

PROJECT BRIEF

A. COVER PAGE FORMAT

1. Identifiers:

Project Number:	Not yet assigned
Project Name:	<i>In Situ</i> /On-Farm Conservation and Use of Agricultural Biodiversity (Horticultural Crops and Wild Fruit Species) in Central Asia
Duration:	Five years
Implementing Agency:	United Nations Environment Programme
Executing Agencies:	Kazakhstan: The Academy of Agricultural Science, Almaty Kyrgyzstan: Research Institute of Farming, Bishkek Tajikistan: Research and Production Association 'Bogparvar', Dushanbe Turkmenistan: Garrygala Research and Production Centre on Plant Genetic Resources of Research Institute of Farming, Garrygala Uzbekistan: Institute of Genetics and Plant Experimental Biology, Tashkent IPGRI (through the Regional Office for Central and West Asia and North Africa (CWANA), Aleppo, Syria and the IPGRI-CWANA Sub-Office, Tashkent, Uzbekistan)
Requesting Country or Countries:	Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan
Eligibility:	Countries participating in this project ratified the Convention on Biological Diversity on the following dates: Kazakhstan - 6 September 1994; Kyrgyzstan - 6 August 1996; Tajikistan - 29 October 1997; Turkmenistan - 18 September 1996; Uzbekistan - 19 July 1995.
GEF Focal Area(s):	Biodiversity
GEF Programming Framework:	OP 13: Conservation and Sustainable Use of Biological Diversity Important to Agriculture

2. Summary:

The outcome of this project will be the conservation and sustainable use of horticultural crops and wild fruit species genetic diversity in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. Local varieties of horticultural crops and wild fruit species will be conserved *in situ*/on farm through enhanced capacity of stakeholder groups including policy-makers, researchers, agricultural extension workers, farmers and their associations, local communities, and NGOs. Knowledge about levels and distribution of fruit species genetic diversity, and the value of this diversity for sustainable agriculture and ecosystem health, will be used to strengthen policy and legislation as it relates to project objectives. The project will produce and distribute proven participatory management models that will contribute to the conservation of this important global resource within and outside the five target countries.

3. Costs and Financing (US\$):

GEF:	-Project	: 5,718,070
	-PDF A	: 25,000
	-PDF B	: 350,000
	Subtotal GEF	: 6,093,070
Co-financing:		
	-Project	: 5,766,595
	International organizations and donors:	
	Quantech SAL:	1,000,000 cash
	IPGRI:	666,500 in-kind
		65,000 cash
	Others ¹ :	1,171,727 in-kind/cash
	-Governments (in-kind):	
	Kazakhstan:	305,200
	Kyrgyzstan:	411,680
	Tajikistan:	274,792
	Turkmenistan:	795,208
	Uzbekistan:	599,555
	-Governments (cash):	
	Kazakhstan:	287,500
	Kyrgyzstan:	42,395
	Tajikistan:	10,600
	Turkmenistan:	29,808
	Uzbekistan:	106,630
	-PDF A	:29,000
	IPGRI:	24,000 in-kind / cash
	Governments:	5,000 in-kind
	-PDF B	:350,000
	IPGRI:	187,000 in-kind
	Governments:	163,000 in-kind
	Subtotal co-financing:	6,145,595
	Total Project Cost:	12,238,665

¹ Discussions ongoing with donors

4. Associated Financing (Million US \$):

N/A

5. Operational Focal Point Endorsement:

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Date of Endorsement: 10.08.04

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Date of Endorsement: 13.07.2004

Chairperson, State Forest Service of Republic of Kyrgyzstan
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Date of Endorsement: 20.08.2004

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Dushanbe, Tajikistan

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Date of Endorsement: 16.07.2004

Deputy Minister, Ministry of Nature Protection of Turkmenistan
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Date of Endorsement: 14.07.2004

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LIST OF ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
AED	Academy for Educational Development
BPM	Biodiversity Participatory Management
CA countries	Central Asian countries
CACILM	Central Asian Countries Initiative for Land Management
CATCN-PGR	Central Asian and Transcaucasian Network on Plant Genetic Resources
CAPRi	Collective Action and Property Rights
CBD	Convention on Biological Diversity
CHM	Clearing House Mechanism
CIRAD	Centre for International Research in Agricultural Development (France)
CIS	Commonwealth of Independent States
CWANA	Central and West Asia and North Africa
CWR	UNEP/GEF project “ <i>In situ</i> Conservation of Crop Wild Relatives through Enhanced Information Management and Field Application”
DFID	Department for International Development (United Kingdom)
EA	Executing Agency
GAA	German Agricultural Action
GFAR	Global Forum on Agricultural Research
GIS	Geographic Information Systems
GRIS	Genetic Resources Information System
IA	Implementing Agency
ICARDA	International Center for Agricultural Research in Dry Areas
ICT	Information and Communication Technology
IFPRI	International Food Policy Research Institute
IPGRI	International Plant Genetic Resources Institute
ISC	International Steering Committee
ISDC	Interstate Sustainable Development Commission
ISTC	International Science and Technology Center
IUCN	World Conservation Union
KIFOR	Kyrgyz/Swiss Forestry Support Programme
LAN	Local Area Network
NBSAP	National Biodiversity Strategy Action Plan
NGO	Non-governmental organization
OBNIS	Oman Biodiversity National Information System
OSCE	Organization for Security and Co-operation in Europe
PGR	Plant genetic resources
PIU	Project Implementation Unit
REAP	Regional Environmental Action Plan
RITSEC	Regional Information Technology and Software Engineering Center
SYSPALM	SYStème d’Information des PALmiers-dattiers du Maghreb
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UN/ESCAP	United Nations Economic and Social Commission for Asia
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WAN	Wide Area Network

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B. PROJECT DESCRIPTION

BACKGROUND AND CONTEXT (BASELINE COURSE OF ACTION)

1. Central Asia is one of the five most important centres of origin of cultivated plants, and the richest in specific and intraspecific diversity for many globally important agricultural crops (N. I. Vavilov, 1931). Cereals (wheat, barley, rice, maize, sorghum), food legumes (bean, chickpea), vegetables (tomato, potato, onion, garlic, coriander), melons, industrial, and stimulant crops (cotton, sugar beet, groundnut, sesame, tobacco) are cultivated in the region. Plant species in the region number 8,100; 890 of them are endemic. About 400 of them are listed in the IUCN “Red Data Book” as endangered.

2. Particularly important crops in Central Asia are the temperate fruit species. Apple (*Malus domestica*), apricot (*Armeniaca vulgaris*), peach (*Persica vulgaris*), pear (*Pyrus communis*), plum (*Prunus domestica*), grape (*Vitis vinifera*), almond (*Amygdalus communis*), pistachio (*Pistacia vera*), pomegranate (*Punica granatum*), and fig (*Ficus carica*) are among the best known crops cultivated in the region where, over the course of several centuries, the diverse natural and climatic conditions have helped farmers produce varieties adaptable to drought and resistant to a number of environmental stress factors. These locally-developed traditional varieties have been shown to be essential components of crop production in difficult environments.

3. Wild apple (*Malus* spp.), wild pear (*Pyrus* spp.), wild plum (*Prunus* spp.), wild almond (*Amygdalus* spp.), wild pomegranate (*Punica granatum*), wild grape (*Vitis* sp.), and other wild relatives of horticultural crops still grow and are cultivated in forests throughout the region. Many of them are used as rootstocks. Their resistance to biotic pressures – insects and disease – make them valuable genetic resources for reducing crop vulnerability on-farm and providing genetic material for crop improvement. Many of these species are also important nutritional resources for local people.

Threats and Barriers

4. Due to the collapse of the Soviet Union and the transition from a centralized economy to a market-driven one, the Central Asian (CA) countries – Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan – face serious development problems. These include food insecurity, poverty, and degradation of the environment (see Annex N for a map of the region). Issues of food security and poverty are pushing agricultural development and consequent biodiversity loss. While government efforts to restructure the agricultural sector and diversify production are ongoing, genetic erosion, including of fruit species, is on the rise. Important fruit species genetic diversity is found both in the wild and on-farm; both sources are threatened by a number of factors.

5. Wild fruit species in Central Asia are under threat due to overgrazing, deforestation, logging and industrialization. The CA countries have responded by establishing 15 forest reserves where wild fruit species grow. However, in many of these reserves, the fruits are used unsustainably by local people, thus contributing to genetic erosion. In addition, the best-quality products are selected to ensure better marketing opportunities. This engenders a human-driven natural selection, which leaves only those varieties that are not immediately marketable to reproduce. The result is loss of wild fruit species, and reduction of intraspecific diversity in natural forests and reserves. The consequent degradation of natural habitats and biodiversity loss leads also to loss of a wide range of valuable ecosystem services (e.g.,

carbon storage, protection of hydrological functions, soil erosion), an instable environment, and, ultimately, natural calamities such as floods, drought, and landslides.

6. Horticultural crops face equal pressures. Since cultivation began, farmers have managed local varieties in a dynamic way to produce the most marketable plants, and those that have adapted the most effectively to local environmental conditions. However, while many valuable landraces and local cultivars of these species are still maintained in home gardens and on small farms, the introduction of uniform high-yield varieties, use of chemical fertilizers and pesticides, and increased mechanization have reduced the area of agricultural lands on which local cultivars are maintained. The result is loss of traditional diversity-based farming systems, arable lands degradation, pollution of the environment (water, soil, air), genetic erosion, and loss of biodiversity.

7. Action to conserve diversity of horticultural crops and wild fruit species is hampered by inadequate information about the value of these resources, lack of coordination between environmental protection and agricultural development agencies, and inadequate communication among local scientific institutes and local and national government agencies. Limited financial resources and inadequate institutional structures diminish the effectiveness of developing legal frameworks for protection of the environment. Information and knowledge on the number and quality of horticultural crops and their genetic resources, distribution, conservation, and use are inadequate. While knowledge on the wild resource exists, much of it is outdated and lacks benefit of modern technologies. Lack of an integrated approach among key actors – farmers and local communities, scientific institutes, government agencies, and the private sector – prevents effective intervention to conserve the resource. The project proposed here will address the problem of inadequate information, coordination and knowledge, thereby contributing to the elimination of the other major barriers to conserving fruit genetic resources (unsustainable use of wild fruit species and loss of traditional diversity-based farming systems).

8. Due to inadequate resources and institutional structures in the CA countries, the existing system of environmental protection faces substantial challenges. The need to increase agricultural production will continue to contribute to biodiversity loss. Economic policy reforms are needed, as is recognition of the important role that farmers and communities can play in *in situ*/on-farm agrobiodiversity conservation.

Baseline and System Boundaries

9. While the CA countries have developed policy frameworks for the environmental and agricultural sectors, these frameworks do not adequately address issues related specifically to conservation of fruit species, or Farmers' Rights and benefit sharing mechanisms needed to ensure the active participation of farmers, local communities and forest dwellers in conserving agrobiodiversity.

10. Research institutes in the CA countries have, for many decades, documented and collected local varieties of horticultural crops grown by farmer's households and promising phenotypes of wild fruit and nut species found in forests. Their knowledge is, however, limited; it is not current and lacks the benefits of modern technologies (e.g., molecular markers, use of GIS to document distribution). Additional knowledge exists in farming communities, where for centuries local varieties have been conserved and maintained by farmers. This knowledge includes, for example, specific adaptive traits of local fruit species varieties, for example to the diverse climatic and soil conditions of marginal environments. Overall knowledge about both wild and cultivated fruit genetic resources is widely dispersed

and fragmented and very little is documented in formal research sectors. Moreover, there is no national or local research infrastructure to coordinate documentation, collection, and management of these local genetic resources.

11. Stakeholder groups include Government Ministries and agencies, scientific institutes and universities, non-governmental organizations (NGOs), farmer associations and farmers, forest dwellers, and other community groups. At present, the linkages between and among stakeholder groups are weak. The result is fragmented documentation about fruit species' genetic diversity and nurseries managed by a variety of stakeholders (institutes, government agencies, and some farmer associations) operating in isolation. There is little effort to coordinate management of the genetic diversity or information about it.

12. Approaches to conservation and management of genetic diversity for the longer lived perennial species, such as the fruit species, have received inadequate attention. Methodologies have focused primarily on the maintenance of annual crops in agroecosystems, and the maintenance of forest stands in natural ecosystems. Tools and methodologies for on-farm conservation have been developed and tested through IPGRI's global project "Strengthening the Scientific Basis of *In Situ* Conservation of Agricultural Biodiversity On-Farm", although these methods have not been applied in the CA region, or to horticultural crops and wild fruit species.

13. The proposed intervention aims to address these barriers. It will engage a broad stakeholder group, from forest dwellers and farmers to policy-makers, in conservation and sustainable use of fruit species genetic resources. The project will target horticultural crops and wild fruit species in at least four sites in each of the five project countries. Project activities will focus on sites selected using priority-setting criteria for crop and agroecosystem selection established during the PDF-A phase and tested and modified during PDF-B phase. Priority crops are apricot (*Prunus armeniaca*), alycha (*Prunus Cerasifera*), grapevine (*Vitis* sp.), pomegranate (*Punica granatum*), pear (*Pyrus* sp.), fig (*Ficus carica*), almond (*Amygdalus communis*), sea buckthorn (*Hippophae* sp.), walnut (*Juglans regia*), peach (*Persica vulgaris*), pistachio (*Pistacia vera*), and apple (*Malus* sp.). Criteria and lists of the crops, sites and agroecosystems are found in Annex I.

Programming Context: National and International Policy and Action

14. Despite resource and capacity limitations, the CA countries have acted to counter loss of biodiversity and genetic erosion. Since their independence in 1991, all five countries have developed (and continue to develop) policy frameworks to address issues related to biodiversity conservation, land use and protected areas, farming systems and Farmers' Rights², and sustainable agriculture development. The countries have adopted a number of conservation and development plans related to plant genetic resources, agriculture, and sustainable use of plant diversity. Preliminary analysis of these laws and policies was carried out during the PDF-B phase. Initial results are summarized in Annex E.

15. All five countries have signed and ratified the Convention on Biological Diversity (CBD), and all have developed their National Biodiversity Strategies and Action Plans (NBSAPs) with components to conserve agrobiodiversity. All five have entered into the Treaty on the Cooperation in the Field of Ecology and Protection of Environment, an agreement of Commonwealth of Independent States (CIS) countries that entered into force in February of

² Farmers' Rights in the context of this document are to be considered within the context of both the CBD and the International Treaty on Plant Genetic Resources for Food and Agriculture.

1992. Four of the project countries are Parties to the Treaty on Collaboration in the field of Conservation and Use of Cultivated Plant Genetic Resources, also an agreement among the CIS countries (1999).

16. Cooperation among the CA countries is further evidenced in the Central Asian and Transcaucasian Network on Plant Genetic Resources (CATCN-PGR), established in 1996. Priority needs identified by CATCN-PGR form a basis for the project proposed here. These include inadequate information on the extent and distribution of traditional varieties of horticultural crops and wild fruit species, lack of capacity to document this information, limited understanding of indigenous knowledge systems, lack of coordination among key conservation practitioners, and insufficient trained personnel.

17. The national plant genetic resources programmes are currently linked through several regional projects. The following IPGRI-coordinated projects aim to strengthen conservation of plant genetic resources (PGR):

- “Strengthening Community Institutions to support the Conservation and Use of Plant Genetic Resources in Uzbekistan and Turkmenistan” is a project initiated by IPGRI and the International Food Policy Research Institute (IFPRI) with the support of Collective Action and Property Rights (CAPRI, 2002-2004). The project is assessing the impacts of land tenure and rural institutions on uses of plant genetic resources, specifically horticultural crops in Turkmenistan and Uzbekistan, agricultural dynamics at the household and village levels, and policy implications of tenure and local institutions for *in situ* conservation. The socioeconomic research and data, and the methodologies applied in this project, are of direct relevance to the project proposed here;
- IPGRI, the International Center for Agricultural Research in Dry Areas (ICARDA), and the US Agency for International Development (USAID) are supporting related national programmes, including an effort to upgrade genebank facilities of the Uzbek Research Institute of Plant Industry;
- IPGRI facilitates a Knowledge Exchange initiative, organizing workshops and distributing literature in English and Russian to scientists and other interested stakeholders, and assists in the establishing databases to document germplasm conserved *in situ* and *ex situ*;
- The IPGRI UNEP/GEF global project “*In situ* Conservation of Crop Wild Relatives through Enhanced Information Management and Field Application” has started and includes Uzbekistan. The CWR project will address policy and legal issues concerning information ownership through the development of protocols for access and benefit sharing of information. Lessons learned in Uzbekistan will support the project proposed here.

18. A key component of the project proposed here is to promote sustainable use of wild fruit species to help rehabilitate degraded ecosystems, especially in fragile marginal areas. Links will therefore be made not only to the agricultural sector, but to the environmental sector as well. Complementarity in biodiversity conservation will be achieved through sharing and exchange of information and project results with national and international projects.

19. Examples of related biodiversity and land management projects in the region include:

- The UNEP/GEF project “Sustainable Land Management in the High Pamir and Pamir-Alai Mountains - an Integrated and Transboundary Initiative in Central Asia” (2004-2006, PDF-B phase) addresses environmental pressures emanating from changing rural livelihood practices in Tajikistan and Kyrgyzstan. The changing practices result from socioeconomic and political developments. The project will address these issues through building institutional and human resource capacities and by introducing methods for sustainable land management using integrated, participatory, and transboundary approaches. The primary project output is to develop and introduce a sustainable land management system for the ecosystems and watersheds in the High Pamir and Pamir-Alai mountain areas and adjacent lowlands.
- The Asian Development Bank/GEF project “Central Asian Countries Initiative for Land Management (CACILM)” (2004-2005) aims to combat land degradation and improve rural livelihoods in the CA Countries. The objective is to establish the Central Asian Initiative for Land Management (CACILM), a multi-country and donor partnership to support the development and implementation of national level programmatic frameworks for more comprehensive and integrated approaches to sustainable land management in the region. CACILM will be guided by a National Programming Framework (NPF) for each country that will describe the policy and legislative conditions for sustainable land management, and the approach to mainstreaming sustainable land management into national development planning and budgetary processes. It will also identify priority problems and constraints to sustainable land management.
- The UNDP/GEF project “*In situ* Conservation of Kazakhstan Mountain Agrobiodiversity” (2003-2008) aims to promote conservation and management of crop wild relatives in protected areas and national forests. It also aims to develop a supportive legislative, institutional, and financing framework to enable Kazakhstan to both sustainably conserve and equitably utilize its agrobiodiversity. The project focuses on *in situ* conservation of two wild fruit forest ecosystems (apple and apricot) of the mountainous regions (Zailiyskiy and Dzhungar Alatau) in Southeastern Kazakhstan. It shares objectives of the project proposed here, therefore the two projects will collaborate on methodologies, data, training, and results. In order to coordinate these two projects and avoid duplication and overlap of activities, it was agreed to include in the National Steering Committee of Kazakhstan of the proposed project the national coordinator of the UNDP/GEF project “*In situ* Conservation of Kazakhstan Mountain Agrobiodiversity”.
- The UNDP/GEF project "Establishment of the Nuratau-Kyzylkum Biosphere Reserve as a model for Bio-diversity Conservation in Uzbekistan” (2001-2005), will establish the basis for development and testing of an integrated and participatory approach to biodiversity conservation and rural development in the project area. The first of its kind in Uzbekistan, the project operates in an area that includes three types of landscapes, mountains, semi-desert plains, and lakes, throughout which a large diversity of ecosystems exist.
- The UNDP/GEF project “Conservation of Kugitang mountain biodiversity in Turkmenistan” (PDF-A phase, 2003-2004), aims to improve the effectiveness of the protected areas network for conservation of the Kugitang mountains and their biodiversity, promote efficiency and sustainability of natural resource use by local populations living near the reserve, increase awareness and incentives for local authorities and populations to conserve and use biodiversity sustainably, and re-establish trans-boundary contacts and integration of activities between Uzbek and Turkmen authorities to conserve the biodiversity of the area.
- Ben-Gurion University of Israel and the National Institute of Deserts, Flora and Fauna of

Turkmenistan are implementing the “Collection, Characterization and Exchange of Pistachio Genus germplasm” project (1999 – 2004) under the USAID funded Cooperative Development Research Programme. The project results include a collection of elite pistachio seeds, establishment of pistachio nursery, creation of a pistachio plantations in the foothills of the Central Kopetdag mountains, and institute staff trained in the science and management of pistachio cultivation at Ben-Gurion University of Israel.

- In Kyrgyzstan, GTZ is implementing the project "Promotion of the biosphere reserve Issyk-kul". Funded by the German Federal Ministry of Economic Cooperation and Development for the period 1997–2005, the project purposes are biodiversity conservation, introduction of ecologically oriented land management, and support of ecological tourism.
- The World Bank/GEF Central Asia Transboundary project “Biodiversity Conservation of West Than-Shan” (2000-2004) focuses on the Aksu-Jabagly Reserve in Kazakhstan, Sary-Chelek and Besh-Aral Reserves in Kyrgyzstan, and Chatcal Reserve in Uzbekistan. It aims to protect vulnerable biological communities in the area, and to support this effort to strengthen and coordinate national policies and regulations. The project is concentrating on ecosystems and species level diversity on protected areas and is therefore complementary to the proposed project where the target is common wild fruit species in forest reserves.
- The PDF-A phase of the UNDP/GEF “Tajikistan Dashtidzhum Biodiversity Conservation Project” was approved in August 2003 for a period of 10 months. The main objective is to develop a GEF medium-sized project on biodiversity conservation of the Dastijum Reserve.

20. UNDP/GEF is supporting several projects in Kazakhstan that aim to build capacity in environmental management and implementation of environmental and development treaties. These include “Strengthening Environmental Management for Sustainable Development”, “National Capacity Self-Assessment for Global Environmental Management (NCSA)”, “Assessment of capacity building needs in priority areas of biodiversity conservation and management and enhancement of biodiversity information management network and national Clearing-house Mechanism (CHM)”, and “Institutional Strengthening for Sustainable Development”. In Uzbekistan, USAID is funding two projects to identify and select highly productive varieties of nuciferous species (walnut, pistachio, almond, and filbert). The Kyrgyz/Swiss Forestry Support Programme (KIFOR) is reforming the management system by devolving planning responsibility to the local level. The KIFOR-Processing and KIFOR-Walnut components promote sustainable management of the forests and participatory and sustainable approaches to the management of the walnut fruit forests of Southern Kyrgyzstan. The project area includes the world's last remaining natural forest stands of walnut and fruit-bearing trees in the south of the country.

21. Collaboration was sought with these initiatives during the PDF B implementation to ensure complementarity. However, it is important to note that the approaches and geographic coverage of this proposed UNEP-GEF project are not in any way duplicative to existing work in the region. The proposed full project will concentrate efforts not only on wild fruit species but also on local varieties of fruit crops while implementing priorities that have been set both at regional and national levels in order to reduce the present rates of degradation and loss of local varieties of fruit crops and the habitat of their wild relatives. Facilitation of the participation of local communities inhabiting forest areas where wild fruit species occur is one of the main activities of the project to mitigate natural habitat losses. This is complementary to on-farm conservation of local fruit varieties and sustainable use of indigenous agrobiodiversity within the same agroecological zones. These features of the project design are wholly unique to the proposed project. Knowledge and experience, gained during project implementation will promote national capacity building in agrobiodiversity,

strengthen links among scientists and farmers, and promote further conservation and sustainable use of global significant fruit species varieties and their wild relatives.

22. Cooperation and shared objectives within the region are evidenced through a number of agreements and declarations. The Regional Environmental Action Plan (REAP) was initiated at the request of the Central Asian Ministers for Environment during the February 2000 United Nations Economic and Social Commission for Asia (UN/ESCAP) meeting. The REAP preparation process was then initiated by the UNEP office in Asia and the Pacific. The Plan was developed as a joint venture between UNEP, UNDP and the Asian Development Bank (ADB) under the overall guidance of the Interstate Sustainable Development Commission (ISDC). The aim of the Plan is improvement of the environmental and socioeconomic situation in the Central Asia Region for a period of 2003-2010. This project is in line with the REAP.

23. The international legal obligations assumed within the framework of the countries of the Commonwealth of Independent States (CIS) reflect the importance of transboundary environmental issues. The Agreement on Environmental Impact Assessment (CIS, 1991) recognized the importance of the ecological assessment in the early stages of the decision-making process, and, as a consequence, the need for coordinated intergovernmental activities in the field of environmental impact assessment. A desire to broaden environmental collaboration with international organizations and agencies has repeatedly been expressed at a high level (the 1997 Almaty Declaration of the Presidents of the Central Asian States, the 1998 Tashkent Declaration on the special UN program for the Central Asian States, the 2002 Dushanbe Declaration).

24. The project supports objectives of Agenda 21 (1992), the Global Forum on Agricultural Research (1999), and the Global Plan of Action of FAO (1998). It supports objectives of the United Nations Medium-Term Plan for the Period 2002-2005, in particular “to improve environmental management capabilities and enhance government capacity to implement environmental policy” (Programme 10, Environment). The Plan calls for pilot projects of demonstrative value and assistance to governments to build capacities to meet the objectives of environmental agreements. The proposed project responds to two objectives of GEF Operational Programme 13, “to promote: the conservation and sustainable use of genetic resources of actual and potential value for food and agriculture; and the fair and equitable sharing of benefits arising out of the use of genetic resources”.

25. The project is in line with Strategic Priority Two in Biodiversity for GEF Phase III to mainstream biodiversity into production systems, and applies the three major themes: (a) capacity building; (b) participation of government agencies beyond “green” ministries in biodiversity projects to foster greater political and institutional participation; and (c) enhancing and sustaining participation of local and indigenous communities and the private sector in GEF projects.

26. Globally significant fruit species in the five CA countries are being lost due to a number of direct and proximate causes. National legal and policy frameworks are being developed to address these causes in a number of ways, although these laws have been largely ineffective in conserving fruits species. Research institutes evaluate, collect, and manage wild species, while farmers, farmer associations and local communities conserve and exchange local varieties within and among their farming systems, including in marginal lands. However, these efforts operate in isolation, and little is known about the extent and distribution of existing traditional varieties of horticultural crops and wild fruit species. Interventions are needed to strengthen legal and policy frameworks, enhance capacities to fully evaluate, document and monitor both horticultural crops and wild species, and promote cooperation and strong partnerships among

stakeholder groups in support of fruit species conservation and use. Without them irreplaceable genetic resources and associated traditional knowledge will be lost to the global community.

RATIONALE AND OBJECTIVES (ALTERNATIVE)

27. This project aims to conserve the high diversity of horticultural crops and wild fruit species found in the CA countries, a resource of global significance. Conservation of the resource will support farmer production and livelihood strategies throughout the region. It will conserve valuable genetic stocks important to plant breeders, researchers, and local populations who depend on them for their livelihoods. The result will be conservation of local varieties of horticultural crops and wild fruit species, protection of the natural resource base, and a basis for sustainable agricultural production in the region.

28. The development objective of the project is that *in situ*/on-farm conservation and utilization of horticultural crops and wild fruit species are ensured for sustainable agricultural development, food security, and environmental stability. The project purpose is that farmers, institutes, and local communities are provided with and use knowledge, methodologies, and policies to conserve *in situ*/on-farm horticultural crops and wild fruit species in Central Asia.

29. Key project objectives are to: 1) provide options to policy-makers for strengthening legal and policy frameworks; 2) assess, document, and manage local varieties of horticultural crops and wild fruit species in a sustainable way; 3) Promote broad stakeholder participation, representative decision making, and strong partnerships among them; and 4) strengthen the capacity to implement all aspects of fruit species genetic diversity conservation at local, national and regional levels.

30. The anticipated project outcomes are:

Outcome 1: Policy options for supporting farmers and local communities to conserve *in situ*/on-farm local varieties of horticultural crops and wild fruit species are available and used.

Outcome 2: Knowledge and methodologies on *in situ*/on farm conservation and utilization of horticultural crops and wild fruit species are available, disseminated and used.

Outcome 3: Broad participation and strong partnerships/links among farmers, among farmers and institutions, between farmers, institutions, and private sector, and among countries are established.

Outcome 4: Capacity for training and support activities on *in situ*/on-farm conservation and use of fruit species genetic resources is established.

31. The proposed course of action to conserve fruit species genetic diversity builds on the existing genetic resource: farming systems that rely on management and exchange of traditional local varieties, and wild resources that continue to provide rootstock and important sources of food and income. It considers existing capacity and structures that do (or might) support conservation of fruit species genetic diversity in each of the five partner countries.

32. Facilitation of the participation of local communities inhabiting forest areas where wild fruit species occur complements on-farm conservation of local fruit varieties and sustainable use of indigenous agrobiodiversity within the same agroecological zones. This combination of features in the project design is wholly unique to the proposed project.

33. During the PDF-A and PDF-B phases, proposed project components were tested, assumptions analyzed, and stakeholder groups identified. The resulting analyses and strategies have guided the strategy to implement the project intervention, which comprises four components:

- Legislation and Policy
- Knowledge and Methodologies
- Broad Participation and Strong Partnerships
- Capacity Building

34. The project intervention will develop policy recommendations that support sustainable management of fruit species genetic diversity (cultivated and wild resources). It will promote participation of farmers and local communities in the conservation of fruit species genetic diversity, involving them in national systems of plant genetic resources (PGR) conservation and joint research work. It will result in improved capacity of scientific institutes to document, manage, and help conserve local horticultural crop varieties and wild fruit species and to work in tandem with farmers, farmer associations, and local communities. Finally, it will ensure that all stakeholders have capacities to implement legal, scientific, and social aspects of fruit species genetic diversity conservation.

35. The project components are designed to strengthen and enhance national nature protection and conservation policies and programmes, and to support implementation of CBD objectives. This includes revising national policies that, while supporting systems of protected areas, allow open access to and unregulated use of the forest resource. The project will further analyze the structure of existing laws and draft recommendations that support more effective management and access. It will expand the focus of scientific institutes with extensive expertise on documentation and management of fruit species to include the conservation of local fruit species' genetic diversity together with indigenous knowledge of this diversity. The project will link and enhance current national and regional capacities from wild and horticultural resource sectors, and provide additional information management resources and techniques. The project will support the implementation of National Biodiversity Strategies and Action Plans (NBSAPs), all of which address the need to conserve PGR, and which include steps to conserve agrobiodiversity (e.g., support to seed banks and nurseries, assessment of fruit diversity) and forest resources. NBSAPs of the project countries also emphasize the importance of community involvement, indigenous knowledge and public awareness, all of which are integral to the proposed project.

36. Measurement of project progress and achievement of project purpose will be based on six impact indicators:

1. At least four methodologies for *in situ*/on-farm conservation of priority horticultural crops and wild fruit species are developed, tested and made available to stakeholders in the five project countries;
2. Sustainably managed areas covered by horticultural crop varieties and wild fruit species of the target crops in pilot sites increased by 20% (333,555 hectares);
3. At least two policy recommendations that support and strengthen farmers' activity on conservation of local varieties of horticultural crops and wild fruit species are developed and submitted to policy makers in each country. Implementation of policy recommendations begins at least in one country;
4. At least 20% (equivalent to 540) of farmers and forest dwellers at the pilot sites will implement the new methods to conserve and use horticultural fruit trees;

5. At least two farmers' associations are established and maintaining local varieties of horticultural crops in each country;
6. At least two representatives of farmers' associations or individual farmers are participating in national programmes/committees on plant genetic resources conservation in each country.

The complete list of indicators per outcome can be found in Annex B.

37. Global benefits of the project are the conservation of globally significant fruit species varieties and their wild relatives, and development of models (best practices) for their conservation and sustainable use that can be applied both within and outside the five project countries. Domestic benefits include broad stakeholder participation in conservation of fruit species, availability and accessibility of genetic stock for development of new robust and resilient varieties, stability in agricultural production, and increased market demand and income for fruit crops. Providing the tools and methods to conserve and sustainably use fruit species genetic diversity will help to strengthen national agricultural economies and eradicate poverty in the region.

PROJECT ACTIVITIES/COMPONENTS AND EXPECTED RESULTS

38. The project will be executed through four components described above. It will operate at local (project sites and villages), national (through National Steering Committees in each country), and regional (through the International Steering Committee) levels. The heart of activity will be at the local level, where at least four project sites will be established in each country. During the PDF-B phase, two project sites were established in each country. At these sites, national planning teams identified and consulted with local agencies responsible for management of the areas. From this process, four different local structures were identified, each of which is accommodated in the project design:

- Individual farms (apple in Kazakhstan and Uzbekistan, and apricot in Tajikistan);
- Individual farms organized around farmers' associations (pomegranate in Turkmenistan);
- Restricted access forest reserves and forestry farms (walnut and wild apple in Kyrgyzstan, and pistachio in Uzbekistan and Turkmenistan);
- Open access forests (wild apricot in Kazakhstan).

Legislation and Policy

Outcome 1: Policy options for supporting farmers and local communities to conserve in situ/on-farm local varieties of horticultural crops and wild fruit species are available and used.

39. During the PDF-B phase, a preliminary analysis of existing legislation and policies in the five project countries was undertaken. The analysis identified legislation and policies covering biodiversity conservation, land use and protected areas, support to farmers and Farmers' Rights, and development of new crops and varieties. The need to strengthen protection of the wild resource, to protect Farmers' Rights, and to develop structures for benefit sharing were found to be most prevalent. For example, while many countries use genebanks to develop new crops, farmers rarely benefit from the new technologies and income that result. As well, the laws do not adequately protect forest areas, resulting in loss of fruit species genetic diversity due to over-exploitation and deforestation. A summary of the results of the analysis are found in Annex E.

40. The legislation and policy project component will further examine existing legislation and policy in the five partner countries, assess its effectiveness, and identify legislative and policy options for strengthening national systems that support conservation of horticultural and wild fruit species genetic diversity. Specific policy recommendations will be documented, promoted among policy-makers positioned to affect change and their implementation initiated at least in one country.

41. Acceptance and implementation of legislation and policies requires a broad understanding of their importance. Public awareness activities will build general awareness about the need to conserve the genetic diversity of horticultural crops and wild fruits. Within the stakeholder groups, awareness activities will focus on their respective roles and responsibilities, and increase understanding about the relationship of legislation and policy to their work. Farmers' experience in maintaining fruit species genetic diversity, information about existing local varieties, and the value of local varieties of horticultural crops and wild fruit species to support sustainable agricultural production and conservation of agro-biodiversity will be promoted through various public awareness materials such as videos, radio and television programmes, brochures, and web presentations. Participation of farmers and local communities will be promoted through local events, such as round table discussions with farmers and local communities, and agriculture theatres designed to reach younger audiences in rural schools and universities. [Agriculture theatres will be established in rural schools and Universities located near the project site to reach younger audiences.](#) These approaches have been successfully implemented by IPGRI in other parts of the CWANA region.

Knowledge and Methodologies

Outcome 2: Knowledge and methodologies on in situ/on farm conservation and utilization of horticultural crops and wild fruit species are available, disseminated and used.

42. The knowledge and methodologies project component will develop methods and guidelines for analysis, documentation, and management of the project horticultural crops and wild fruit species. It will focus on crops selected during the PDF-A phase and tested during the PDF-B phase: apricot (*Prunus armeniaca*), alycha (*Prunus cerasifera*), grapevine (*Vitis* sp.), pomegranate (*Punica granatum*), pear (*Pyrus* sp.), fig (*Ficus carica*), almond (*Amygdalus communis*), sea buckthorn (*Hippophae* sp.), walnut (*Juglans regia*), peach (*Persica vulgaris*), pistachio (*Pistacia vera*), and apple (*Malus* sp.).

43. During the PDF-B phase, interdisciplinary project teams tested and modified criteria for sites and crop selection (identified during the PDF-A phase) at the two project sites in each country. At that time, additional project sites (villages, settlements, forestry farms, etc.) for other priority crops were identified in preparation for survey missions to be undertaken at the start of the full project. These missions to priority agroecological zones will identify the best local varieties of horticultural crops and promising forms of wild fruit species. The findings will guide selection of demonstration plots at which project activities will be implemented together with farmers, farm households, and local communities. Site location choices will be based on concentrations of the best local varieties of fruit crops and proximity to farm households, settlements, and forestry operations, and existence of nurseries to manage the varieties. Farmers' and forest dwellers' knowledge of the materials and management practices, and the willingness and interest of the farmers and forest dwellers to participate in the project, will also be considered. Demonstration plots will be used as a matrix garden (i.e. a stock collection) to be distributed among farmers and protected area managers for

reproduction or recovery of plants and their conservation in their natural habitats. Criteria for selection of crops and agroecosystems are found in Annex I.

44. Understanding the extent and distribution of diversity of horticultural crops and wild fruit species, and existing systems for their use and maintenance, is the first step toward establishing the scientific basis for project implementation. This information will be derived not only from the documentation and collections held at scientific institutes, but also from farmers and local communities who can contribute knowledge about the resource, documentation on characteristics and distributions, and sustainability of use. The missions to priority agroecological zones will apply a number of survey tools including: participatory approaches to gather farmer information on distinguishing varieties and particular adaptive and qualitative variety traits, that can improve farmers' resilience to variable *in situ*/on-farm environment conditions, knowledge and experience on the maintenance, processing (e.g., drying) and storage of local varieties and wild fruit species, agromorphological and biochemical characterization, molecular markers, isoenzyme, GIS, and other modern methods of studying plant genetic resources (PGR). The project will provide facilities and equipment for surveys and data analysis, help establish a database to document results (levels and distribution of diversity), publish and exchange information about the local varieties, and provide a mechanism for information on the varieties to be returned to and used by the farming communities. Survey procedures were developed during the PDF-B phase; these can be found in Annex H.

45. Existing and new methods of reproduction (root shoots, *in vitro*, etc.) of priority horticultural crops and wild fruit species in the selected sites will be adapted or developed based on the biological traits of local forms and varieties of fruit species and their wild relatives, taking into account the farmer's indigenous knowledge of reproduction practices. The process will also take into account the selection of tree stocks (e.g., root shoots, grafts). It will also consider a number of factors affecting PGR including soil and climate conditions, farmers' socioeconomic status and standard of living, systems of household management, tenure rights, and methods of agroecosystem management. Socioeconomic assessment of the status of farms responds to the influence of multiple factors – environmental, biological, and socioeconomic – in farmers' decisions to select particular varieties. Economists, sociologists, lawyers, and ecologists will therefore be involved.

46. Existing nurseries will be enhanced to cultivate the best local varieties of horticultural crops and best forms of wild fruit species. This activity aims to build farmers' capacities to maintain nurseries and to manage the best varieties. It will look at the requirements and sources of planting stock, and help strengthen existing nurseries and the relationships between them. A survey will be undertaken to identify farmers who already select and multiply plants locally, and nursery activities will build on these farmers' capacity.

47. By establishing communication between nurseries and treating their acquisitions collectively, capacity to assess and monitor levels and distribution of fruit species genetic diversity will increase substantially. The enhanced nursery system and network of databases (see below) will support and enhance access to and exchange of genetic materials (saplings, seeds, etc.) among farmers and between farmers, forest dwellers, and scientists.

48. To support continuation and expansion of conservation systems and methodologies during the life of the project and beyond, recommendations and guidelines will be developed for using the best local fruit varieties and wild fruit species for breeding purposes. This will help to improve the assortment of fruit crops adapted to the local environment, and fruit genetic resources in non-breeding programmes (e.g., marketing, direct use of fruit products,

environmental rehabilitation). Scientific guidelines on technology of growing the best local varieties of horticultural crops will also be developed.

49. A network of databases on local varieties of horticultural crops and wild fruit species maintained on-farm and in the wild will be established for ease and accessibility of information management. A protocol will be established to ensure that this information is returned to the farmer communities in a form both acceptable and useful to them. In 1999, IPGRI, in collaboration with national programmes throughout the CWANA region, developed the Genetic Resources Information System (GRIS). GRIS consists of a set of relational databases that document and analyze information about PGR. Application of the GRIS system to this project, in particular as it supports the collection of indigenous knowledge and returning of the knowledge to the source community, is described in Annex J. This activity will provide the basis for documenting knowledge, and will include protocols and conditions for access, sharing and use of the information.

Broad Participation and Strong Partnerships

Outcome 3: Broad participation and strong partnerships/links among farmers, among farmers and institutions, between farmers, institutions, and private sector, and among countries are established.

50. Government agencies (national and regional), scientific institutes, farmers, farmer associations, local communities, and NGOs concerned with conservation and agricultural development all have a role to play in the conservation and sustainable management of fruit species (see section on Stakeholder Participation and Implementation Arrangements). Building links between these groups is instrumental to the success of the proposed *in situ*/on-farm conservation activities during the life of the project and beyond.

51. Activities to support this project component include organization of management committees, assessment and promotion of links between and among stakeholder groups, promotion of farmer involvement, and communications between and among levels of operation.

52. In all five project countries the scientific community has, for many years, studied and documented genetic diversity of fruit species in protected areas and other State lands. Historically, conservation and management of fruit species has not included farmers and forest dwellers, even though these groups are the most direct link to, and have significant knowledge about, fruit genetic resources. Evolution of on-farm varieties has been largely ignored. Farmers and local communities can contribute to conservation and sustainable use of the genetic resources on several levels: knowledge about the resource, documentation on characteristics and distributions, and sustainability of use.

53. Within the scientific community, links are weak or non-existent. It was found during the PDF-A and PDF-B phases that responsibility for management of horticultural crops and wild fruit species is assigned separately to horticulture and botany/forest agencies and institutes. Immediate initial steps were taken to establish links and agreements on sharing responsibilities between them in each of the five countries.

54. Further, economists and social scientists have had little or no role to play in the study of plant genetic resources, even though their disciplines address the social, cultural, and economic factors that influence farmer and local community practices. Involvement of economists and social scientists to adequately address the impact of these factors, in

particular relationships between indicators of economic change, market development, and government policy, is essential.

55. During the PDF-B phase, a Strategy for the Application of a Participatory Approach was developed (Annex K). Development of the strategy was based on a series of discussions with agencies in the five partner countries, field visits to test sites, and a regional introductory training course on participatory approaches attended by twelve participants from the five countries. The existing structure and linkages relevant to implementation of the project, knowledge about participatory approaches, and current roles of stakeholder groups in cultivation and conservation of fruit species were assessed.

56. Two levels of coordinating committees will be established. Multidisciplinary Committees will coordinate activities for each of the project sites. These Committees will include representation from all stakeholder groups (including farmer associations and forest dwellers) and types of expertise. They will provide the forum through which individuals and groups can exchange information about varieties, their uses, and potential markets.

57. A Site Coordination Committee will be established in each country. The Committee will link Multidisciplinary Committees, ensuring that lessons learned are shared among the sites and with the national and regional level operations. Existing linkages among farmers, among institutions, between institutions and farmers/local communities, and between countries in the region will be analyzed, constraints to establishing or strengthening them will be identified, and agreements on key collaborations between institutions and groups will be developed.

58. A series of activities to further promote farmer involvement will be undertaken. These include development of a database on farmers' achievements on *in situ*/on-farm conservation of local varieties of horticultural crops and wild fruit species, and publication of an information bulletin about farmer maintenance of local varieties. Achievement fairs will be organized to promote use and exchange of local varieties and compile and disseminate lists of promising local varieties and forms of horticultural crops and wild fruit species to be conserved and used. Electronic communication for broader information exchange among farmers, researchers, donors and other stakeholders will also be established.

59. In each country, facilitators will help to link scientists, farmers, agencies, and other stakeholders. They will help farmers to overcome barriers to them being able to participate in the process, and to deal more easily with market issues. The training strategy (Annex L) calls for external training of two to three facilitators who will then serve as local instructors on the participatory approach. They will train facilitators selected from research institutes, universities, and NGOs on the principles and methods of communicating and working with farmers. Availability of local instructors with international training will contribute to sustainable training in the region after completion of the project.

60. The management structure designed during the PDF-B phase supports participation at all levels, links between and among stakeholders and stakeholder groups, and lines of communication to ensure that lessons learned are shared (Public Involvement Plan, Annex F).

61. At the end of the five-year project, this component will culminate in a "wrap-up" conference in each of the participating countries and at the regional level to ensure diffusion of project results and explore plans for replication in the project countries and beyond. This project component will result in comprehensive capacities to apply the scientific, legal, and social aspects of the project and enable stakeholders to carry out their project roles.

Capacity Building

Outcome 4: Capacity for training and support activities on in situ/on-farm conservation and use of fruit species genetic resources is established.

62. Conservation of fruit species genetic diversity requires a range of expertise in policy, law, agrobiodiversity assessment, GIS, participatory management, communications, marketing, and public relations. Stakeholders must be competent in laboratory analysis, computers (a variety of software including GIS), and English (for interaction with the global community). This project component takes a comprehensive approach to training and capacity-building. During the PDF-B phase, an in-depth assessment of existing training capacity and needs was carried out, and a detailed strategy that builds on existing facilities developed (see Annex L). While extensive capacity for training and education exists throughout the region, it focuses on agronomy, horticulture, forestry, ecology, agro-techniques, morphology, and taxonomy. There is little training opportunity in the assessment of diversity and distribution, collecting, and methods of conservation. Further, no training is available to farmers.

63. The project component will improve the stakeholder skills in their respective roles. Target stakeholder groups are policy-makers at state and local levels, instructors and teachers from research and training institutes, farmers and forest dwellers, and employees of reserves and forest farms. Examples include training of:

- Policy-makers in legal and other policy aspects of agrobiodiversity conservation;
- Provincial and district level local authorities in the importance of participatory management;
- Scientists in application of relevant policy and law;
- Scientists and teachers in use of GIS and GRIS;
- Scientists and farmers in assessment of agrobiodiversity, including survey procedures and documentation;
- Farmers and local communities on socioeconomic issues related to management (e.g., agrotechnical methods of horticultural crop cultivation, processing, and storage) and marketing of fruit crops;
- Employees of reserves and forestry farms on methods of conservation, reproduction, and facilitation of natural regeneration of wild fruit species, marketing of nuciferous products of forest farms, documentation and information management.

64. Training programmes and manuals will be developed for each of the categories of trainees on the various topics of training. These will be developed by national-level consultants in Russian and local languages. Regional-level training will be designed so that trainees are able to serve as instructors in their respective countries. During the life of the project, an estimated 100 people at the regional level, and 870 at the national level, will be trained.

65. Training formats will be adapted to the needs and characteristics of stakeholder groups. For example, short courses will be offered to policy-makers while courses on application of scientific methodologies will require several weeks of time. Some courses will be offered in the field. These include joint workshops for farmers, protected area managers, and researchers on *in situ/on-farm* conservation of local varieties of priority horticultural crops and wild fruit species. Workshops will promote collaboration between scientists and farmers and will be the first step toward information sharing in a mutually beneficial way. Mobile

training will also be offered on-site to equip farmers with skills in new technologies, and to document and disseminate their traditional knowledge and skills on maintaining, processing, and storing products.

66. Intensive training will be provided for some technical specialties. For example four individuals will be trained in use of molecular markers. Two to three individuals will receive in-depth training on participatory approaches outside of the region and will then return to serve as local instructors. Training will also be available to enhance computer skills and English.

67. The training programme will be organized within existing regional and national training centre structures. Regional training programmes on pomegranate will be established within the Garrygala Research and Production Experimental Center on PGR (Turkmenistan), on walnut within the Research Institute of Forest and Nut Production (Kyrgyzstan), and on Molecular Markers at the Institute of Genetics and Experimental Plant Biology (Uzbekistan). Each of these institutions has the staff expertise, scientific focus, laboratories, and *ex situ* collections needed to provide the type of training described. They are leading institutes in their respective countries for this priority crops (as pomegranate, apricot and walnut in case for Turkmenistan, Tajikistan and Kyrgyzstan), and on molecular markers and socioeconomic studies (in case of Uzbekistan and Kazakhstan).

68. These are in addition to training programmes established at two existing regional training centres established during the PDF-B phase:

- Apricot, Sogdiyskiy Branch of “Bogparvar” Research and Production Association (Tajikistan);
- Socioeconomic Studies, Research Institute for Economy of Agroindustrial Complex and Development of Rural Territories (Kazakhstan).

69. During the PDF-B phase, these two training programmes were established to assess the training needs for the full project and to test preliminary data on training needs obtained during the PDF-A phase. Two representatives from each country participated in the training sessions and the results of their experience were integrated into the strategy. At the opening of the Training Centre on Apricot Genetic Resources, more than 20 farmers were among the participants. The training on participatory approaches in Kazakhstan included a site visit where participants were able to meet and exchange views with farmers.

70. National training programmes will supplement regional training programmes. They will be established where there are not regional training centres on priority crops or where access is difficult for a significant number of stakeholders. These will also be established within existing institutions:

- Turkmenistan, National Institute of Deserts, Flora and Fauna, and the Research Institute of Farming;
- Kazakhstan, Research and Production Centre of Processing and Food Industry;
- Tajikistan, “Bogparvar” Research and Production Association, and the Pamirs Biological Institute;
- Kyrgyzstan, Research Institute of Farming;
- Uzbekistan, Research Institute of Forestry, and the Research Institute of Horticulture, Viticulture and Wine Making named after R.R. Shreder.

RISKS AND SUSTAINABILITY

71. The project carries with it a number of assumptions (detailed in the project logical framework, Annex B) and associated risks. These fall into four categories: participation, public policy and law, technical capacity, and management.

72. The project relies on active *participation* of all stakeholders groups. This risk has been reduced by engaging all stakeholder groups in the PDF-B planning process. Representatives of Government Ministries, scientific institutes (agriculture and environment), farmer associations, and NGOs were invited to and attended national planning meetings. Donors and individual farmers attended as well.

73. The project relies on sound *public policy and legislation* to support, through regulation and financing, protection of the wild resource and the respective roles of multiple stakeholders in the project. A survey of existing laws found that while participating countries have put significant effort into building appropriate legal frameworks, they do not adequately support a number of needs related to conservation of fruit species. This risk has been reduced by developing a baseline understanding about weaknesses during the PDF-B phase.

74. The project relies on a number of *technical capacities*. At present, capacity among the five participating countries is uneven in all areas of expertise. This risk is reduced by the training strategy developed during the PDF-B phase. The strategy identifies needs for expertise, and the significant number of universities and trade schools currently providing training. Further, two training programmes were established during the PDF-B phase and training courses were implemented to test models in preparation for broad implementation.

75. The project relies on a strong *management* structure that supports cooperation between and among countries, and between and among local to national level agencies and associations. Overall coordination of the project presents a particular challenge based on the complexity of the levels and participants. This risk has been reduced by the design of a management structure sufficiently robust to support implementation of multiple and diverse tasks, ensure ease of communication, and respond to both achievements and problems quickly and efficiently (see Public Involvement Plan, Annex F).

76. Minimizing risk and creating an effective and efficient system for conserving horticultural crops and wild fruit species genetic diversity increases the likelihood that project activities will be continued and expanded in the future. The duration of the project provides ample time to test, adapt, and prove its value. Training, tools for research and information management, and equipment and facilities enhancement will all contribute to encouraging participation and ensuring that stakeholders experience the benefits of carrying out project activities. Once these lessons are learned, stakeholders at all levels will be motivated to participate during the life of the project and beyond.

77. Financial and participatory sustainability must both be considered when assessing long-term potential for project activities and outcomes. Financial sustainability will be promoted at three levels. First, the project aims to establish effective and efficient structures and links to ease the work of farmers. This will include systems to share expenses and equipment. Ultimately project activities will improve farmers' income stability, a primary motivator for them to continue their role in conserving fruit species genetic diversity. Second, active involvement of government officials, their growing awareness about the importance of conserving fruit species, and successful achievement of project objectives will increase the

likelihood of supporting and increasing budget allocations as they relate to fruit species conservation. Third, training centres will be provided with new curricula, equipment, and capacity to attract additional students. This will position the institutes to continue benefiting from government support, and to build tuition income for trainees from outside the region, providing them with income stability needed to offer training courses as an ongoing service. Governments are committed to continue offering these courses without the need for a fee structure.

78. Participatory sustainability requires that all stakeholder groups continue to play their roles in conservation of fruit species genetic diversity. The project provides a model for cooperative work, and strengthens the capacity of all stakeholders to carry out their respective roles. Participation in the PDF-B planning process on the part of government officials (primarily at the deputy level) shows support for the proposed project, including recognition of legislative issues. Both ministries and local governments have actively contributed to the project thus far. At the national level, all countries have endorsed the project. This initial support increases the likelihood that ministries and other government entities will continue their active participation in particular by acting on recommendations for legislative changes. If policies and laws are improved, the long-term sustainability of the project activities becomes more viable.

79. Cooperation with farmers results in more complete information for researchers and better tools with which to analyze and manage fruit species genetic diversity. Cooperation with researchers and each other leads to farmers who are better equipped to manage and exchange high-quality varieties. Government agencies will see return both in terms of conserving globally significant diversity and more stable agricultural production systems. More efficient and effective work will lead to sustainability of cooperative networks.

80. As the project progresses, achievement of milestones will serve to measure progress toward project success. These include formalization of stakeholder participation through development of a site-based committee structure and ties with farmer and community associations (existing and new), documentation of legal issues and their progress toward formal recommendations, establishment of databases and their population with data and information on levels and distribution of fruit species genetic diversity, and execution of training courses and workshops.

81. The four project components are designed to change the way stakeholders do their business, as it relates to management of fruit species. At the completion of the project, awareness about the importance of conserving fruit species genetic diversity – both as a global resource and as a resource for sustainable agriculture – will be significantly higher among government officials, researchers, farmers, and local communities. Coordination will have been significantly increased, as will the efficiency and effectiveness of managing horticultural crops and their wild relatives.

STAKEHOLDER PARTICIPATION AND IMPLEMENTATION ARRANGEMENTS

82. Stakeholder groups include government ministries and agencies dealing with issues of environment, agriculture, finance, and education, scientific institutes operating at national and local levels, universities, government-sponsored farmer associations organized to address agrobiodiversity issues, NGOs promoting conservation and agricultural development, and farmers, forest dwellers, and other community groups. During the PDF-A and PDF-B phases,

each of the five countries examined potential stakeholders and developed lists of the key institutions, NGOs, and associations. These are described in Annex F.

83. During the PDF B phase, two Multidisciplinary Site Committees were established in each country, in locations where priority species could be tested. These Committees served as a testing ground for a number of project concepts. National coordinators led missions to each of the sites to meet with the leadership of local government, local branches of the State Forest Services, agricultural joint stock companies, and local farmers to help organize work at the sites. The interactions also helped to define objectives for the Multidisciplinary Site Committees:

- Assist in implementation of the project activities;
- Provide assistance in conducting survey missions;
- Involve farmers conserving local varieties of fruit species in project activities;
- Assist in organizing demonstration plots and establishing nurseries;
- Establish relationships between project implementers and households with gardens.

84. Importantly, stakeholder groups were consulted in development of: the survey procedures; criteria for crop, agroecosystem, and project site selection; and the strategy for public participation. In each of the countries 35-40 stakeholders were invited to planning meetings, including representatives from governments, research institutes, NGOs, and farmer associations (or individual farmers). In addition, the project has attracted private sector participation, with Quantech SAL agreeing to provide co-financing through provision of equipment for research and training. Other private sector partnerships are being pursued, for example, discussions are taking place with wine-making associations of in Kazakhstan.

85. Such a wide diversity of groups and experts presents a challenge for project execution. Project managers must ensure that activities and results from one group to the next are coordinated and shared, and that the contributions of all participants are recognized and valued. Toward that end, the Public Involvement Plan (Annex F) provides for rigorous management at regional, national, and local levels, and the links and communication channels to ensure flow of information between and among levels of operation.

86. The International Steering Committee will comprise representation from each of the project implementation units at the national level (National Coordinators), IPGRI headquarters, IPGRI-CWANA, IPGRI CWANA-Tashkent, Uzbekistan (the sub-regional office from where the project will be coordinated) and UNEP/GEF. IPGRI will serve as the executing agency at the regional level. It will oversee the Project Implementation Unit (PIU, located in Tashkent), which will include the project Regional Coordinator, ProgrammeAssistant (bilingual).

87. National Steering Committees (NSCs) will include representation from Ministries of Agriculture, Nature Protection, and Education, Academies of Science, State Forest Services, Site Coordination Committees, NGOs, and Farmer Associations. NSCs will have responsibility for project coordination and monitoring at the national level. Each country has assigned a project executing agency:

- Kazakhstan: Academy of Agricultural Science
- Kyrgyzstan: Research Institute of Farming
- Tajikistan: Bogparvar Research and Production Association
- Turkmenistan: Garrygala Research and Production Center of Plant Genetic Resources

- Uzbekistan: Institute of Genetics and Plant Experimental Biology

88. Each of these institutes will coordinate activities among stakeholder groups in their respective countries. National-level project management will be the responsibility of a National Coordinator and Assistant. At each project site, the Multidisciplinary Site Committees will coordinate site-level activities. Their work will be streamlined through a Site Coordination Committee, which will report findings to the National Coordinators and NSCs. Results, lessons learned, and other pertinent information will be dispersed through the National Coordinators and PIU, and more formally through the Steering Committee structure. Detailed flow charts for both regional and national levels, and descriptions of key stakeholders and their roles, can be found in the Public Involvement Plan (Annex F). Responsibility for financial management will rest with the PIU and National Coordinators, with oversight by IPGRI Finance and Administration Group.

INCREMENTAL COSTS AND PROJECT FINANCING

Incremental Cost Analysis

89. Baseline, incremental, and component costs are provided in the tables that follow. They reflect the baseline and increments costs and activities described in Annex A.

Table 1: Baseline, Alternative and Incremental Costs in US\$

	Partner	Baseline	Alternative	Increment
Outcome 1	Kazakhstan	19,000	409,772	390,772
	Kyrgyzstan	95,000	566,842	471,842
	Tajikistan	14,000	392,842	378,842
	Turkmenistan	123,000	663,172	540,172
	Uzbekistan	38,900	551,272	512,372
Total		289,900	2,583,900	2,294,000
Outcome 2	Kazakhstan	540,000	1,068,000	528,000
	Kyrgyzstan	124,000	751,300	627,300
	Tajikistan	28,000	399,340	371,340
	Turkmenistan	129,740	871,240	741,500
	Uzbekistan	178,903	900,905	722,002
Total		1,000,643	3,990,785	2,990,142
Outcome 3	Kazakhstan	65,000	379,390	314,390
	Kyrgyzstan	37,080	444,080	407,000
	Tajikistan	19,000	387,960	368,960
	Turkmenistan	12,700	385,350	372,650
	Uzbekistan	24,600	396,600	372,000
Total		158,380	1,993,380	1,835,000
Outcome 4	Kazakhstan	150,000	573,644	423,644
	Kyrgyzstan	102,255	525,899	423,644
	Tajikistan	106,000	529,645	423,645
	Turkmenistan	157,500	581,145	423,645
	Uzbekistan	122,000	545,645	423,645
Total		637,755	2,755,978	2,118,223
Project Management	Kazakhstan	-	210,000	210,000
	Kyrgyzstan	-	120,000	120,000
	Tajikistan	-	110,000	110,000
	Turkmenistan	-	110,000	110,000
	Uzbekistan	-	120,000	120,000
	Regional	-	1,577,300	1,577,300
Total		-	2,247,300	2,247,300
GRAND TOTAL		2,086,678	13,571,343	11,484,665

Table 2: Co-financing: Component financing in US\$

	Partner	Increment	Co-funding			Requested from GEF
			Governments		International Partners and donors	
			In-kind	Cash		
Outcome 1	Kazakhstan	390,772	23,700	25,000	105,800	236,272
	Kyrgyzstan	471,842	52,619	15,100	127,316	276,807
	Tajikistan	378,842	23,835	2,000	118,335	234,672
	Turkmenistan	540,172	131,020	3,650	94,530	310,972
	Uzbekistan	512,372	84,800	14,700	115,800	297,072
Total		2,294,000	315,974	60,450	561,781	1,355,795
Outcome 2	Kazakhstan	528,000	149,500	99,500	107,500	171,500
	Kyrgyzstan	627,300	207,270	10,095	188,785	221,150
	Tajikistan	371,340	91,835	1,000	185,335	93,170
	Turkmenistan	741,500	349,675	14,140	99,435	278,250
	Uzbekistan	722,002	261,850	45,125	146,527	268,500
Total		2,990,142	1,060,130	169,860	727,582	1,032,570
Outcome 3	Kazakhstan	314,390	7,000	7,000	95,500	204,890
	Kyrgyzstan	407,000	28,336	3,000	124,654	251,010
	Tajikistan	368,960	21,940	600	114,440	231,980
	Turkmenistan	372,650	43,805	1,370	94,150	233,325
	Uzbekistan	372,000	30,375	5,725	102,400	233,500
Total		1,835,000	131,456	17,695	531,144	1,154,705
Outcome 4	Kazakhstan	423,644	95,000	146,000	101,084	116,000
	Kyrgyzstan	423,644	120,455	12,200	101,084	116,000
	Tajikistan	423,645	129,182	5,000	101,084	116,000
	Turkmenistan	423,645	263,208	8,148	101,084	116,000
	Uzbekistan	423,645	217,530	36,080	101,084	116,000
Total		2,118,223	825,375	207,428	505,420	580,000
Project Management	Kazakhstan	210,000	30,000	10,000	-	170,000
	Kyrgyzstan	120,000	3,000	2,000	-	115,000
	Tajikistan	110,000	8,000	2,000	-	100,000
	Turkmenistan	110,000	7,500	2,500	-	100,000
	Uzbekistan	120,000	5,000	5,000	-	110,000
	Regional	1,577,300	-	-	577,300	1,000,000
Total		2,247,300	53,500	21,500	577,300	1,595,000
GRAND TOTAL		11,484,665	2,386,435	476,933	2,903,227	5,718,070

MONITORING, EVALUATION AND DISSEMINATION

90. The monitoring and evaluation plan (M&E Plan) maps the approach for measuring and verifying that activities and outcomes described in the project logframe and timeline are being met. The M&E Plan follows UNEP guidelines and incorporates UNEP monitoring activities. The full Monitoring, Progress Reporting, and Evaluation Plan is found in Annex M.

91. There are four entities with roles to play in the M&E process:

- UNEP will receive from the PIU quarterly progress and financial reports. UNEP will also serve as a member of the International Steering Committee (ISC), make field visits to assess progress and problems (as needed and agreed with the PIU and ISC), and organize independent evaluators for mid-term and final evaluations;
- The PIU will develop a reporting structure for all project partners and ensure that reporting is timely and complete. It will develop all reports for UNEP, and carry out regular site visits with particular attention to sites experiencing difficulties or delays;
- The ISC will review all reports, advise the PIU on resolving difficulties and increasing efficiency, and monitor progress on the capacity-building component;
- The NSCs will review all national reports and offer policy guidance where needed. They will play a key role in facilitating linkages, both in their respective countries and between countries, and will report on both successes and difficulties within the monitoring process.

92. Project monitoring will be carried out at two levels. The first is the execution performance, which monitors efficiency of project management and supervision. Execution performance tracks both programmatic progress and financial accountability. With support from the PIU, UNEP will carry out this level of monitoring.

93. The second is monitoring of project outputs and milestones. This process examines technical execution of the project. It is based on the indicators and means of verifying them that are documented in the project logframe, and on the implementation timeframe set out in the timeline (Annex G) and the M&E Plan. Quarterly progress reports will include assessment of all outputs that were to be completed within that specific timeframe. Outputs not completed within the planned timeframe will be noted, the reason for delay assessed, and anticipated date of completion cited for tracking purposes.

94. The Regional Project Coordinator will be responsible for developing quarterly progress and financial reports, with inputs from national management units. These reports will be important monitoring tools, as they will be carefully tracked by both the NSCs and the ISC. These bodies will be responsible for assessing successes, ensuring that effective approaches are replicated to the extent possible, and that difficulties are addressed. When problems arise, members of the NSCs and ISC are expected to help craft solutions and follow the result of their execution.

95. Participation of all stakeholders is fundamental to this project. Stakeholder participation in the M&E process is also essential to ensure their continued ownership in the project activities. As important is the knowledge the diverse group of stakeholders brings to the process of monitoring and evaluation; they are often best positioned to understand the reasons behind successes and failures. Farmers and other stakeholders will therefore be included on the evaluation team and will be involved in internal project evaluation and annual reviews of

project performance. Mid-term and final evaluation will be conducted by independent evaluators contracted by UNEP.

96. Government agency representatives serving on the NSCs or ISC will be best positioned to understand the challenges and craft strategies for influencing legislation and policy. Multidisciplinary Site Committees will provide the structure through which farmers, local communities, and NGOs can provide feedback about what works well or poorly for them, and the constraints they may face. It will be the responsibility of their representative to the Site Coordination Committee to report the feedback; the Site Coordination Committee representative to the NSC will then have responsibility for reporting this information to the National Coordinator and NSCs. That information will be a key part of the progress reports provided to the PIU. Scientists will provide feedback either directly as participants on the NSCs, or through the Multidisciplinary Site Committees, depending on their role in the project.

97. The monitoring process will highlight tactics that are successful or not, motivating factors for project stakeholders, and, as the project progresses, the extent to which project activities are realizing success. These lessons will be summarized in reports, and highlighted at the closing national and regional scientific and practical conferences. Proceedings of these conferences will be made widely available through the project web site, but will also be promoted through government agencies, at international conferences, and through other fora. Examples of distribution channels include CBD technical meetings and COPs, FAO and other organizations that facilitate agricultural policy, and through regional and international conservation organizations. Planning for the closing national and regional conferences will include development of a more specific plan to ensure that project findings are distributed as widely as possible in order to maximize influence and impact on global management of fruit species genetic diversity.

LIST OF ANNEXES

In Situ/On-Farm Conservation and Use of Agricultural Biodiversity (Horticultural Crops and Wild Fruit Species) in Central Asia

REQUIRED ANNEXES

- Annex A. Incremental Costs
- Annex B. Logical Framework
- Annex C. STAP Roster Technical Review
- Annex C1. Response to STAP
- Annex D. Letters of Endorsement

OPTIONAL ANNEXES

- Annex E. Analysis of Existing Legislation and Policy
The Annex summarizes legislation and policy in each of the five project countries as they relate to project objectives.
- Annex F. Public Involvement Plan Summary
The Annex described the structure for regional and national project management and summarizes the roles of stakeholders in project implementation.
- Annex G. Project Timeline
The Annex sets the timeframe for completing project activities and sub-activities.
- Annex H. Survey Procedure and Diversity Level Assessment of Priority Crops
The Annex describes methodologies for assessing diversity levels and socio-economic circumstances that will influence stakeholders' actions.
- Annex I. Project Crops, Agroecosystems, Sites, and Criteria for their Selection
The Annex lists criteria for crop, agroecosystem, and site selection, and those that have been chosen for the project.
- Annex J. Information and Communication Technology
The Annex describes the information management structure and procedures to be employed in the project.
- Annex K. Strategy for the Application of a Participatory Approach
The Annex describes the process by which all stakeholders will be involved in project implementation.
- Annex L. Training Strategy

The Annex describes training needs of stakeholder groups, and the facilities and courses needed to build capacities for stakeholder participation.

Annex M. Monitoring, Progress Reporting, and Evaluation Plan
The Annex describes monitoring, reporting, and evaluation procedures at national and regional levels, and assignments of responsibility.

Annex N. Map of Project Countries
The Annex provides a map of the project countries.

ANNEX A – INCREMENTAL COST

BROAD DEVELOPMENT GOALS

While genetic diversity of horticultural crops and wild fruit species in Central Asia is a globally significant environmental resource, it concurrently provides a basis for sustainable agricultural development and food security. Project strategies therefore focus on building systems for sustainable use and management of the resource.

The CA countries recognize the importance of plant genetic diversity through various regional and global environmental treaties and conservation and development plans. National Biodiversity Strategy Action Plans of the region include conservation of plant genetic diversity with specific actions related to forest conservation, agrobiodiversity, seed banks and nurseries, and horticultural crops. Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan have joined the Treaty on Cooperation in the Field of Conservation and Use of Cultivated PGR between the CIS countries.

The Central Asian and Transcaucasian Network on Plant Genetic Resources (CATCN-PGR) regional network coordinates plant diversity conservation and the objectives of national plans and policies. It supports collaborative research on regional species priorities, exchange of information and germplasm, and regional training. Regional thematic working groups focus on specific issues and carry out joint activities, for example surveying, collecting, characterizing, and documenting priority species.

BASELINE

The project components were designed to address the overall project baseline assumptions:

1. Erosion of globally significant genetic diversity is increasing;
2. Capacity of governments to act is limited by lack of resources;
3. Farmers are not realizing the potential economic benefits from better use of diversity;
4. Farmers' role in maintenance of crop genetic diversity is poorly recognized by the research community.

Legislation and Policy

Since the CA countries have gained their independence, legal frameworks have developed rapidly in the environmental and agricultural sectors. National programs and plans include Kazakhstan's "Conservation, Development and Use of Genetic Resources of Agricultural Plants, Animals and Microorganisms" (2000), "Fundamentals of Development of Kyrgyzstan up to 2010" (2001), Tajikistan's "Programme of Development of Horticulture and Viticulture" (2000), "Mid-term Programme on Agricultural Development of Tajikistan and Priority Directions of its Development Strategy for the Period until 2005" (2000), "Eleven-Year Programme of Agricultural Development in Turkmenistan" (1999), and "National Environment Action Plan of the President of Turkmenistan on Environment Protection" (2002).

Further, the five countries have completed their National Biodiversity Strategy and Action Plans (NBSAPs), all of which provide support for implementation of project objectives.

- National Strategy and Action Plan on Conservation and Sustainable Use of Biological Diversity in the Republic of Kazakhstan (1999);

- Biodiversity Strategy and Action Plan (Kyrgyzstan, 1998);
- National Strategy and Action Plan on Conservation and Sustainable Use of Biological Diversity in Tajikistan (2003);
- Biodiversity Strategy and Action Plan for Turkmenistan (2002);
- National Biodiversity Strategy and Action Plan of Republic of Uzbekistan (1998).

What the laws do not sufficiently address are farmers' roles in conserving genetic resources, especially in terms of protecting Farmers' Rights and ensuring that they share the benefits accrued from the development of new, high-quality varieties. Strengthening legislation requires awareness about the importance of conserving horticultural crops and wild fruit species genetic diversity, issues surrounding its conservation, and knowledge about the stakeholders and institutions key to the process. Awareness of the importance of conserving biodiversity is growing, as evidenced for example by CA countries' government participation in the CBD and growing systems of protected areas. However, that awareness does not extend to the specific issues related to horticultural crops and fruit genetic resources, the value of varieties and intraspecific diversity found both on-farm and in the wild, and the need to recognize a diverse group of stakeholders through law.

The baseline cost for this project component is estimated to be \$289,900. These costs comprise the salaries of employees of both legal and information sections at the Ministries of Agriculture, Nature Protection, Forest Services, and mass media agencies. They cover costs related to the development of legislation and publishing, and development and dissemination of public awareness materials related to protection of agrobiodiversity.

Knowledge and Methodologies

During the Soviet era, the system of scientific institutes in the five project countries was well supported. All of the countries benefit from institutes with 50 or more years of experience. Significant emphasis has been placed over the years on the study of plant genetic resources coordinated and led by the All Union Research Institute of Plant Industry named after N.I. Vavilov in Saint-Petersburg (VIR), and more specifically on identifying and collecting fruit varieties from the wild. Therefore a significant body of knowledge exists and is documented in multiple (Russian-language) scientific papers, and a number of varieties are maintained in field collections managed by various institutes and agencies.

While these activities continue, since the break-up of the Soviet Union they have been severely under-funded. Further, existing information becomes increasingly out of date and does not benefit from modern techniques and technologies.

Formalized knowledge about horticultural varieties also exists, but this is held by the agriculture agencies charged with fruit production and orchard management. Research institutes in CA countries collect and manage information on horticultural crops, are involved in development of the new varieties and forms of plants, and the preparation of their descriptors. However, there is no linkage between these institutes, and the data are not accessible for all potential users. In addition, the institutes are poorly equipped and are unaware of modern evaluation and documentation techniques. A significant amount of knowledge on horticultural varieties is held by farmers, farmer associations, and local communities, and it is used by them to manage their cultivation operations. However, the information is not formalized, nor is it accessible for broader scientific study and monitoring.

Excepting the incomplete baseline information described above, resources to assess and monitor loss of fruit species genetic diversity do not exist. Further, socio-economic factors are not well enough understood to develop sound policy and strategies for *in situ*/on-farm conservation of horticultural crops and wild fruit species.

The baseline cost for this project component is estimated to be \$1,000,643. Costs are based on personnel, equipment and databases, existing methodologies and guidelines, and upkeep of the scientific institutes, management of the plant materials, and operations of existing nurseries.

Broad Participation and Strong Partnerships

At present there is little cooperation among stakeholders. Institutes researching and holding information about the wild resource have little contact with those addressing horticultural issues. Farmers cooperate and exchange information through associations, but do not share their information with research institutes to help form a more comprehensive knowledge base. There is some cooperation between government agencies and farmers, primarily in the form of sponsorship of diversity fairs that promote exchange of varieties among farmers. During the Soviet era, links between research institutes supported cooperative work and exchange of information; however these links were cut after the collapse of the Soviet Union.

Nurseries are operated by a number of institutes (primarily Departments of Forestry and Ministries of Agriculture) and in some cases by farmer associations. The nurseries operate as distinct entities, and there are no systems for coordinated management of the plant materials they maintain.

The baseline cost for this project component is estimated to be \$158,380. Costs are based primarily on farmer activities related to the work of their associations and diversity fairs.

Capacity-building

In the region, there are 37 universities and institutes and 16 colleges and technical schools that provide training in the fields of agronomy, horticulture, forestry, ecology, biology, plant protection, and other related specializations.

Although disparate, all project countries operate training institutes with expertise on management of horticultural crops and specific expertise on the fruit species targeted in this project. Institutes are equipped with basic laboratory equipment and computing facilities.

However, training to assess levels of distribution and diversity, collection techniques, methods of conservation, plant genetic resources documentation, and biotechnology are not offered. Further, the target audiences of these training institutes are scientists; training of this type is unavailable to farmers and local communities. And while skills in policy analysis and advocacy, socio-economic issues, community organizing, computer applications, and language (English) skills are important to this work, training in these areas is not available to specialists in agriculture and forestry. The result is that capacity to address the many elements of fruit species conservation is uneven and inadequate. Initial steps to improve on the baseline were taken during the PDF-B phase, with the establishment of the first two regional training centers.

The baseline cost for this project component is estimated to be \$637,755. Costs are based on personnel, equipment (laboratory and computing), and upkeep needed to execute existing training curricula. Costs also include establishment of the two regional training programs with existing institutes during the PDF-B phase.

GLOBAL ENVIRONMENT OBJECTIVES

The temperate fruit species of Central Asia represent a wealth of genetic diversity, with varieties developed on-farm, and promising forms selected in the wild over the course of centuries. Fruit species face a number of environmental and development pressures. Their environmental significance, however, has been recognized by the five CA countries through legislation and policy, most notably in the NBSAPs developed in response to the CBD.

Environmental benefits will be realized at local, national, and global levels. At project sites indigenous diversity of horticultural crops and wild fruit species will be better understood and conserved. The role of farmers and local communities in conserving genetic diversity will be recognized and supported. At the completion of the project, participants will have a solid understanding of the importance of conserving fruit species genetic diversity, and will have the tools and methods to do so. Likelihood of replication to other sites within the five countries, and subsequent conservation of additional fruit species, will increase as scientists and policy-makers broaden their understanding about the significance of the genetic diversity and benefits derived from conserving it.

The project approach will serve as a model for conservation of fruit species genetic diversity beyond the CA countries, leading to broader replication of the conservation approaches tested and ultimately a comprehensive effort to conserve the temperate fruit species genetic resource in many parts of the world.

GEF ALTERNATIVE

At project completion, stakeholder groups will cooperate to maximize economic and ecological potential of fruit species genetic diversity. The conservation and sustainable use of traditional local varieties of horticultural crops and wild fruit species will be on the rise and erosion of genetic diversity will have decreased.

Legislation and Policy

Analysis of legislation and policy undertaken during the PDF-B phase provides the basis for a consultative process with stakeholder groups and development of recommendations to strengthen legislation and policy as it relates to fruit species conservation.

The project will employ public awareness strategies to equalize understanding of the importance of conserving genetic diversity of horticultural crops and wild fruit species, and of working cooperatively to do so. Videos, brochures, and a permanent source of information about fruit species conservation on the Internet will contribute to the outcome of this project component. These efforts will increase recognition of the need to advocate on the part of scientists, and the need for action on the part of policy-makers.

The result will be concrete recommendations for revisions to legislation and policy, and scientists and policy-makers positioned to advocate for their adoption. Areas of focus will

include legislation and policy related to: protected areas, conservation of wild fruit species, farm development, protection of Farmers' Rights, and mechanisms for benefit sharing.

The incremental cost of this project component is estimated to be \$2,294,000 of which national governments will provide co-financing of \$315,974 (in-kind) and \$60,450 (cash) to cover cost of the salaries of employees of both legal and information sections at the Ministries, and mass media agencies. They cover costs related to the development of legislation and publishing, and development and dissemination of public awareness materials related to protection of agrobiodiversity; participation of farmers and local communities in project activities. Co-financing from other donors is estimated at \$561,781 including \$38,550 IPGRI in-kind contribution. GEF funds \$1,355,795 will be directed to further analysis of legislation and development of recommendations (consulting, stakeholders' meetings), and to development of public awareness materials.

Knowledge and Methodologies

Focusing on the project sites selected at the start of the project, the project will build knowledge about and monitoring systems for project fruit species by updating existing information about wild fruit species and horticultural crops, and linking and analyzing information held by various sources (research institutes, government agencies, Universities, farmer associations, local communities, indigenous knowledge, and NGOs). It will promote use of modern technologies to enhance quality of information (e.g., molecular markers, survey methodologies, crop descriptors, GIS), and will strengthen management of horticultural crops, including development of knowledge about markets, leading to increased income for farmers.

The project will also support enhancements to existing nurseries, and help develop new ones where warranted to enhance multiplication of planting material and germplasm exchange among farmers and forest dwellers. Information management systems will allow knowledge sharing and coordinated management of plant materials managed by multiple nurseries. This information will help identify which wild varieties should be managed in nurseries and, coupled with socio-economic analyses of the markets, will support identification of the best varieties for cultivation.

The result will be scientists, farmers, forest dwellers, the private sector, and NGOs positioned to assess and monitor genetic diversity of horticultural crops and wild fruit species, and to ensure that its use is sustainable.

The incremental cost of this project component is estimated to be \$2,990,142. Countries plan to provide \$1,060,130 (in-kind) and \$169,860 (cash). IPGRI will provide \$38,550 (in-kind) Quantech SAL will provide \$333,335 (cash) for equipment and software. Other donors are expected to provide \$355,697.

GEF funds of \$1,032,570 will be directed to consultancies, equipment for the establishment of demonstration sites, implementation and operations of GRIS to support management of fruit species genetic diversity information, start-up and activity coordination of nurseries (including seed supply systems), organizing workshops, preparing and disseminating information bulletins and brochures about methodologies, plant materials managed in nurseries, and varieties.

Broad Participation and Strong Partnerships

Identifying sources of information and knowledge will be supported by participatory approaches that promote active participation of and cooperation among various stakeholder groups. The principal tool for building relationships among stakeholders will be the Multidisciplinary Site Committees established at each project site, and the Site Coordination Committees that link their work. The process will be coordinated by two facilitators in each country who will oversee systems of communication among and between project stakeholders and will help them to address barriers to their participation. In addition, collaboration agreements between agencies and institutes will be facilitated.

Lessons learned from the project will be fully shared, and opportunities for replication explored at “wrap-up” conferences at national and regional levels. The result of this project component will be cooperative efforts to conserve fruit species genetic diversity and a sustainable and comprehensive source of information.

The incremental resources required for this component are \$1,835,000 of which \$1,154,705 is requested from GEF. Funds will be directed to support the facilitators, meetings, and workshops that support interactions between and among farmers and community groups, research institutes (horticulture and wild resource), policy-makers, and NGOs. They will also support linkage of information from the multiple sources (through operation of GRIS). Countries plan to provide \$131,456 (in-kind) and \$17,695 (cash), while IPGRI \$38,550 (in-kind). Quantech SAL will provide \$333,335 (cash). It is expected that other donors will provide cash contribution of \$159,259.

Capacity-building

The project will build capacity among all stakeholder groups to conserve fruit species. In addition to the two regional training programs established within existing institutes during the PDF-B phase, it will establish two regional training programs on priority horticultural crops (walnut in Kyrgyzstan and pomegranate in Turkmenistan) and one on molecular markers in Uzbekistan. These will serve as centers for training trainers.

The project will also establish eight national training programs on priority horticultural crops within existing institutes. These national training centers will play a key role in organization of training for all categories of stakeholders and will function as a supplement to the regional training centers. Establishment of the national training centers will facilitate wide coverage of on-site stakeholder training.

New training curricula will cover all skills required to conserve fruit species. In addition to scientific and technical skills (e.g., application of agrobiodiversity assessment and conservation tools), trainees will learn needed computing skills, methods of participatory management, post harvest processing, marketing, and English skills. They will be trained about socio-economic issues. Training will be provided both at the centers and in the field, where appropriate (for example, training farmers and protected area managers in the field). The result will be in-country capacity to address legal, technical, social, and economic issues related to conservation of fruit species genetic diversity.

The incremental cost of this project component is estimated to be \$2,118,223 of these resources \$580,000 are sought from the GEF. GEF funds will be directed to organizing different types of training oriented to target groups of trainees, including training courses,

travel workshops, development of training materials and curricula, and establishment of facilities for successful implementation of project training strategy. Countries will provide \$825,375 (in-kind) and \$207,428 (cash), Quantech SAL, a dealer of IBM products, will provide co-financing equivalent to \$333,330 in the form of cash contribution to support the training centers with equipment and software. Training center operations, including communications, LANs, utilities, and databases, will be provided as co-financing by each national partner. IPGRI's contribution is \$38,550 (in-kind). Other donors will support this component with \$133,540.

The incremental cost of project management component is estimated to be \$2,247,300. Of the funds requested from GEF (\$1,595,000), \$1,000,000 for regional project management will meet costs of full time regional project coordinator, full time regional program assistant, direct administration charges, regional coordinator's travel and International Steering Committee's work. The remaining \$595,000 requested from GEF will cover costs for national project management (PIUs at national level) of full time national Project Coordinators, full time national admin/finance assistants, direct administration charges, national coordinator's travels and National Steering Committee's work, office equipment, office car. Countries plan to provide \$53,500 (in-kind) and \$21,500 (cash) to cover cost for the office maintenance of these PIUs. IPGRI's contribution to project management is \$512,300 (in-kind) and 65,000 (cash).

COSTS

The incremental costs and benefits of the proposed project are summarized in the following incremental cost matrix. Baseline expenditures amount to US\$ 2,086,678, while the alternative has been estimated at US\$13,571,343. The incremental cost of the project, US\$ 11,484,665, is required to achieve the project's global environmental objectives of which the amount US\$ 5,718,070 is requested from GEF. This amounts to 49,79% of the total cost of alternative. The remaining amount US\$ 5,766,595, 50,21% of the "Full Project" increment cost, will come from the national and international partners and other donors. The figure includes in-kind and cash contributions.

ANNEX A: INCREMENTAL COST ANALYSIS

TABLE 1: COSTS AND INCREMENTAL ANALYSIS

	Baseline (B)	Alternative (A)	Increment (A-B)
Global Benefits	<ul style="list-style-type: none"> Fruit species genetic diversity diminishing due to a number of environmental and development pressures; No systematic efforts to conserve fruit species genetic diversity due to inadequate knowledge, capacities, policy and legal support, and cooperation. <p>Baseline \$2,086,678</p>	<ul style="list-style-type: none"> Genetic diversity within project crops managed and conserved in a sustainable way; Models for fruit species conservation tested and available for replication in project countries and beyond. <p>Alternative \$13,571,343</p>	<p>Increment \$11,484,665</p>
Domestic Benefits	<ul style="list-style-type: none"> Knowledge about existing varieties incomplete, fragmented, and dispersed ; Inadequate legal and policy support for stakeholders and protecting the natural resource; Lack of cooperation among stakeholders. 	<ul style="list-style-type: none"> Full participation in fruit species conservation; Resilient varieties understood and sustainably used; More stable agricultural production; Newly developed varieties increase market options; Increased market demand and income for horticultural crops. 	
Component 1: Legislation and Policy	<ul style="list-style-type: none"> Legislation and policy addresses biodiversity conservation, land use issues, development of new varieties; Legislation and policy inadequate in areas of fruit species conservation, farmers' roles in management of fruit species genetic resources, and benefit sharing; Public awareness uneven and inadequate. <p>Kazakhstan: 19,000 Kyrgyzstan: 95,000 Tajikistan: 14,000 Turkmenistan: 123,000 Uzbekistan: 38,900 Total: 289,900</p>	<ul style="list-style-type: none"> Laws and policies strengthened in support of fruit species conservation, farmers rights, and benefit sharing; Stakeholders aware about importance of fruit species conservation and their respective roles in the process. <p>Kazakhstan: 409,772 Kyrgyzstan: 566,842 Tajikistan: 392,842 Turkmenistan: 663,172 Uzbekistan: 551,272 Total: 2,583,900</p>	<p>Kazakhstan: 390,772 Kyrgyzstan: 471,842 Tajikistan: 378,842 Turkmenistan: 540,172 Uzbekistan: 512,372 Total: 2,294,000 Co-finance: 938,205 Cost to GEF: 1,355,795</p>

Component 2: Knowledge and Methodologies	<ul style="list-style-type: none"> • Outdated knowledge about wild fruits held by scientific institutes; • Dispersed information about horticultural crops and wild relatives held by agriculture institutes, farmers, and communities; • No link between nurseries managed by government agencies and farmers; • Information on fruit species is fragmented and inaccessible; • Knowledge of socioeconomic issues not well enough understood; • Capacity to employ modern technologies and access to information is inadequate. 	<ul style="list-style-type: none"> • Information updated, formalized, documented, and accessible through network of databases; • Methodologies for assessing and managing fruit species genetic diversity distributed to relevant stakeholders; • Nurseries connected through information and knowledge exchange; • Socioeconomic factors assessed and integrated into policy and strategies; • Diversity levels and distribution understood and monitored. 	Kazakhstan: 528,000 Kyrgyzstan: 627,300 Tajikistan: 371,340 Turkmenistan: 741,500 Uzbekistan: 722,002 Total: 2,990,142 Co-finance: 1,957,572 Cost to GEF: 1,032,570
	Kazakhstan: 540,000 Kyrgyzstan: 124,000 Tajikistan: 28,000 Turkmenistan: 129,740 Uzbekistan: 178,903 Total: 1,000,643	Kazakhstan: 1,068,000 Kyrgyzstan: 751,300 Tajikistan: 399,340 Turkmenistan: 871,240 Uzbekistan: 900,905 Total: 3,990,785	
Component 3: Broad Participation	<ul style="list-style-type: none"> • Links between stakeholders with knowledge and information weak or non-existent; • Links among stakeholders weak at regional level; • Nurseries operating in isolation; • Some cooperation between farmers and government agencies (diversity fairs). 	<ul style="list-style-type: none"> • Stakeholders linked through Multidisciplinary Site Committees and NSCs; • Farmers participate in NSCs; • Stakeholders collaborate regionally through ISC; • Collaboration agreements support cooperation at national and regional levels; • Farmers motivated via communication and other techniques; • Farmer associations supporting conservation activities. 	Kazakhstan: 314,390 Kyrgyzstan: 407,000 Tajikistan: 368,960 Turkmenistan: 372,650 Uzbekistan: 372,000 Total: 1,835,000 Co-finance: 680,295 Cost to GEF: 1,154,705
	Kazakhstan: 65,000 Kyrgyzstan: 37,080 Tajikistan: 19,000 Turkmenistan: 12,700 Uzbekistan: 24,600 Total: 158,380	Kazakhstan: 379,390 Kyrgyzstan: 444,080 Tajikistan: 387,960 Turkmenistan: 385,350 Uzbekistan: 396,600 Total: 1,993,380	

Component 4: Capacity- building	<ul style="list-style-type: none"> • Training capacity on horticulture, agronomy, and biology exists in all project countries; • Training to assess distribution and diversity, collecting and conservation techniques, data documentation, socioeconomic issues and other areas related to study, conservation, and sustainable management of agrobiodiversity not available; • Training for farmers, local communities, and policy makers not available. 	<ul style="list-style-type: none"> • Training centres established at regional and national levels; • Facilities and equipment for effective training established; • Stakeholders trained in areas of expertise needed for their role (on-site or at institutes); • Training capacity sustainable beyond the life of the project. 	Kazakhstan: 423,644 Kyrgyzstan: 423,644 Tajikistan: 423,645 Turkmenistan: 423,645 Uzbekistan: 423,645 Total: 2,118,223 Co-finance: 1,538,223 Cost to GEF: 580,000
	Kazakhstan: 150,000 Kyrgyzstan: 102,255 Tajikistan: 106,000 Turkmenistan: 157,500 Uzbekistan: 122,000 Total: 637,755	Kazakhstan: 573,644 Kyrgyzstan: 525,899 Tajikistan: 529,645 Turkmenistan: 581,145 Uzbekistan: 545,645 Total: 2,755,978	
Project Management		<ul style="list-style-type: none"> • Effective national and regional collaboration to produce project outcomes with required standards of monitoring, evaluation and active participation of stakeholders in project activities at national and regional levels. Kazakhstan: 210,000 Kyrgyzstan: 120,000 Tajikistan: 110,000 Turkmenistan: 110,000 Uzbekistan: 120,000 Regional: 1,577,300 Total: 2,247,300 Co-finance: 652,300 Cost to GEF: 1,595,000	Kazakhstan: 210,000 Kyrgyzstan: 120,000 Tajikistan: 110,000 Turkmenistan: 110,000 Uzbekistan: 120,000 Regional: 1,577,300 Total: 2,247,300 Co-finance: 652,300 Cost to GEF: 1,595,000

ANNEX B: PROJECT LOGICAL FRAMEWORK

ANNEX B – LOGICAL FRAMEWORK

Project Planning Matrix (PPM)	Project title: “ <i>In Situ</i> /On-Farm Conservation and Use of Agricultural Biodiversity (Horticultural Crops and Wild Fruit Species) in Central Asia”		Phase: 01/2005-12/2009 Date: 01/08/2004
Objectives	Indicators	Means of verification	Important assumptions/risks
<p><i>Development objective:</i></p> <p><i>In situ</i>/on-farm conservation and utilization of horticultural crops and wild fruit species are ensured for sustainable agricultural development, food security and environmental stability.</p>	<ul style="list-style-type: none"> • Sustainably managed areas covered by horticultural crop varieties and wild fruit species of the target crops in pilot sites increased by 20% (333,555 hectares) • At least 50% of target farmers and forest dwellers improve their livelihood by 10% through better management and use of their fruit genetic resources. 	<ul style="list-style-type: none"> • Conservation and Management plans for target horticultural crops and wild fruit species in National Agriculture Development Programmes and Forest Management Plans. • Ministry Documents, National Reports on implementation of National Action Plans on Biodiversity Conservation • Ministry documents and statistics. Data on socio-economic assessment in project documents 	<p>Global food security, economic and environmental stability</p>
<p><i>Project purpose (immediate objective):</i></p> <p>Farmers, institutes and local communities are provided with and use knowledge, methodologies and policies to conserve <i>in situ</i>/on-farm horticultural crops and wild fruit species in Central Asia.</p>	<p><i>By 2009:</i></p> <ul style="list-style-type: none"> • At least four methodologies for <i>in situ</i>/on-farm conservation of priority horticultural crops and wild fruit species are developed, tested and made available to stakeholders in the five project countries • At least two policy recommendations that support and strengthen farmers’ activity on conservation of local varieties of horticultural crops and wild fruit species are developed and submitted to policy makers in each country. Implementation of policy recommendations begins at least in one country; • At least 20% (equivalent to 540) of farmers and forest dwellers at 	<ul style="list-style-type: none"> • Published methodologies for <i>in situ</i>/on-farm conservation of priority horticultural crops and wild fruit species • Project reports; research reports; ministry documents (Ministry Of Environment, Ministry of Justice, State Committee of Forestry, etc.) • Project reports on number of people trained and reports on training 	<p>Farmers, institutes, local communities and policy makers adopt recommendations of project activities</p>

	<p>the pilot sites will implement the new methods to conserve and use horticultural fruit trees</p> <ul style="list-style-type: none"> • At least two associations of farmers are established and maintaining local varieties of horticultural crops in each country. • At least two representatives of farmers' associations or individual farmers participating in national programmes/committees on plant genetic resources conservation in each country. 	<p>courses</p> <ul style="list-style-type: none"> • Registration records of farmers' associations and information on farmers conserving in situ/on-farm local varieties of horticultural crops and wild fruit species in the database • List of members of Coordination Committees/ Councils of national plant genetic resources programmes and meeting reports 	
<p><i>Outcome 1:</i> Policy options for supporting farmers and local communities to conserve <i>in situ</i>/on-farm local varieties of horticultural crops and wild fruit species are available and used.</p>	<p>1.1 At least two policy recommendations that support and strengthen farmers' activity on conservation of local varieties of horticultural crops and wild fruit species are developed and submitted to policy makers in each country by 2009.</p> <p>1.2 Implementation of policy recommendations begins at least in one country.</p> <p>1.3 Material to help increase public awareness (brochures, leaflets, posters, one video, radio and television programmes, and web presentations) about value of local varieties of horticultural crops and their wild relatives prepared, published, and disseminated in each country by 2007.</p> <p>1.4 At least two recommendations on establishment/development of benefit sharing mechanism are developed and submitted to policy makers by 2009.</p> <p>Benefit sharing mechanism is developed and field tested at least in</p>	<p>1.1 Activity report</p> <p>1.2 Ministry decree on implementation of policy recommendations issued by the Ministry of Environment and/or the Ministry of Agriculture.</p> <p>1.3 Press releases</p> <p>1.4 Policy recommendations on benefit sharing</p> <p>1.5 Benefit sharing agreement</p>	<p>Farmers and local communities participate in the development of policy options</p>

	one country by 2009.		
<i>Outcome 2:</i> Knowledge and methodologies on <i>in situ</i> /on farm conservation and utilization of horticultural crops and wild fruit species are available, disseminated and used.	<p>2.1 Four national methodologies on assessment of distribution and diversity level and status of <i>in situ</i>/on-farm conservation for project seed, stone fruits, nut and subtropical crops¹ are developed and available for farmers' use by 2008.</p> <p>2.2. Five national and one regional databases on local varieties of horticultural crops and wild fruit species are developed and available for use in each country by 2008</p> <p>2.3. Database on adaptive traits that can improve farmers' resilience to variable <i>in situ</i>/on-farm environments.</p> <p>2.4. Information bulletins on market preferences for fruit products for farmers' use are published annually in each country starting from 2007.</p> <p>2.5. At least two mini-nurseries for multiplication of local varieties of horticultural crops and promising forms of wild fruit species are established or existing ones in farm households and forest farms strengthened in project sites in each country by 2006.</p> <p>2.6 At least four demonstration plots of <i>in situ</i>/on farm conservation of local varieties of horticultural crops and wild fruit species are established in each country by 2007.</p>	<p>2.1 Project publications</p> <p>2.2 Database on local varieties of horticultural crops and wild fruit species</p> <p>2.3 Database on adaptive traits</p> <p>2.4 Information bulletin</p> <p>2.5 Reports on Mini-nurseries</p> <p>2.6 Reports on demonstration results</p>	Methodologies and technologies on <i>in situ</i> /on-farm conservation are appropriate to local conditions
<i>Outcome 3:</i> Broad participation and strong partnership/links among farmers, among farmers and institutions, between farmers and institutions, and the private sector, and among countries are established.	<p>3.1 At least two farmers' associations are established and maintaining local varieties of horticultural crops in each country by 2006.</p> <p>3.2 At least five agreements for collaboration on access and exchange of database information among institutions in each country and among countries are developed and adopted by 2007.</p> <p>3.3 At least two representatives of farmers' associations or individual farmers participate in national programmes/committees on plant genetic resources conservation in each country by 2006.</p> <p>3.4 A regional digital database on project partners for information exchange is established and accessible in each country by 2007.</p> <p>3.5 Multidisciplinary Site Committees are operational in all project sites to coordinate project activities at village level within six</p>	<p>3.1 Registration records of farmers' associations</p> <p>3.2 Documents of agreements</p> <p>3.3 Meeting reports and lists of participants</p> <p>3.4 Project website</p> <p>3.5 Meeting reports</p>	Partners are interested in taking responsibilities for project activities

¹ Seed fruit crops: apple, pear, grapevine; Stone fruit crops: apricot, alycha, peach; Nut crops: pistachio, walnut, almond; Subtropical crops: pomegranate, fig

	<p>months of project initiation.</p> <p>3.6 Site Coordination Committees are established in each county and are operating to coordinate and link the work of the Multidisciplinary Site Committees to the national management structure by 2005.</p> <p>3.7 Annual diversity fairs for fruit crops are organized in each partner country starting from 2007.</p> <p>3.8 Five national and one regional conference on agrobiodiversity are organized by 2009.</p>	<p>3.6 Meeting reports</p> <p>3.7 Project reports and Public awareness materials</p> <p>3.8 Conference proceedings</p>	
<p><i>Outcome 4:</i> Capacity for training and support activities on <i>in situ</i>/on-farm conservation and use of fruit species genetic resources is established.</p>	<p>4.1 Three regional training programmes (on priority crop species and on molecular markers) are operational by 2006.</p> <p>4.2 Eight national training programmes on priority horticultural crops are operational in participating countries by 2006.</p> <p>4.3 At least four researchers with expertise on interdisciplinary and participatory approaches to <i>in situ</i>/on-farm conservation and use of fruit species are available in each country by 2009.</p> <p>4.4 At least four representatives of farmers' associations or individual farmers and forest dwellers in each country have improved their knowledge and skills in agrobiodiversity management by 2009.</p> <p>4.5 Regional ICT network is established by 2006.</p>	<p>4.1 Annual reports on centre activities and training materials</p> <p>4.2 Annual reports on centre activities and training materials</p> <p>4.3 Reports on number of people trained and on training courses</p> <p>4.4 Reports on number of people trained, on training courses and on number of trained people applying new skills in the field</p> <p>4.5 ICT network</p>	<p>Training Guidelines/ Training curricula are implemented</p> <p>Skilled human resources are available</p>

ACTIVITIES

Outcome 1. Policy options for supporting farmers and local communities to conserve in situ/on-farm local varieties of horticultural crops and wild fruit species are available and used.

- 1.1 Produce policy recommendations that support *in situ*/on-farm conservation of horticultural crops and wild fruit species:
 - 1.1.1 Analyze existing legislation on protected areas
 - 1.1.2 Analyze legislative options for farm development and submit proposals for establishing farmer associations
 - 1.1.3 Analyze existing legislation and normative deeds on conservation of wild fruit species in protected areas and other forest lands
 - 1.1.4 Produce recommendations needed for extension of existing and establishment of new protected areas to cover diversity of wild fruit species
 - 1.1.5 Produce recommendations to support farmers and local communities in maintaining local varieties of horticultural crops and wild fruit species
 - 1.1.6 Organize workshops with the representatives of governments sectors e.g. finance, planning, agriculture and environment to discuss adoption and implementation plans of policy recommendations.
- 1.2 Analyze options and produce proposals on protection of Farmers' Rights
- 1.3 Develop mechanisms for benefit sharing among partners in cases where genetic material is conserved by farmers and used for breeding purposes, including field testing
- 1.4 Produce and disseminate public awareness materials on the value of local varieties of horticultural crops and wild fruit species:
 - 1.4.1 Video on farmers maintaining local varieties of horticultural crops and wild fruit species, their experience and knowledge
 - 1.4.2 Video on value of local varieties of horticultural crops and wild fruit species as basis of sustainable agriculture production and healthy environment
 - 1.4.3 Information about local varieties of horticultural crops and wild fruit species via mass media
 - 1.4.4 Brochures, posters and leaflets on value and importance of conservation of genetic resources of horticultural crops for use by farmers and decision makers
 - 1.4.5 Web site on project outcomes for public use
- 1.5 Promote participation of farmers and local communities in project activities
 - 1.5.1 Round tables with farmers and local communities on importance of conservation of local varieties of horticultural crops and wild fruit species
 - 1.5.2 Establish agro-theatres in rural schools/Universities near project sites

Outcome 2. Knowledge and methodologies on in situ conservation and utilization of horticultural crops and wild fruit species are available, disseminated and used.

- 2.1 Conduct multidisciplinary survey mission to assess distribution and level of diversity of target wild fruit species and local/traditional varieties of horticultural crops and their adaptation to climatic/edaphic *in situ*/on-farm condition, using agromorphological, biochemical and molecular characterization, including molecular and isoenzyme markers, GIS and other modern techniques of plant genetic resources evaluation
 - 2.1.1 Provide appropriate facilities for field survey and data analysis and exchange: field equipment and tools, laboratory facilities and materials, office equipment, hardware, software, GIS, vehicles
 - 2.1.2 Establish digital database on assessment of diversity distribution and level of genetic resources of target fruit species
 - 2.1.3 Produce brochure on description of local varieties of priority horticultural crops and wild fruit species
 - 2.1.4 Produce database on adaptive characters that can improve farmers' resilience to variable *in situ*/on-farm environments accessible to farmers

- 2.2 Study and disseminate experience of farmers and local communities on maintenance, processing (drying, etc.) and storage of products of local varieties of horticultural crops and wild fruit species:
 - 2.2.1 Document traditional skills and knowledge
 - 2.2.2 Publish brochure on traditional knowledge of maintaining local varieties of horticultural crops and wild fruit species, processing and storage of horticultural products
 - 2.2.3 Organize travel workshops for experience exchange among farmers/local communities
 - 2.2.4 Produce video about traditional knowledge on maintaining local varieties of horticultural crops and wild fruit species
- 2.3 Establish demonstration plots with local varieties of horticultural crops in selected agroecological zones and promising populations of wild fruit species in their natural habitats
- 2.4 Promote establishment of nurseries to reproduce best local varieties of horticultural crops and promising forms of wild fruit species in farms and forest farms respectively:
 - 2.4.1 Identify existing nurseries that manage both local varieties of horticultural crops and promising forms of wild fruit species
 - 2.4.2 Determine the requirements of farmers in planting stock of horticultural crops
 - 2.4.3 Identify sources of provision of farmers with planting stock of horticultural crops
 - 2.4.4 Identify key farmers who maintain nurseries for planting stock
 - 2.4.5 Assist in strengthening existing nurseries, enlarging their assortment, and establishing new ones where needed
 - 2.4.6 Promote the strengthening of collaboration among farmers, maintaining nurseries (nursery network)
 - 2.4.7 Provide equipment and tools for growing local varieties of horticultural crops and wild fruit species in nurseries: mini-tractors, farming implements, tools for grafting, etc
 - 2.4.8 Develop methodologies on reproduction of local varieties of project fruit species which combine official research findings and traditional knowledge on maintenance of these crops
- 2.5 Establish network of databases on local varieties of horticultural crops and wild fruit species maintained on farms and in forest sites:
 - 2.5.1 Develop protocols of agreements on access to the database and uses of data
 - 2.5.2 Provide conditions for farmers and local communities to access the database
- 2.6 Identify the best varieties of horticultural crops and their wild relatives with economically valuable features and develop recommendations to use them for breeding purposes to improve assortment of fruit crops adapted to local environments
- 2.7 Develop recommendations for using fruit genetic resources in non-breeding programmes (marketing horticulture and forestry fruit and other products such as bark, flowers, roots, seeds, etc.), direct use of fruit products, in marginal lands, for environmental improvement and rehabilitation (soil and water preservation, improvement of hydrological regime and microclimate, etc.), in reforestation projects
- 2.8 Undertake a socioeconomic assessment of the status of farms where local varieties of horticulture crops are maintained, and develop relevant proposals on modifications of running farm households
- 2.9 Promote the application of new technologies for producing fruit crops products and adding value
- 2.10 Increase knowledge of farmers and local communities on marketing of fruit crop products
- 2.11 Develop and apply scientific guidelines on technology of growing the best local varieties of horticulture crops and promising forms of wild fruit species

Outcome 3. Broad participation and strong partnership/links among farmers, among farmers and institutions, between farmers and institutions, and private sector, and among countries are established.

- 3.1 Establish Multidisciplinary Site Committees in each pilot site
- 3.2 In each country, establish a Site Coordination Committee comprising representation from each Multidisciplinary Site Committee
- 3.3 Undertake analysis of status of linkages among farmers, among institutions, between institutions and farmers/local communities using the tools and methods of Participatory Rural Appraisal
- 3.4 Undertake analysis of existing links between/among countries in the region using the tools and methods of Participatory Rural Appraisal
- 3.5 Identify constraints and solutions to them at all levels of partnership using the tools and methods of Participatory Rural Appraisal
- 3.6 Develop agreements on collaboration on access and exchange of information on database between/among institutions involved in work on genetic resources of fruit crops at national and regional levels
- 3.7 Establish database on farmers' achievement on *in situ*/on-farm conservation of local varieties of horticulture crops and wild fruit species
- 3.8 Compile and publish information on farmers, maintaining local varieties of horticulture crops and wild fruit species in information bulletin
- 3.9 Establish electronic communication for broader information exchange among farmers, researchers, donors and other stakeholders:
 - 3.9.1 Provide partners with communications equipment (for e-mail communication, fax, phone)
 - 3.9.2 Establish database on project partners
- 3.10 Organize farmers' achievement fairs to promote use and exchange of local varieties and compile and disseminate list of promising local varieties and forms of horticultural crops and wild fruit species to be conserved and used
- 3.11 Promote establishment of farmers' associations to maintain local varieties of horticulture crops and wild fruit species
- 3.12 Hold scientific and practical conferences on agrobiodiversity conservation at national and regional levels

Outcome 4. Capacity for training and support activities on in situ/on-farm conservation and use of fruit species genetic resources is established.

- 4.1 Establish Regional Training Centres on:
 - pomegranate - in Turkmenistan (Scientific and Production Experimental Centre on Plant Genetic Resources)
 - walnut - in Kyrgyzstan (Research Institute on Forest and Nut Production)
 - molecular markers - in Uzbekistan (Institute of Genetics and Experimental Plant Biology)
- 4.2 Establish National Training Centres on priority fruit species in:
 - Turkmenistan: - on pistachio - in National Institute of Deserts, Flora and Fauna; on stone, seed and subtropical project fruit crops - in Research Institute of Farming
 - Kazakhstan - on project fruit crops - in Research and Production Association of Processing and Food Industry
 - Tajikistan - on project fruit crops - in "Bogparvar" Research and Production Association and in the Pamirs Biological Institute

- | | | |
|--|------------|---|
| | Kyrgyzstan | - on project fruit crops - in Research Institute of Farming |
| | Uzbekistan | - on nut species – in Research Institute of Forestry, and on stone, seed and subtropical project fruit crops - in Research Institute of Horticulture, Viticulture and Wine Making |
- 4.3 Provide appropriate facilities for training, field surveys and data analysis, tools for cultivating in nurseries
 - 4.4 Develop training programmes and manuals for different categories of trainees
 - 4.5 Training of identified target groups
 - 4.5.1 Decision makers: peculiarities of biodiversity conservation, legal aspects of plant genetic resources conservation, biosecurity and biosafety
 - 4.5.2 Farmers, local communities, forest dwellers: technology of growing and reproduction of local varieties and forms of horticultural crops and their wild relatives, assessment and characteristics of local varieties and their wild relatives, methods of support to the natural regeneration of wild fruit species and traditional methods of the promising forms selection, basics of economic knowledge of plant genetic resources use and efficient management of farm households, methods of processing and storage of fruit products, marketing of horticultural products, computer and Internet applications, English language training, establishment of farmers’ associations, cooperatives, etc
 - 4.5.3 Protected area managers: methods of conservation and reproduction of wild fruit species and the promotion of their conservation in their natural habitats, methods of support to the natural regeneration of wild fruit species, marketing nut products of the forest farms, documentation of traditional knowledge on local varieties of horticulture and their wild relatives and their analysis in agrobiodiversity assessment, computer and Internet applications, English language training, establishment of farmers’ associations, cooperatives, etc
 - 4.5.4 Researchers and Instructors: analysis of legislative deeds on agrobiodiversity conservation, utilization of GIS on assessment of distribution of agrobiodiversity, documentation and assessment of traditional knowledge on local varieties of horticulture and their wild relatives, on-site field studies with the use of new methods of study and descriptors, communications skills with farmers (preparation of facilitators), participatory approach in plant genetic resources management, marketing fruit products, agrobiodiversity assessment with the use of molecular markers, undertake socioeconomic studies on plant genetic resources conservation and use a, application of computer and internet, English language training
 - 4.6 Organize participatory workshops for farmers and researchers with site visits on in situ/on-farm conservation of local varieties of priority horticulture crops and wild fruit species
 - 4.7 Establish national and regional IC networks for information management and exchange on agrobiodiversity

ANNEX C: STAP ROSTER TECHNICAL REVIEW OF THE PROJECT “*IN SITU*/ON-FARM CONSERVATION AND USE OF AGRICULTURAL BIODIVERSITY (HORTICULTURAL CROPS AND WILD FRUIT SPECIES) IN CENTRAL ASIA”

Executive Summary

This is a generally well conceived and well presented project. It clearly benefits from the institutional organization dealing with crop genetic resources in the Central Asian republics and from the support of IPGRI, an institution that has a good track record in designing and implementing projects for conserving plant genetic resources for food and agriculture. The project should be a strong addition to the other projects that have been supported under the GEF Operational Programme 13 on Conservation and Sustainable Use of Biological Diversity Important to Agriculture. It has no glaring deficiencies in the scientific and technical elements. It fits very well with other GEF projects in this area. The Regional context is fully justified and well conceived, and there are several elements that should promote the sustainability of project goals and activities after the project's life.

The review of the scientific and technical merit of the project did, however, identify several areas and points where additional clarification and/or strengthening is called for.

- Strengthen the social science components, especially in training.
- Strengthen the participation of civil society and/or non-governmental organizations with expertise in rural development and capacity building.
- Identify specific farmer organizations in project sites and for specific target species.
- Define the scope and meaning of Farmers' Rights and suggest mechanisms to protect these rights.
- Better describe the relation of matrix gardens to on-farm conservation.
- Accelerate the implementation of on-farm activities to Year 2 in order to allow for adjustments.
- Identify farmer associations and NGOs that can assist in diffusing results of variety selection.
- Clarify the role of the National Committees.

Scientific and Technical Merit

The in situ conservation of agro-biodiversity is a relatively novel approach to maintaining valuable genetic resources. The GEF has recognized the importance of this conservation area by initiating its Operational Programme 13 on Conservation and Sustainable Use of Biological Diversity Important to Agriculture. Nevertheless, the science of designing and implementing on-farm conservation is relatively underdeveloped in comparison to other biodiversity conservation areas and to the conservation of agricultural germplasm in *ex situ* conditions. GEF has supported relatively few (5) projects in this area, and bilateral and private foundation funded programs are also few in number. Evaluating the scientific and technical merit of proposed activities for on-farm conservation of agro-biodiversity rests on evaluating three aspects of the project: (a) project location, (b) project participants, and (3) planned activities

- (a) Project location. Central Asia is the region of origin and genetic diversity for several of the world's most widely grown and commercially important fruit species, including apple, pear, plum, grape, and walnut. Research, collection, and *ex situ* conservation of the genetic resources of these species began before and during Soviet times, but on-farm conservation was neglected and the funding and infrastructure for conserving these resources declined sharply after the collapse of the Soviet Union. In

terms of agricultural resources, Central Asia is an extremely important focus for conservation efforts, and because of the nature of the species and the history of instability in centralized, off-site, conservation, the choice of the *in situ* approach is strongly justified.

The plan to have multiple project sites in each country that are representative of both different species and agro-ecological conditions is appropriate to maximizing the capacity of the project to design locally useful methods and to begin the process of diffusing those methods.

- (b) Project participants. Four types of participants are critical to the success of *in situ* conservation of agro-biodiversity: government agencies, research organizations, civil society organizations, and farmers. During Soviet times, the Socialist Republics of Central Asia were well organized and active in the collection, maintenance, and development of crop germplasm. The support and infrastructure of these activities diminished after independence, but all five countries of this project have steadily and concertedly worked to rebuild capacity for these activities. The governmental organizations that have been recruited to this project (Annex F) have the appropriate mandates and technical responsibilities to contribute to a project of this nature. There appear to be no serious deficiencies or gaps in terms of government participation.

Research organizations include universities and research institutes. The concentration of skills in these organizations appears to be in the biological and agricultural sciences, which are necessary components of a project of this nature. Although the project document (# 54) identifies the need for social scientists and the possible lack of capacity in this area, the list of partners (Annex F) does not clearly indicate what social sciences will be represented and it what capacity they will be involved. Given the importance of this type of expertise to *in situ* conservation of agro-biodiversity and the traditional dominance of biological and agricultural expertise in matters relating to crop germplasm, it is important to be proactive in identifying and incorporating social science organizations in the project.

Civil society and non-governmental organizations may be important participants in part because of their capacity to connect formal sector (governmental and research) organizations with farmers and farming communities. While there are several NGO participants apart from farmer organizations (see next paragraph), these are organizations that work on environmental issues rather than social ones. Environmental NGOs may be valuable partners in activities relating to the protection of wild relatives of the target species, but they are likely to not have relevant interests and expertise for on-farm components. It may be the case that NGOs that work on the social issues of rural development are lacking. The project is encouraged to identify and recruit as partners NGOs that work on such topics as rural capacity building, education and extension.

Farmer organizations are participants in all of the sites, and this is an important aspect of the project preparation. However, the organizations named represent the broad agricultural sectors of each country and not necessarily the regions or fruit producers that will be the specific targets of this project. The organizers are encouraged to work with the sector-wide farmer organizations to identify more specific partners based on regional and commodity interests.

- (c) Planned activities. Four major activities are planned: legislation and policy initiatives, development and implementation of *in situ* methods, building participation and partnerships, and capacity building. These are all appropriate and relevant activities for this type of project. Each will be considered below.

A legislation and policy review was conducted as part of the preparation of the project, and several areas for further work were identified. Most important among these are policies to strengthen the protection of the wild resource and those that will protect Farmers' Rights. Four of the five countries (exception is Tajikistan) have specific policy implements ("Forest Codes") that should be relevant to preserving the wild relatives of the target species. It is possible, however, that these resources fall outside of designated forest areas or in areas such as hedgerows. The project plans to evaluate existing policies for their effectiveness in protecting these resources. The participation of governmental agencies responsible for forest protection will enhance the project's ability to succeed in this activity. Farmers' rights are more problematic. These rights are not well defined internationally nor are they defined well in this document. The most common national approach to Farmers' Rights (e.g., India) is through two mechanisms. The first is guaranteeing the rights of farmers to use, reproduce, and exchange varieties ("farmers' privilege") that are protected by Breeders' Rights (e.g., plant variety protection). Four out of the five countries (exception is Turkmenistan) have Breeders' Rights policies in place, but it is not clear whether the farmers' privilege is included in these policies. Inserting this privilege on a *post hoc* basis may be extremely difficult. The second is a system of benefit sharing based on commercialization of certified crop varieties that use breeding materials from farmers. This benefit sharing mechanism is untried and may not generate significant funds to remain viable. A third mechanism is to insure that farmers are beneficiaries of the use of crop germplasm through education, extension and technology diffusion programs. This third mechanism may involve participatory plant breeding or varietal selection to enhance the usefulness of crop breeding to farmers. This element is suggested but not well developed in the second set of activities relating to *in situ* conservation.

In situ conservation are planned in four areas: identifying the threat of genetic erosion, *in situ* conservation methodologies, survey and crop characterization, and stock distribution among farmers. Identifying the threat of genetic erosion is a difficult but necessary step in any project of this nature, and the project appears to be well equipped to undertake this activity. It is possible that the areas and/or species of greatest concern for genetic erosion are not the optimal areas of on-farm conservation activities because of logistical or economic reasons. The project needs to be cognizant of this issue and to build it into its site selection process. The specific *in situ* conservation activities are somewhat lacking in detail and clarity. A wide range of activities is possible and these may call on very different types of expertise, site location, timing, and budgeting. Major emphasis will be given to demonstration plots ("matrix gardens") for identifying, testing, multiplying, and distribution of fruit varieties. This is an appropriate activity, but its relation to on-farm conservation is not clearly developed. The project can usefully draw on the expertise of IPGRI in participatory plant breeding and varietal selection to strengthen the on-farm aspects of this activity. An additional issue that should be addressed is the increased threat of genetic erosion from a highly successful program of identifying and promoting high quality local material. The potential exists for tension between the *ex situ* parties (nurseries) and the *in situ* parties (NGOs or farmer organizations) and this project leans toward the *ex situ* side in the design of on-farm activities. This bias is not inappropriate, but it needs to be recognized and overcome in evaluating the best activities to meet project

goals. The timing of activities (Annex G, G-4, 2.9, 2.10) suggests that important on farm activities will be delayed until year 4. This is insufficient time for evaluation and adaptation of these activities. The reviewer suggest that the timing of these activities be moved up to year 2. Finally, the planning for networks for distribution of improved stock (#45, 46) is not well articulated. Where possible, the project should cooperate with existing formal sector distribution systems (extension services) and identify NGOs and farmer associations that can complement these where they are deficient.

Participation and partnerships are important and highly appropriate elements of the project. The project is very aware (e.g., # 52) that on-farm activities have been ignored in previous conservation programs and planning to overcome this problem has been a major part of the project's preparation (e.g. Annex K). The training and participatory aspects are among the strongest components of the project. One minor point is that school activities are mentioned in Annex G (G-2, 1.5.2) but not in the proposal text. Another minor point is that the text mentions two types of committees (Multidisciplinary Committees and Site Coordination Committees) but the Public Involvement Summary (Annex F) mentions the National Steering Committee. The relation between the National Steering Committee and these other committees is not clearly described.

Capacity building is directly connected to participation and partnerships, and this also is a strong part of the project's plan. The training needs are well articulated and the partners who will participate in this training are appropriate. One issue here is the representation and capacity from the social sciences at the universities listed in Annex L. Given the need for social science and the lack of extensive experience in this area of science relating to agro-biodiversity, the project may need to make a special effort to recruit trainers from the social sciences.

Identification of Global Environmental Benefits

Central Asia is a major region of domestication and genetic diversity of globally important tree fruits such as the apple, apricot, grape, and walnut. In addition to the many varieties of locally adapted populations (landraces) of these species that are managed by farmers, the region is also home to populations of wild relatives and a place where gene flow between wild and domesticated types continues. Because of the economic and nutritional importance of these crops to people around the world, the genetic resources of landraces and wild relatives are globally important. The importance of this region for these crops has been recognized for 150 years and it has been the site of important crop collecting expeditions from many nations. Until approximately 1990, the conservation and management of these resources was part of the centralized genetic resource conservation program of the Soviet Union. Independence has been accompanied by decentralization of conservation programs, a decline in support for conservation activities, and the loss of genetic resources that had been previously collected. Moreover, agricultural scientists and ecologists have recognized the need for *in situ* conservation to complement existing off-site programs. On-farm strategies not only can serve as a back-up and a reservoir of diversity that was not incorporated into *ex situ* facilities, but as a means to preserve crop evolutionary processes and to increase the public participation in and appreciation for conserving biodiversity in agriculture.

There are no obvious drawbacks to the project. *In situ* conservation that focuses on promoting a narrow range of "elite landraces" may pose a threat to other landraces and thus accelerate genetic erosion, but the project is aware of this problem and

GEF Compatibility

The GEF has supported a number of projects in the Central Asian republics relating to land management and biodiversity conservation, and this project is fully compatible with these programs. In particular, this project will complement the UNDP/GEF project “*In situ* Conservation of Kazakhstan Mountain Agrobiodiversity” which emphasizes crop wild relatives. This project will complement that one by expanding the scope of activities in this area to four countries in the region and by focusing on the maintenance of resources on-farm and with farmer participation. This project appears to be cognizant of the other projects supported by GEF under its Operational Programme 13, and it corresponds closely to the potential activities and operational principles of that programme. It is especially strong in defining capacity building, the involvement of local constituencies, and conducive policy environments as project components.

Regional Context

The regional context of this project is a major asset but also a significant challenge. Central Asia has long been considered to have a certain identity despite important cultural and social differences. The five countries of this project are members of the Commonwealth of Independent States. Their activities relating to the conservation and management of agrobiodiversity have a common history in the programs of the Soviet Union and the Vavilov Institute of Plant Industry. As members of the CIS, they are parties to the Treaty on Collaboration in the Field Of Conservation and Use of Cultivated Plants (1999), and they cooperate in this area through the Transcaucasian Network on Plant Genetic Resources organized in 1996. In addition to their shared historical experiences and membership in regional treaties and networks, the five countries of this project share a pool of wild and domesticated agricultural resources that is not confined by national borders. A regional context is potentially valuable in achieving economies of scale in terms of developing effective methodologies for on-farm conservation of agro-biodiversity and in the biological sciences related to analyzing the distribution of genetic material and identifying priority conservation areas. However, this five country project faces major logistical and coordination challenges. Despite their shared histories, these countries do not share single cultural heritage or language. While not serious at the present time, political tensions and conflicts between the nations are possible and would be disruptive to this project. IPGRI will be a strong and effect partner in helping to bridge the separate countries in the four principal components of the project. The equitable distribution of the budget among countries is an asset for achieving cooperation.

Sustainability

The elements that should encourage sustainability of *in situ* conservation activities after the life of the project include the strong institution interest and capacity in this area and IPGRI’s experience and interest in this type of conservation. On-going *in situ* conservation activities, such as farmer participation in selecting and evaluating fruit stocks, after the project life should not require regular subsidies from national or international sources. The sustainability of the project can be enhanced by emphasizing the participation of civil society and non-governmental organizations, especially those working in the area of rural development and capacity building.

The well developed plans for monitoring and evaluation indicate an interest and dedication to remaining flexible and to adapting the project to meet its goals. This attitude and the monitoring activities will enhance the project’s sustainability.

Linkages to other Focal Areas

The linkage to other focal areas will occur through primarily through the development and use of methodologies to assess the biological diversity and population biology of the crops in question. Another major linkage is in the area of protecting wild relatives of valuable fruit species that are located in managed forests. This should give added incentive for improved protection of the forests.

Linkage to other Programmes

The linkage to the UNDP/GEF project “*In situ* Conservation of Kazakhstan Mountain Agrobiodiversity” was mentioned above. This project will be a strong complement to that project and there should be mutual benefit for both projects in sharing methodologies, data, and strategies. In addition, this project should like will with other projects that have been supported by the GEF Operational Programme 13, such as the projects in Peru, the Maghreb, the Fertile Crescent, and Vietnam. The Magreb project, with an interest in date palm conservation, is a logical point for linkage.

Degree of Stakeholder Involvement

The degree of stakeholder involvement is one of the strongest aspects of the project. The involvement of formal sector (governmental and research) organizations is especially noteworthy. The project will benefit from encouraging and helping the development of civil society and non-governmental organizations, especially in the area of rural development and capacity building.

Capacity Building

As noted above, capacity building is a strength of the project plan. It will be especially important to identify and recruit social scientists in this effort, and the project document is somewhat lacking in this regard.

Innovativeness

Agro-biodiversity conservation project are rare in the GEF portfolio and in national and international biodiversity programs in general, so that this project is innovative in its very nature. Nevertheless, it is also innovative in its regional focus, its focus this particular set of horticultural crops, and its interest to combine on-farm conservation of cultivated with the enhanced protection of wild crop relatives. Other projects have many of these elements, but none combine them in the ways planned for in this project.

**Stephen Brush,
University of California
23 August, 2004**

ANNEX C1: RESPONSE TO STAP REVIEW

We would like to record our thanks to the Reviewer for the constructive and helpful comments on the project. These have been carefully considered and our responses and clarifications are noted below. Our comments are organized around the major areas and points highlighted in the reviewer's Executive Summary.

Reviewer Comment:

1. Strengthen the social science components, especially in training.

Response:

We agree with the reviewer's comment that it is essential to ensure that the social sciences expertise is adequately identified mobilized and developed within the project framework. Among the List of Stakeholders, presented in Annex F (see pages F-5, F-13, F-19, F-26, F-32) there are Research Institutes, which represent the social sciences, such as Research Institute for Economy of Agroindustrial Complex and Development of Rural Territories in Kazakhstan; Research Institute of Economy and Processing Industry in Kyrgyzstan; Tajik Research Institute of Economics and Agricultural Production; National Institute of Statistics and Projection in Turkmenistan; and Research Institute of Market Economy and Reforms in Agriculture in Uzbekistan. In each of the abovementioned Research Institutes there are scientists (sociologists, economists), who conduct research in socioeconomic fields. These researchers will be involved in and responsible for implementing the activities of the project, such as: socioeconomic assessment of farm households; development of benefit sharing mechanisms; recommendation of ways to strengthen legislation that promotes the transition of the agricultural sector to a market driven economy; development of the private sector in agriculture; farm development, including farms maintaining horticultural crops; and participating in training on socioeconomic studies in agrobiodiversity management (see Annex F, Tables "Institutional profile", column "Role in the project").

During the first year of the project, further efforts will be made to engage social scientists, anthropologists and economists with appropriate skills in specific relevant project activities. However, there is limited experience within the partner countries on the application of social sciences directly to agricultural biodiversity conservation and use. Therefore, the project plans to identify, build capacity and recruit the needed expertise in components of social sciences by implementing recommendations of the regional consultant on participatory management and strengthening the expertise of the project team (see Annex K. Strategy for Participatory Approach, page K-15, paragraphs 1., 2.,3; Table 1; and page K-16, Table 2).

The Regional Consultant on participatory management recommended building capacity in participatory approaches and the social sciences in the first instance through training outside the region 2-3 trainers from the Regional Training Center on Socioeconomic Studies established during PDF 'B' phase at the Research Institute of Economy of Agro-industrial Complex and Development of Rural Territories in Kazakhstan. Those trainers will, in turn, train other trainers from the five partner countries at regional and national courses on socioeconomic issues as listed in Table 3, Annex L. Training strategy.

In addition, an Associate Expert on social sciences has been recruited to work on the social science components of the project. IPGRI's Senior Scientist, Anthropology and Socioeconomics will oversee this work and provide the necessary technical advice and

training to the project team. He will also provide further advice on strengthening participation of appropriate social scientists throughout the lifetime of the project.

Reviewer Comment:

2. Strengthen the participation of civil society and/or non-governmental organizations with expertise in rural development and capacity building.

Response:

There are, in fact, few NGOs working on social issues of rural development, capacity building, education and extension in the region. This may be ascribed to the fact that NGOs are only recently beginning to emerge and build their capacity in the countries, and there remains a lack of appropriate policy and legal frameworks to support their functioning. As suggested by the reviewer, the project will identify and seek to engage NGOs that work on social issues of rural development. Through the project activities, these NGOs will incorporate the agricultural biodiversity management issues into rural development.

The project will also identify and train NGOs within the target group of farmers and farmer's communities on social topics such as: economics of plant genetic resource use and efficient farm household management; documentation of traditional knowledge and agricultural biodiversity assessment; and marketing of diversity rich horticultural products (see also Annex L. Training Strategy).

Reviewer Comment:

3. Identify specific farmer organizations in project sites and for specific target species.

Response:

We agree that farmers' organizations, listed in Annex F (Public involvement plan summary) are dealing with broad agricultural issues on the national level and not necessarily working at site or crop specific levels. As noted above, local or crop based organizations are often absent or embryonic at this stage. In order to overcome this problem the project plans to identify and support the establishment of farmer's organizations working at the project sites or on priority horticultural crops in consultation and participation with the Multidisciplinary Site Committees (see below) and the sector-wide farmers' organizations (see Activities 3.7, 3.8, 3.11 in the Annex B – Logframe and paragraph 51 and 58, pages 18 and 19 in the Project Description).

The formal Government recognition accorded to project activities, the roles and capacities at the national and district levels of the sector-wide farmers' organizations, the links between the sector wide farmer's organizations, multidisciplinary site committees, and the newly established site-specific farmer's organizations will all help to facilitate the establishment and sustainable functioning of appropriate regional and commodity groups as suggested by the reviewer.

Reviewer Comment:

4. Define the scope and meaning of Farmers' Rights and suggest mechanisms to protect these rights.

Response:

We thank the reviewer for his perceptive analysis of some of the important issues concerned with Farmers' Rights (page C-3 of the review) and agree with the problems he identifies in establishing a satisfactory definition of the scope and meaning of Farmers' Rights (both internationally and, more specifically, in the context of this Project). One reason for this was that farmers were not recognized as Intellectual Property Rights holders under the Soviet Union system for crops such as the target crops of the project.

The project partners have recognized this problem and the project plans to discuss and agree on the scope and the meaning of Farmers' Rights as part of Activity 1.1 (Produce policy recommendations that support *in situ/on-farm* conservation of horticultural crops and wild fruit species) and Activity 1.2. (Analyze options and produce proposals on protection of Farmers' Rights) to achieve Outcome 1. This will take full account of any further international developments aimed at providing a more complete and satisfactory understanding of the concept.

Concerning options for benefit sharing mechanism to protect Farmers' Rights, since this does not exist in the region and is not yet clearly developed at the international level, elements to protect Farmers' Rights will be developed and field tested. The activities under Outcome 4, such as those relating to adding value and promotion and application of technologies, increasing knowledge of farmers in efficient management of farm households and marketing of horticultural products will represent some of these elements. Indeed, it is hoped that experience from this project will contribute to international developments in this area.

Reviewer Comment:

5. Better describe the relation of matrix gardens to on-farm conservation.

Response:

By undertaking identification, testing, multiplication, and distribution of selected fruit varieties that might be in danger of disappearing, matrix gardens will strengthen subsequent on-farm conservation through the provision of sufficient stocks of these varieties. This will both increase the benefit to farmers and recover and rehabilitate lost or under-represented horticultural genetic resources and wild fruit species (Activities 2.3. and 2.4). Farmers will receive training on the use of the matrix gardens material and technologies to transfer to their *in situ/on-farm* sites (Activities 4.5.2, Annex B).

The reviewer rightly identifies a possible tension between *ex situ* and *in situ* parties (last paragraph on page C-3 of the review) with respect to activities planned to multiply and distribute specific varieties and the concern to see the widest possible diversity maintained. It will be important to continue to monitor this tension and to review outcomes fully, so as to effectively evaluate the procedures followed and their wider suitability in other conservation and use scenarios.

Reviewer Comment:

6. Accelerate the implementation of on-farm activities to Year 2 in order to allow for adjustments.

Response:

We agree with this recommendation. Activities 2.9 (Promote the application of new technologies for producing fruit crops products and adding value) and 2.10 (Increase knowledge of farmers and local communities on marketing of fruit crop products) will be moved from Year 4 to Year 2 of project implementation. The work plan will be amended accordingly.

Reviewer Comment:

7. Identify farmer associations and NGOs that can assist in diffusing results of variety selection.

Response:

We accept this recommendation. The project will cooperate with existing formal sector distribution systems (extension services) so as to identify NGOs and farmer associations working on dissemination of selected varieties at the district or site levels.

Reviewer Comment:

8. Clarify the role of the National Committees.

Response:

Three committees will be established to manage and link activities at project sites and national levels (see Annex F. Public Involvement plan Summary, pages F-4, F-12, F-18, F-25, F-31, f-36 and Annex M. Monitoring, Progress Reporting, and Evaluation Plan, Table 4, pages M-14 and M-16).

The Multidisciplinary Site Committees (MSC) will be established for each project site. These committees will represent all local key-stakeholder groups such as farmers, forest dwellers, and local authorities. Each MSC will develop a framework in which these stakeholder groups can cooperate at the local level. Farmers and farmer organizations who are interested to be involved in the project, will be identified (the roles and responsibilities of the MSCs are described in Annex M). The MSC will provide the primary mechanism for implementation of the project activities.

The Site Coordination Committee (SCC) in each country will link the Multidisciplinary Site Committees in each country to ensure the sharing of experiences among project sites as well as at national and regional levels. The SCCs will include one representative from each Multidisciplinary Site Committee, and one member who will participate also as a member of the National Steering Committees (NSC). Each year each SCC will meet twice, both times at least two weeks prior to the NSC meetings to make sure that its recommendations and suggestions can be provided to the NSC in time. The SCCs will compile and disseminate the results of the activities of the different priority species undertaken at different project sites and will act as a coordinating body among the different project sites on development of methodologies, and exchange and sharing of experiences and lessons learned. The SCCs will analyze the process of implementation of activities at the different project sites and prepare and submit the appropriate recommendations to the NSCs including modifications of the work plan and the budget allocations. They act as the mid-level tier in the implementation of project activities.

The NSCs will be established at the national level in each participating country. They will provide a general overview and guidance to the project. These committees will facilitate interagency coordination and monitor activities at the national-level, based on the input of the Site Coordination Committees, as explained above. The NSCs will meet twice per year. They will represent national stakeholder groups, e.g. Ministry of Nature Protection, Academy of Sciences, Ministry of Education, State Forest Service, Site Coordination Committee, farmer associations, farmers, and NGOs.

OTHER POINTS NOTED BY REVIEWER:

9. On school activities in annex G but missing the proposal text (page C- 4, paragraph 2 of the review)

We thank the reviewer for pointing this out. The relevant text in page 16 paragraph 41 of the main text will be amended in line with Activity 1.2. (Annex G-2).

10. Linkages to other Programmes (page C-6, paragraph 2 of the review)

This is a very valuable comment. Since IPGRI is: (i) the executing agency of the Maghreb project on “Participatory Management of Date Palm genetic resources in the Maghreb”; (ii) participates in the execution of activities of the “Conservation and Sustainable Use of Dry land Agrobiodiversity in the Nearly East”, executed by ICARDA; and (iii) provides mentoring support to the UNDP/GEF project on “Conservation Training and Biodiversity Action Plan” in progress in Vietnam, it will ensure that links are established so as to exchange information on best practices, lessons learned from *in situ*/on-farm and capacity building activities of various countries of the CWANA region and elsewhere. A specific consultation initiated during the PDF B phase, as noted in paragraph 19, page 10 in the Project Description, will continue with appropriate organizations to ensure optimum links with the UNDP/GEF funded project on “*In situ* Conservation of Kazakhstan Mountain Agrobiodiversity” referred to by the reviewer.

11. Capacity Building (page C-6, paragraph 4 of the review)

As already reflected in the response 1 (paragraph 2, page 1 above) due to the lack of knowledge on social sciences as applied to in agrobiodiversity in the Central Asia region, the project will make a special effort to identify and recruit social science experts. In the first instance, relevant inputs will be made by an Associate Expert recruited to work on the social since activities of this project.

Annex D: Letters of Endorsement