

UNDP GEF
TERMINAL EVALUATION REPORT

**A DYNAMIC FARMER-BASED APPROACH TO THE
CONSERVATION OF ETHIOPIA PLANT GENETIC
RESOURCES PROJECT ETH/93/G31**

PIMS 236

SEPTEMBER 2002

REVIEWER:

**DR. DIONYIOUS K. KIAMBI
INTERNATIONAL PLANT GENETIC
RESOURCES INSTITUTE (IPGRI)
SUB-SAHARAN AFRICA OFFICE,
P. O. BOX 30677, NAIROBI, KENYA
TEL. 254-2-524506/524509
FAX. 254-2-524501
E.MAIL: D.KIAMBI@CGIAR.ORG**

TABLE OF CONTENTS

Executive Summary

A. Background

B. Analysis of Project Components and Findings

- I. Capacity Building and Institutional Strengthening
 - i) Research
 - ii) Training
 - iii) Communication and Networking
- II. Community Based Conservation Programme
 - i) In situ/on-farm Conservation
 - ii) Incentives and Sustainability Mechanisms

C. Implementation Arrangements

- I. Internal Project Planning, Monitoring and Implementation
- II. External project evaluation
 - i) Mid-Term Review
 - ii) STAP Review

D. Achievements

E. Lessons Learned

F. Recommendations

Tables

- Table 1.** Summary of training activities conducted

Boxes

- Box 1.** Summary of project achievements

Annexes

- Annex 1.** List of major research outputs
- Annex 2.** Membership of crop conservation association across regions, zones and Woreda by gender
- Annex 3.** Number of conservator farmers trained across regions, zones and Woreda by gender
- Annex 4.** The level of implementation of the project activities
- Annex 5.** Documents on file

ACRONYMS

CCA	Community Conservation Association
CGB	Community Gene Banks
CP-V	Fifth Country Programme
DA	Development Assistants
EARO	Ethiopian Agriculture Research Organization
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
GIS	Geographical Information Systems
IBCR	Institute of Biodiversity Conservation and Research
ICRAF	International Centre for Research in Agroforestry
IPGRI	International Plant Genetic Resources Institute
ITPGR	International Treaty on Plant Genetic Resources
MOA	Ministry of Agriculture
MTR	Mid-Term Review
NGO	Non Governmental Organization
NEX	National Execution
PAOC	Project Advisory Organization Committee
PCC	Project Coordination Committee
PSD	Project Support Document
STAP	Scientific and Technical Advisory Panel
TE	Terminal Evaluation
TPR	Tripartite Review
TOR	Terms of Reference
TPR	Tripartite Project Review
UNDP	United Nations Development Programme

PROFILE OF THE REVIEWER

Dr. Dan Kiambi (Kenya) is a botanist specializing in conservation and utilization of plant genetic resources. He worked on community plant biodiversity conservation projects and programmes before joining IPGRI as a Conservation and Genetic Diversity Scientist. He has co-ordinated the development and implementation of many plant genetic resources projects, programmes and networks in Africa. He has also carried out agro-biodiversity status assessments as part of the National Biodiversity Strategy and Action Plans (NBSAP) in Eritrea and Djibouti. He has worked on diverse plant genetic resources and agro biodiversity issues in close collaboration with multilateral agencies such as FAO, UNEP, GEF and UNDP; bilateral agencies such as SIDA, EU and JICA; IARCs including IRRI, CIP, ICIPE, IITA; sub-regional agricultural research organizations and networks such as ASARECA and SPGRC and international NGOs including IUCN, ACTS and CINS.

Dr. Kiambi was a member of the Medium Term Review team and therefore has a very good understanding of the project under review and its evolution. Contact address: IPGRI, P.O. Box 30677, Nairobi, Kenya. Tel. (254-2) 524506, Fax. (254-2) 524501. Email: D.Kiambi@cgiar.org.

EXECUTIVE SUMMARY

In 1994 UNDP/GEF provided US\$ 2.5 million towards the implementation of project ETH/93/G31 "A Dynamic Farmer Based Approach to the Conservation of Ethiopia Plant Genetic Resources", which was initiated in six districts in the Central Highlands upon signing of the project document by the Government of Ethiopia and UNDP. The main purpose of the project is to demonstrate the effectiveness of small-scale farmers in conservation and utilization of their local plant genetic resources using complementary methods including community gene banks. It also demonstrates how farmer conservation activities can be integrated into the national plant genetic resources conservation institutional framework, serving as a global demonstrative model for agrobiodiversity conservation, thus underscoring the need to disseminate strong lessons for the rest of the world to draw upon. The project was executed by the Institute of Biodiversity Conservation and Research (IBCR) and was at the outset fashioned to be implemented in collaboration with other key stakeholders in Ethiopia. The objective of the Terminal Evaluation of the project is to advise IBCR and UNDP on the achievements and lessons learnt at the end of the project through the evaluation of the patterns of outputs and activities based on the project document.

The Project under review is unique and considered as the pioneer in promoting farmer-based landraces conservation and enhancement both in the country and elsewhere. Overall, the project has performed very well against a background of lack of any previous experience or examples to go by in the implementation of such a complex initiative in a relatively new and pioneering field of *in situ*/on farm conservation, as a complementary approach to the more traditional, familiar and well established *ex situ* conservation of plant genetic resources. The project has largely taken a unilateral approach in implementation of its activities with only marginal involvement of key stakeholders primarily due to shortage of funds and time. However, despite some weakness in the project's ability to closely network, establish practical institutional linkages with key partners and articulate project management organs, it has clearly demonstrated that on farm conservation is a practical, viable and effective mechanism for maintenance of plant genetic resources by farmers in their traditional farming systems and settings. In addition, it has demonstrated that farmers need not be alienated and have an important role to play in the national plant genetic resources conservation institutional framework.

The IBCR's capacity for on farm conservation has considerably been strengthened through an impressive record of trained personnel and procurement of laboratory and office equipment thus contributing significantly towards the project's goal. The achievements in training and the establishment of the 12 Community Gene Banks have exceeded the initial project expectations. The project has to a large extent served as a model and a learning process from which the country and the rest of the world can draw lessons for up-scaling, replication and informing policy. For example, if well documented, the concepts of CCAs and CGBs could serve as models with a high potential for replication within the country and elsewhere in the world. However, for the project's full achievements to be clearly visible, the terminal technical report needs to be carefully drafted in order to bring out the **main impacts and lessons more articulately**. A well-written report will no doubt meet the country's and the world's expectation of Ethiopia as a show case for practical approaches to conservation of plant genetic resources on farm, as the necessary information and outputs are available.

The termination of the UNDP/GEF funding is not necessarily the end of the project but rather the beginning of full assumption of the government's and the communities' responsibility for its continuity through a follow-on project that should aim to build upon the lessons learnt. Thus, the sustainability mechanisms that IBCR has started to put in place are commendable but they must be further enhanced, with particular attention being given to the legalization of the CCAs, further development of **market and non-market incentives as the driving forces of continued interest by farmers** on conservation of their genetic resources at community level and capacity mobilization and practical engagement of trained personnel at different levels in order to gain more mileage in the follow-on project under the full responsibility of IBCR and other governmental or non-governmental organs that will be responsible for its continuity. Several recommendations on the follow-on project have been made but principally the project should view on farm management of plant genetic resources from an agro-biodiversity conservation perspective and should be closely linked to the wider agricultural sustainability and development functions.

A. BACKGROUND

In 1994 UNDP/GEF provided US\$ 2.5 million towards the implementation of project ETH/93/G31, "A Dynamic Farmer Based Approach to the Conservation of Ethiopia Plant Genetic Resources", which was initiated in six districts in the Central Highlands upon signing of the project document by the Government of Ethiopia and UNDP. The main purpose of the project is to demonstrate the effectiveness of small-scale farmers in conservation and utilization of their local plant genetic resources using complex, multi-faceted and complementary strategies of institutional strengthening, research and training to achieve its objectives. It also demonstrates how farmer conservation activities can be integrated into the national plant genetic resources conservation institutional framework, serving as a model and a learning process from which the country and the rest of the world can draw lessons. The project was executed by the Institute of Biodiversity Conservation and Research (IBCR) and implemented in collaboration with other key stakeholders in Ethiopia. The immediate objectives of the project are:

- a) Strengthen the institutional capacity for planning and implementing *in situ* conservation
- b) Establish community support for *in situ* conservation and community Gene Banks in six districts namely Tigray; Tegulet in Northern Shewa; Kalu in Wello; Goro and Agarfa in Bale; Decha and Chenna in Bonga and Ada'a in Eastern Shewa.
- c) Select and train farmer conservators to curate and manage the Community Gene Banks (CGB)
- d) Strengthen IBCR - farmer interaction
- e) Develop community and market incentives for *in situ* conservation.

The Terminal Evaluation (TE) of the project is initiated by GEF/UNDP and the Ethiopian Government in line with the PSD for the National Programme on Improvement of the Resource-Population-Sustainability Balance being executed under the fifth Country Programme of UNDP. The PSD stipulates the need for "Terminal Evaluation of project components at the end of the overall project life". The project was scheduled to end in 1998 and is therefore terminating four years behind targeted completion date. The purpose of the Terminal Evaluation (TE) as per the terms of reference is:

“ to advise IBCR and UNDP what has been achieved and lessons learnt at the end of the project. There is a need therefore to evaluate the patterns of outputs and activities based on the project document. The TE findings, recommendations and subsequent workshop inputs are expected to sustain and implement future project activities”.

However, this should not be seen as the end of the project *per se* but rather the termination of the UNDP/GEF funding and thus mechanisms for the project sustainability need to be articulated.

Methodology

Based on the NEX guidelines and evaluation checklist, an evaluation methodology and process was developed. The conduct of the evaluation process and analysis of information included:

- Study of existing literature, the project Terminal Report, progress reports, workshop/seminar proceedings, scientific publications etc.
- Interviews of key informants at UNDP, IBCR, site Team Leaders and CCA leaders
- Interaction with Community Conservation Associations representatives.
- Field visit to one project site namely Ejere in Adaa, East Shoa. The visit was limited to the CGB and discussions with the DA and leaders of the CCA.
- Checking of all information provided by the Project authorities for independent understanding.
- Consultants’ reports on “Analysis of market and socio-economic situations” and “Analysis of sectoral and inter-sectoral policies”.
- The STAP and MTR evaluation missions’ reports
- Presentations, additional information and insights gathered during the project’s, “Terminal Stakeholders Workshop” held on 25th September 2002 at IBCR and attended by some of the key stakeholders including regional representatives and farmers.

B. ANALYSIS OF THE PROJECT COMPONENTS AND FINDINGS

I. Capacity building and institutional strengthening

i). Research

At its inception, the project envisaged a resilient, flexible and nationally integrated research approach as one way of strengthening the capacity of IBCR and other Ethiopian institutions to plan and implement *in situ* conservation programmes in a rational manner. It was expected that the project would tap the technical and intellectual resources available from other institutions with competitive advantage, in line with their mission statements and mandates. The IBCR as the executing agency would therefore harness a wide array of skills and expertise from the community of scientists in these institutions in implementing the project’s research agenda.

The project has contributed significantly to capacity building at IBCR and to the National Herbarium of the Addis Ababa University where 3 MScs have been trained and a vehicle and computers procured to facilitate field research and development of databases. But in the implementation of activities IBCR has largely adopted a unilateral approach with inadequate involvement of key partners in the research component, which is necessarily

complex and multidisciplinary in nature. Greater efforts could have been made to involve the key partners in a more meaningful way through joint project planning meetings and establishment of a consultative process that would have ensured more interactions at the planning, implementation and internal monitoring levels. Institutionalization of this consultative process could have been ensured through MoUs establishing the project's *modus operandi*, clear definition of roles and responsibilities and allocation of budgets against agreed work plans. However, the project should be highly commended for successfully initiating and implementing a broad range of research initiatives in two broad thematic areas, a) ethnobotanical research which aims to understand and analyze patterns of farmer knowledge, selection, utilization and maintenance of crop genetic resources using anthropological methods and analysis of social, cultural and economic factors and, b) population and conservation biology. A lot has been achieved particularly in diversity studies and characterization of farmer varieties using both agro-morphological and biochemical methods, as evident from the quantity and quality of the research outputs comprising publications that include scientific papers in refereed journals, postgraduate Thesis, papers presented in workshops, technical reports and booklets (Annex 1).

Commendable efforts were made to increase outputs in ethnobotanical research, following the recommendations of the MTR and the STAP evaluation missions. More initiatives were undertaken in documenting indigenous knowledge, understanding genetic erosion factors and carrying out surveys of medicinal plants. However, building effective interdisciplinary networks involving scientists, including anthropologists, sociologists and economics as well as natural scientists such as population geneticists and biometricians, could have further enhanced this research component. The slackness in establishment of such networks, as recommended by STAP review, constrained more substantial progress. A clear understanding of traditional **informal seed storage, exchange and diffusion mechanisms**, which could have added value to and even complement the current CCAs and CGBs approaches was not fully developed.

Substantial research activities have been undertaken in the six project sites, with results being evident through the publications emanating from the initiatives. Each site has in its own ways demonstrated well-appreciated research outputs that have been achieved using diverse approaches. However, it seems that the research agenda didn't benefit from a harmonized approach based on an overall institutional implementation strategy. This is manifest in the nature and extent of disparities in research approaches and methodologies, inconsistencies in levels of achievement and reporting formats across the six research sites. There seems to be little cross-fertilization, synergy and horizontal transfer of experiences and technologies between sites. Whereas it is appreciated that each research site is somehow unique, a fair amount of interchange and harmonization would have enabled ease of comparison of achievements across the sites. As an example, establishment of **botanical gardens** was quite successful in North Shewa and Keffa sheka while there is hardly any work done in other sites such as South Wolo and Ada'a. In Ejere, even the hedges and compound of the slightly more than 1 Ha where the CGB is located are planted with the exotic kei-apple and cypress trees. The important element of constraints and problems encountered is not reported across the sites. It is also hard to explain the high level of disparity in CCA membership, for example in Keffa-sheka there are 1656 members while in Bale there are only 197.

ii). Training

Within the project framework, training was seen as a vital component of institutional strengthening with the view of building broad based expertise at the scientific, technical

support and community level. At the onset, therefore, the project embarked on a rigorous training venture, which has been very successful and the achievement surpasses the initial project expectations as outlined in the log framework. This is clearly demonstrated by the number of people trained including 4PhDs, 6MScs, 2BScs, 44 Certificates while 5BScs and 13 Diplomas are undergoing training (Table 1). Moreover the number of DAs and farmers that have received training in different aspects of plant genetic resources conservation are numerous. The beneficiaries of graduate and postgraduate studies have mainly been IBCR staff but 3 MSc students from Addis Ababa University were trained with the project funds. Many graduate studies have been undertaken overseas with the shortcoming that 2Phd graduates have failed to come back and strengthen research capacities, thus somehow undermining the intended purposes.

Table 1. Summary of training activities conducted

Type of training	No.	Subjects	Location	Output
PhD	4	Ecology Genetic diversity Genetics, Botany	USA, Netherlands	3 completed, 1 on-going
MSc	6	Plant breeding Ecology Ethnobotany Genetic diversity	Netherlands, Addis Ababa	All completed
BSc	7	Biology	UK, Addis Ababa	2 completed, 5 on-going
Diploma	13	Agriculture	Jimma College	All on-going
Certificates	44	Agriculture, Extension	Jimma College, IBCR	Completed
DAs	48	Various	IBCR, on site	Completed
Farmers	3883	Various	IBCR, on site	Completed

Formal training of the DAs was mainly through courses conducted at the IBCR and the National Herbarium while farmers were trained through community level short courses and workshops. During the field visit, the CCA leaders lauded the training initiatives as very useful and this has contributed significantly to their expertise in conserving plant genetic resources on farm. However, the project did not base the training of community level workers on written curriculum that could be used to gauge the nature and level of training provided. On the whole, there is need for clarity on how the high calibre of trained personnel will be strategically deployed and made the best use of in the furtherance of the project's goals.

iii). **Communication and networking**

The vertical and horizontal flow of information, project materials and services was envisaged as an important ingredient for creating effective intra- and inter-institutional linkages. The project created a very sound rapport with the DAs and the farmers through an internal system involving frequent visits to project sites, community level training courses and workshops, extension services to farmers by DAs and to some extent through field days, seed fairs and farmer exchange visits. This motivated the DAs and farmers resulting in harmonious relationships that were at times interrupted by untimely delivery of project monies and materials.

The project's strategies for inter-institutional collaboration, communication and networking at the regional level have largely been through informal linkages with the extension agents from the Ministry of Agriculture and Regional Agricultural Research Stations of EARO. The strength of these linkages varied from one site to another and were mainly initiated and sustained by the Development Agents in collaboration with IBCR site managers. Limited success has been achieved in the establishment of linkages with the Regional Agricultural Cooperative Bureaus through their participation in CCA meetings in some of the sites. Stronger linkages would have hastened the legalization of the CCAs. Links with the mainstream agricultural research and extension sectors could have been strengthened by enhancing their roles in planning and implementation of all community-based project activities in the respective regions. For instance, the formation of all-inclusive on-site project implementation sub-committees would have ensured the full integration and involvement of the key partners operating in the various regions.

The initial project's intentions of drawing skills and expertise from collaborating institutions through establishment and maintenance of close inter-institutional linkages and networking modes have been realized but not to the fullest extent. Strong but largely informal linkages have been established with the National Herbarium of the University of Addis Ababa, particularly in training, and to a lesser extent with EARO and the Ministry of Agriculture. At the project's inception, mechanisms for collaboration, communication and networking had been put in place as exemplified by a national workshop held in 1995 in which there was a well-balanced institutional participation. The institutional goodwill, enthusiasm and spirit of co-operation created then could have been built upon fully to develop stronger institutional linkages. A national workshop was held in September 2002 to present the project's work to stakeholders and involve them in the development of the follow-on project. Though a commendable effort, this workshop would have been more appropriate at the mid-term of the project to enable the participants to review the project's activities and make recommendations on improving its implementation.

II. Community based conservation programme

i). *In situ/on-farm conservation*

The project has been successful in initiating community conservation programmes in six districts and these are Ada'a, Bale, Bonga, North Shewa, South Welo and Tigray. Activities have been implemented in at least two Woreda in each district. The selection of districts and Woreda was based on several scientific, socio-economic and institutional criteria through a consultative process involving farmers. The selection criteria for sites within Woreda differed slightly from one site to another but mainly included diversity of micro agro-ecological environments, farmers' traditional knowledge, history of landrace cultivation and ease of accessibility among others. All the selected districts and sites were approved by the PAOC.

The community based conservation model revolves around establishment of Community Gene Banks (CGBs) in the six districts, which is stipulated as the second broad strategy in achieving the objectives of establishing *in situ* conservation activities in the country. It is worth noting with great appreciation that the project has surpassed its initial expectations of establishing six CGBs and have established twelve instead, two in each of the six districts. The CGBs have served the intended purpose but they were too costly and did not blend very well with the community physical environment. The CGBs are currently being fumigated to deal with problems of grain storage pests and this could have been avoided

by better integration of traditional post harvest seed storage methods based on deliberate documentation and application of indigenous knowledge.

Based on rules and regulations of the country for establishment of cooperatives as stipulated in proclamation number 147/91, twelve Community Conservation Associations (CCAs) with a current membership of 3,359 have also been established to provide the overall oversight and management of each CGBs and to elect farmer conservators who become members of the associations (Annex 2). In the six project sites, 3,883 farmers have received training in a wide range of topics (Annex 3). The CCA-CGB model is based on a revolving seed supply system to farmers, where seeds are borrowed during the planting season and repaid with a 20-25% interest at harvest time, depending on the rules established by specific CCAs. The model has proved quite successful in providing seed security to farmers and cushioning them against crop failure as was proved in Ejere last year. In the twelve *in situ* conservation sites, the project has managed to conserve over 400 farmer varieties comprising 22 different crops with an annual turnover of 136,942 Kg of seeds using this approach. One indicator of the model's success is the steady growth of the amount of farmer variety seeds supplied and the number of farmer conservators (beneficiaries) joining the project in the period 1997-2002. In Ejere for example, the amount of wheat and legumes seed supplied to farmers increased from 24,000-339,000Kg while the total number of farmer beneficiaries rose from 156 to 1302 in the same period. There is also a well-appreciated increase in awareness of the importance of on farm conservation. Some farmer varieties that were lost have now been re-introduced in the project sites and interest and demand for these varieties has increased. Survey data from Goro and Agarfa in Bale indicate that out of 127 interviewed wheat-growing farmers, 51% and 70% respectively participated in the revolving seed fund organized by the CGBs. The CCA-CGB model is perhaps one of the approaches to on farm conservation that has the highest potential for replication not only in the country but elsewhere in the world. However, the size, style and construction materials of the CGBs would have to be custom made to blend with the cultures and settings of the communities where they are established.

However, the achievements in the implementation of community conservation activities are not flawless. It seems that there were consultations with the Regional Agricultural Cooperatives Bureaus in most of the sites during the establishment phase of the CCAs but the relationships were not adequately built upon. The CCAs are therefore not legalized and this places their sustainability on slippery grounds unless the matter is resolved immediately. Institutional linkages with other regional based organizations, which would have served a crucial role in the sustainability of the CCAs are also weak. In addition, they are largely male dominated though women are more practically involved in seed selection, storage and related issues as is the common practice. Moreover, the project mainly put emphasis on cereals and legumes but did not devote sufficient attention to roots and tuber crops in its on farm conservation activities.

ii). Incentives and sustainability mechanisms

The IBCR has been putting in place sustainability mechanisms for on farm conservation activities based on the project's three main outputs for incentive measures viz: a) development of community and market incentives for *in situ* conservation; b) creation of non-market community incentives for *in situ* conservation and; c) analysis of national policies affecting crop biodiversity in Ethiopia. The development of incentives for on farm conservation is clearly linked to sustainability of the project. It is worth noting that the project has now stopped the cash compensation system and has strengthened the more

sustainable revolving seed loan schemes, which have to a large extent provided incentives to farmers. This system provides farmers with a fall back mechanism and has enabled them to be more seed secure. The project has applied other non-market community incentives such as seed fairs but this has not been done sufficiently enough to make tangible impacts.

The reported growing demand for farmer varieties in the local markets, their multiple benefits including low inputs, better adaptation to marginal conditions and superior culinary, nutritional and straw qualities have all contributed positively as incentive measures. In addition, a key component of the provision of incentives is the creation of links to the markets in the private sector. To this end, it is worth noting with great appreciation that the project has managed to develop links between Ejere and Cheffe-Donsa (Aadaa) farmers growing durum wheat varieties with the flour milling companies serving the confectionery industries. The milling companies used to import the wheat variety but are now contracting farmers to supply the grain, with an estimated annual demand of 10,000 quintals (1,000 tons). This commendable initiative needs to be enhanced through further diversification of markets and replication in the other project sites. Better documentation of the production levels and contractual arrangements between the farmers and the companies is also necessary.

The project commissioned a consultant's report on, "Market and socio-economic factors affecting *in situ* biodiversity conservation" that has elaborated the farmer variety market environment and made several socio-economic, policy and institutional related recommendations. These have not yet been addressed and their implementation is crucial in the sustainability of the project. The report could be further enhanced by supplementary information on local seed supply systems and empirical data on farmer varieties production levels and statistics, seed sale returns and cost-benefit analysis of farmer variety production in comparison to improved varieties.

Another consultant's report on, "Analysis of sectoral and inter-sectoral policies affecting *in situ* biodiversity conservation in Ethiopia," was also commissioned since the policy environment is notably linked to sustainability of the project. Among other things, it is clear that there is a policy disconnect between promotion of farmer varieties as mandated to IBCR (through the Presidential Proclamation No.120/1998 the National Policy on Plant Genetic Resources) and the evident promotion of improved varieties and other inputs by EARO in response to the government's agricultural policy on increasing production in accordance to the broad-based ADLI strategy. There is therefore an additional need to review and analyse the existing policies in relation to the nature and scope of policy and institutional support for *in situ* on farm conservation programmes in order to enhance sustainability of farmer variety conservation.

The government, through IBCR, is putting in place sustainability mechanisms through provision of funds to meet the major running costs of the CGBs including the DAs salaries. However, sustainability of the initiated community based activities is closely linked to legalization of the CCAs, which has not been done so far. Devolution of power, more strengthened relationships with and greater involvement of regional organizations in the running of the CCAs will further enhance the sustainability of the project, which is an issue of concern to farmers interviewed since the necessary management capabilities have not yet been developed in some sites.

C. IMPLEMENTATION ARRANGEMENTS

The project was implemented by PGRC/E (re-constituted as IBCR in 1997), as envisaged in the project document. The Director of IBCR was the National Project Coordinator (NPC) of the project and under him was a Project Manager who designated 6 site Team Leaders to take responsibility for the coordination and monitoring of the landrace conservation project in the respective sites. The other relevant divisions of IBCR - conservation, documentation, plant exploration/collection, seed health, plant introduction and distribution - participated in the activities and provided technical support to Community Gene Banks.

I. Internal project planning, implementation and monitoring

As envisaged in the project document, a Project Coordinating Committee (PCC) comprising extension agents, a farmer representative, University/EARO researchers, and local government agents assisted the Project Co-ordinator. In addition, a Project Advisory and Overseeing Committee (PAOC) made up of four prominent national and three international experts drawn from relevant disciplines provided technical oversight in the project's implementation. The PAOC's envisaged responsibility was to oversee, monitor and evaluate the project's activities and provide guidance throughout its life.

Together the PCC and PAOC formed an important source of technical and professional advice. Although much has been accomplished by the project, a lot more in terms of both quantity and quality could have been achieved if these two project advisory mechanisms had been made use of fully. As observed in the MTR, the PCC comprises mainly of IBCR staff with no representation from regional governments, farmers and extension agents as expected in the project document. There is no indication that this anomaly was corrected and this has therefore undermined the project's ability to consider regional and grassroots issues in the implementation process. The PAOC has not met since the MTR though some form of interactions with some members of the Committee have been made. The project has therefore missed good opportunities to benefit from the intellectual inputs, scientific guidance and counsel from this professional organ.

The team leaders in each of the project sites have accomplished a lot individually and collectively in initiating and developing substantial research activities as evident from the terminal report, annual reports and the list of publications available. Disparities, however are evident in the pattern and level of achievements of results. The project does not seem to have harmonized the research approach based on an overall institutional implementation strategy. This is evident from the obvious disparities in levels of achievement, reporting formats and quality and quantity of publications emanating from research activities undertaken in the six sites. The direction of the research agenda seemed to have been controlled more by the dynamism and innovation of the site leaders than an overall institutional strategic approach. Whereas this could be motivational to the site leaders, the project may have missed the opportunity for cross-fertilization, synergy and horizontal transfer of experiences and technologies between sites. It is appreciated that each research site has its own peculiarities but a fairer amount of interchange and harmonization through better co-ordination and teamwork of the site leaders would have produced more and higher quality results.

II. External project evaluation

Two evaluation missions were commissioned in 1999. The first of these was the mid-term review (MTR), which is an expectation under the NEX guidelines. The objective of the MTR was to report to IBCR and UNDP on the progress made in achieving the project objectives and offer suggestions for future planning. The MTR was to compile “a report on the status of the project using the project document and focus on the concept of the project design as well as inputs and outputs and also focus on the implementation, results and lessons learned”. The second was the independent technical selective review undertaken by the Scientific and Technical Advisory Panel (STAP) of the Global Environment Facility (GEF) with the aim of assessing the scientific and technical soundness of the project and make recommendations as necessary.

i). Implementation of the Mid-Term Review (MTR) recommendations

The recommendations of the Mid-Term Review (MTR) covered a wide cross-section of the project components including management, research, and implementation and monitoring issues. The project has made encouraging attempts to implement the recommendations but these efforts were not adequate. For instance, the MTR (pp. 27) recommended the immediate organization of a **key stakeholders workshop** to inform about progress and review the project, among other objectives and this was not done. Moreover other key recommendations on strengthening institutional linkages and improving project monitoring were not implemented. For example, the recommendation to immediately organize a PAOC meeting and following this, to organize a TPR were not implemented. The recommendations on research and training were similarly partially implemented. Quite commendable efforts were made in implementing recommendations on policy analysis and incentive measures particularly through the commissioning of consultants' reports on policy and marketing aspects and the linking of farmers with the milling industries. Recommendations on networking and collaboration were partially implemented, with increased exchange visits for farmers, DAs and extension agents, more empowerment of CCAs but little done on increasing institutional collaboration, NGO involvement, improving gender balance in CCAs and farmer conservators and structuring interactions with relevant government agents at community level.

ii). Implementation of STAP review recommendations

The STAP review made a wide range of recommendations on research topics and emphasis, research teams and research methods, scientific and research capacity building and integration of research components with other project activities and outside the project. Overall, the project has done a commendable effort in implementing the recommendations but not to the fullest extent possible. For example, technical papers and MSc thesis on indigenous knowledge, surveys of medicinal plants, ethnobotany and genetic population structure have been compiled and or published. Commendable efforts on searching for specialized markets for farmer varieties have been made, with the linking of durum wheat farmers with the milling industry as a good example. Studies on marketing and socio-economic situations and sectoral and inter-sectoral policies have been carried out although they have not fully addressed STAP's concerns especially, a) policy contradiction between augmenting productivity with improved varieties and on farm maintenance of diversity and, b) addressing Farmer's Rights in the *sui generis* system of protected plant varieties in Ethiopia. These are, however, complex policy issues that may need more time and effort to resolve. The following are some additional issues that were not adequately addressed:

- More attention should also have been given to multi-disciplinary studies of seed supply systems and integration of traditional systems with the CCA-CGBs approach.
- In research teams, methods and capacity building, the STAP recommendations to broaden the spectrum of collaborating scientists and partner institutions and also build inter-disciplinary networks involving social scientists, anthropologists, sociologists and economists were not effectively addressed.

D. ACHIEVEMENTS

The project has undoubtedly made a big mark in the advancement of on farm conservation of farmer varieties in Ethiopia and as a global pioneer, it has a lot of useful lessons to offer to the rest of a world that has over the years been looking up to it as a model. The project National Coordinator, the Manager and the entire team of site leaders deserve a lot of credit for so ably delivering the desired outputs and in the case of training and establishment of CGBs, performing beyond the initial project expectations. A full account of the achievements by objectives and outputs as laid out in the project logical framework is provided in Annex 4 while Box 1 below provides a summary.

Box 1. Summary of project achievements

- The institutional capacity of IBCR to manage on-farm conservation initiatives strengthened
- The molecular laboratory established and *ex situ* conservation gene bank well equipped
- Project vehicles, office and field equipments procured and in use.
- On-farm conservation, research and development activities initiated in six project sites
- Numerous publications including 2 papers in scientific journals, 6 MSc Thesis, 3 PhD Thesis and several technical papers, workshop proceedings and reports
- 4 PhDs, 6 MScs, 7 BScs and 13 Diplomas trained in different technical fields
- 48 DAs, 44 Certificates and 3883 farmer conservators trained and engaged in on farm conservation
- 12 CCAs with a membership of 3359 farmer conservators established and functioning
- 400 farmer varieties comprising 22 crops conserved on rotational basis in 49 conservation sites in six districts
- 12 well equipped Community Gene Banks with an annual turnover of 136,942 Kg of farmer varieties established and functioning in six project sites
- Linkages with private sector established resulting in contracts for farmers to supply 1,000 tons of durum wheat annually
- 2 National workshops held – one on ecogeographic surveys and the other on presentation of project results and planning for the follow-on project.

As written in the document, the goal was the development of a sustained capacity within Ethiopia to conserve biodiversity of crop landraces together with their associated farmer knowledge. The project has no doubt contributed significantly towards the achievement of this noble goal. This capacity has been created in different ways and also at different levels viz. at the level of trained individuals; strengthening of farmer organizational structures through CCAs-CGBs models; strengthening of IBCR through staff training and procurement of laboratory and office equipments and also strengthening of collaborating

institutions (the National Herbarium in particular) through procurement of a vehicle and computers. The high level of achievement in human resources development through training of IBCR staff, community level workers including farmers and to some extent staff of collaborating institutions is very commendable but this capacity must now be deployed, effectively and efficiently mobilized to sustain the project activities.

The numerous publications emanating from the project's research work are very commendable and will inform policy, scientific community and the general populace at large in Ethiopia and elsewhere in the world of the immense opportunities that exist in the sustenance of agricultural productivity without necessarily compromising conservation imperatives. The project has also created awareness and raised the national profile of plant genetic resources among scientists, the public and the policy makers. The heightened profile on biodiversity, leading to the Presidential Proclamation on IBCR's new mandate and the pronouncement of National Policy on Biodiversity Conservation and Research may partly be attributed to the work of the project.

However, the project records many missed opportunities for making even greater impact. For example, closer collaboration with other institutions would have made use of their comparative advantages in accordance to their institutional mandates and mission statements especially in the social sciences and anthropological fields. A closer working relationship with NGOs and regionally based institutions would have created more impact at the community level and increased the level of awareness raised. In addition, the project's achievements are in a way mitigated by shortcomings including:

- Inadequate participation of women in conservation and training activities
- Weaknesses in project planning, monitoring and technical execution of activities.
- Partial implementation of recommendations of PAOC, STAP and MTR.
- Lack of a clear strategy in the establishment of botanical gardens and consequently this component of the project is incomplete in several sites including Ada'a, South Wolo and Tigray.

E. LESSONS LEARNT

- The project has clearly demonstrated that on farm conservation is a practical, viable and effective mechanism for maintenance of plant genetic resources by farmers in their traditional farming systems and settings. Therefore, farmers need not be alienated from their resources in the development of conservation strategies and action plans, as they have an important role to play and are an integral part of national plant genetic resources conservation institutional framework.
- Conservation of plant genetic resources on farm is a complex and multi-faceted undertaking that requires integrated strategies of institutional strengthening, research and training at different levels. It also requires a multidisciplinary approach that ought to draw skills and expertise from a wide range of institutions through establishment of strategic institutional linkages.
- On farm conservation of crop genetic resources at the community level is a dynamic interplay of political, economic and socio-cultural factors. It requires an integrated farming systems approach that ought to enhance food security, increased agricultural productivity and farmers income, while maintaining diversity and contributing to the overall environmental health.

- The conservation of plant genetic resources on farm is an ecologically sound approach that allows for continuity of evolutionary processes of diversity through the gradual adaptation of crops to biotic and abiotic pressures while at the same time sustaining livelihoods and providing a source of genetic material that sustains agricultural production.
- The CCA-CGB model and concept is a very practical approach to the conservation and use of plant genetic resources at the community level. It is highly replicable in other parts of the country and the world at large but has to be modified appropriately to suit the socio-cultural conditions of the rural communities.
- The successful initiation, implementation and sustainability of community based conservation initiatives depends upon the coupling and integration of modern technology with the traditional knowledge and insights of farmers, with science blending with and building upon indigenous community practices and norms.
- The long term sustainability of community initiatives in plant genetic resources conservation depends upon the development and institutionalisation of both market and non-market incentives, the gradual devolution of power in the running of the established community structures, such as CCAs and CGBs, and the active engagement of organizations/institutions working in the regions or at grassroot levels, such as NGOs and government extension agents.
- Policy disconnects between promotion of conservation imperatives such as maintenance of farmer varieties and the introduction of improved varieties for increased production on the other hand could be a great impediment, as farmers receive conflicting messages.

F. RECOMMENDATIONS

General

The project's outcomes mean a lot not only to the Ethiopian people but also to the world at large. It is imperative therefore that terminal report is of the highest quality possible, as it will be used as a vital reference document. The following recommendations are therefore made:

- a) The outputs of the project are disseminated in two separate reports. The first should be an immediate and improved version of the current Terminal Report for mainly administrative purposes and in accordance with the expectations and guidelines of GEF/UNDP NEX procedures for end of project reporting. This report should be for limited distribution to relevant authorities and administrative organs. It should articulately and comprehensively summarise the project's achievements, lessons learnt, recommendations and comprehensive annexes of lists of people trained, equipped purchased, publications produced etc. The second report should be more technical in nature, with more emphasis on the scientific research outputs, case studies and models for replication and scaling up. This report should be disseminated widely including IBCR and UNDP/GEF websites for wider access. The quality of the currently submitted Terminal Report could be substantially improved by incorporating the following suggestions:

- Clarity and elaboration of achievements by outputs
 - The financial report should come last, not in the middle of technical issues.
 - Correction of inconsistencies between figures in Tables and those in the text.
 - Synthesis of the six site reports but if presented separately, then reporting formats should be standardized for ease of comparison of results.
 - Substantial editing
 - Inclusion of a few photographs on project activities
 - A map of Ethiopia with project sites clearly marked
 - A case study on CCAs-CGB model in form of a Box
 - The summaries of consultants reports should be removed from the main body of the report and presented as annexes
 - Clarity and consolidation of lists of people trained, publications, employees, equipments purchased etc. and presented as annexes
 - Better deciphering of scientific data to add value to the report
 - Better data and quantification e.g. production of farmer varieties for millers
 - Elaboration of the sustainability mechanisms IBCRI is putting in place
- b) A lot of value could be added to the project's achievements by a clearer demonstration of the impact of its activities on income generation, food security and linkage to health and nutrition. This could be done through documentation and to some extent verification of the farmers' accounts, as recorded during the project's Terminal Stakeholders Workshop and at different times and places during field visits.
- c) The consultant's report on "Analysis of market and socio-economic situations affecting *in situ* biodiversity conservation in Ethiopia" is a good, very comprehensive and resourceful document. The report should be published separately but with some editing, additional data and more information on: i) cost-benefit analysis of production of farmer varieties compared to improved varieties, ii) factors influencing farmer variety choices including agricultural intensification, agro-ecology, market infrastructures, variety traits, aesthetic and cultural factors, iii) potential for increasing consumer demands by value addition through processing and, iv) traditional informal seed supply and exchange systems especially in the event of crop failures and how such systems could augment the CCA-CGB approach.

Project sustainability arrangements

The termination of the UNDP/GEF funding does not mark the end of the project *per se* but rather the beginning of the full assumption of the government's and the communities' responsibility for its continuity through a follow-on project that builds upon the lessons learnt. Thus, IBCR must rigorously pursue the project sustainability mechanisms initiated. Particular attention should be given to:

- Legalization of the CCAs according to the Cooperative Societies Proclamation No.147/1998 by developing closer working relationships with the Regional Agricultural Co-operatives Bureaus.
- More devolution of power of CCA-CGB leadership to the communities coupled with specific training on their effective management.

- Petitioning the government for more financial allocation to meet the running costs of the project while assisting the CCAs-CGB to be more self-sustaining through the revolving seed loan scheme, marketing of farmer varieties and other mechanisms.
- Further development of market and non-market incentives as the driving forces for continued interest by farmers on conservation of their genetic resources at community level. In particular, the development of linkages between farmers and commercial users of farmer varieties or their products should be strengthened in other project sites, following the example in Ejere.
- Greater involvement of organizations and institutions working in the regions, including NGOs, in the on farm conservation activities building upon existing linkages.
- Mobilization and constructive engagement of the trained cadre of personnel at different levels to gain more mileage in the next phase of the project under the full responsibility of IBCR and other governmental or non-governmental organs that will be responsible for its sustainability.

Informing policy

Among the credits to be accorded to the project is the exposure and bringing into limelight areas of weakness in the agricultural related policies. The obvious policy disconnect or seeming contradiction between augmenting productivity on one hand and maintenance of diversity on the other needs to be resolved through a careful policy analysis focusing on these themes initially and later instituting the necessary legal and policy procedures for redress. This should include a review and analysis of the existing policy environment in relation to the nature and scope of government support for *in situ*/on farm conservation. In addition, the following policy related issues need to be addressed:

- Application of existing policies and proclamations that support on farm conservation to seek government support in provision of extension production packages for farmer varieties as is done for improved varieties.
- As the project's activities expand and in the light of globalization, mechanisms for ensuring continued right of ownership of materials by farmers through the provisions of Article 9 (Farmers Rights) of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR), which Ethiopia is a signatory to, are required.

The case for a follow-on project

It is imperative that the lessons learnt in the project under review be build upon in form of a follow-on project. A lot of experience and insights in community-based approaches to biodiversity conservation have been accrued in the project and these could be very useful in the development of a conceptual framework and implementation of a follow-on project. The follow-on project should build upon the gains of the project under review and borrow from one of the key lessons that "on farm conservation of plant genetic resources at the community level is a dynamic interplay of political, economic and

socio-cultural factors and requires an integrated farming systems approach that ought to enhance food security, increase agricultural productivity and farmers income while contributing to the overall environmental health". The follow-on project should therefore of necessity, view on farm management of plant genetic resources from an agro-biodiversity conservation perspective and should be closely linked to the wider agricultural sustainability and development functions. Agro-biodiversity is a broad subject and the project should focus on crops and their wild relatives, wild food plants and agroforestry-livestock productions systems to avoid spreading too thin thus comprising potential for making impact especially on food security concerns. Among other things the project should therefore, based on an in-depth problem analysis, aim to:

- Increase crop productivity while improving the agro-ecosystem health by adoption of agroforestry-livestock-crop production systems using a combination of multipurpose tree species and fruit trees. One observed impediment to the use of organic fertilizers in production of farmer varieties is the diversion of cow dung and crop residue into fuel wood as a result of firewood crises caused by deforestation. The suggested system would alleviate fuel wood shortages and hence release the vital organic manure into the agricultural production system. In addition, intercropping provides diversity, enhances agro-ecosystem resilience and presents other environmental benefits such as soil erosion control. The inclusion of fruit trees species in the agroforestry interventions could significantly enhance the broader objectives of improving food security through diversification of its sources and dietary supplements. ICRAF should be consulted for collaboration and scientific support in this component of the follow-on project.
- Broaden the genetic diversity of agricultural production systems and improve farmer varieties through, a) participatory plant breeding methods that incorporate food and feed nutritional quality concerns in the objectives and promote appropriate traditional cultural practices in crop husbandry and, b) diversification of plant agro-biodiversity conserved on farm (fruit, fuel wood, fodder, medicinal, shade species).
- Strengthen farmers' management of diversity through, a) analysis of agro-ecosystem factors that affect agro-biodiversity, b) integrated characterization of inter- and intra-specific diversity in agro-ecosystems using a combination of traditional knowledge, spatial (GIS) analysis, morphological and molecular methods, c) Understanding relationships between cultural diversity and genetic diversity, d) Understanding how land tenure systems influence agro-biodiversity conservation and, e) Understanding farmers decision making processes such as choice of preferred species or traits including factors that influence these choices.
- Use GIS in mapping spatial autocorrelations and integration of socio-economic data (e.g. poverty and population density maps) with biophysical environment and target species with a view to developing resource and agro-biodiversity management plans that are more in harmony with the requirements of the local people.

- Constructively engage a wide range of stakeholders, with roles and responsibilities clearly defined, work plans and budgets agreed upon and MOUs signed as a pre-condition for their involvement before project initiation.
- Adopt a decentralized and inter-disciplinary approach with most of the activities being based at grassroots level in the regions.

In the development of the conceptual framework and planning and implementation of the follow-on project, consultations with IPGRI would be useful in order to benefit from the technical expertise available, in line with its institutional mandate and mission.

Annex I. List of major research outputs

- Kebebew, F., Tsehay, Y. and McNeilly, T. (2001). Diversity of durum wheat (*Triticum durum* Desf) at in-situ conservation sites in North Shewa and Bale Ethiopia. *Journal of Agricultural Science*: 136:383-392.
- Kebebew, F., Tsehay, Y. and McNeilly, T. (2001). Morphological and farmers diversity of Barley (*Hordeum vulgare* L. (Poaceae) at Bale and North Shewa. *Journal of Genetic Resources and Crop Evolution*: 48:467-481.
- Negash, A. (2001). Diversity and Conservation of Enset (*Ensete ventricosum* Welw. Cheesman) and its relation to household and livelihood security in South-western Ethiopia. Ph.D. Thesis, Wageningen University.
- Kebebew, F., Gebeyaw, Z. and Tsehay, Y. (2001). Ethno botanical survey on durum wheat (*Triticum durum* Desf.) in Tegulet (North Shewa). Workshop Proceedings. IBCR, Addis Ababa
- Yibrah, H. (2001). Genetic population structure studies of 28 barley varieties from all the GEF sites (6 from Tigray, 9 from North Shewa and 13 from Bale). IBCR, Addis Ababa.
- Yibrah, H. (2001). Study on the status of agro-biodiversity and identifying the main reasons for genetic erosion at the GEF sites. IBCR, Addis Ababa.
- Yibrah, H. (2001). A technical and implementation manual on genetic resources conservation and utilization, characterization and evaluation, on the use of CSBs and on the revolving seed supply system. IBCR, Addis Ababa.
- Feleke, W. (2000). A study on biodiversity management in Daaddegoyo (Traditional Home Gardens) by Kaficho People (Southwestern Ethiopia): An ethnobotanic approach. M. Sc. Thesis, Addis Ababa University, Addis Ababa.
- Kebebew, F., Gebeyaw, Z. and Tsehay, Y. (2000). Local knowledge and diversity of barley in Ankober (North Shewa) Ethiopia. Proceeding of the International Society of Ethno biology, 7th congress, University of Georgia, USA.
- Fassil Kebebew and Kaleab Wondimu. (2000). Market study in some selected markets of North Shewa Survey Report. IBCR, Addis Ababa
- Ayneabeba Adamu. (2000). Rhizobial status and strain identification of some pulse fields at Ankober, Keyt, Mehal-medea and Molale (North Shewa). M.Sc. thesis.
- Tanto, T. (1999). Genetic analysis of the competitive ability of barely (*Hordeum vulgare* L.) recombinant inbred lines, intercropped with oat varieties. MSc. Thesis, Wageningen Agricultural University, The Netherlands.
- Mulualem Tamiru. (1999). Morphological and molecular diversity in durum wheat (*Triticum durum* Desf.) landraces of North Shewa. M.Sc. thesis.
- Yeshitila Mengistu. (1999). Local Knowledge and maintenance of crop genetic resources in North Shewa. M.Sc. Thesis
- Bechere, E and Kebede, H. (1997). Durum Wheat in Ethiopia- An old crop in ancient land, IBCR, Addis Ababa.
- Wondimu, M. (1997). Kororeima (*Aframomum corrorima*) - Collection, Conservation, and Development: a Monograph. IBCR, Addis Ababa.
- Awas, T. (1997). A study on the ecology and ethnobotany of non- cultivated food plants and wild relatives of cultivated crops in Gambela Region, South Western Ethiopia. MSc Thesis, Addis Ababa University School of Graduate Studies, Addis Ababa.
- Wondimu, M. (1996). Coffee (*Coffea arabica* L) at the center of origin and diversity (Ethiopia). IBCR, Addis Ababa.
- Kebede, H., Tadese, D. and Kebebew, F. (1995). (Eds) Proceedings of the workshop on Planning and priority setting in eco-geographic survey and ethnobotanical research in relation to genetic resources in Ethiopia, 15-16 February 1995.

Annex 2. Membership of crop conservation association across regions, zones and woreda by gender

Region	Zone	Woreda	CCA members by gender category			Total
			Male	Female	% Female	
Oromia	East Shewa	Lume	800	200	20.0	1000
Oromia	East Shewa	Gimbichu	240	60	20.0	300
Oromia	Bale	Agarfa	84	12	12.5	96
Oromia	Bale	Goro	82	19	18.8	101
SNNPR	Keffa Sheka	Decha	170	56	24.7	226
SNNPR	Keffa Sheka	Chena	268	29	9.8	297
Amhara	North Shewa	Ankober	70	18	25.0	88
Amhara	North Shewa	Insaru Wayu	60	6	9.0	66
Amhara	South Wello	Kallu	206	17	7.6	223
Amhara	South Wello	Wereilu	311	51	14.1	362
Tigray	Eastern zone	Hawzen	270	30	10.0	300
Tigray	Eastern zone	Ganta Afeshum	270	30	10.0	300
Total			2831	528	15.1	3359

Annex 3. Number of conservator farmers trained across regions, zones and Woreda by gender

Region	Zone	Woreda	Number of Trainees by gender		% Female	Total
			Male	Female		
Amhara	North Shewa	Ankober	262	66	20	328
Amhara	North Shewa	Insaru Wayu	284	32	10	316
Amhara	South Wello	Kallu	114	17	13	131
Amhara	South Wello	Wereilu	114	17	13	131
Oromia	East Shewa	Lume	1130	126	10	1256
Oromia	East Shewa	Gimbichu	360	40	10	400
Oromia	Bale	Agarfa	84	12	12	96
Oromia	Bale	Goro	82	19	12.0	101
SNNPR	Keffa Sheka	Decha	318	56	15.0	374
SNNPR	Keffa Sheka	Chena	318	57	15.0	375
Tigray	Eastern zone	Hawzen	146	44	30.0	190
Tigray	Eastern zone	Ganta Afeshum	146	39	26.0	185
Total			2095	284	16	3883

Annex 4. The level of implementation of the project activities

Narrative summary	Key indicators	Monitoring & evaluation	Status
<p>Goal and purpose</p> <p>Goal: Development of a sustained capacity within Ethiopia to conserve biodiversity of crop landraces together with their associated farmer knowledge</p> <p>Purpose: To ensure that Ethiopia's plant genetic resources and their associated farmer knowledge are conserved through a farmer-based approach</p>	<p>Establishment of <i>in situ</i> conservation sites and CCAs in project areas, construction of Community Banks, training of 3PhDs, 1MSc & 2BSc, research started in 6 project sites, selection of farmer conservators, purchase of project equipment and employment and deployment of staff</p> <p>Establishment of farmer-based conservation initiatives, strengthened traditional conservation methods, blend and integrate farmer/modern technologies, increased participation of farmers in the conservation programme</p>	<p>An external and internal system is put in place to monitor project planning and implementation of activities, recommendations of PCC, PAOC and evaluation missions are implemented</p> <p>Develop and strengthen process of ownership by communities, particularly women farmers</p>	<p>Project highly contributed to the intended goal as six conservation sites have been established; 12 CCAs and 12 CGBs have been established; 4 PhDs, six MScs, 2 BScs are trained and 5 BScs and 13 Diploma undergoing training; 3883 farmers and 44 Certificates trained; research started and successful in six sites; 3359 conservator farmers selected; vehicles and equipment purchased and project staff employed and deployed</p> <p>However, this capacity is largely in IBCR and both the external and internal systems of project planning, implementation and monitoring has been weak with recommendations of PAOC and evaluation missions not being fully implemented</p> <p>The project has contributed significantly in achievement of the purpose as 400 farmer varieties comprising 22 crops have been conserved on farm with annual turnover of 136,942 Kg of seeds and substantial information on indigenous knowledge has been documented through papers and MSc thesis. The process of ownership by farmers has been weak for example in devolution of power, legalization of CCAs and poor participation by women farmers in CCAs and in training.</p>

Objective 1: Strengthening institutional capacity for planning and implementing in situ conservation

Narrative summary	Key indicators	Monitoring & evaluation	Status
Outputs			
1.1 Enhanced research capacity at IBCR and collaborating institutions in crop biodiversity surveying & site identification	Comprehensive report on state of knowledge; workshop report and recommendations; technical reports on agro-ecological surveys	Joint planning and research activities undertaken	Done – report on state of the art done, technical papers compiled and presented in workshop; recommendations made but no follow-up; results of agro-ecological surveys reported in annual progress reports
1.2 Enhance ethnobotanical and social research capacity	Workshop and seminar reports, technical papers, survey methodologies, research proposals, information exchange, 1 Ph.D. and 2 BScs	Joint planning and implementation of research undertakings with social and life sciences, progress reports of trainees	Done - a paper presented in international conference; an MSc thesis completed; 1 Phd and 2 BScs completed; initiation of joint research undertakings with social and life sciences was weak
1.3 Enhance population and conservation biology research capacity	Data bases, no. of documents acquired, and no. of users, recruitment of full project staff, No. of MOUs signed, No. of ongoing collaborative activities, 2 PhDs 3 MSc, 4 Technical support staff, survey and seminar reports, technical reports	Work plans and outputs of recruited personnel, joint work plans with collaborating institutions	Done – papers on populations dynamics in wheat and barley published in refereed journals; 3 PhDs and 5 MSc completed; 2 BScs completed and 5 BScs on-going; 13 Diplomas on-going; technical reports compiled. Collaboration with other institutions weak, weak joint planning.
1.4 Enhanced capacity of IBCR to conserve crop germplasm	List of vehicles, computers & field equipment procured, no. of germplasm accessions, 6 technicians trained, databases	Field visits made, use of databases, technicians lab reports	Done - 5 Project vehicles and equipment purchased, 400 accessions comprising of 22 crops collected and conserved in IBCR; laboratory equipment for molecular work done purchased; <i>ex situ</i> gene bank equipment purchased; computers purchased and databases in use.

1.5 Enhance capacity of national herbarium	List of vehicles, computers and equipment procured, no. of specimens collected & stored under the project, name and size of databases	Field visits made, use of databases	Done - 1 vehicle purchased; computer and some accessories procured Computerisation and development of databases in progress List from herbarium not yet available
--	---	-------------------------------------	---

Objective 2: Establish community support for in-situ conservation and establish CGB in 6 districts

Narrative summary	Key indicators	Monitoring & evaluation	Assumptions Risks
Outputs			
2.1 Established <i>in situ</i> conservation activities in 6 districts	IBCR field reports, reports of meetings and recommendations, no of farmers identified, activity reports	Work plans and travel schedules	Done - Teams for all 6 project sites well in place and tangible research activities undertaken as reported terminal report; 49 conservation sites in six districts studied, 3359 farmer conservators elected, 400 farmer varieties comprising of 22 crops conserved <i>in situ</i> on rotation basis
2.2 Siting of Community Gene Banks and build community support	Reports; evidence of community consultation, selection criteria, no of visits and meetings held, no. of CCAs established	Review of field reports and site plans, schedule of field visits, meetings and composition of CCAs	Done – the sites for CGBs were selected in consultation with communities, project leaders visit the sites at about 8-10 times a year; 12 CCAs established and are functional, CCAs rules and regulations in place but low women participation and CCAs are not legalized yet. Sustainability mechanisms need to be refined
2.3 Construction of six community gene bank facilities	Comparison with other gene banks in Ethiopia in terms of cost, technology and recurring costs, gene bank plans, no. of CGBs constructed	Review gene bank plans and bidding process, level of community involvement	Done – Achievement exceeded expectations, 12 Community Gene Banks fully constructed and are operational; there is good community participation in their running; CGBs are well equipped and motor cycles supplied to DAs. The CGBs too big, costly and don't blend very well with community set-ups.

Objective 3: Select and Train Farmer Conservators to Curate and Manage CGBs

Narrative summary	Key indicator	Monitoring & evaluation	Status
Outputs			
3.1 Identification of farmer conservators at each CGB site	Reports of CCA meetings, names of the Farmer Conservator by CGB sites and gender, no. of farmers selected	Process of stakeholder inclusion	Done – Most CCAs have annual general meetings, have management framework; 3883 conservators joined the CCAs
3.2 Develop capacity of Farmer Conservators	Course program; no. of persons trained by district and by gender; overall grading of the course conducted, workshop reports, lists of equipment supplied to Farmer Conservators	Development of the course curricula and course evaluation procedures	Done - 3359 have received different forms of training, women representation was low <20%; regional district level workshops organized; training course curricula not well developed

Objective 4: Strengthen IBCR - Farmer Interaction

Narrative summary	Key indicators	Monitoring and evaluation	Status
Outputs			
4.1 Improved extension agent training in CGB districts	Course program; no. of persons trained by district and by gender; overall grading of the course conducted, no of visits by agents to IBCR, no. of ecogeographic surveys conducted using DAs, no. of community based workshops	Development of the course curricula and course evaluation procedures, agents work plans and reports	Done – 13 Diplomas trained at Jimma College, DAs trained at IBCR; visits of agents to IBCR effected and ecogeographical surveys held as reported in annual progress reports and publications; community based workshops held.
4.2 Enabling Extension agents	No. of extension agents provided with transport, lists of equipment provided No. of visits by DAs to farmers	Extension agents' reports of sites visited.	Done - DAs trained and supplied with 12 motorcycles Lack of timeliness in delivery of material and monetary provisions to DAs

4.3 Increased IBCR presence in CGB districts	Tour reports Timings of visits	Timely schedule of visits	Done – Regular visits, 8-10 per site per year are reported and interactions between site leaders, DAs and CCA leaders seen to be effective
--	-----------------------------------	---------------------------	--

Objective 5: Develop community and market incentives for in situ conservation

Narrative summary	Key indicators	Monitoring & evaluation	Status
Outputs			
5.1 Identification of marketable landraces and investigating their market potential	No. of products identified and their potential market value, reports of socio-economic studies, marketing bottlenecks identified, EIA reports	Identification and contracting of consultants	Done – linkages with milling industries established and farmers contracted to produce about 1,000 tons of durum wheat annually; consultants' report on markets and socio-economic situations compiled and recommendations made
5.2 Create non-market community incentives	No. of annual regional agricultural fairs held; No. of farmer-led displays; No. of visitors, no. of contracts awarded; no. languages and types of educational material developed/ distributed	Calendar of agricultural fairs developed, identification and awarding of contracts for PA material	Done – Seed revolving funds initiated in project sites; some audio-visuals made but targeted audience not well defined; weak link with Ethiopian NGOs engaged in PA at national and community level.
5.3 Analysis of national policies affecting crop diversity	Reports of the Consultant; Periodic monitoring reports; Action taken by PAOC/PCC	Identification and contracting of suitable consultants, policy monitoring system in place	Done – Consultant's report on sectoral and inter-sectoral policies compiled and recommendations made

Annex 5. Documents on File

Project Documents

- Feyissa, R. 1998. *A Dynamic Farmer- Based Approach to the Conservation of Ethiopia's Plant Genetic Resources: Progress Report on Project*. IBCR, Addis Ababa
- IBCR. 1996. *Project Performance Evaluation Report (PPER)*. IBCR, Addis Ababa
- IBCR. 1997. *Progress Report on Project for the year*. IBCR, Addis Ababa
- IBCR. 1998. *Progress Report on Project for the year*. IBCR, Addis Ababa
- IBCR. 1999. *Project Performance Evaluation Report (PPER)*. IBCR, Addis Ababa
- IBCR. 2000. *Progress Report on Project for the year*. IBCR, Addis Ababa
- IBCR. 2001. *Progress Report on Project for the year*. IBCR, Addis Ababa
- UNDP. 1994. *A Dynamic Farmer-Based Approach to the Conservation of African Plant Genetic Resources. Project document*. UNDP-Ethiopia.

Workshop/Conference proceedings

- Kebede, H., Tadese, D. and Kebebew, F. (1995). (Eds) *Proceedings of the workshop on Planning and priority setting in eco-geographic survey and ethnobotanical research in relation to genetic resources in Ethiopia*, 15-16 February 1995.
- Arega.T and Demissie, A. (1998). *Report on Joint Project Overseeing and Advisory Committee. (PAOC) and Project Coordinating Committee (PCC) Meeting on "A Dynamic Farmer-Based approach to the Conservation of Ethiopia's Plant Genetic Resources Project"*, 26 March, 1998, Institute of Biodiversity Conservation and Research, Addis Ababa

Consultancy Reports

- Debello, A., Gadgil, M. and Padoch, C. (1999). *Report on the STAP Selective Review of, "A dynamic farmer-based approach to conservation of African Plant Genetic Resources"*. UNDP, New York and Addis Ababa.
- Chakraborty, M., Kiambi, D.K., Telaye, A. and Zegeye, T. (1999). *Mid-Term Review of , "A dynamic farmer-based approach to conservation of African Plant Genetic Resources"*. UNDP, New York and Addis Ababa.
- Anteneh, A. (2001). *Analysis of market and socio-economic situations affecting in situ biodiversity conservation in Ethiopia*. IBCR, Addis Ababa.
- Anonym. (2001). *Analysis of sectoral and inter-sectoral policies affecting in situ biodiversity conservation in Ethiopia*. IBCR, Addis Ababa.

Official Documents

- IBCR. 1998. *Biodiversity Conservation and Development - Strategy and Action Plan for Ethiopia*. Institute of Biodiversity Conservation and Research, Addis Ababa
- Government of Ethiopia. 1997. *National Policy on Biodiversity Conservation and Research*. Government of Ethiopia, Addis Ababa
- Government of Ethiopia. 1993. *A Proclamation to Provide for the Establishment of the National Seed Industry Agency*, Proclamation No. 56/1993. Government of Ethiopia Addis Ababa
- Government of Ethiopia. 1998. *A Proclamation to Provide for the Establishment of the*

Institute of Biodiversity Conservation and Research, Proclamation No. 120/1998.
Government of Ethiopia, Addis Ababa