Conservation and Adaptive Management of Globally Important Agricultural Heritage Systems (GIAHS)

PIMS 2050

Terminal Report

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Conservation and Adaptive Management of
Globally Important Agricultural Heritage Systems (GIAHS)

I. Background of the Project

In 2002 a proposal to develop the concept of Globally Important Agricultural Heritage Systems (GIAHS) was submitted to the Global Environment Facility (GEF) through the United Nations Development Programme (UNDP). The UNDP was the implementing agency while FAO served as the executing agency. During the PDF-B stages, preliminary assessment of globally important traditional agricultural systems of the world was prepared together with a baseline on candidate agricultural systems based on desk studies and call of proposals as well as from the outcome of a workshop on concept and identification criteria. The GEF funded a Preparatory Phase (PDF-B)[1], with a budget of 700,000 US$ which started in 2004, the International Steering Committee was established and international meetings and workshops were conducted. These meetings and workshops were all instrumental in the delivery of expected outputs, fine-tuning of the concept and underpinning the scientific framework of the GIAHS. One important administrative change for the project is the FAO as the sole implementing/executing agency of the project. FAO as IA/EA has been continuously working in partnership with interested governments, UNDP, UNESCO, UNU[2], IPGRI, ICCROM[3] and other partners.

II. Introduction to the GIAHS Concept

A Heritage for the Future

Worldwide, specific agricultural systems and landscapes have been created, shaped and maintained by generations of farmers and herders based on diverse natural resources, using locally adapted management practices. Building on local knowledge and experience, these ingenious agricultural systems reflect the evolution of humankind, the diversity of its knowledge, and its profound relationship with nature. These indigenous and traditional agricultural systems (henceforth referred to as Globally Important Agricultural Heritage Systems "GIAHS") systems have resulted not only in outstanding landscapes (some are recognised as World Heritage Sites), maintenance and adaptation of globally significant agricultural biodiversity, indigenous knowledge systems and resilient ecosystems, but, above all, in the sustained provision of multiple goods and services, food and livelihood security and a certain quality of life that keeps a close link with its natural environment.

Based on a high diversity of species and their interactions, the use of locally adapted, distinctive and often ingenious combinations of management practices and techniques, such agricultural systems testify to millennia of co-evolution of human societies with their natural environments. These systems often contain rich and globally unique agricultural biodiversity, within and between species but also at ecosystem and landscape level. Having been founded on ancient agricultural civilizations, these systems are linked to important centres of origin and diversity of domesticated plant and animal species, the in situ conservation of which is of great importance and global value.

However, traditional agriculture is rapidly disappearing in the face of major social, political, and economic changes. The dynamic conservation and management of these systems and associated agro-biodiversity will be possible only if they are linked to the preservation of

[1] UNTS/GLO/002/GEF
[2] United Nations University
[3] International Centre for the Study of the Preservation and Restoration of Cultural Property

the cultural diversity and economic viability of the local farming populations. The conservation of GIAHS is vital to the future of humankind, and should be treated at the international level as an ecological/cultural resource of utmost global significance. The study of traditional agricultural systems and the ways in which indigenous peoples and traditional farmers maintain and use biodiversity can facilitate the discovery of valuable agro-ecological principles, which in turn can contribute to the development of more sustainable agro-ecosystems and biodiversity conservation strategies in both developed and less developed countries. Hence, GIAHS initiative was conceived and developed into full sized project.

II. The Project Goal

The overall goal of the project is to identify and safeguard Globally Important Agricultural Heritage Systems and their associated landscapes, agricultural biodiversity and knowledge systems through mobilising global and national recognition and support for such systems and enhancing global, national and local benefits derived through their dynamic conservation, sustainable management and enhanced viability. Ultimately the project's purpose is to be catalytic in establishing a long-term programme building on the experiences and lessons learnt in a number of pilot systems. During the PDF-B stages, the project has achieve its goal and purpose by developing, testing and implementing specific Pilot Frameworks and participatory methodologies and mechanisms in 5 pilot systems. In addition the project has built linkages with other existing GEF initiatives on agricultural biodiversity (OP 13) that are potentially could be GIAHS sites.

III. Achievements and Outputs of the PDF-B

GIAHS is defined

During the PDF-B stages, FAO defined Globally Important Agricultural Heritage Systems (GIAHS) as *"remarkable land use systems and landscapes which are rich in globally significant biological diversity evolving from the co-adaptation of a community with its environment and its needs and aspirations for sustainable development".*

To further understand, GIAHS are classified and typified based on its ingenuity of management systems, high levels of agricultural biodiversity and associated biodiversity, biophysical, economic and socio-cultural resources that has evolved under specific ecological and socio-cultural constraints and opportunities. **GIAHS could include the following types:**

1. Outstanding terraced mountain sides with rice and complex agro-ecosystems. This type includes remarkable terraced systems with integrated forest use (swidden agriculture/agro-forestry and hunting/gathering), such as rice terraces and combined agro-forestry vanilla system in Pays Betsileo, Betafo and Mananara in Madagascar, the Ifugao rice terraces in the Philippines. This type also includes diverse rice-fish systems with numerous rice and fish varieties/genotypes and other integrated forest, land and water uses in East Asia and the Himalayas.
2. Maize and root crop based agro-ecosystems. Developed by Aztecs (Chinampas in Mexico) and Incas in the Andes (Waru-Waru around lake Titicaca in Peru and Bolivia), with ingenious micro-climate and soil and water management, adaptive use of numerous varieties of crops to deal with climate variability, integrated agro-forestry and rich resources of indigenous knowledge and associated cultural heritage.

3. Taro based systems. These are the unique agricultural systems and endemic genetic resources found in Papua New Guinea, Vanuatu, Solomon Islands and other Pacific small islands developing countries.

4. Specialised dryland systems including the remarkable pastoral systems. These are range/pastoral systems based on adaptive use of pasture, water, salt and forest resources through mobility and herd composition in harsh non-equilibrium environments with high animal genetic diversity and outstanding cultural landscapes. These include highland, tropical and sub-tropical dryland and arctic systems such as Yak based pastoral management in Ladakh, high Tibetan plateau, India and parts of Mongolia and Yemen; Cattle and mixed animal based pastoral systems, such as of the Maasai in East Africa; and Reindeer based management of tundra and temperate forest areas in Siberia, such as Saami and Nenets.

5. Ingenious irrigation and soil and water management systems. These are the agricultural practices in drylands with a high diversity of adapted species (crops and animals) for such environments: ancient underground water distribution systems (Qanat) allowing specialised and diverse cropping systems in Iran, Afghanistan and other central Asian countries with associated homegardens and endemic blind fish species living in underground waterways; and integrated oases in deserts of North Africa and the Sahara, traditional valley bottom and wetland management, e.g. in Lake Chad, Niger river basin and interior delta (e.g. floating rice system) and other ingenious systems in regions of the Bamileke (Cameroon), Dogon (Mali) and Diola (Senegal).

6. Complex multi-layered homegardens. Agricultural system featuring a complex multi-layered homegardens with wild and domesticated trees, shrubs and plants for multiple foods, medicines, ornamentals and other materials, possibly with integrated agro-forestry, widen fields, hunting-gathering or livestock, such as homegarden systems in China, India, the Caribbean, the Amazon (Kayapó) and Indonesia (e.g. East Kalimantan and Butitingui).

7. Hunting-gathering systems. This features unique agricultural practices such as harvesting of wild rice in Chad and honey gathering by forest dwelling peoples in Central and East Africa.

IV. Expected Outcomes/outputs of the PDF-B

The PDF-B project was requested to produce the following outcomes/outputs:

1) select through a consultative process, up to 10 pilot demonstration systems and 5-10 partner OP 13 projects (that are potentially GIAHS sites) for networking;
2) develop a methodological framework and a step by step approach for the participatory development and implementation models for a “dynamic conservation” through site-specific “Pilot Frameworks” in pilot systems;
3) establish participatory mechanisms and processes in each pilot system and country and design Pilot Frameworks for each pilot system through a fully participatory process;
4) leverage global and national support and co-funding arrangements for the full scale project;
5) develop a communication strategy and plan;
6) develop the full project executive summary and project document.

V. Delivered Outputs

1. Selection of pilot systems

<u>Component 1</u> select through a consultative process, up to 10 pilot demonstration systems and 5-10 partner OP 13 projects (that are potentially GIAHS sites) for networking;

Five pilot systems have been selected, these are:

1. Andean agriculture in Peru (Cusco-Puno)
2. Chiloé Agriculture, Chile
3. Rice-Fish systems in China
4. Rice terraces of Ifugao, The Philippines
5. Oasis of the Maghreb, (Algeria and Tunisia)

Brief description of the pilot systems is summarised in Annex 1.

Other Systems were also studied and identified for further expansion and networking of GIAHS systems. Some of these systems are, as follows (brief description of these systems is summarised in Annex 2):

Africa:

1. Traditional Maasai Pastoral Rangeland Management (Kenya and Northern Tanzania)
2. Tapade Cultivation System, Fouta Djallon (Guinea)
3. West African Sahelian Floodplain Recession Agriculture (Mali)
4. Limpopo Sorghum-Peral Millet Cultivation System (South Africa)
5. Coffee-agroforestry and Homegardens (Ethiopia)

America:

1. Little Colorado River Watershed (Arizona – USA)
2. Milpa-Solar Systems (Mexico)
3. Chinampa Agricultural System (Mexico)
4. Terra Preta – Amazonia Dark Earth (Brazil)
5. Agraria System of the Wayana (French Guyana)

Asia

1. Qanat Irrigation Systems and Homegardens (Iran)
2. Qashqai Nomadic Pastoralism (Iran)
3. Marsh Arabs and Marshland Agriculture (Iraq)
4. Traditional Ladakh Agriculture (Northern India)
5. Raika Pastoralists of the Thur Desert (Rajasthan, India)
6. Catamaran Fishing System (Tamil Nadu, India)
7. Korangadu Silvo-Pastoral Management System (Tamil Nadu, India)
8. Traditional Agriculture in the Koraput Region (Orissa, India)
9. Soppina Bettas Systems (Western Ghats, India)
10. Sikkim Himalayan Agriculture (Sikkim, India)
11. Wewe Irrigation System (Sri Lanka)
12. Alder-based Rotation and Intercropping (Yunna, China)
13. Udege Forest Management (Kamtchatka, Russia)

Europe:

1. Lemon Gardens (Southern Italy)
2. Traditional Agro-ecosystems in the Carpathians (Slovakia)
3. Mobile Pastoral Systems (Romania)
4. Traditional Reindeer Herding in the Arctic Region (Siberia-Russia)

Small Islands:

1. Mananara Rice Terraces ad Agroforestry (Madagascar)
2. Taro-based systems and Homegardens (Vanuatu)

Component 2 develop a methodological framework and a step by step approach for the participatory development and implementation models for a "dynamic conservation" through site-specific "Pilot Frameworks" in pilot systems

Several meetings have been held on key conceptual, methodological and strategic issues, both with the Steering Committee. These led to a short list of key papers commissioned. Some of these key documents are posted on the GIAHS webpage (http://www.fao.org/sd/giahs/):

1. Step by step approach to implementing the PDF-B: guide for pilot system facilitators
2. A guide for the assessment of pilots systems: characteristics, functioning, dynamics and drivers of change
3. GIAHS conceptual framework: core concepts and definitions
4. Criteria for selection of GIAHS
5. GIAHS: extent, significance, and implications for development
6. Local Knowledge Systems and the Management of Dryland Agro-ecosystems: Some Principles for an Approach
7. GIAHS – Frequently Asked Questions (FAQs)
8. GIAHS: An Eco-Cultural Landscape Perspective
9. Towards a methodological framework for implementing the GIAHS process in target sites: suggested guidelines and tips
10. Project outline following a logical steps to Agricultural Biodiversity of Global Significance (ABGS) characterization

Other papers:

1. A historical analysis of the Oases agrarian and tenure systems
2. Guidelines for land and natural resource tenure analysis in the GIAHS

Component 3: establish participatory mechanisms and processes in each pilot system and country and design Pilot Frameworks for each pilot system through a fully participatory process

Multi-stakeholder participatory mechanisms were conducted in the pilot countries (China, Chile, Peru, Philippines, Algeria and Tunisia) continuously for almost 3 years. Work is in progress in Peru, Chile, and the Philippines. The Government of the Netherlands is providing in-kind support through Wageningen International (WI).

Component 4: leverage global and national support and co-funding arrangements for the full scale project

For this component, GIAHS secretariat has commissioned three key papers to help map out the strategic path for GIAHS program development:

- GIAHS: Towards analyzing the drivers of change in farming systems
- GIAHS –An examination of their context in existing multilateral instruments (summary / full report)
- Strategic framework for GIAHS: Executive summary and Full Report

Country Support and Funding: The GEF Operational Focal Point of each of the participating governments have endorsed the GIAHS project and committed funds from their country biodiversity allocation. Also, the co-financing for the full scale implementation of the project have been provided and confirmed.

- Funding support are leveraged (and will continue to leverage) for the Full Scale Project implementation

Component 5: develop a communication strategy and plan

- The updated GIAHS website has been online since October 2006.
- GIAHS brochure and posters (in UN language) have been developed and global and national awareness have been started and will continue.
- Awareness on GIAHS and capacity built on vulnerable stakeholders of GIAHS have been started and will continue.
- Communication plan and strategy have been integrated into the Full Scale Project design

Component 6: develop the full project executive summary and project document

The Project Document (executive summary and full ProDoc) has been developed and is now for CEO endorsement (March 2008). Summary of the expected outcomes/outputs of the Full Scale Project (FSP) is attached as Annex 3.

- Lessons learned in each pilot systems and related initiatives have been integrated into international efforts and Full Scale Project Document
- Improved knowledge and understanding and networking among international policy makers and governments have been started
- National Project Framework had also been developed for each country/system:
    1. China
    2. Chile
    3. Peru
    4. Philippines
    5. Algeria and Tunisia

VI. International and National Workshops Conducted to support delivery of the Expected Outcomes/Outputs

A number of workshops (both at international and national level has been carried out to facilitate the important outputs required for the project. International Workshops/Meetings held:

- First International Steering Committee Meeting, 5-7 August 2002;
- Second International Steering Committee Meeting, 7-9 June 2004;
- International Forum on GIAHS: experiences on dynamic conservation, 24-26 October 2006.

The executive summary of the international meetings cum workshops and the list of targeted workshops held at country levels are attached in Annex 4.

VII. Summary, Constraints, Findings and Recommendations

Summary

The PDF-B is a second cycle of the project development facility of the GEF. It is requested to further the concept and developed the GIAHS project for full scale implementation. The overall goal of the project is to identify and safeguard Globally Important Agricultural Heritage Systems and their associated landscapes, agricultural biodiversity and knowledge systems through mobilising global and national recognition and support for such systems and enhancing global, national and local benefits derived through their dynamic conservation, sustainable management and enhanced viability. To achieve this goal, the PDF-B have implemented six major components: 1) select through a consultative process, up to 10 pilot demonstration systems and 5-10 partner OP 13 projects for networking; 2) develop a methodological framework and step by step approach for the participatory development and implementation models for a "dynamic conservation" through site-specific "Pilot Frameworks" in pilot systems; 3) establish participatory mechanisms and processes in each pilot system and country and design Pilot Frameworks for each pilot system through a fully participatory process; 4) leverage global and national support and co-funding arrangements for the full scale project; 5) develop a communication strategy and plan; and 6) develop the full project executive summary and project document.

Main Outputs of the PDF-B:

- Five GIAHS systems have been selected for "dynamic conservation"
- Other candidate systems have been preliminary evaluated for GIAHS networking and expansion
- Background documents underpinning of the GIAHS scientific concept, strategic framework, methodological guidelines, review of GIAHS in relation to multilateral instruments, and other relevant documentation that justifies GIAHS have been prepared and posted on the webpage
- Updated GIAHS webpage (on-line since October 2006) http://www.fao.org/sd/giahs/
- Updated GIAHS brochure in several UN languages ftp://ftp.fao.org/sd/SDA/GIAHS/GIAHSbrochure_en.pdf
- new GIAHS poster featuring the systems and its relevance to climate change ftp://ext-ftp.fao.org/SD/Data/Upload/
- Full Scale Project Document, incorporating the lessons learned in each pilot systems and related initiatives
- 5 National Project Frameworks[4] (China, Chile, Peru, Philippines, Algeria and Tunisia)
- The Maasai agropastoral system in Kenya and Tanzania is included as an additional pilot demonstration system[5]

Constraints

The formulation and development of the GIAHS initiative was started in 2002, has financed by GEF under Project Development Facility (PDF A and B amounting to US$ 725,000) from Operational Programme on Biodiversity (OP13). These funds have been used to develop GIAHS conceptual framework, identification of over 40 agricultural heritage systems, undertake assessment studies and baseline preparation, awareness raising and capacity building of national and local communities, international and national workshops,

[4] The National Project Framework is a detailed analysis of the system including detailed implementation of dynamic conservation of GIAHS. This will be posted on the GIAHS webpage soon.

[5] Establishment and implementation of dynamic conservation of GIAHS is funded by the Government of Germany

guideline preparations for full size project preparation, and finally, fund raising. Also, FAO and other partners including participating governments, UNDP, IFAD, UNEP, UNESCO, UNU, IUCN, Government of the Netherlands, Christensen Fund etc. have provided roughly the same amount of cash and in-kind contributions for gathering baseline information and development of the full scale project GIAHS initiative. However, for the *full scale project implementation, the initiative* is needing a total US$ 24 million (original proposal) of which US$ 6 million is from GEF resources and the difference is co-funded and endorsed by the participating countries and funding partners, and was approved by STAP reviewer and GEF Secretariat for submission to GEF Council in June 2006. However, it was not considered priority of the implementing agency (UNDP) because of the financial situation of the GEF 3 and was suggested to be moved to GEF 4 under new Resource Allocation Framework (RAF) modalities. The project document was revised and re-aligned as was requested by GEF Secretariat and all of the national governments of the participating countries (Chile, Peru, China, Philippines, Algeria, Morocco, and Tunisia) have prioritized it under their national biodiversity projects and re-endorsed the global GIAHS project for inclusion in GEF4 Work Programme (WP). The project has been finally included in June 2007 WP, with FAO as Implementing/Executing agency (IA/EA). However, the GEF resources allocated for the project is reduced to US$3.5 million.

Findings and General Recommendation

During the PDF-B phase of the GIAHS project, FAO established an International Steering Committee, to formulate the framework of conceptual criteria for selection of systems and to start the baseline information. related to this, three international meetings, workshops and consultations were held, aside from in-country targeted workshops. For the full scale project implementation, six countries, representing five traditional agricultural systems with diverse agro-biodiversity, associated wildlife, cultural practices, were identified. These are Andean Agriculture in Peru; Chiloe Agriculture in Chile; Ifugao rice terraces in the Philippines; Oases of the Maghreb in Algeria and Tunisia; and Rice-fish Agriculture in China. Over the last 5 years of conceptualisation, GIAHS project and its methodology of dynamic conservation has created lots of enthusiasm among local and international communities. The IA/EA is receiving proposals/candidate systems for GIAHS recognition from many countries and institutions, and more countries are submitting proposals to join in the initiative, not necessarily to get funds but to become part of this global initiative and promote recognition of *Agricultural Heritage* (a concept that is complementary to Natural and Cultural Heritage of UNESCO). Sustaining the interest of the wide stakeholders is fundamental; especially guardians of the "*agri-cultural*" systems who wish to participate in the recognition and valuation of their agricultural heritage systems. This challenge is considered in the project and the need for an innovative management structure is deemed necessary in order not to loose the enthusiasm and to carry out the long term objective of the project. The establishment of a long term secretariat in FAO will allow creation of a mechanism to respond on a sustainable basis to increasing government/organization requests. However, this may need additional financial resources and strengthening of policy and technical outcomes of the GIAHS through national designation of agricultural heritage systems and creation of voluntary or/and agreed legal measures and/or development of policy options. Likewise, it will allow also a continuous process of GIAHS labelling focusing on the multitude of goods and services of GIAHS at national and global levels.

VIII. Administrative and Financial Aspects of the PDF-B

A. Detailed disbursement of the resources

Project Activities	*Amount Approved*	***GEF Amount ($)****		
		Amount Spent	*Amount Committed*	*Co-financing committed*
1) 5-10 pilot systems and 5-10 liaison projects	65,250.00	68,641.12	68,641.12	72,608.88
2) Participatory approaches and methodologies for conservation of GIAHS developed and assessed.	65,250.00	70,944.17	70,944.17	109,305.83
3) Multi-stakeholder mechanisms in country established and Activity Plans in 5-10 selected Pilot Systems developed	479,300.00	487,934.79	487,934.79	481,565.21
4) Global and national institutional, financial and policy support for the Full Project leveraged	8,200.00	8,024.58	8,024.58	209,975.42
5) Communication strategy and plan developed	10,000.00	9,065.72	9,065.72	149,934.28
6) Full project Executive Summary and Document prepared	72,000.00	55,389.62	55,389.62	16,610.38
Total	**700,000.00**	**700,000.00**	**700,000.00**	**1,040,000.00**

* The PDF-B approved grant is 700,000 USD.

B. Summary of Components/Activities completed on the Use of PDF-B grant

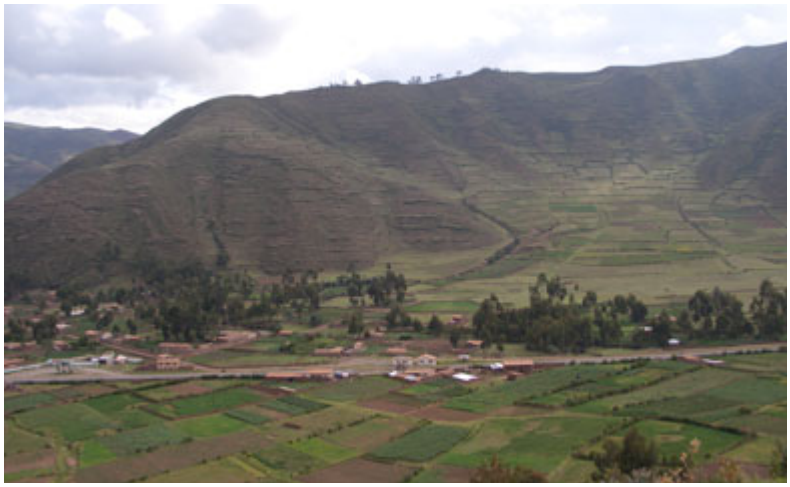
Approved			**Actuals**			
Proposed activities at Approval	GEF financing (USD)	Co-financing (USD)	Completed Activities	GEF Financing committed (USD)	Co-financing committed (USD)	Uncommitted GEF funds
1) 5-10 pilot systems and 5-10 liaison projects	65,250	55,000	• Selection of Pilot Systems (2 Steering Committee meetings) • Selection of 5 liaison OP 13 projects, and other sister projects	68,641.12	72,608.88	0
2) Participatory approaches and methodologies for conservation of GIAHS developed and assessed.	65,250	55,000	• Development of a methodological framework and step by step approach for the participatory development and implementation of Activity Plans • Background papers on various methodological aspects of GIAHS • Development of code of conduct for working with local and indigenous communities and populations • Technical workshops and seminars are conducted at the selected pilot systems/countries	70,944.17	109,305.83	0
3) Multi-stakeholder mechanisms in country established and Activity Plans in 5-10 selected Pilot Systems developed	479,300	440,200	• Establishment of participatory multi-stakeholder mechanisms and prior informed consent of farming communities • Capacity building of vulnerable stakeholders (training) • PRA of GIAHS (functioning, characteristics, threats, opportunities) • Assessment and fine tuning of participatory methods and tools for assessment and monitoring, and adaptive management of GIAHS pilot systems • Assessment of policy, regulatory and incentive environments affecting GIAHS at global, national and local policy • Collect baseline information to prepare detailed M&E	487,934.79	481,565.21	0

			indicators and system for the full project. • Development of Activity Plans for each pilot systems • Conducted workshops (list is attached)			
4) Global and national institutional, financial and policy support for the Full Project leveraged	8,200	209,800	• Awareness raising and networking (among int. policy makers/Gov.) • Information dissemination (among int. policy makers/Gov.) • Assessment of impact of int. policy and incentive structures (threats and good policies) • Exploration and possible establishment of a new (sub) category of World Heritage for Agricultural Heritage	8,024.58	209,975.42	0
5) Communication strategy and plan developed	10,000		• Updated project website (http://www.fao.org/sd/giahs/) • Holding of International Forum on GIAHS (October 24-26, 2007) • Presented GIAHS on Terra Madre –Slow Food Movement October Conference at Torino, Italy (2006) • GIAHS in Latin America participated in FAO Telefood (2005-2006) • GIAHS National Event and presentation for the "Chinese National Cultural Heritage Day" (June 9, 2007) • GIAHS Symposium at EcoSummit Beijing 2007	9,065.72	149,934.28	0
6) Full Project Executive Summary and Document prepared	72,000	149,000	• For CEO Endorsement and indicative date of FSP implementation is May 2008	55,389.62	16,610.38	0

Annex 1. Brief information and agricultural biodiversity characteristics of the five systems selected for the full scale project implementation

1. Andean Agriculture (Peru)

The Central Andes are a primary centre of origin of potatoes. Up to 177 varieties have been domesticated by generations of Aymara and Quechua in the valleys of Cusco and Puno, not far from the famous Machu Picchu. A long list of cultural and agriculture treasures from the Inca civilization has been carefully preserved and improved over centuries to guarantee living conditions over 4000 metres above sea level.



One of the most amazing features of this heritage is the terracing system used to control land degradation. Terraces allow cultivation in steep slopes and different altitudes. From a range of 2800 to 4500 metres, three main agricultural systems can be found: maize is cultivated in the lower areas (2500-3500 m above msl), potato mainly at medium altitudes (3500-3900 m above msl). Above 4,000 metres the areas are mostly used as rangeland, but can still be cultivated with high altitude crops as well. In the high plateau, around Lake Titicaca, farmers dig trenches (called "sukakollos") around their fields. These trenches are filled with water, which is warmed by sunlight. When temperatures drop at night, the water gives off warm steam that serves as frost protection for several varieties of potato and other native crops, such as quinoa.

However, a number of socioeconomic and environmental factors, including water contamination, insecure land tenure and fragmentation of the collective property systems, male out-migration in search of earning opportunities and problems with storage and distribution of seeds of native varieties are posing a serious threat to this unique, culturally and biologically rich environment.

The GIAHS project, in coordination with local institutions and the participation of local communities, will help value these ingenious agricultural technologies to guarantee their preservation, while providing sustainable development conditions for present and future generations of Andean peoples.

2. Chiloé Agriculture (Chile)

The Archipelago of Chiloé, in the south of Chile, is one of the centres of origin of potatoes and is an extraordinary biodiversity reserve: its temperate rainforests hold a wide range of endangered plant and animal species. The Chilotes -Huilliche indigenous populations and Mestize- still cultivate about 200 varieties of native potatoes, following ancestral practices transmitted orally by generations of farmers, mostly women. However, new income generating activities, such as intensive fish farming in the island lakes and inner sea, are leading to a dramatic out-fluxing of male and female labour from the agricultural sector and, consequently, to the abandonment of traditional agricultural practices.

These changes seriously jeopardize biodiversity conservation activities that are beneficial not only to Chilotes, but also to global genetic biodiversity. The GIAHS project will help to design politics for recognition and conservation of these resources in which rural and indigenous communities play an active role and are recognized as the main custodians of this treasure of humanity.

3. Ifugao Rice Terraces (Philippines)

The ancient Ifugao Rice Terraces (IRT) is the country's only remaining highland mountain ecosystem featuring ingenuity of the Ifugaos and a remarkable agricultural farming system which has retained the viability as well as the efficacy of the 2000 year-old organic paddy farming. The continued existence and viability of the rice terraces is a manifestation of strong culture-nature connections, marvellous engineering systems, innovativeness and determined spirit of the Ifugaos to maximise use of the mountainous lands for food production.

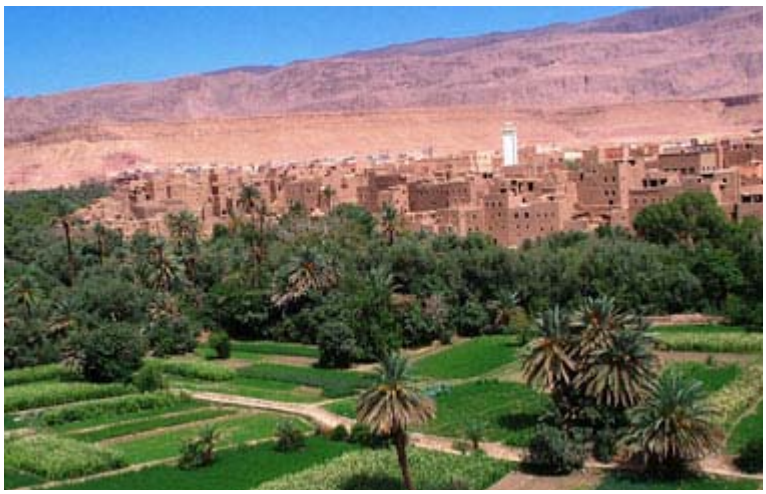
The rice terraces are supported by indigenous knowledge management of muyong, a private forest that cap each terrace cluster. The muyong is managed through a collective effort and under the traditional tribal practices. The communally managed forestry area on top of the terraces mostly contains about or more than 264 indigenous plant species, mostly endemic to

the region. The terraces form unique clusters of micro-watersheds and are part of the whole mountain ecology. They serve as a rainwater and filtration system and are saturated with irrigation water all year round. A biorhythm technology, in which cultural activities are harmonized with the rhythm of climate and hydrology management, has enabled farmers to grow rice at over 1000 metres.

Aside from food production, the IRT paddy farming allows protection and conservation of significant and important agricultural biodiversity and associated landscapes including promotion of tourism through its aesthetic value. In 1995, five terrace clusters in the Ifugao province were declared UNESCO World Heritage Sites because their spectacular landscapes expresses conquered and conserved harmony between humankind and the environment. The Ifugao Rice Terraces have also dubbed as a "Living Cultural Heritage Site".

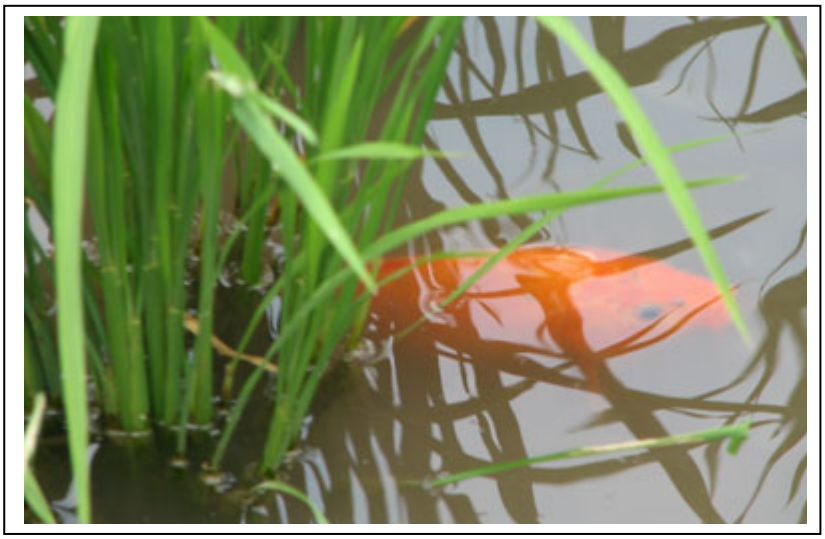
4. Oases of the Maghreb (Algeria, Tunisia)

The oases of the Maghreb region are green islands flourishing in a constraining and harsh environment. They are home to a diversified and highly intensive and productive system, which has been developed over millennia. Sophisticated irrigation architectures, supported through traditional local resource-management institutions which ensure a fair water distribution, constitute a crucial element of the oasis systems.



Dominated by the date palm, intertwined with trees and crops, these ancient systems produce a surprising variety of fruits and vegetables, cereals and forages, medicinal and aromatic plants. The palm groves offer shade and lower the ambient temperature, making it the best place to live in the Sahara and an important place of recreation. The systems of production and irrigation and the culture of the oases vary between the different locations in correspondence to their environment. There are oases in continental, mountainous, as well as in littoral areas. With their rich diversity these oases systems constitute an agricultural and cultural heritage.

5. Rice-Fish Agriculture (China)



In Asia fish farming in wet rice fields has a long history. A Chinese clay plate dating to the Han Dynasty 2000 years ago shows a fish swimming from its pond into a rice field.

Ecological symbiosis exists in the traditional rice-fish agricultural system: fish provides fertilizer to rice, regulates micro-climatic conditions, softens the soil, disturbs the water, and eats larvae and weeds in the flooded fields; rice provides shade and food for fish. Furthermore, multiple products and ecological services from the co-ecosystems are beneficial to local farmers and the environment. The high quality food of fish and rice are helpful to maintain farmers' nutrient and living standard: the reduced cost and labour increases the productive efficiency, and, especially by reducing the use of chemical fertilizers, pesticides and herbicides for insect and weed control, helps in agro-biological conservation and field environmental protection. The rice-fish system in Longxian village of Zhejiang province demonstrates an ingenious approach to generating ecological, economic and social benefits through encouraging essential ecological functions.

Agricultural biodiversity features of the systems/sites selected for the full scale project implementation

Pilot GIAHS	Globally Significant Agricultural biodiversity to be conserved and sustainably used
Chile Chiloé Agriculture Chiloe Island	Agricultural biodiversity: Chiloe Island is one of the Vavilov centers of origin of crop diversity. It is a centre of origin of potatoes (*Solanum tuberosum*), and a centre of mango (*Bromus mango*) and strawberry (*Fragaria chiloensis*). Some 200 documented varieties of native potatoes are still managed today, together with a variety of garlic (Ajo chilote) that is unique to the islands and its volcanic soils. The island supports an indigenous horse race, the hardy Caballo Chilote. Associated biodiversity: WWF has listed Chiloe Island as one of the 25 priority areas for ecosystem conservation in the world. Both primary and secondary temperate rainforest are found on Chiloe Island in the patchwork landscape shaped as a result of 10,000 years of co-evolution with human livelihoods. They hold a wide range of species including 15 rare to endangered bird species, 33 endemic species of amphibians (3 rare to endangered), 9 species of endemic mammals (all rare to endangered), and 4 species of vulnerable to endangered freshwater fish; Wild species provide fruit (8 species), dyes (9 species), ethno-medicines (41 species) and used for sculpture (5 species). Ecosystem functions: Field hedges and the adjacent forests support pollinators and pest predators. Seaweed and washed-up cuttlefish are used for soil improvement.
China Rice-fish system, Lonxiang village, Zhejiang Province	Agricultural biodiversity: Rice paddies (20 native rice varieties; many threatened), homegardens, and livestock / poultry; Trees and field hedges; Numerous native vegetables and fruits including lotus roots, beans, taro, eggplant, Chinese plum (*Prunus simoni*), mulberry; 6 native breeds of carp. Associated biodiversity: 5 species of fish, and amphibians and snails in paddies; 7 species of wild vegetables collected in borders of fields; 62 forest species are used (21 as food); 53 medicinal plants. Ecosystem functions: Integrated use of forest (70% of water catchments) and managed rice-fish interactions for nutrient recycling, pest control and high quality protein production from organic

	waste material; Use of 4 species of *Azolla* for nitrogen fixation and protein rich fish food; Use of trees in field and hedges for pest control (ethno-pesticides or habitats for beneficial insects)
(**Algeria**: BéniIsguen, **Tunisia**: Gafsa) Oases of the Maghreb	Agricultural biodiversity: 50 date varieties in Gafsa, Tunisia; 100 in Beni, Algeria, several local varieties of vegetables, beans, medicinal plants, fruit trees and shrubs, local breeds of goat, sheep, etc. Associated biodiversity: Migratory birds, Gazelle (*Gazella cuvieri),* Fennec (*Vulpes zerda).* Ecosystem functions: The three tier system (palms; shrubs and fruit trees; ground crops) creates conditions suited for water conservation and micro-climate regulation; ingenious under ground irrigation systems called Fogara with traditional water rights and management system and unique blind fish in Fogaras, Management of inter- and intra-species interactions for pest and disease control and efficiency of water and nutrient uses; Efficient water-use and reduced land degradation
Peru Andean Agriculture	Agricultural Biodiversity: Primary centre of origin of potatoes, quinoa, kañiwa, chilis, the chinchona tree, the coca shrub, oca, olluco), mashwa), amaranth, leguminous plants such as beans and lupins, and roots such as arracacha, yacón, mace and chagos; Extraordinarily polymorphic groups of the soft corn have been differentiated; Domestication of llamas, alpacas and guinea pigs. Baseline Caritamaya: Potatoes (28 varieties). Bitter potatoes (13 var.) Quinoa (43 var.), Kañiwa (8 var.), Oca, Olluco, Llamas, Alpacas (all 24 colors, 3 mayor breeds). Baseline Microcuenca de San José: Potatoes (80 var.), Mashua (14 var.), Olluco (18 var.), Kañiwa (12 var.) Oca (20 var.) Llamas, Alpacas . Baseline Cuenca de Lares: Potatoes (177 var.), Oca (20 var.), Olluco (11 var.), Mashua (17 var.), Maiz (23), Quinoa, Kañiwa, Lupins, Llamas, Alpcas, wild relatives Baseline Micro de Carmen: potatoes (105 var.), Oca (25 var.) Olluco (14 var.), Mashua (20 var.), Maiz (34), Quinoa, Kañiwa, Lupins, Llamas, Alpcas, wild relatives Associated biodiversity: Vicuña; Endemic grassland and wetland birds (including many North American migrants); Wild medicinal and food plants; Wild crop relatives Ecosystem functions: Climate regulation through water management (waru waru, qochas); Hedges for pest and disease control; Land degradation control through terracing; Efficient water-use through Inca and pre-Inca irrigation systems
Philippines Ifugao Rice Terraces	Agricultural biodiversity: Traditional rice varieties of high quality for rice wine production (4 endemic); Associated mudfish, snails, shrimps, and frogs in paddies, some of which are endemic; Managed forest re-growth (muyong) after shifting cultivation, with enhanced biodiversity (264 species, most indigenous, 47 endemic), including 171 tree species (112 species are used), 10 varieties of climbing rattan, 45 medicinal plant species, 20 plant species which are used as ethno-pesticides Associated biodiversity: 41 bird species, 6 indigenous mammal species and 2 endemic reptiles Ecosystem functions: The muyong have important functions for water regulation in the hydrological cycle (catching 320 cubic meters of water while primary forest catches 74.5 cubic meters), and provide habitat for pollinators and pest predators. The terraces provide reservoirs for excess water reduce land degradation and erosion and catch nutrients and filter water for human consumption.

Annex 2. List of Other GIAHS Systems identified and pre-evaluated systems

Africa

Traditional Maasai Pastoral Rangeland Management (Kenya and Northern Tanzania)

The highlands of East Africa are rich in scenic beauty and wildlife diversity, which is of immense recreational value. In this semi-arid region, which is affected by climatic uncertainties, the traditional Maasai pastoralism has proved to be a sustainable productive system. The Maasai possess an intimate understanding of the ecological processes of their environment. By applying traditional knowledge and informal rules and regulations they pursue a flexible risk-minimizing strategy based on herd diversity (sheep, goats, camels, cattle) and strategic mobility. They thereby avoid environmental stress and ensure an efficient use of natural resources, including products from the savannah and forests of the region.

Tapade Cultivation System, Fouta Djallon Highland (Guinea)

The mountainous region of Fouta Djallon in Guinea is the water tower of West Africa. Farmers and pastoralists have occupied this area of poor soils for at least a thousand years. As they became sedentary the famous herder Fulani practiced agriculture by creating all around their houses an innovation of homegardens, the so-called "Tapade", in which they cultivate an association of staple crops, fruit trees and numerous useful plants. The tapade system is a model of how skilful management can transform a poor soil into a fertile field, where intensive cultivation is possible. To allow coexistence of crops and animals the tapades are always fenced. However, the old practice of using dead wood for fences has become unsustainable as it takes too much wood from the shrinking forest. It is, therefore, essential to adopt alternative fencing practices, such as live agroforestry fences, which, additionally to saving more forest for wildlife and water conservation, also further enhance the productivity of the tapade system.

West African Sahelian Floodplain Recession Agriculture (Mali)

The floodplain of the Senegal River in the Sahelian region of West Africa supports a very productive wetland. Indigenous people have developed a system of sequential uses of the floodplain by different ethnic communities (Toucouleurs, Wolofs, Peuls) in relation to inundation and recession of flood waters, promoting forestry, crop cultivation, fisheries and livestock husbandry in synchrony with annual inundation patterns. The floodplain is an important habitat for granivorous and migratory birds. The flood cycle, moreover, enhances soil fertilisation, aeration, detoxification and aquifer recharge. Flood recession agriculture is widespread in Africa and especially important in dry zones.

Limpopo Sorghum -Pearl Millet Cultivation Systems (South Africa)

In the Limpopo Province of South Africa the Pedi and North Sotho people have developed an incredible diversity of local landraces of sorghum and pearl millet. Coupled with the environmental heterogeneity of the region (diverse climate, soils and vegetation), the cultural diversity of these communities results in an extremely complex situation where major differences occur in production practices and landrace morphology from farmer to farmer, even over very short distances in adjacent fields. Selection of farmer-saved seeds has generated landraces adapted to the local climatic and edaphic conditions, low fertility and

low-input husbandry, but nevertheless fulfilling the taste and cooking preferences of the individual farmers. The old knowledge and skills are rapidly being lost; with this erosion the nation will lose a very unique and proud part of its heritage.

America

Little Colorado River Watershed (Arizona –USA)

On the Colorado Plateau farming has been an unbroken cultural tradition for at least 4200 years. The Navajo, Zuni, Apache, Hopi, Paiute and Tewa have cultivated the most diverse annual crop assemblage in the New World north of the Tropic of Cancer. The landscapes of this ecologically diverse but arid region have been shaped by a variety of traditional land and water use practices. Farmers have managed the same fields and terrace gardens for centuries, in a way well adapted to the arid climate and the altitudes from 3350 to 4000 meters. Their traditional ecological knowledge has been transmitted orally in at least six indigenous and three European languages. In addition to tending pre-Columbian crops, residents adopted and further adapted some sheep herding, ranching and orchard keeping traditions of Hispanic, Basque and Anglo immigrants. More recently, these rural communities have developed a multicultural food system with extensive cross cultural exchange and mutual support.

Milpa-Solar Systems (Mexico)

Mexicans identify themselves as the “people of maize”. The cultural area of Mesoamerica is a primary heart of crop domestication and agricultural evolution in the world. The traditional “milpa” field is intercropped with three principal species, maize, beans and squash. Farmers also tolerate and harvest useful weeds. Their homegardens, “solares”, are places of enjoyment and experimentation, and an important source of goods. Through hundreds of generations Mesoamerican farmers have selected and exchanged seeds, and improved or created new landraces. The milpa-solar system ensures a high production of rich, balanced and diverse food crops from small areas. Its protection, and also reintroduction, is of great importance, in particular as it is the world's reservoir of maize genes.

Chinampa Agricultural System (Mexico)

The Chinampas are polyculture systems on raised beds in the swamplands of the spring-fed southern lakes in the central valley of Mexico. The canals around the Chinampa beds are used for aquaculture and to keep out pests and livestock. Moreover, the surrounding water raises the temperature sufficiently to mitigate frosts. The polycultures on the beds include corn, beans, squash, chili and a wide variety of other crops and fruits, as well as edible herbs. Early evidence of Chinampas can be found in the ancient city of Teotihuacán. The greatest Aztec innovations were seed germination beds and seedling nurseries (“almacigas”) at the margins. By use of a rich diversity of niches, the Chinampa agricultural system provides high yields of terrestrial and aquatic produce and can, therefore, support high population densities. It is an excellent example of sustainable farming that ensures food security and livelihoods and helps alleviating poverty, especially with emerging climate-related threats.

Terra Preta –Amazonian Dark Earths (Brazil)

Amazonian Dark Earths (ADE) are dark coloured, highly fertile soils –they are a unique product of ingenious soil management by ancient indigenous people. Most of the ADE-soils were created 500 -2500 years ago. The Terra Preta Soil Management as practiced in the Amazon Basin builds on a diverse and complex integration of organic soil amendments to maximize revenues and food quality, whilst minimizing resource degradation. The key elements of the system are addition of pyrogenic carbon, organic phosphorus and calcium that

lead to the formation of Amazonian Dark Earths (ADE). Crop yields on ADE are several times higher than on adjacent soils and remain high for many years in a region that normally does not support more than one cropping cycle without massive fertilizer inputs. This resilience creates a remarkable livelihood security.
The knowledge systems and culture linked to the Terra Preta management are unique but have unfortunately been lost. ADE are, however, still an important, yet threatened, resource, as well as an agricultural heritage that needs better scientific understanding.

Agrarian System of the Wayana (French Guyana)
Cultivated area and forest surrounding as a single agro-ecosystem
The way of life and the production system of Amerindians represent the accumulated experiences of humankind closely interacting with their environment over centuries. The farming system of Wayana society is based on shifting cultivation, with a characteristically high agrobiodiversity. Agriculture forms part of a complex system of activities taking place within the habitat where Wayana obtain a significant portion of their subsistence requirements through gathering, fishing and hunting. In fact, there is not a clear limit between cultivated and wild area, which can be considered as a single agro-ecosystem.

Asia

Qanat Irrigation Systems and Homegardens (Iran)
The ancient Qanat system, which originated in Iran around 800 BC, is a unique methodology to irrigate arid and semi-arid regions. Qanats have contributed to forming civilizations under these harsh conditions. Underground tunnels following an aquifer collect water from different layers of earth by relying only on gravity alone. The Qanats minimize evaporation loss and ensure an efficient use of the available water resources. Qanats are owned communally; the Qanat water, which is of high quality, is distributed on a rotational basis. Construction and maintenance of Qanats requires skilful workers and cooperation among the community members. Farmers select diverse crops that complement each other in terms of water requirement. In order to preserve these benefits it is necessary to maintain the ancient Qanat irrigation systems including their agro-biodiversity on a sustainable basis.

Qashqai Nomadic Pastoralism (Iran)
Pastoral communities have always played an important role in Iran. The Qashqai of Iran use a system of opportunistic management that has evolved over centuries of dependence on a varied and unpredictable environment. This system has resulted in greater livelihood security and resilience to severe disturbance than would be possible under conventional sedentary range management practices. Outstanding characteristics of the Qashqai management system are transhumant patterns of mobility, scouting of pastures ahead of seasonal migration, flexible stocking levels based on rainfall and expected vegetation production, collecting and using livestock in spreading seeds of desirable native plant species, marketing of multiple products from livestock including highly prized handicrafts, and a philosophy that places a high value on biodiversity protection. Despite several threats to their way of life, like government policies promoting sedentarisation, the Qashqai have shown to be highly resilient.

Marsh Arabs and Marshland Agriculture (Iraq)
The Mesopotamian Marshlands at the confluence of the Tigris and Euphrates rivers, once covering 20,000 km^2, constitute a unique freshwater ecosystem and have been home to indigenous tribes of Marsh Arabs, or Madans, who had practiced their traditional agriculture

for over 5,000 years, since the Sumerian civilization. The wetland ecosystem consists of permanent, seasonal and temporary marshes and contains many endemic and threatened species. It is an important breeding ground for fish and plays a key role in the intercontinental flyway of migratory birds. The Marsh Arab communities gather reed, cultivate cereals and date palm, graze large livestock, fish and hunt. Due to their uniqueness in the desert environment, the ancient cultural heritage, biodiversity and wildlife, the wetlands –regarded as the site of the legendary Garden of Eden– are of global value and deserve to be protected and restored.

Traditional Ladakh Agriculture (Northern India)

The Ladakh region on the Tibetan plateau is a high altitude cold desert in the rain shadow of the Himalayas. It is inhabited mainly by Tibeto-Mongolian Buddhists who on a sedentary basis or with spring migration herd several animals. The yak, a native of the region, is adapted to graze on the scanty local feed of the high altitudes and tolerates temperatures of -40ºC to +30ºC. Under the harsh conditions agriculture is difficult. Nevertheless, by diverting glacial-fed rivers into stone-built terraces, where soil is formed, people have been able to cultivate plants. Sedimentation on the new soil is enhanced by planting Himalayan rose and willow. Later manure facilitates the planting of staples. The traditional Ladakh agriculture is unique and representative of the Tibetan plateau. Its conservation of old land races of cultivated plants, especially of alfalfa, is of global importance.

Raika Pastoralists of the Thur Desert (Rajasthan – India)

The Raikas are a pastoral caste herding camels, goats and sheep. They live in groups of 4 -20 families on the outskirts of villages and combine crop production during the summer rains with pastoralism during the autumn-spring dry season. Raikas are mostly non migratory and live with small herds of about 100 animals with a rich variety of breeds. Camel herding has been their traditional heritage, they are, moreover, known for 11 “Bikaneri” sheep breeds. Traditionally Raikas have been guardians of agro-biodiversity; they have developed a variety of indigenous breeds for harsh climatic conditions and maintained them within restricted social groups. Their traditional memorization of pedigree lineages of animals over 7-8 generations is invaluable.

Catamaran Fishing (Tamil Nadu – India)

The ancient tradition of fishing by catamaran is a sustainable way of harvesting marine life without damaging the sensitive coastal environment of coral mangrove, wetland and sea-grass bed habitats in the Bay of Bengal. It has been practiced by the coastal fishing communities in Sirkali Taluk, Tamil Nadu state, India, for 2000 years, yet is now seriously threatened by pollution and over-fishing by commercial mechanized boats. Preserving and promoting this sustainable traditional fishing practice is crucial for the protection of the biological very productive and environmentally unique coast of the Bay of Bengal, whose bordering countries, together, are home to one quarter of the world's population.

Korangadu Silvo-Pastoral Management System (Tamil Nadu – India)

Korangadu is a traditional grazing land in the semiarid tract in the districts of Erode, Karur and Dindigul in Tamil Nadu state, South India. Annual rainfall in the area is about 650 mm. The grassland provides livelihood for local communities who are depending upon livestock keeping. Korangadu grasslands are managed on sound management practices tested over hundreds of years. The paddocks are a typical combination of grasses, legumes and trees, fenced with live thorny shrubs. Korangadu is known as the breeding tract of “Kangeyam” cattle, which supply good quality plough and draught bullocks, local buffaloes and native

breeds of sheep ("Mayilambadi" breed) and goats. However, the maintenance of these unique breeds and the sustainable traditional grassland management practices are now threatened by several factors, above all a lack of awareness of the benefits from this system for the region.

Traditional Agriculture in the Koraput Region (Orissa – India)
The Koraput region in the state of Orissa, India, has a rich assembly of unique floral and faunal diversity. The genetic repository of the region is of great significance in the global context. About 79 plant angiosperm species and one gymnosperm are endemic to the region.
In addition, people, who belong to different tribal groups, have conserved and preserved a large number of land races of rice, millets, pulses and medicinal plants, using diverse traditional cultivation practices, which have been developed as an answer to the topographical and ecological diversity of the region. Koraput has been identified as an important centre of origin of rice. The changes in the traditional practices coupled with both, natural and anthropogenic pressures require immediate attention for conservation of these unique species and genotypes for perpetuity.

Soppina Bettas Systems (Western Ghats – India)
In the rain fed paddy fields of the Western Ghats in the areas of Karnataka people grow about 16 local varieties of rice along with popular varieties of other plants. Compost made from foliage and leaf litter collected from foliage hillocks (*Soppina Bettas*) has been the major fertilizer for paddy. The common pool resource of the Soppina Bettas provides manure, botanical pesticides, fuel wood, fodder, medicine and timber to the communities. Traditional farmers of the Malnad area still largely depend on botanicals collected from the homegardens and *Soppina Bettas* with their considerable floral diversity. A recent study has revealed at least six plant species being used in the area as herbal sources of pesticides. The area is also characterised by areca gardens intercropped with coffee, banana, citrus fruit, vanilla, pepper, etc. The existence of this unique self-sustaining system is threatened due to over exploitation, conversion of land and lack of awareness.

Wewe Irrigation System (Sri Lanka)

The ancient irrigation systems of Sri Lanka have been perfected through consistent improvements and construction over 1600 years. Small village cascades are linked up with massive reservoirs in intricate hydraulic systems. Villagers managed the small village tanks (*weva*), while the large reservoirs were managed and operated by designated families. Collective decisions were taken in a way to accommodate to the high climate variability characteristic of the tropics. The tank irrigation system blends seamlessly to the natural environment, which has been maintained carefully through the preservation of a diverse array of plants and trees that occupy the surrounding land.
During the 20th century, however, poor knowledge of the function of the ancient tank system has lead to its ignorance and destruction by modern large scale irrigation projects, which yet failed to secure reliable water supplies. The restoration and use of the ancient tanks is, therefore, of great importance. What is more, a proper maintenance of old tanks will also help to reduce the malaria epidemic in the region, since abandoned tanks are breeding media for malaria vectors.

Alder based Rotation and Intercropping (Yunnan – China)
The multiple functions of alder in the social-economy and ecology widely recognised by local people make the alder based rotation and inter-cropping system popular in the Himalaya region from North Pakistan to South-west China and Burma. Alder (*Alnus nepalensis*) is a

native tree species wildly grown in the Himalaya and Hengduan region. Alder trees grow rapidly and are symbiotically nitrogen-fixing, they produce huge quantities of high quality leaf litter which promotes soil enrichment. The patterns of this alder based system are diverse and flexible in different ethnic areas. Crop choice differs at household level. Traditionally, local people apply the leaves of alder as an organic substitute of livestock manure. The fertility of 1,000kg dry leaves of alder is equal to 14.3kg of nitrogen, 2.4kg of phosphorus and of 2.2kg potassium without any pollution of the soil and natural environment compared to the application of chemical fertilizers. This is a most important ecological benefit from alder based agricultural systems. In recent years people have developed several alternatives to the traditional alder system, these are, however, often not sustainable. It is, therefore, important to preserve the traditional system and its associated indigenous knowledge for the future.

Udege Forest Management (Kamtchatka – Russia)
Once the Ussuriland (Primorsky Krai: "Maritime Province") forests were covered with old growth pine forests. The pine tree –called "kedr" in Russian– is both ecologically and culturally vital to the Russian Far East. The pine cones provide food for many animals that inhabit the Ussuri taiga, including wild boar, elk, roe deer, musk deer, and even Himalayan black bear. These animals in turn form the prey base of the Siberian tiger. However, logging over the last 40 years has severely impacted much of the Ussuriland forests.
The Bikin watershed represents a series of well preserved, native forest ecosystem types, and is the habitat of more than 60 endemic, rare and endangered plant and animal species. It is home to the Bikin Udege people. This indigenous group continues its traditional way of life in a contemporary context, relying upon the region's natural resources for their survival.

Europe

Lemon Gardens (Southern Italy)
The "lemon gardens ("giardini di limoni"), in the Italian southern peninsula sorrentina-amalfitana, are an outstanding example of how an agricultural landscape is characterising a complete geographical area. Lemon pergolas, chestnut windbreaks, "pagliarelle" (terraces incorporated in containment walls) and narrow footpaths have been built, and preserved, over centuries to guarantee the conservation of local lemon varieties (*Citrus limonum* ssp.).

Lemon varieties were exchanged for gold on Mediterranean ships in the sixteenth century, when their healing properties against scurvy were discovered. Being so profitable on the market the inhabitants of the peninsula invented ways to cultivate them in spite of the difficult terrain and environmental constraints. Adapted ecotypes of lemon have been cultivated mostly on small farms. By occupying even the steepest slopes, their presence has protected the territory and contributed to preserve the soil from hydro-geological instability. In addition, it has created a beautiful coastal landscape admired by voyagers of any time.

The dehesa system of southern Spain and Portugal

A very peculiar agroforestry system, named dehesa in Spain and montado in Portugal, dominates the landscape of southwestern Iberian Peninsula (Joffre et al. 1988b; San Miguel 1994; Gomez Guttierez and Perez Fernandez 1996). Characterized by the presence of a savannah-like open tree layer, mainly dominated by Mediterranean evergreen oaks – holm oak (*Quercus ilex*) and cork oak (*Q. suber*) – and to a lesser extent by the deciduous *Q.pyrenaica* and *Q. faginea*, they occupy more than 5,800,000 ha in the western and south-western provinces of Spain, representing 52% of total utilized agrarian area within these province (Campos Palacin 1992) and more than 500,00 ha in southern Portugal.

The agroforests of the vinho verde region of Portugal

The agricultural landscape of Northwestern Portugal is characterized by a pattern of small, fragmented farms that produce mainly for family consumption, interspersed with somewhat larger and more mechanized farms that specialize in commercial crops. Since the ninth century, Portuguese peasants have developed complex farming systems, the sustainability of which has stood the test of time. These traditional agroecosystems, which consist of crop polycultures surrounded by vines (*Vitis vinifera*) upon tree-hosts, reflect the priorities of peasant farmers, meeting the needs of a simple, largely self-sufficient peasant society. These vineyard-based agroforestry systems are found mainly in the designated regions of 'Vinho verde' including Minho and a portion of northern Beira Litoral (Stanislawski 1970).

Traditional Agro-Ecosystems in the Carpathians (Slovakia)

The Carpathian region is a refuge for the original agro-ecosystems, traditional knowledge and customs of the people of Central and Eastern Europe. Over centuries, the interaction of nature and humanity in the Carpathian region have resulted in a landscape both rich in domesticated and wild species and habitats. The traditional agro-ecosystems of this region are high in genetic biodiversity and offer an opportunity to revive and use more than ten thousand landraces derived over generations from at least three hundred domesticated and introduced plant species. The mosaic like landscape that evolved as a result of it is very beautiful and rich in different micro-ecological sub-systems on which highly integrated and complementary agricultural activities take place.

Recent developments, like the EU-accession have now created an environment conducive to revitalizing this traditional agro-ecosystem.

Mobile Pastoral Systems (Romania)

Extensive livestock production in Romania, incorporating elements of mobility, has created and maintained semi-natural grassland habitats of exceptional biodiversity. The management practices of transhumance and pendulation are adapted to, and integrated with the environment. Production is linked to seasonal cycles and the availability of forage and fodder resources. At present, few if any agro-chemicals are applied to the land. Landscapes created and maintained by pastoralism are considered to be exceptionally beautiful; they generate income into the region by attracting national and international tourists

These systems have been sustainable for thousands of years and, if properly supported now – in recognition of the multiple benefits that they deliver to society, can continue to provide food and secure livelihoods in the long term.

Traditional Reindeer Herding in the Arctic Region (Siberia –Russia)

Once the Ussuriland (Primorsky Krai: "Maritime Province") forests were covered with old growth pine forests. The pine tree –called "kedr" in Russian– is both ecologically and culturally vital to the Russian Far East. The pine cones provide food for many animals that inhabit the Ussuri taiga, including wild boar, elk, roe deer, musk deer, and even Himalayan black bear. These animals in turn form the prey base of the Siberian tiger. However, logging over the last 40 years has severely impacted much of the Ussuriland forests.
The Bikin watershed represents a series of well preserved, native forest ecosystem types, and is the habitat of more than 60 endemic, rare and endangered plant and animal species. It is

home to the Bikin Udege people. This indigenous group continues its traditional way of life in a contemporary context, relying upon the region's natural resources for their survival.

Other systems and sites

Mananara Rice Terraces and Agroforestry (Madagascar)

Due to its long isolation the African island of Madagascar has an extremely rich biodiversity with more than 85 percent of the species being endemic. One famous example is the lemur Aye-aye (*Daubentonia madagascariensis*) living in the forests on the east coast of Madagascar, which in part belong to the Mananara-Nord Biosphere Reserve. The people living in this area still grow vanilla –one of the world's most precious spices– in the tropical rainforest using traditional cultivation methods. In more populated areas people mainly cultivate rice, which is the major staple crop of the country. The area is a good example of how population size influences landscape construction. In order to preserve the unique biodiversity of Madagascar addressing the needs of local people is extremely important to promote an economically and ecologically sustainable development.

Pacific Islands Taro Based Homegardens (Vanuatu)

Taro based homegardens are widespread throughout the Pacific. Vanuatu, a relatively large Melanesian island country, has a hot and wet tropical climate and is dominated by low forest and thicket bush vegetation. Its vibrant cultural traditions and its agricultural system ensure subsistence production and high food security, which provides the small economy with resilience in times of external economic shocks and natural disasters, such as cyclones. In their traditional, mostly small gardens people cultivate multiple crops and fruits: rich varieties of taro and yam, sweet potato, manioc or cassava, breadfruit, rice, sugarcane, island cabbage, naviso, pineapple, pawpaw, banana watermelon, tomato and kava. Root and tree crops, spices and indigenous nuts (nangai or navele) generate household income. Maintaining the traditional agro-biodiversity of the homegardens, which also moderate the island's climate, is essential for disaster mitigation and self-sufficiency.

Annex 3. Summary of the Proposed Components/Expected Outcomes/Outputs of the Full Scale Project

1. An internationally accepted system for recognition of GIAHS is in place

Through this outcome the project will aim to raise awareness at the international and national levels of the intrinsic value of GIAHS and the need to promote their long-term sustainability. The underlying strategy for identifying and managing GIAHS will be to avoid or reverse the loss or degradation of essential features and attributes of these systems especially their biodiversity while allowing their necessary evolution and enhancing the socio-economic development of resource users and national benefits. This will require careful consideration of the critical issue of how to meet often-conflicting goals of conservation and development, for instance avoiding creating "ethno-museums" where preserving the key characteristics of the systems might extinguish their human vitality. This is a challenge that requires innovative and adaptive approaches, which the project will devise, develop and demonstrate in these pilot sites.

During the project development phase (PDF-B), extensive analysis was undertaken of existing multilateral instruments (including CBD, WHC, UNESCO MAB) to see how the concept of GIAHS is addressed. The study found that there is support within various conservation instruments. However, the emphasis of GIAHS is on agricultural biodiversity and heritage which in turn are intrinsically linked to the traditional management systems. While in some cases biodiversity preservation initiatives would work in tandem with the GIAHS objectives, in other cases there could be conflicts especially in areas where the conventional conservation perspective has been to exclude human activities from core protected areas. Therefore, in order to accord international importance to GIAHS there is a need for developing a supportive policy declaration exclusively dedicated to the concept, by building on the positive reinforcement of the concept in existing international instruments.

2. The conservation and adaptive management of globally significant agricultural biodiversity harboured in GIAHS is mainstreamed in sectoral and inter-sectoral plans and policies in the three pilot countries.

The focus of this outcome will be on ensuring that key sectoral and inter-sectoral policies and plans (such as policies on protected areas, cultural heritage, in situ conservation of genetic resources for food and agriculture, agricultural extension, public participation, indigenous peoples, land-tenure and access to natural resources) take explicit account of the significance of GIAHS.

Drawing on PDF-B assessments, identification and implementation of specific measures through which sectoral and inter-sectoral policies and regulations can be improved to support conservation and adaptive management of GIAHS, for instance through official recognition of GIAHS in national policy documents. Concrete activities will include workshops to develop GIAHS designation in national protected area and cultural heritage systems (all countries); development of guidelines to ensure sound environmental management, community participation (PIC) in designated areas; mainstream GIAHS considerations in NBSAPs and

GRFA strategies; field visits of policy makers to GIAHS pilots systems to discuss policy bottlenecks and opportunities with farming communities (all countries); development of policy proposals for adjustments of land-tenure and access to natural resource regimes workshops and development of policy proposals to include GIAHS considerations into national legislation on indigenous peoples and minorities proposals for adjusting national, provincial and local policies and programs on sustainable tourism, including guidelines to safeguard community interests and sound management of the agricultural biodiversity and heritage; lobby and awareness raising activities, including through the identification of GIAHS "champions" in national governments and partnerships with civil society partners. The key sectors where GIAHS will work are group into 5:

1. **Environment:** biodiversity conservation, land and water management, protected areas
2. **Agriculture:** genetic resources, rural development, trade and marketing, participation, access to natural resources/ land tenure
3. **Tourism:** development of niche agro-tourism
4. **Culture:** valorisation of indigenous and traditional agricultural patrimony
5. **Education:** inclusion of traditional knowledge and agricultural patrimony in primary education at local level

3. Globally significant agrobiodiversity in pilot GIAHS is being managed and sustainably used by empowering local communities and harnessing evolving economic, social, and policy processes and by adaptation of appropriate new technologies that allow interaction between ecological and cultural processes (Local).

The strategy for this outcome explicitly recognises that change in "traditional" political, social and economic processes is inevitable; they cannot be frozen or re-created. Consequently, it adopts the "adaptive management" approach to explore and develop novel political, social and economic processes that strengthen the existing management systems, and which generate the same biodiversity outcomes – that is, maintain the same races, species and agroecosystems. Thus, the processes may be different and contain new and modern elements, but the way they interact with the biophysical world will maintain the values of these agroecosystems.

The outcome will address the obstacles for long-term sustainable management of GIAHS and will help the people living in and around GIAHS to establish strengthened socio-political (governance) and economic processes (markets and employment opportunities) that help them address the challenges of today's world (with all its modern pressures) and let them to take advantage of the opportunities of modern living, while at the same time maintaining the remarkable values (and co-evolving processes) of their agroecosystems.

Screening, testing and deployment of environmentally friendly technologies and practices that improve the management and productive capacity of agroecosystems and their traditional crops, as well as new co-evolved races shall also be done.

4. Lessons learned and best practices from promoting effective management of pilot GIAHS are widely disseminated to support expansion and upscaling of the GIAHS in other areas/countries and creation of the GIAHS network (Global, National, Local)

In order to facilitate further replication and expansion of the GIAHS concept, this outcome will focus on documenting lessons learned and best practices, and enabling exchange of experience among communities nurturing the “agri-cultural” systems.

Annex 4. Highlights of International Meetings and Workshops Conducted during PDF-B stages

A. International Meetings

- First International Steering Committee Meeting, 5-7 August 2002;
- Second International Steering Committee Meeting, 7-9 June 2004;
- International Forum on GIAHS: experiences on dynamic conservation, 24-26 October 2006.

1. Summary of the Key Elements discussed in the First International Steering Committee Meeting, 5-7 August 2002

- summary of project goals and objectives
- Discussion and agreement on a conceptual framework of GIAHS
- Exploring partnerships and institutional mechanisms for the GIAHS programme
- Identifying criteria for identification and selection of GIAHS
- Discuss aspects of a PDF-B strategy

Highlights of the meeting

The meeting was then informed about a number of land-use systems that appeared to have GIAHS characteristics, and about several approaches followed by other institutions that contained elements or had had experiences relevant to the present project.

Participants used each presentation as a basis for wide-ranging discussions on the concept of GIAHS, on their potential to survive in a rapidly changing global or local context and the threats to them arising from increasing population pressure or from competing, less diverse or less environmentally sound systems with higher immediate returns. The discussions also touched on various possible criteria that might be relevant to the selection of GIAHS from the multitude of land-use systems in existence.

One discussion period focused specifically on the conceptual aspects of GIAHS subsumed under each of the letters of its acronym: globally important; ingenious; etc.

The parallel working group sessions on the second afternoon focused on the systematic identification of criteria for the identification and selection of GIAHS. These are the subject of separate reports.

It is impossible to do justice to the rich and varied substance of the plenary discussions in the few minutes at our disposal, but it may be useful to present a brief abstract, listing some tentative conclusions drawn or interpreted from the discussions.

The concept of GIAHS is distinct from, and more complex than a heritage site or a protected landscape. As an attempt at description, without any pretence at definition:

A GIAHS is a living, evolving system of human communities in an intricate relationship with their territory, cultural or agricultural landscape or biophysical and wider social environment. The humans and their livelihood activities have continually adapted to the potentials of the environment and also shaped the landscape and the biological environment to different degrees. This has led to an accumulation of experience over generations, an increasing range and depth of their knowledge system and a complex and diverse range of livelihood activities, often closely integrated.

GIAHS have an array of value elements or benefits, both local and national or global, that is much wider than immediate economic return. Promoting knowledge and understanding of GIAHS and wide recognition of their benefits, particularly positive externalities, may be enough to help some of them survive. Other GIAHS may need more specific support, for example in branding and development of niche markets for certain produce, or through the creation of institutions that enable payment to communities for environmental services that are by-products of their land-use system.

There are concrete, practical reasons for embarking on a GIAHS programme, and hence on the proposed project: the threat of *decline or disappearance of diversity* in flora, fauna, culture, knowledge systems, institutions, … .
Diversity is a survival factor at all scales, from household to global, in the face of uncertainties, economic or environmental changes, hazards, shocks or disasters. The several kinds of diversity cannot be safeguarded or preserved in isolation, as in an archive, gene bank or museum, but only within living, evolving livelihood systems.

While starting with sound concept formulation, characterisation and selection of GIAHS, the project and programme should be oriented toward action plans and concerted action by networks of local community, NGOs, governments and international partners to enhance the economic basis of GIAHS, their facility to adapt to new and rapid changes, and hence their chances of survival.

These are issues which arose more than once during the plenary discussions, and on which there appeared to be substantial consensus or a convergence of views. But the most important conclusion may be that the wealth of information and insights shared during the presentations and discussions of the first two days of this Workshop will be a major support to the building of the PDF-B and will improve and enrich the envisaged GIAHS project and programme.

2. Second International Steering Committee Meeting, 7-9 June 2004;

Summary of the Meeting

The second International Workshop and Steering Committee Meeting of the GIAHS programme, 7–9 June 2004, was convened to inform members on the progress of the project since the first meeting and several GIAHS-related issues; and to discuss methodologies, communication and dissemination methods and approaches, procedures for the selection of case studies, and strategic and funding issues. The various presentations and the extensive discussions identified and clarified a number of issues that should be considered or dealt with during the current phase of the work and in later phases of the programme, rather than providing simple answers to complex questions.

The meeting was opened with a welcome address highlighting the evolving understanding of agricultural diversity and its values, and a keynote address highlighting the importance of agro-ecological, biological and cultural diversity for current and future food security. The first day was devoted to an update on progress of the GIAHS project; presentations on several approaches to recognition and conservation of cultural and agricultural heritage landscapes; and presentation and discussion of several GIAHS-related issues, including a methodological and participatory framework and approach for implementing the GIAHS programme.

The rich and diverse presentations brought about discussions circling and converging on a number of important issues, including: people being the core and insurance of an agricultural system or a (cultural) landscape; viewpoints of the local people forming the basis of GIAHS descriptions and promotion; and the viability of safeguarding the future of such agricultural systems through a combination of market processes and a public-goods approach.

The second day the meeting dealt with global assessment and identification of agricultural heritage systems, criteria and procedure for selection of pilot systems, and an overview and preliminary review of current GIAHS proposals. In a side session, case proponents presented a series of pilot system proposals. On the third day, the functions and composition of the steering committee and the international technical advisory committee the next project phase was discussed, communication and strategic issues were discussed, and planning discussions covered selection criteria and process, priority activities and next steps.

3. International Forum on GIAHS: experiences on dynamic conservation, 24-26 October 2006.

Executive Summary of the Forum

In 2002, FAO initiated a wide programme for the conservation and adaptive management of Globally Important Agricultural Heritage Systems (GIAHS). During the preparatory phase, several meetings were convened to formulate and give guidance to an umbrella project supported by UNDP/GEF in close collaboration with UNESCO, UNU, IPGRI, ICCROM, interested governments and other partners. As part of this project, pilot systems were identified in Chile, China, Peru, Philippines, Algeria, Morocco and Tunisia and baseline information and case studies were conducted in these pilot areas.

The International Forum on GIAHS was convened to take stock of the findings of the preparatory phase and give direction for the full scale global GIAHS initiative to be implemented over a 5 to 7 -year period. The objectives were to elaborate further the overall conceptual approach and scientific underpinning of the programme; to examine its requirements for an enabling policy and legal environment; to outline its management structures at local, national and global levels and to mobilize further partnerships and resources.

The Forum was attended by 12 delegates from the pilot countries (GEF Operational Focal Points and National Facilitators), 15 representatives of UN system and other partner institutions, 18 experts from universities and research institutes, 8 members of embassies and country representations to FAO and 21 FAO staff members, consultants and volunteers.

Progress in the development of the GIAHS conceptual framework and its scientific underpinning

The Forum further elaborated the concept of the GIAHS recognizing that GIAHS are complex "social-ecological systems" where the traditional values, beliefs and social relations of local communities and their traditional knowledge, technologies and practices are an integral part of the biodiversity and agricultural heritage to be preserved. The close interaction and co-evolution of the biological and cultural components of these systems over centuries gave them a considerable resilience and adaptive capacity to changing circumstances. Their preservation should therefore follow a "dynamic conservation approach of bio-cultural diversity" based on the inherent skills of the local communities in the adaptive management of their environmental and cultural heritage. The complexity of this concept and the difficulty of the task were recognized, however, as these systems are under multiple influences and threats by endogenous and exogenous forces. While the GIAHS contributions to a new sustainable development paradigm are promising, further research and practical experience - as should be provided by the GIAHS pilot projects- are needed to test the guiding principles discussed by the Forum participants. Among these, the following were highlighted:research workers and farmers should study together how certain intuitive/empirical practices of traditional agriculture systems could be explained with the help of modern science, quantum physics[6] in particular, and, there from, a post-modern agriculture may develop using both old and new agricultural knowledge and practices.

The traditional knowledge and innovative technologies of local farmers in the GIAHS should be investigated and agro-ecologists should engage in an active "dialogue of wisdom" with them to understand their rationale and potential for transfer and wider application.

The reduction of poverty is the essential prerequisite to the dynamic conservation of GIAHS. The local and external causes of poverty should be investigated through the empowerment of the GIAHS communities and a multi-stakeholder participatory process. The use of the wider, internationally recognized criteria of the DAC-OECD methodological framework was proposed for this analysis (covering the human, economic, socio-cultural, political and protective/resilience dimensions in combating poverty) rather than the 5 capitals of the DFID Sustainable Livelihoods framework (human, natural, physical, financial and social capitals) which focuses mainly on local conditions.

The agro-biological and cultural diversity of the GIAHS should be preserved also because it permits the diversity of their activities, products, sources of income and other benefits and therefore facilitates the resilience and adaptive capacity of the system. This diversification should be maintained for sustainable poverty alleviation.

Development of the GIAHS mandate and legal framework

Elements of a GIAHS conservation framework can be found in existing international instruments such as the World Heritage Convention, the UNCBD and the International Treaty on Plant Genetic Resources for Food and Agriculture. None, however, covers all the aspects of the GIAHS initiative and places a sufficient emphasis on agricultural heritage, agro-biodiversity, dynamic conservation, local empowerment and multi-stakeholder processes. GIAHS, therefore, should seek special international recognition with its own mandate and legal framework.

[6] The application of quantum physics for a holistic approach to agricultural heritage systems - Quantum agriculture + Intuitive agriculture. The presentation materials can be browsed at: ftp://ftp.fao.org/sd/SDA/GIAHS/forum_oct2006/opening/Quantum_Physics_Henk_Kieft.pdf

The scope, objectives, definitions, criteria and other components of an international instrument on the conservation of GIAHS were discussed and identified. The instrument could take different forms: a set of internationally accepted principles and guidelines, a non-binding agreement or undertaking or an international convention or treaty. A step-by-step consensus building process should be initiated capable of averting possible conflicts of interests and influencing national legislations related to the GIAHS. Special attention should be given to the requirements to be met for the international designation of a GIAHS site and for its inclusion and listing in a "World Agricultural Heritage Category" (and for its de-listing).

The experience of the FAO Commission on Genetic Resources for Food and Agriculture (CGRFA) was found particularly relevant, especially the process by which an international undertaking on plant genetic resources was negotiated and then became an international treaty, with the addition of protocols (e.g. farmers 'rights) and a funding facility. This treaty, however, gives limited attention to in situ conservation and does not cover animal genetic resources and other elements of agro-bio-diversity. An international instrument on GIAHS could therefore fill an important gap and a submission on GIAHS to the CGRFA and FAO Council was proposed to this effect.

Other useful elements for the development of an international instrument on GIAHS should be found in the work of the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge (TK) and Folklore. The general principles and guidelines on TK protection, now under negotiation, were presented and further cooperation between WIPO and the FAO and CBD Secretariats was recommended.

Review of the pilot country experience and development of the GIAHS management structure

Progress reports were presented to the Forum by the national facilitators/focal points of the pilot systems on Andean Agriculture (Peru), Chiloe Agriculture (Chile), Rice-Fish Agriculture (China), Ifugao Rice Terraces (Philippines) and the Oases of the Maghreb (Algeria, Morocco and Tunisia). All projects had adopted the GIAHS holistic, agri-cultural approach and its focus on the local community. The rich agro-biodiversity of the initial selected sites was confirmed and was found to be closely associated with specific environmental conditions, management practices and cultural traditions. Out-migration, the introduction of new technologies and external market influences were identified as major problems in all sites but, while some sites focussed essentially on a specific, discrete system, others took an aggregate/area-based, multiple land use approach. The use of a whole landscape approach - integration of both discrete and area-based approaches and upscaling of the systems was recommended to raise global awareness of GIAHS dynamic conservation.

Strong disparities were found to occur between the local community level and the higher levels in the GIAHS sites as regards the flow of information, organization, technology and management control. An overall management structure was outlined with several levels of multi-stakeholder participation in steering the programme and projects and providing the necessary technical and operational guidance, at local, national and global levels. Special emphasis was placed on the community as the imperative entry point for all the management processes and on the need for multiple cooperative linkages (bottom-up, top-down and horizontal) among the actors at all levels. The general outline of a management protocol was

proposed with the primary objectives of enhancing the self-determination of the GIAHS communities and following the principles of subsidiarity and mutual accountability.

Partnership development and resources mobilization

The Small Grant Programmes (SGP) of the Global Environment Facility (GEF) managed by UNDP was presented. The GEF-SGP premise is that community-based organizations and NGOs can produce global environmental benefits through small initiatives that address local environmental management, livelihoods and local empowerment. The management structure of the programme is highly decentralized with national multi-stakeholder steering committees defining the country programme strategies and national coordinators ensuring the identification and implementation of country projects. Some 800 project are dealing with agro-biodiversity, with strong emphasis on certification and marketing of agro-biodiversity products. There is wide scope, therefore, for further SGP–GIAHS partnership, notably for joint programming and financing at national level and, at global level, for the promotion of common objectives.

The maintenance of worldwide diversity- both cultural and biological - through small grants and other activities is also the major objective of the Christensen Fund. It operates as a private institution supporting bio-cultural conservation through small grants. The Fund expressed interest in co-operating the GIAHS in view of the large coincidence of their objectives and approaches.

Another expression of strong interest and support was expressed by the Secretary General of the Roman Forum. He invited the GIAHS to be more ambitious in involving a wider range of partners and funding sources, in the private sector in particular, mobilizing local NGOs and making use of micro-credit facilities in support of village-level enterprises. He also recommended to strengthen the participation of policy-makers, NGOs and scientists in the GIAHS Forum so as to give it more influence in promoting innovative strategies of sustainable agricultural development.

The work of the UN Forum on Indigenous Issues was also presented. It could play a major advocacy role in support of the GIAHS. The International Decade for Indigenous People, its Action Plan and the ongoing negotiations of a UN Declaration on the Rights of Indigenous People should provide a number of opportunities of cooperation with the GIAHS.

In addition to these expressions of support at international level, several national coordinators and focal points of pilot systems reported that they had developed mechanisms of governance, management and stakeholders' participation at national level to strengthen partnership and support for their pilot systems.

B. List of International Workshops, In-Country Training courses/ Workshops/Meetings:

- GIAHS First Stakeholders'Workshop and International Steering Committee meeting, FAO-Rome, Italy,
- GIAHS Second Stakeholders' Workshop and International Steering Committee Meeting, FAO Rome, Italy, 7-9 June 2004. 53 particpants from the UN systems, international organisations and donor agencies.
- Inception workshop to formulate the Andean agriculture'framework of strategies for agricultural biodiversity conservation in Peru. September 2004. 45 participants from Cusco and Puno sites.
- Inception workshop to formulate the Chiloe agriculture'framework of strategies for agricultural biodiversity conservation in Chile. January 2005. 40 particpants from the local and provincial officials, local farmers and representatives from the non-governmental organisations.
- Follow-up workshop for the operationalisation and prioritisation of activities for agrciultural biodiversity conservation in Peru. January 2005. 40 participants from the local and provincial officials, line agencies, local farmers and representatives from the civil societies and organisations.
- Inception workshop to formulate the Ifugao rice terraces'framework of conservation strategies for agricultural biodiversity and associated biodiversity and landscapes – Philippines, 12-13 April 2005, Banaue, Ifugao. 50 participants from the local, national government organisations and non-governmental organisations.
- Inception workshop to formulate the rice-fish agriculture' framework of conservation strategies for agricultural biodiversity and associated biodiversity and landscapes – China, 10-11 June 2005. 40 participants from the Qingtian county and Zheijiang province, local farmers and government officials, and civil societies.
- Inception workshop to formulate the oasis systems'framework of conservation strategies for agricultural biodiversity conservation – Tunisia, 29 November 2005, jointly supported with IPGRI and Wageningen International (WI). 35 participants from Algeria, Morocco and Tunisia.
- Workshop on operationalisation of GIAHS in Oasis systems. 4-7, June 2006. Jointly supported with IPGRI and WI. 40 partcipants from Algeria, Morocco and Tunisia.
- Follow-up workshop and meeting for the operationalisation of the Ifugao rice terraces agriculture heritage system, 20-21 July 2006. 60 participants from the local, national government organisations, community-based organisations and local farming communities.
- Follow-up workshop and meeting for the operationalisation of the rice-fish agriculture heritage system, 29 July 2006. Qingtian province. 40 participants from the Ministry of Agriculture and Chinese Academy of Sciences, local officials and farmers.
- International Forum on Globally Important Agricultural Heritage Systems – a heritage for the future, FAO-Rome, Italy, 24-26 October 2006. 74 participants from the pilot GIAHS countries (GEF operational focal points and national coordinators), representatives of UN systems, partner institutions and academes, embassies and country representatives and FAO staff members.

- Follow up workshop and national ministry meeting to finalise the Chinese National GIAHS Project Framework and visit to potential GIAHS, 9-10 February 2007. Chinese Academy of Sciences, Beijing. 50 participants
- GIAHS Symposium at Beijing Eco-summit, 27-28 May 2007. Participated by 50 international participants and Chinese community
- Follow up workshop and meeting on establishing criteria and priorities for national GIAHS, Ifugao Rice Terraces. 12-14 February 2007, DENR, Manila. 100 participants.
- Finalisation of Philippines National GIAHS Project Framework, 4-5 June 2007. DENR Central Office. 20 Participants.
- Field Survey of additional GIAHS network sites/associated sites Guizhou province of China, 25-30 May 2007. Evaluation conducted by FAO staff, UNU staff and National Chinese Experts.
- GIAHS Cultural Heritage Day, 9 June 2007, sponsored by the Chinese Academy of Sciences and the Ministry of Agriculture, China. 50 Participants.
- First Local Stakeholders' Meeting on dynamic conservation of GIAHS. Sikkim University, Sikkim State, India. 5-7 November 2007. UNU, Tokyo University and FAO. 100 participants.