

**NATIONAL BEST PRACTICES REPORT
ETHIOPIA**

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Acronyms and Abbreviations:

AIDS	Acquired Immune Deficiency Syndrome
ARARI	Amhara Regional Agricultural Research Institute
ASE	Agri-service Ethiopia
AZULMA	Albuko ena Zuriaw Limat Mahiber
CBD	Convention on Biological Diversity
CBI	Community Based Institution
CBO	Community Based Organization
EE&A	Environmental Education and Awareness
ha	Hectare
HH	Household
HIV	Human Immunodeficiency Virus
km	kilometer
MG	Micro-grant
MGC	Micro-Grant Coordinator
NBI	Nile Basin Initiative
NGO	Non Governmental Organization
NPC	National Project Coordinator
NTEAP	Nile Transboundary Environmental Action Project
ORDA	Organization for Rehabilitation and Development in Amhara
SSD	Support for Sustainable Development
SVP	Shared Vision Program
TT&T	Team Today and Tomorrow
USD	United States Dollar

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Executive Summary:

What is strikingly new in the Shotelemat – Mentara Community Watershed Management project is the paradigm shift in land use management as a mean to rehabilitate the sloppy and degraded farmland with the inception of a community incentive system which was specifically tailored to address women as the main partners. In view of the success made, neighboring villagers had already adopted the concept of integrated soil conservation practices through their own efforts and resources. Ultimately, this means that the project has a strong potential for replication and sustainability.

The intervention, Lay Michael Integrated Watershed Management, succeeded to rehabilitate a total degraded land of 50 hectares through the practice of area closure entrusted to the beneficiary groups. The farmers around the enclosures were surprised by the impact of the area closure technique for natural regeneration of the various local trees and grasses. They also indicated that the closed area became a demonstration site for local residents looking for better environmental management.

The project, Itsecomol Medical and Indigenous Plant Conservation, being within the primary health care domain, triggered the interest of the community. However, in order to enhance its sustainability it is important that the project leaders should be transparent in sharing unveiled traditional medical knowledge, create strong linkages with traditional institutions that have similar interest and deal with organized local groups having legal land holdings. The fact that the project has trained more than 14,500 individuals relating to different disciplines, the success made in sharing much information on medicinal plants and the wider partnership created by the project, all, provide a solid base for its replication.

The project, Household Based Forest Development in the Upper Jejeba Watershed, has managed to establish a total of 434,450 tree seedlings which were further planted by the project for multiple purposes. This intervention also created an opportunity for alternative income generation through sale of seedlings. The key factors for the sustainability of the project include the creation of a strong partnership with local administration and institutions and the integration of the planned project's activities into local development plans.

One of the major achievements of the Ambo Secondary and Preparatory School Project was the establishment of a tree nursery within the school compound. The club members raised various indigenous trees and fruit trees that are suitable to the school environment. However, they could only raise indigenous tree species during the project period due to shortage of fruit seeds

The overall performance of Gohatsion Secondary and Preparatory School project is beyond expectation. Being very close to the Abay Valley and cognizant of the fact that environmental issues are directly tied to the daily livelihoods of the community, they have the determination and readiness to implement projects of this nature within the context of NTEAP in Ethiopia. However there is a need to: (a) finalize the construction of the biogas extension up to the school laboratory club as soon as possible; (b) plant more fruit trees; and (c) further ossify the porgrammes of awareness raising, enhance outreach visits and constantly share experience and knowledge; and (d) continue raising the technical capacity of the to club members.

The Kassim Primary School project had demonstrated immense tangible benefits that include financial revenue from the sale of vegetable crops, awareness promotion and enhancement of the technical skills of the students and the community at large on various activities pertaining to the project. The financial benefits gained from the sale of vegetable crops had helped many of the students to remain on board; otherwise they would eventually drop out of school. However, in order to enhance sustainability and replicability of the project there is a need to solve the critical water shortage, seek more substantial support from various concerned stakeholders, enhance the participation of the community members through continuous awareness raising activities, introduce multipurpose tree seedlings, initiate integrated approach for development and launch organized and sound natural resource and environmental conservation programmes to be supported by robust public awareness campaigns.

In Sadini Biyyo Primary School where students enrolment is totally depend on school feeding, the implementation of the school project had achieved tangible outcomes. This includes confidence of students that they can be able to attend schools by producing the various vegetable and fruit tress as sources of income for their educational material and provide additional source of food for their families. Furthermore it created greater awareness on the causes of land degradatation, soil erosion, low crop production and its mitigation measures. However, to sustain or upscale the school activity, there is a need to Look for dependable sources of funding, provide additional source of water, provide different fruit tree and vegetable seeds, provide different nursery equipments and arrange exchange visit in areas where similar and successful activities have been conducted.

The success of the Highland Fruits and Natural Resource Conservation project began at the very stage of defining the underlying problem, which correlated poverty with environmental degradation. Such reciprocal relationship had enabled the project design to focus on provision of alternative livelihood opportunities.

The positive nature of this approach is two-fold: firstly, helped in reducing the destruction of the natural resources caused by the disadvantaged groups as a means of subsistence; and secondly, it paved the way towards opening up hitherto unknown alternative livelihood opportunities and, yet better rewarding with improved living conditions of target community members. Thus, one of the key issues yet, fundamentally determined the direction of the project towards its successful completion was the clearly demonstrated poverty – environmental degradation linkage.

The rationale behind the integrated Addis Zeman Preparatory School Environmental Education Club project is to use the school, in addition to its mandated role for education, as a center of excellence in order to promote environmental management through the establishment of school based Environmental Club. In this context the club had managed to forge the link between the school and the community to the extent that the latter got engaged in addressing critical environmental issues pertaining to siltation in Lake Tana, land degradation, erosion and deforestation. In order to carefully manage this complex project, a set of indicators were set mostly focusing on the extent and survival rate of seedlings under the arid environment, income generation, water harvesting, recycling of waste and capacity building.

The outcomes of the Monarch Environmental Support Programme project are progressively impressive which means that the project has a huge potential for replication and up-scaling in nearby mountainous ecosystems that are presently suffering from massive sheet and gully erosion, serious land degradation and loss of fertility. The simple alternate energy technology adopted by the project led to energy conservation of up to 75% in the total biomass. The extensive use of the compost had doubled the growth rate of fruit trees and tripled the total production of vegetables. The spring development cement lining technique adopted by the project was effective both for good quality drinking water, cessation of seepage and provision of supplementary irrigation. One unique outcome of the project was the restoration of the wildlife habitat. As a consequence of that monkeys, birds, wild pigs, antelope, wild cat, foxes and hyenas were seen in the area after thirty years of absence. Conclusively, these religious attachments are in a way analogous to the school attachments, albeit popular mobilization is more effective under the former arrangement as compared to the latter.

1. Introduction:

The Nile Transboundary Environmental Action Project (NTEAP) is one of the eight projects under the Nile Basin Initiative (NBI) Shared Vision Program (SVP). The main objective of the project is to provide a strategic environmental framework for the management of the transboundary resources and environment challenges in the Nile River Basin. Moreover, NTEAP also aims at improving the understanding of the relationship of water resource development and environment, providing a forum to discuss development paths for the Nile with a wide range of stakeholders, enhancing basin-wide cooperation and environmental awareness as well as enhancing environmental management capacities of basin-wide institutions and the NBI. In order to meet these major and specific objectives, NTEAP has comprised the following five focus areas/components:

- Institutional Strengthening to Facilitate Regional Cooperation (ISFRC),
- Community Level Land, Forests and Water Conservation (CLLFWC),
- Environmental Education and Awareness (EEA),
- Wetlands and Biodiversity Conservation (WBC)
- Water Quality Monitoring (WQM).

The Community-Level Land, Forests, and Water Conservation component supports pilot activities in geographic and thematic areas of transboundary significance. It demonstrates the feasibility of local level approaches to land and water conservation, including mitigation action for erosion, non-point source pollution, invasive waterweeds, environmental awareness and Non Governmental Organization (NGO) networking. The Environmental Education and Awareness (EE&A) component within the NTEAP focuses on creating awareness on the River Nile environmental threats, while stimulating behavioral change at three levels; the general public, secondary schools and tertiary institutions of learning. The secondary schools sub-component is among the three sub-components of the EEA, targeting the future generation of the Nile basin. One of the activities planned under this sub-component are to support transboundary education and awareness activities that build on the promising local and national initiatives on project based learning.

The Nile Transboundary Micro-grants (MG) Program is one of the major activities designed within the Community-Level Land, Forests, and Water Conservation component that basically support community driven interventions to address transboundary environmental threats on a local scale and to provide alternative sustainable livelihood opportunities to communities who may otherwise be obliged to over exploit their natural resources.

It contributed to the efforts towards sustainable development by responding directly to funding proposals submitted by Community Based Organizations (CBOs), organized groups (women, youth, etc), community supported national NGOs and schools. Accordingly, the NTEAP has established major activities on the ground that is of significant importance to the Nile Basin countries and have an impact on the environment of the basin. These activities are implemented by various development actors such as CBOs, NGOs and school teachers and students. The collective objective of these activities are to pilot innovative approaches to land and water conservation measures at the national level, raise awareness on the major environmental threats that face the Nile basin and enhance the technical cooperation among the Nile basin countries.

In general, the main emphasis of MG programme were on piloting new and promising trans-boundary initiatives, on the development and dissemination of best practices and exchange of lessons learned. To this effect, NTEAP has initiated and funded this study which was carried out by a national consultant. The overall objective of the study was to validate the technical appropriateness of each identified by the National consultation committee, NTEAP National Project Coordinator (NPC) and Micro-Grant Coordinator (MGC) with the view of its contribution to the proper management of the Nile basin environmental resources.

In 2007, NTEAP embarked on a major exercise to identify, review, select and document techniques and processes that have the potential to be sustainably replicated and/or up scaled.. In support of this process a regional workshop was held in Kigali in August 2007 in order to enhance the capacity of the National Coordinators in the identification and selection of the best practices in their respective countries. The major criteria or parameters used for the validation of the selected best practices are:

- Demonstration of positive impacts that address the need of the project beneficiaries with respect to the Nile Basin environmental issues;
- Potential for easy replication or up-scaling;
- Cost-effectiveness of the outputs achieved during the project period
- Innovativeness of the project strategy or approach to address the Nile Basin environmental issues and
- Sustainability in the long term.

Based on the above mentioned criteria three NTEAP MG projects were validated and found to qualify for the documentation of best practices among the five projects proposed by the National consultation committee, NPC and MGC earlier and presented at the regional best practices workshop held in August 2007 in Kigali, Rwanda.

In addition to these, two new projects were validated and selected for the documentation. Therefore, this document provides detailed information on the nature of each best practice of the following five projects:

- Shotelemat-Mentara Community Watershed Management Project
- Lay Michael Integrated Watershed Management Project
- Itsecomol Medicinal and Indigenous Plants Plantation and Conservation Project
- Household Based Forest Development in the Upper Jejeba Watershed
- Ambo Secondary and Preparatory School Project

2. Best Practice Concept: Basic Definition:

Generally, within the NTEAP, the art of best practice is defined as a visibly sustained impact of an innovative project/Programme brought about by a particular design, a technique, a process, a methodology and finally delivered with fewer problems and unforeseen complications.

Specifically, in environmental management, the concept of best practice is literally defined as the most efficient and effective series of outcomes that have proven desirable and further generate sustained impact, both on the resource base and beneficiaries. As such, they could be further replicated or up-scaled in similar ecosystems; advisably with a recorded multiplier value.

As a conduit for knowledge management, the best practice concept facilitates wide exchange of information, enhances trading of sustainable good operating systems" and promotes cross-border, transboundary and regional cooperation.

3. Best Practice 1: Shotelemat –Mentara Community Watershed Management

3.1 Problem Statement:

The thin vegetation cover of the area has been under a number of severe degradation threats beginning from the twenties. Loss of vegetation, high population pressure, shortage of farm land, cultivation on the steep hill sides, overgrazing are the major factors that aggravated the deterioration of productivity and subsequently impoverished the people. Soil erosion has been the main driving force for low productivity of the farmlands Furthermore, absence of extensive soil and water conservation practices as well as a highly degraded and undulating terrain of the area further added to the magnitude of the problem. The area has been designated as one of the target localities for the regular food aid programme of the government.

Hence, the project was designed to assist the communities of the watershed to rehabilitate the area through integrated watershed management approach for better environment which in long term will result in sustainable development and ensure food security at household level.

3.2 Justification for Selection (innovativeness):

The project has introduced a number of important land use packages which were successfully adopted by the villagers. Firstly was the integrated soil and water conservation measures made by the farmers on their respective farmland voluntarily following the watershed management principles (see plates 3 &4). Though there were limited individual efforts of using traditional conservation methods, most of the farmers were not familiar with the integrated conservation approaches before the intervention of the project. The conservation measures implemented in the watershed include graded soil bunds, cut-off drains and water ways. Secondly, the project has managed to introduce a shift from crop lands directly into forest lands in order to rehabilitate the degraded slopes of the watershed. Thirdly, the project has directly involved communities in watershed management, an activity which was technically latent before the project.

3.3 Technical Approach: Design and Methodology:

The main objective of the project was to assist the residents of Shotelemat-Mentara area towards halting environmental degradation, rehabilitating natural environment and improving livelihoods through the implementation of integrated watershed management activities. The project strategy is four-fold: firstly, reduce soil erosion from farmlands and hill sides through implementation of biophysical conservation techniques; secondly, engage communities in tree plantation activities both around the homestead and hill sides; thirdly, increase awareness of the community on natural resource management; and fourthly, strengthen the capacity and experience of the CBO. The implementation strategy of the project included:

- Actively involve the local community through the CBO,
- Create close relationship with the local administration as well as line development offices,
- Free supply of forest tree seeds,
- Rehabilitation of the Central Nursery in the locality,
- Provision of direct incentives in the form of farm tools,
- Provision of training on forestry, steep land management and improved farm land management, spring maintenance, Sanitation and management
- Set community incentive systems particularly for the provision of the clean water supply scheme

The main activities carried out included: (a) production of tree seedlings at the central nursery; (b) raising and plantation of seedlings by community members; (c) construction of different types of conservation measures (check dams, farm terraces, cut off drains and bund stabilization); and (d) training of Woreda experts and community on watershed management techniques and awareness raising and capacity building activities through symposiums and workshops for experts and influential community members to sensitize the need for environmental protection.

3.4 Partnership:

The direct project beneficiaries are the people living in the watershed, specifically in Wenfech, Jegola and Sirrefursse villages, which is estimated to be 1000 households. The main stakeholders are local administration and associated line development offices, the NTEAP/ MGP, the community of Albuko ena Zuriaw and the CBO.

3.5 Essence of the Best Practices:

The essence of a best practice project takes into consideration three key issues namely, accrues benefits and lessons learnt, sustainability and replicability. For the Animal Traction Project these could be further elaborated as follows:

3.5.1 Benefits and lessons learnt:

The afforestation and soil conservation intervention of the project are impressive. Overall 40,000 various tree seedlings were raised and distributed to more than 92 farmers among whom 20 were female participants. The plantations took place around homestead as well as on the degraded sloppy areas of the watershed (see plates 1&2 below), which were owned and cultivated by individual farmers. Farmers have supported the plantation with micro basins structures in order to conserve moisture so that favorable conditions created to boost the survival and success rates for the seedlings. The survival rate was estimated at 90% and 95% for the degraded steep hills and homesteads, respectively. The farmers have started displaying land use change in that they planted the upper most peak of the hill which they used to plough before the intervention. Moreover, farmers juxtapose to the participating farmer were also observed replicating the same effort by own initiative and capacity (see plate 2). The land use change from cultivated land to forest land could be considered as one of the best practice of the project. This is due to the fact that the decision made by the owners of the land for the land use change is in line with the recommendation of the land use expert based on land capability classification.



Plate (1): View of the Project Area



Plate (2): Plantation on Steep Slopes

The other best practices of the project are the integrated soil and water conservation measures made by the farmers on their respective farmland voluntarily following the watershed management principles (see plate 3 &4). Though there were limited individual efforts of using traditional conservation methods, most of the farmers were not familiar with the integrated conservation approaches before the intervention of the project. The conservation measures implemented in the watershed include graded soil bunds, cut-off drains and water ways.



Plate (3): Soil and Water Conservation/Measures



Plate (4): Soil and Water Conservation Measures

Also it was observed that the project has a number of strengths namely, strong partnership with local administration, active participation of the project beneficiaries, strong and close follow-up of the local administration, introduction of land use change as a means of rehabilitating the sloppy and degraded areas under cultivation and community incentive system (spring development) specific to women problems. Finally, the CBOs that are usually established by involving the local people can easily mobilize all community members for any development activities that can meet the local needs. This was also found to increase the trust and commitments of the local residences and local administration for timely accomplishment of planned activities.

3.5.2 Sustainability:

The accrued benefits reported by the project, the strong partnership with local administration, active participation of the project beneficiaries, strong and close follow-up of the local administration, introduction of land use change as a means of rehabilitating the sloppy and degraded areas under cultivation and community incentive system (spring development) specific to women problems all appeared to be key elements for the future sustainability of the project.

3.5.3 Replicability:

In view of the success made neighboring villagers had already adopted the concept of integrated soil conservation practices using their own resources. Ultimately, this means that the project has a strong potential for replication.

3.5.4 Limitations and Challenges:

The major weakness of the project observed during the study was inadequate fundraising efforts made by the CBO leaders to keep the momentum gained in the mobilization of the local communities. The main challenge of the project was the rugged and mountainous nature of most parts of the watershed. This situation forced most of the farmers to cultivate steep slopes that were rarely treated with traditional conservation measures.

4. Conclusion:

What is strikingly new in this project is the paradigm shift in land use management as a mean to rehabilitate the sloppy and degraded farmland with the inception of a community incentive system which was specifically tailored to address women' as the main partners. It is therefore in view of the success made, neighboring villagers had already adopted the concept of integrated soil conservation practices using their own efforts and resources. Ultimately, this means that the project has a strong potential for replication and sustainability.

5. Best Practice 2: Lay Michael Integrated Watershed Management Project

5.1 Problem Statement:

Widespread poverty, chronic food shortage and meager rainfall for agricultural production characterize the project area. As a result of recurrent drought, selling of livestock and other household assets are common phenomena.

These days, the community uses labour migration as major coping mechanism to overcome the problem, but it is also contributing to the spread of HIV/AIDS and

other social crisis like divorce and children dropping out of schools. Environmental degradation in particular is the core problem of the area. Each year, enormous mass of agricultural land remains non-productive due to severe soil erosion. This in turn is seriously affecting crop and livestock production. Besides, due to small land holding, 0.75 ha/HH on average, all hillsides and steep slopes were ploughed leaving behind a bare land which is apt for soil erosion. Due to the disturbance of the natural environment, the community is suffering from recurrent drought; hence, most of the farmers in the area are poor. Almost 65 % of the farmers categorized as poor and poorest of the poor. There are 801 households (25.3% women headed) and most of them severely affected by natural calamities like erratic rain, drought, hailstorm, and flooding. The soil erosion coupled with the recurrent drought made the area highly food insecure. Unless the situation is reversed, at the earliest, the socio-economic problem will further aggravate and may become difficult to ameliorate.

5.2 Justification for Selection (innovativeness):

The project was a real contribution to improvement of degraded lands, conservation of natural resources and restoration of household food security in fragile ecosystems. In this context, this initiative was found to protect, conserve and improve natural resources for efficient and sustainable production of the main food crops which in turn improved the household food security. Moreover the project triggered the awareness of villagers on environment and HIV/AIDS and further enhanced their capacity on biological and physical soil and water conservation measures on farmlands.

5.3 Technical Approach: Design and Methodology:

Alem Birhan Community Based Institution (CBI) was established in 2004 with a close support and capacity building it got from Agri-service Ethiopia (ASE), a local NGO that has been working in the area. Currently, it is structured in to a general assembly, board of management and audit and inspection. This is a result of series of intervention injected by ASE with the intention of empowering the community so that they will be able to lead many of the development activities in its project areas, specifically in seven of the previously ASE intervention localities. Agri-Service Ethiopia in consultation with Alem Birhan CBI and Enebsie Sar Mider Woreda Agriculture and Rural Development office selected Lay Michael sub-watershed for pilot integrated watershed management project. Lay Michael sub-watershed (a project area) is located in the Amhara National Regional State, East Gojjam Zone, Enebsie Sar Mider Woreda, 370 km away from Addis Ababa.

The selected sub- watershed called Lay Michael is covering a total area of 738 ha. The project area is located at middle altitude locally called *woina-dega* and is densely populated.

The general objective of this project is to contribute to the improvement of the land and natural resources and restoration of household food security in the target area. The overall strategy of the project include: (a) protect, conserve and improve natural resources for efficient and sustainable production; (b) improve household food status of the poorest community by creating alternative means of livelihood; and (c) improve the awareness of the community on environment, HIV/AIDS and the NBI.

The implementation arrangements include production and planting of tree and forage seedlings, undertaking biological and physical soil and water conservation measures on farmland, area closure, establishment of individual tree nurseries, capacity building for farmers engaged in these activities and establishment of Watershed Development and Management Committee

5.4 Partnership:

At first the main partners to the project include the direct project beneficiaries (about 801 households of whom 25.3% women headed households) residing in the project area. The main stakeholders are local administration and associated line development offices, the Agri-service Ethiopia, NTEAP/MG office and the community of Lay Michael Kebele.

5.5 Essence of the Best Practices:

The essence of a best practice project takes into consideration three key issues namely, accrues benefits and lessons learnt, sustainability and replicability. For the Animal Traction Project these could be further elaborated as follows:

5.5.1 Benefits and lessons learnt:

The intervention managed to conserve and rehabilitate a common degraded land estimated at 50 hectares (see plate 5). This has been achieved through area closure by active participation and common understanding of the beneficiary groups in project area. The farmers, especially those who are having farmland around the enclosures were surprised by the impact of area closure for natural regeneration of the various local trees and grasses. They also indicated that the closed area became a demonstration site for local residents looking for better environment. In addition to this, different conservation structures such as stone bunds and cut-off drains were implemented in near by areas covering about 30 hectares of the cultivated lands (see plate 6).



Plate (1): Impact of Area Closure



Plate (2): Integrated Conservation Measures

Moreover, the Alem Birhan CBI introduced, for the first time, controlled and free grazing in close consultation with the local communities where some of the farmers started practicing this new initiative.

The CBI introduced various forage plants that are planted on soil bunds as stabilization measures (see plate7) as a new initiative. During the study period tangible results with regard to gully erosion control measures (see plate8), natural regeneration of closed area and forage development activities were observed.



Plate (3): Forage Plants on Soil Bunds



Plate (4): Gully Erosion Control

In addition the project has demonstrated: (a) a strong and true partnership developed between the Alem Berhan CBI and Agri-service Ethiopia; (b) active participation and commitment of the direct project beneficiaries; (c) committed stakeholders; (d) documentation of project activities using photographs, knowledge management; (e) a strong movement to produce by-law for the natural resources management; (f) efforts intended for resource mobilization/fundraising made by the board members; (g) collection of annual membership fee from the local residents who are member of the CBI; and (h) a strong will to influence neighboring localities/kebeles in terms of creating interest in conservation activities

5.5.2 Sustainability:

The success made by the project was impressive which indicates that the project can easily be sustained. In addition, the fact that a strong institutional set up for the project has been established which already started to mobilize resources and put a legal framework for the project is a guarantee for its sustainability.

5.5.3 Replicability:

The farmers, especially those having farmland around the closed area were surprised by the impact of enclosures intended for natural regeneration of the various local trees and grasses. As such, the closed area became a demonstration site for local residents looking for better environment. In view of the success made some of the farmers started to practice controlled and free grazing in close consultation with the local communities. This is an excellent indicator for the replicability of the project.

5.5.4 Limitations and Challenges:

The major limitations include weak gender mainstreaming in project setting, poor management of forage plants and poor on-farm physical soil conservation structures. For future the adoption of this project, these three areas have to be cemented.

6. Conclusion:

The success made by the project was impressive which indicates that the project can easily be sustained. In addition, the fact that the project had established a strong institutional set up which already started to mobilize resources and put a legal framework for its activities; is a guarantee for its sustainability. The farmers, especially those having farmland around the closed area were surprised by the impact of enclosures intended for natural regeneration of the various local trees and grasses. In view of the success made some of the farmers started to practice controlled and free grazing in close consultation with the local communities. This is an excellent indicator for the replicability of the project.

7. Best Practice 3: Itsecomol Medicinal and Indigenous Plants Conservation Project

7.1 Problem Statement:

The terrestrial dry lands of the area represent the last remnant of dry ever-green afro-mountain forests where once endowed with extraordinary biodiversity and variety of medicinal plants important for genetic resources and primary health care. The forest ecosystems play also roles in the hydrological cycle by stabilizing catchments and arresting runoff to percolate water down through the process of infiltration. Despite the case, currently, the project area is faced with problems ranging from ecological degradation to water pollution, resulted from deterioration of ecosystems leading to loss of habitats, loss of species, loss of genetic diversity, introduction/invasion of exotic species and cultural pollution due to agrochemical residues. Expansion of cultivation, logging, fuel wood consumption, consumption of non-timber products (i.e. medicinal plants, bamboos and others), infrastructure development (settlement and urbanization); overgrazing; introduction and invasion of non-native species are the direct root causes of the problem. Also population growth, poverty, policy gaps, natural factors (slope, drought, high intensity of rainfalls, soil erodability significantly add to the underlying causes. The effects of these causes are manifested by massive soil erosions, land degradation, gully formation, biodiversity and genetic resource depletion and loss of the ecosystem.

7.2 Justification for Selection (innovativeness)

The motto adopted by the project: "Saving Lives by Saving Medicinal Plants" in itself is a prime justification for its selection as a best practice initiative. Evidently, the project was found to promote conservation and sustainable use of the medicinal plants in primary health care through community based approaches with a focus on primary health care of the rural poor. Consequently, this was found to alleviate a lot of financial burden on the majority of the rural poor in the project area.

7.3 Technical Approach: Design and Methodology:

The main idea behind the project is to promote conservation and sustainable use of the national indigenous trees and medicinal plants used in primary health care through community based approaches in the upstream watersheds of Injibara highlands. The focus was given to medicinal plants and indigenous trees that are essential in cultural therapy, particularly those which are vital to meet the primary health care of the rural poor.

At global scale, the project will complement the first two objectives of the Convention on Biodiversity Conservation (CBD) and Caring for the Earth, Global Biodiversity Strategy and Guidelines for Assessment of Herbal Medicines. Under the motto: "Saving Lives by Saving Medicinal Plants", the project strategy is to: (a) gather valuable indigenous knowledge and information from the traditional healers which is under threat of being lost forever before being transferred to the next generations; (b) identify indigenous trees and the traditional knowledge in the use of medicinal plants in health care; (c) identify medicinal plants and indigenous trees, outline and assess their distribution and abundance; (d) promote the cultivation of medicinal plants as the source of supply for sustainable use; (e) strengthen the conservation and protection of populations of medicinal and indigenous plants in natural habitats, *in situ*, and *ex situ*, outside natural habitats; and (f) build public support for the conservation of medicinal plants through awareness raising and improving communication and cooperation.

The implementation strategy of the project is seven-fold: firstly, conduct preliminary assessment to identify the indigenous medicinal plants and other indigenous trees by species principals; secondly, carry out collection of seeds from mother trees and establish a nursery for seedling production to distribute seedlings for cultivation of medicinal plants; thirdly, identify potential areas that are important for *in situ* (at their natural habitats) and *in state* forests, parks, University compounds, holy sanctuaries (both on churches/ monasteries and mosques), training centers, hospitals by natural regeneration or planting of selected species; fourthly, promote environmental education and awareness raising; fifthly, disseminate information via mass media to reach the general public; sixthly, conduct supervision, monitoring and evaluation of project achievements; and seventhly, report on success as per action plan. In addition the project has managed to: (a) organize youths and women and promote the importance of medicinal plants; (b) ensure free supply of seedlings to organized groups with legal land holding; (c) promote the philosophy of the project in schools and religious institutions; (d) distribute seedlings with exotic species to attract interests; and (e) provide technical support related to medicinal and indigenous plants management

7.4 Partnership:

The main stakeholders and beneficiaries are Enjibara Zone Administration and associated line development offices, the Amhara regional Environmental Protection, Land Administration and Use Authority, Amhara Regional Agricultural Research Institute (ARARI), Bureau of Agriculture and Rural Development, Organization for Rehabilitation and Development in Amhara (ORDA), a local NGO, NTEAP MG office, Enjibara youth association, women association, and churches in the vicinity of Enjibara.

7.5 Essence of the Best Practices:

The essence of a best practice project takes into consideration three key issues namely, accrues benefits and lessons learnt, sustainability and replicability. For the Animal Traction Project these could be further elaborated as follows:

7.5.1 Benefits and lessons learnt:

This is thematically a unique conservation intervention in the Amhara Regional State. Currently, the association has established a center that has been keeping more than 8,000 different plants, of which 110 medicinal, 120 indigenous, 8 exotic, totally 238 types of plants (see plate 9, 10 &11). Moreover, it also contributed to the accumulation and sharing of knowledge through the assessment and compilation of more than 82 species belonging to 69 families of medicinal plants and their traditional uses. The intervention, created an interesting practical learning ground pertaining to conservation of medicinal and indigenous plants. It is a breakthrough and managed to share knowledge in the midst of a situation where traditional medicinal issues used to be considered secrets, even it has never officially been transferred to closer relatives in Ethiopia.



Plate (1) Medicinal Plants Center Plate (2) List of Medicinal Plants Plate (3) Medicinal Plants

The project has arranged a series of comprehensive training and awareness creation on the importance of conserving medicinal plants to different strata of the society. In line with this, 50 civil servants, 35 leaders of youth associations, 20 individuals-traditional healers, 20 environmental club members of 4 schools, 50 church leaders from 15 churches in the area and foresters working in the local offices or institutions. In addition more than 14, 400 participants of different forums attended awareness raising sessions on the subject matter. The project also identified potential sites that are suitable for plantation of the various medicinal plants to be used for reservation and public awareness creation. These sites are the compound of public library (see plate 12), area reserved for park (see plate 13) and individuals-traditional healers (see plate 13) found in Injibara town.

The project also donated various medicinal plant seedlings to the owners or responsible officials of these sites with relevant trainings on the management and use of the plants. Moreover, the project organized four youth groups and trained them on afforestation and conservation activities. The youth groups and churches have totally planted more than 220,000 indigenous, medicinal as well as exotic species in different areas that are approximately covering 96 hectares.



Plate (4): The library



Plate (5): Park Area



Plate (6): Traditional Healer's

7.5.2 Sustainability:

In view of the curative nature of the project within the primary health domain, it can easily be sustained. However, in order to enhance sustainability it is found important that the project leaders should be transparent in sharing hidden traditional medicine knowledge, create strong link with traditional institutions that have similar interest and deal with organized local groups having legal land holding.

7.5.3 Replicability:

The fact that the project has trained more than 14,500 individuals relating to different disciplines, the success made in unveiling much information on medicinal plants and the wider partnership created by the project, provide a solid base for the replication of this project.

7.5.4 Limitations and Challenges:

The only limitation observed during the technical review of the project was that the project was found to be supervised from Bahir Dar town which is far from the project area.

8. Conclusion:

In view of the curative nature of the project within the primary health care domain, it triggers the interest of the community and, as such, it can easily be sustained.

However, in order to enhance sustainability it is found important that the project leaders should be transparent in sharing hidden traditional medical knowledge, create strong linkages with traditional institutions that have similar interest and deal with organized local groups having legal land holdings.

The fact that the project has trained more than 14,500 individuals relating to different disciplines, the success made in unveiling much information on medicinal plants and the wider partnership created by the project, all, provide a solid base for the replication of this project.

9. Best Practice 4: Household Based Forest Development in the Upper Jejeba Watershed

9.1 Problem Statement:

Land and environmental resources are noted as constituting the main sources of livelihood of the population both in the country as well as in Woreda. Despite the case, in the country in general and the project area in particular, land resources are highly degraded due to both human and natural factors. The problem of land degradation (soil erosion, deforestation) is seen severe in the project area, as it is a common phenomenon in the central highlands of the Blue Nile Basin. In this regard, much of Jejeba watershed is highly degraded with no or meager vegetation cover where 47.8% of the Upper Jejeba watershed encountered severe to very severe soil erosion hazard. Rapid and extensive deforestation caused largely by the expansion of farm land, cutting of tree stands for fuel wood, charcoal and raw materials for different construction purposes are among the widespread problems as it is also true in most parts of the country. Shortage of fuel wood has also forced the residents to use crop residues and animal dung for fuel rather than using it as source of organic fertilizer to enhance productivity of the low fertility soils of the watershed. Causes related to fuel wood scarcity are multiple and also interlinked to absence of strategic replacement of vegetation as well as with absence of integrated environmental conservation and development measures. In addition to the above, there are a number of perennial springs serving the population of the watershed, but proper water sanitation is lacking. Due to poor sanitation, water born and skin diseases are rampant. Moreover, during the dry season water supply from these springs is very low which causes women to travel long distances to fetch it or queue longer time to get it.

9.2 Justification for Selection (innovativeness):

The selection of this integrated environmental conservation- cum- development project as a best practice is justified by its success in halting down severe soil erosion, deforestation, proper watershed management and shortage of fuel wood.

In addition to that the project managed to reverse the old practice of using the crop residues and animal dung for fuel rather than using it as source of organic fertilizer to enhance productivity of the low fertility soils of the watershed. Moreover, the project enabled the potential utilization of a number of perennial springs and consequently addressed incidents of poor sanitation, water born and skin diseases and saved enough time usually spent by women in search of water in remote areas.

9.3 Technical Approach: Design and Methodology:

The Household Based Forest Development was implemented in the Upper Jejeba Watershed with the objective to enhance food security of the population through an integrated participatory conservation, farm management and sanitary related interventions. Institutionally the project was modeled in such a way that all activities are to be implemented by a traditional social institution called 'Kire', This institution gained the full trust of the local people.

The project strategy is three-fold: firstly, to reduce the current level of degradation on steep communal lands; secondly, to enhance capacity of communities and government development partners on sustainable forestry and nursery management; and thirdly, to ensure clean and adequate water supply. The approach adopted by the project to implement this strategy includes the following:

- Involvement of the local social institutions;
- Creation of close relationship with the local administration;
- Free supply of forest tree seeds;
- Establishment of household nurseries;
- Rehabilitation of the central nursery in the locality;
- Provision of direct incentives in the form of farm tools;
- Provision of training on forestry, steep land management and improved farm, land management, spring maintenance, Sanitation and management; and
- Institutionalization of Drinking Water and Sanitation Committees,

The main activities set in order to achieve the stated objectives include: (a) conduct trainings for farmers on basic forestry, nursery management, natural resource conservation and bylaw drafting, alley cropping, spring maintenance; (b) enhancing sanitary management; (c) raising of seedlings and planting them in private fields, degraded common lands and gullies; (d) planting of leguminous tree seedlings on farm lands; (e) rehabilitating Chelechele Central Nursery and establishing household nurseries; (f) establishing water users committee; (g) undertaking study and design of two springs; (h) constructing water supply points and cattle troughs, local laundries and shower rooms; and (i) conducting field visits and monitoring and evaluation.

9.4 Partnership:

The total population of the three project Kebele Administrations (Chelchelena Senbo, Edndode, Waldiana Gubissa) is about 5,684 comprising of 1215 households of whom 19% of the household are female headed. About 600 households are considered as direct project beneficiaries, accounting about 28.6% of the total households residing within the watersheds. The main stakeholders are local administration and associated line development offices, Kire (social institution) of the locality, NTEAP/MG office and the community of upper Jejeba.

9.5 Essence of the Best Practices: Benefits and lessons learnt:

The essence of a best practice project takes into consideration three key issues namely, accrues benefits and lessons learnt, sustainability and replicability. These could be further elaborated as follows: A total of 434,450 tree seedlings were planted for multiple purposes. Of these 234,450 were raised in central nursery while 200,000 seedlings were raised by 185 households among whom 23 are female headed households. A total of 106 hectare of private woodlot and homestead plantation was established and a total of 174 households, of these 14 female headed have established their own private wood lots. This intervention also created an opportunity for alternative income generation through sale of seedlings. Five households sold a total of 1,990 seedlings and generated cash ranging from Birr 60 to 600 per head per annum. These achievements encouraged the farmers to organize themselves into "Forest Management Groups" so that would continue having similar activity in their village. Establishment of the private nurseries and the overall management of homestead plantation (plate 15 &16) were found encouraging.



Plate(1): Homestead Plantations



Plate(2): Homestead Plantations

Most of the farmers clearly showed their interest of continuing these activities in the future without any external assistance. Therefore, they can be considered as best practices brought about by the project interventions.

Also the project has managed to create a strong partnership with local administration and line offices, including involvement of local social institutions in the implementation of some conservation activities. Of particular importance, was the integration of the planned project's activities into local development plan.

9.5.1 Sustainability:

All the farmers indicated that they would continue the implementation of the project's activities in the future without any external assistance. The fact that the project has managed to create a strong partnership with local administration/institutions and line offices, is a clue towards its sustainability. One of the guarantees of sustainability was the integration of the planned project's activities into local development plans.

9.5.2 Replicability:

This intervention created an opportunity for alternative income generation through sale of seedlings which encouraged many farmers to adopt its results. In pursuit of that, farmers organized themselves into "Forest Management Groups" so that they would continue having similar activity in their respective villages. Which means that already villagers started to replicate this initiative.

9.5.3 Limitations and Challenges:

The main limitations include inadequate ex-post supervision by the technical staff and that few women were involved in the project management

10. Conclusion:

All the farmers indicated that they would continue the implementation of the project's activities in the future without any external assistance. The fact that the project has managed to create a strong partnership with local administration/institutions and line technical offices, is a clue towards its sustainability. One of the guarantees of sustainability was the integration of the planned project's activities into local development plans. In addition, this intervention created an opportunity for alternative income generation through sale of seedlings which encouraged many farmers to adopt its results. In pursuit of that, farmers organized themselves into "Forest Management Groups" so that they would continue having similar activity in their respective villages. It means that already villagers started to replicate this initiative.

11. Best Practice 5: Ambo Secondary and Preparatory School Project

11.1 Problem Statement:

The environment where students can apply and practice what they learn theoretically in class rooms while developing values and skills for improving environmental conditions both in the school and their localities is totally lacking. Accordingly, the students and the school management have identified and listed a number of environmental problems that are affecting their school and surrounding communities. Among the problems, they have agreed to work on two major issues namely, gully erosion bordering the school compound along one side and shortage of water for tree nursery and vegetable garden during the dry season.

11.2 Justification for Selection (innovativeness)

The project was found to produce a number of valuable vegetables which serve the club as means of generating income that could be used to sustain the presence of the club and also serves to introduce additional food habit within the local community. That in addition, to teaching and demonstrating the practical means of vegetable production to the students. An additional innovative achievement of the club was the low cost technology of constructing various structures (tankers, gutters, etc) for rainwater harvesting using roofs of the school block (see plate 21). The rainwater collected from roof into two tankers and then used for watering the tree seedlings and vegetables

11.3 Technical Approach: Design and Methodology:

Ambo Senior and Preparatory School is found in Ambo town in West Shewa Zone, Oromia National Regional State of Ethiopia. It is located 105 km south west of Addis Ababa at an altitude of 2200meters above sea level. At present, the school serves about 5400 students of grade 10 to 12. According to the information obtained from the school director, there was an environmental club established by the school management and some volunteer students some years back though it was not active enough. The main objective of the club at that time was to keep the school compound clean and protection of few plants that were found within the compound. Following the visit and briefings made by the then NTEAP National Project Coordinator, the Ambo school environment club (hereinafter referred to as club) was reestablished in 2006 in line with the objectives of NBI-NTEAP. Considering the importance, roles and responsibilities of the club the school management allocated an office-a separate room (see plate 17) and assigned a coordinator and a secretary who are responsible for overall activities of the club.

Currently the club has 200 student members (40 of them are female) 5 male teachers and 3 men administration staffs (see plate 18) who are entrusted to address the problem stated hereto above.



Plate (1): The club office



Plate (2): Members of the club

To pursue the above issue the strategic approach used by the club include: (a) establishment of student's club; (b) involvement of each club member at all levels of project cycle; (c) carrying of environmental awareness activities on regular basis; (d) assessment of the contribution of each club member in the implementation of the planned activities; (e) holding of regular meeting between the club members and the school administration staff in order to get updated on the performance of the club; (f) undertaking monitoring and evaluation of the project activities; and (g) mobilization of the school and nearby communities specifically for labour intensive activities such as check-dam construction and tree planting. The implementation arrangement of the project includes the following:

- Establishment of tree nursery;
- Construction of water tanker for roof water harvesting;
- Establishment of a vegetable garden; and
- Reclamation of gullies.

11.4 Partnership:

The direct project beneficiaries are the school community (i.e. teachers and students). Moreover, the town residents that are bordering the rehabilitated gully area could also be considered as direct beneficiaries of the project. Because, if the gully rehabilitation works were not carried out, they could have been affected by the expansion of the gully erosion. The major stakeholders of the project include: the school administration, parents and teachers association committee, primary schools (two) found in the town, local administration offices and NTEAP/MGP.

11.5 Essence of the Best Practices: Benefits and lessons learnt

The essence of a best practice project takes into consideration three key issues namely, accrues benefits and lessons learnt, sustainability and replicability. One of the major achievements of the school club was the establishment of a small tree nursery (see plate 19) within the school compound. The club members planned to raise various indigenous trees and fruit trees that are suitable to the school environment. However, they could only raise indigenous tree species during the project period due to shortage of fruit seeds. The indigenous trees seedlings were planted in school compound and the gullied area identified. These include: *Acacia abyssinica*, *Podocarpus falcatus*, *Cordia africana* & *Hagenia abyssinica*. Moreover, vegetable garden was established and different types of vegetables such as cabbage, carrot, cauliflower, onion, potato, etc (see plate 20) were produced and sold to the school and surrounding (town) communities at a reasonable price. This could serve the club as means of income generating activities in addition to teaching and demonstrating the state-of-the-art of vegetable production to the students. It also serves to introduce additional food habit to the local community.



Plate(3): Tree Nursery



Plate (4): Vegetable Garden



Plate (5): Rainwater Harvesting

The other important achievement of the club was construction of various structures (tankers, gutters, etc) for rainwater harvesting using roofs of the school block (see plate 21). The rainwater harvested from the roof was collected in two tankers and used for watering the tree seedlings and vegetables



Plate (6): Gully Erosion



Plate (7): Brushwood Construction



Plate (8) Gully Plantation

Among the various conservation activities undertaken by the club members, school and surrounding communities, indigenous tree plantation within the school compound and gully rehabilitation works such as construction of brushwood check dams (see plates 23 and 24).

11.5.1 Sustainability:

The members of the club and the communities at the surroundings (being actively engaged) are important assets for the sustainability of the project.

11.5.2 Replicability:

The fact that some of the major stakeholders of the project include student's parents, the teachers associations and the primary schools within the town, indicates that the project can be replicated in similar environments.

11.5.3 Limitations and Challenges:

The key challenges are the limited environmental awareness among the populations of the surroundings or town communities, limited efforts made to mobilize resources and few female students as members of the club.

12. Conclusion:

The members of the club and the communities at the surroundings (being actively engaged) are important assets for the sustainability of the project. The fact that some of the major stakeholders of the project include student's parents, the teachers associations and the primary schools within the town, indicates that the project can be replicated in similar environments.

13. Best Practice 6: . Gohatsion Secondary and Preparatory School Project

13.1 Problem Statement

Gohatsion is geographically located in Oromyia Region very close to the Blue Nile Valley and 185 kms from Addis Ababa. The school which was established 65 years ago as one of the oldest in the region. Currently over 2,000 students are enrolled with a significant gender mix. According to the information obtained from the school director, there was an environmental club established by the school management with few volunteer students some years back though it was not active enough, through there are a number of environmental and poverty issues that need to be addressed. In 2006 and in line with the objectives of NBI-NTEAP an Environment Club was established as one of the ten model school projects in Ethiopia.

The current school club has 410 boys, 190 girls, 12 teachers (11 males and one female) and one male administrative staff. The source of income for the Environment Club is mostly the monthly contribution of members which amounts to Birr 300 per year.



Plate (1): Gohatsion School

13.2 Justification for Selection (innovativeness):

The school has been selected as one of the NTEAP environmental school projects based on the quota given to the five Nile basin National Regional States. Accordingly from the three projects selected in Amhara Region, Gohatsion Secondary and preparatory School has been selected as one of the pilot schools. The main criterion was its proximity to the Blue Nile gorge and hence its capacity to serve as practical demonstration area for deforestation and land degradation. The major problems identified by the school environmental club members were land degradation, soil erosion and deforestation. Observing these interrelated major environmental threats, the school initiated this project for the first time in the area rendering it an innovative approach.



Plate (2): Degraded land around the School

13.3 Technical Approach: Design and Methodology:

The School environmental club members have designed various activities which include (a) preparation of vegetable garden; (b) preparation of tree seedling production; (c) awareness raising for students and the local community; (d) construction of Bio-gas systems; (e) making the project as practical teaching aid for relevant subjects; (f) launching of sanitation activities; and (g) rain Water harvesting.

13.4 Partnership:

The various partners of the school project include, NTEAP/NBI, Lem Ethiopia, Ethiopian Wildlife Natural History Society, Federal and Regional Environmental Protection Authorities, Wora Jarso Woreda and Zonal Offices of Education, Agriculture and Administration.

13.5 Essence of the Best Practices: Benefits and lessons learnt:

The essence of a best practice project takes into consideration three key issues namely, accrues benefits and lessons learnt, sustainability and replicability. These could be further elaborated as follows: As with regards to vegetable production the club prepared 20 seed beds (1mt x 4 mts) which used to produce various vegetables the sales of which accrued Birr 120.00 in year 2008. In year 2009, during the documentation, the total harvest and hence the sales were slightly higher than the previous year. The national best practice documenting team has witnessed that, this activity has met the project objective of sustainability, being source of income generation and practical teaching aid for grade 9 and 10 biology and geography students.



Plate (3): Vegetable Seed bed



Plate (4): Apple Tree Seedlings

On the environmental front awareness raising on the major environmental threats is one of the great achievements of the school project. All in all, the club targeted a total of 600 club member students (447 male & 153 female), 1200 club members students' parents, 20 teachers and 4,000 community members. As planned in year 2008, the project helped the students, their parents, teachers and the community to be aware of environmental problems at local, regional and global perspectives. Using the school project as a practical demonstration field, awareness activity has been given to for 600 environmental club members, 1,200 family members, 20 teachers, 25 representatives per Kebele (local administration) four times, that is a total of 100 representatives have been participated in the school project awareness campaign. That in addition to 200 to 300 sector ministries representatives, 3-4 times per year. Hence with this intervention over 1000 people were kept aware of the causes of the environmental threats as well as the alleviation measures of land degradation, soil erosion, deforestation and water shortage.

Conclusively, over 200 people, including Were Jarso Woreda Administrator, Board members of the school, community members, teachers, students, academic staff and environmental club members of the school had in one way or another contributed to the achievement of the objectives of this project.



Plate (5): School Project Inaugural

On the part of energy, construction and demonstration of Biogas technology as an alternative source of energy, constitutes one of the major outputs of the school project. Though limited, the introduction of this technology in Gohatsion School, being situated very close to the main Blue Nile Gorge, had significantly demonstrated alleviation of effects of deforestation, land degradation and sedimentation into part of the Nile River system. As practical demonstration for alternative sources of energy, the school club constructed 35m³ bio-gas digester which demonstrated for the first time in the area as an alternative source of energy other than fire wood for the school students and local community. This intervention if replicated in a wider zone will result into a significant impact in alleviating the problem of deforestation, land degradation and siltation not only in Ethiopia, but to all Nile Basin Region.



Plate (6): Biogas Construction

As a practical teaching guide the school project has aided a total of 2,435 students (grades 9 and 10 biology and geography students) in all level activities of vegetable gardening as well as tree seedling production techniques, including seed bed preparation, seeding, weeding, watering and transplantation.

Regarding indigenous tree plantation, the afforestation and soil conservation interventions of the project were impressive. In year 2008, a total of 3,000 indigenous tree seedlings had been raised. Which, include 500 Olea African "Weyira", 1,000 Acacia Abysinica "Gerare", and 1,500 Junipers Procera "Tid ". These seedlings had been distributed to the students and planted in the school compound over a total area of two hectares with more than 70% survival rate. The plantations took place around the students' homestead as well as in the school compound. Fruit tree plantation was also one of the activities of the school project. However, due to problem of identifying the suitable fruit varieties, only few apple and avocado seedlings were planted as a test for the suitability of these species. This has been found to be suitable. Therefore the school club members have a plan to expand planting of fruit trees as multiple purposes, both as environmental regulator and income generation activity. The environment club members were also engaged in sanitation activities where they cleaned the two hectares' school compound as well as extending the same activity into their respective residents.



Plate (7): Clean Premises of the Schools

Protection of the environment was further enhanced by area closure of the two hectares acacia tree plantation where the plantations had been properly protected from any human interaction. This has been witnessed by the rehabilitation of the environmental situation of the surrounding area.



Plate (8): Area Closure Scene

In general, the formation of the club helped in (a) students to interact more on environmental issues and given the opportunity of learning by doing; (b) the school administration to look for possible ways of creating income generating activities; and (c) communities to practical see the problem and mitigation measures of the major environmental threats. The rainwater harvesting technique was identified by the school project as the main means of addressing the critical water shortage in the area which resulted from deforestation and land degradation, despite the school proximity to the main Blue Nile. In this regard the project procured plastic water tanker with a capacity of 5, 000 liters for harvesting rainwater during the rainy season and used for the irrigation of both the vegetable and tree seedling raising. This intervention was used to further demonstrate the viability of the technology to more than 1,200 community members in the surroundings.



Plate (9): Water Tanker for Rainwater Harvesting

13.5.1 Sustainability:

It has been reported that after NTEAP/ NBI intervention phase-out, the school project will viably be sustained through the various income generation activities, including school gardening, tree seedlings and the school club cafeteria.

13.5.2 Replicability:

Most of the school project activities have been replicated by different community members who visited the various project sites and received awareness by the club members. Moreover, the Gohatsion elementary school had also replicated the Gohatsion Secondary and Preparatory School project activity. This viably demonstrated the school project potential to be replicated in other areas/schools such as the students' homestead and the local communities.

13.5.3 Limitations and Challenges:

The main limitations of the school project were the delay experienced in the implementation of the Biogas extension into the school laboratory and the water shortage.

14. Conclusion:

The overall performance of Gohatsion Secondary and Preparatory School project is beyond expectation. Being very close to the Abay Valley and cognizant of the fact that environmental issues are directly tied to the daily livelihood of the community, they have the determination and readiness to implement projects of this nature within the context of NTEAP in Ethiopia. However there is a need to: (a) finalize the construction of the biogas extension up to the school laboratory club as soon as possible; (b) plant more fruit trees; and (c) further ossify the porgrammes of awareness raising, enhance outreach visits and constantly share experience and knowledge; and (d) continue raising the technical capacity of the to club members.

15. Best practice (7): Kassim Primary School

15.1 Problem Statement:

Kassim primary school is found in North Shoa, Debrelibanos District, Woreda, around 100 kms from Addis Ababa. The school is located in the Central Highland Plateau of Ethiopia where cereal crop production and animal husbandry are the dominant farming systems. The school has 484 students among the thirty are 20 males and 10 Females who constitute the environmental club of the school, which was established by the launching of the National Eligible Project /NEP/ of NTEAP - NBI. All the school community namely, teachers, students, school administrative staff and community members remained actively engaged in the realization of and participating in the environmental club activities. The school children were supported by the school feeding programme introduced by WFP in collaboration with the Ministry of Education and Oromiya Bureau of Education.

As the result of environmental degradation, productivity of the main livelihoods had been progressively declining and the area was finally labeled as food insecure zone.

15.2 Justification for Selection (innovativeness):

The NEP was initiated through the agreement reached among the Environmental Protection Authority, NBI //NTEAP, WFP Addis Ababa Office and UNDP- CCF₂ Project. The aim of the project was to support a number of schools which are located in chronic food insecure areas of Tigraye, Amhara and Oromia Regions. Based on the said agreement, the NTEAP management committee, being promoting Environmental Education and Awareness, agreed to provide financial support to thirty seven schools for the three National Eligible Projects (authorized in 2006) to be implemented in collaboration with UNDP-CCF₂ Project and WFP through the school feeding project. Kassim Primary School was among the nine schools in Oromiya region considered to benefit from the NTEAP, NEP 2006 supported projects.

The main reason for the selection of Kassim Primary School to benefit from the joint environmental management project was due to the following environmental problems prevailing in the areas. These are erratic rainfall, severe land degradation, soil erosion and deforestation. Thus, due to the prevailing abject poverty, parents could not afford to send their children to school. Student enrolment was totally dependent on school feeding. Hence, the project with financial support from the NBI/ NTEAP is the first of its kind in the area, which has introduced new techniques and skill in the community.



Plate (1): Kassim Primary School

15.3 Technical Approach: Design and Methodology:

The major activities carried out by the school community are:

- establishment of central nursery and preparation of seed bed for rising varieties of seedlings;
- production of vegetable crops, such as carrot, onion, cabbage.
- planting tree seedling for shade, hedges and soil and water conservation purposes;
- demonstration of all activities related to seedbed preparation and production of vegetables for communities residing in the area; and
- launching of awareness raising programmes for communities and school children using various forums at the end of the academic year.

15.4 Partnership:

It is well known that the area has complex environmental problems which culminated into rampant poverty. To alleviate this serious problem, Government, NGOs and individuals are participating in providing financial, material and technical support to the project. Most specifically these partners engaged into:

- the World Food Programme (WFP) through school feeding programme helped to increase the enrollment of students;
- the NBI / Nile Transboundary Environmental Action Project (NTEAP) provided financial resources in support of the project activities;
- the Federal and Regional Environmental Protection Authority and the Regional Environmental Office provided technical support and follow up of activities;
- District Agriculture and Education offices provided technical and administrative supports;
- Bill Gate Foundation willing to give support for solving the water shortage and other problems; and
- other individual volunteers are also showed interest to help the school

15.5 Essence of the Best Practices: Benefits and lessons learnt:

The essence of a best practice project takes into consideration three key issues namely, accrues benefits and lessons learnt, sustainability and replicability. During the field visit, discussion was made with the school principal, environment club leader, and previous school principal and environmental club members. The participants stated that the school had received immense benefits from the project. In this regard a total number of 14 seedbed have been preparation for vegetable crop production during 2008. From which cash income was generated from the sale of vegetables.

For instance, from the sale of garlic they earned around USD 25 during the season. Besides they have some garlic seeds in their store for the next production. Trees also served as wind break/hedge/ fence around the school boundaries. Besides environmental protection and soil and water conservation, the stand of trees contributed to the creation of a microclimate within the school.



Plate (2): Vegetable Seedbeds

More than 484 students permanently enrolled in education. Environmental awareness was created among more than 1,000 people, including the students and communities around. This finally inspired the communities to replicate the project's activities in their own lands and individual household premises.

15.5.1 Sustainability:

The fertile ground created so far will have significant contributions for the continuity and management of the already achieved project outcomes. This can be witnessed by the local capacity built in terms of awareness, perception, attitudinal and behavioral changes of the community towards the environmental issues. The already created strong partnership among the concerned partners and the existence of environmental instruments such as policy, law, directives and guidelines in the country are other opportunities for ensuring the sustainability of the project outcomes. Moreover, overcoming the prevailing water shortage problems would eventually enhance and further promote vegetable production, fruit tree planting, poultry raising, high land fruit tree planting and fattening programmes.

15.5.2 Replicability:

The project had demonstrated immense tangible benefits that include financial revenue from the sale of vegetable crops, awareness promotion and enhancement of the technical skills of the students and the community at large on various activities pertaining to the project. The financial benefits gained from the sale of vegetable crops had helped many of the students to remain on board; otherwise they would eventually drop out of school. Thus, besides, the school feeding programme, the project has contributed to the smooth continuation of the academic year. The outcomes achieved, so far, had inspired community members and individuals to undertake similar activities or efforts in their own homestead and farmlands. Among the students who have benefited from the project an illustrative interview has made to few students as follows:

The Student : Hailemeskel Gezahegn (Grade 5):

Besides, participating in the school project activities, he received vegetable seeds such as carrot to plant in his homestead. He produced carrot and used part of it for home consumption with his family and sold part of it and received USD 25. He used the money to fulfill his shortcomings such as educational materials and the remaining for clothing.

In the next production, a part from his educational materials he is expecting to receive over USD 20. In addition to his direct benefit he further triggered the interest of more than 300 people who visited his farm. They were very impressed and requested him to show them the techniques and provide them with the vegetable seeds.

The Student Ethiopia Legesse (Grade 5):

She is one of the environmental club members participating in the project activities. Her participation enabled her to be aware of the prevailing environmental problems of the area. The skill she received helped her to prepare seedbeds necessary to produce vegetables such as onion and carrot. The produced onion and carrot were partially consumed at home by the family for around two weeks. The remaining vegetable was sold for USD\$ 20. The money earned from sale of vegetables was used to purchase educational materials and part of it goes to her families. Ethiopia also attracted more than 20 residents who committed themselves to undertake similar activities.

The Student: Lelisie Girma (Grade 5):

She expressed that her participation in the school environmental club helped her to be aware and to know more about the surrounding environment.

Based on the experiences and skills received from the school she managed to produce onion and cabbage.

The produced cabbage and part of the onion were consumed at home which lasted for one month. The income earned from the sale of the remaining onion, USD 5 was used to purchase education materials. She further mentioned that she is encouraged to promote the new practice in order to satisfy her family's consumption requirement. Around 14 people residing in the area visited her work and wanted to replicate the same activities. Currently, she had prepared more land to grow potatoes, onion and carrot using rain water.

The Student: Girma Worku (Grade 3):

Girma is an active member of the school environmental club. Like his colleagues Girma had been provided with carrot and garlic seeds from the school. He earned USD 30 and USD 50 from the sale of carrot and garlic, respectively. The rest of the products were consumed at home. For the next production season, he has some reserved garlic seeds valued at USD 20. The income obtained from the sale of onion and garlic was used to purchase cloth, educational materials and saving of the remaining portion. At present, he has planted garlic and is expecting to earn around USD 80. Some 30 members of the community are now planning to replicate the same activities.

The Student: Dereje Tarmiru (Grade 5):

Dereje is also one of the environmental club members in the school. In a similar manner, Dereje had received garlic seeds from the school and bought potato and cabbage seeds from the nearby market. Cabbage and potatoes products were consumed at home for about two months for a family of seven members. The value of the product consumed at home is estimated to be around USD 80. In addition, he earned USD 80 from the sale of garlic. Further more he has reserve garlic seeds valued at USD25 for the next production season. Around twenty community members visited his work and they were inspired to undertake similar activities.

15.5.3 Limitations and Challenges:

The area has complex environmental problems which hinder the implementation of the project activities. Among these are:

- water shortage - water which is a crucial resource, is required for numerous activities within the school compound and the surrounding areas, specially for effective implementation of the project;
- shortage of nursery equipment compared to the need of the school; and

- Less support and focus by the relevant district / Woreda offices.

16. Conclusion:

In order to ensure the replicability and sustainability of the project outcomes the following points must be taken into account:

- solve the critical water shortage in the area through different techniques including spring development, rainwater harvesting and borehole drilling;
- seek more substantial support from various concerned stakeholders mostly the District Agriculture Office, NGOs and others.
- enhance the participation of the community members through continuous awareness raising activities;
- introduce multipurpose tree seedlings - fruit trees and indigenous trees for environmental conservation and shelter;
- initiate integrated approach for development, including afforestation, livestock and crop production and water harvesting; and
- launch organized and sound natural resource and environmental conservation programmes to be supported by robust public awareness campaigns.

17. Best Practice (8): Sadini Biyyo Primary School

17.1 Problem Statement:

Sadini Biyyo primary school project is located in North Shoa Zone, Yayagulale Woreda. Oromia Regional state. The school environmental club was established with the coming of the National Eligible Project /NEP/ of NTEAP/ NBI/. Like Kassim primary school, all teachers, students, school administration staff and parents are actively participating in the realization of the environmental club activities. The school children are being assisted through school feeding programme introduced by WFP in collaboration with the Ministry of Education and Oromiya Bureau of Education. The NEP was initiated through the agreement reached among the Environmental Protection Authority, NBI //NTEAP, WFP Addis Ababa Office and UNDP- CCF₂ Project. The aim of the project was to support a number of schools which are found in chronic food in secured areas of Tigraye, Amhara and Oromia Regions. Based on the agreement, the NTEAP management committee, being promoting Environmental Education and Awareness agreed to provide financial support to thirty seven schools for the three National Eligible Projects (authorized in 2006) to be implemented in collaboration with UNDP-CCF₂ Project and WFP through the project, Children In Local Development /"CHILD"/ school Feeding Program.

Sadani Biyyo Primary School was among the nine schools in Oromiya region considered to benefit from the NTEAP, NEP 2006 projects. The reasons that make the area food insecure is the prevailing environment problems such as severe soil Erosion, deforestation, high population pressure over the resource base, erratic rainfall and the destructive habits of some communities that live in the area.

17.2 Justification for Selection (innovativeness):

By the support of NTEAP, in Deberelibanos Woreda there are three primary schools that involve in environmental protection activities. The main reason for the selection of Sedeni Beyyoo Primary School to benefit from the joint environmental management project was due to the following environmental problems prevailing in the areas. These are erratic rainfall, severe land degradation, soil erosion and deforestation. Thus, due to the prevailing abject poverty, parents could not afford to send their children to school. Students' enrolment is totally dependent on school feeding. Hence, the project with financial support from the NBI/ NTEAP is the first of its kind in the area, which had introduced new techniques and skill in the community.

17.3 Technical Approach: Design and Methodology:

The environmental club activities are: (a) raising awareness of school and surrounding communities on the main environmental problems; (b) making the school compound more organized and attractive; (c) participating in income generation activities; (d) using the project activities as practical demonstration plot for students; (e) planting of fruit and indigenous trees; (f) growing of vegetables; and (g) managing the nursery.

17.4 Partnership:

The various partners of the environment club and their pertinent contribution to the project are summarized in table (1) below:

17.5 Essence of the Best Practices: Benefits and lessons learnt:

The essence of a best practice project takes into consideration three key issues namely, accrues benefits and lessons learnt, sustainability and replicability. In this regard on the part of awareness raising during the year 2008 impressive awareness activities had been performed by the project. A total of 2,106 participants have received practical and theoretical awareness on the major environmental threats as summarized in the table below:

Table (2)

Participants	Total Number
Students	500
Teachers	14
Students' Families	716
Environment Club	400
Coordinators from six Schools	60
Top Twenty Students from four Schools in the Area	80
Six Schools Committees	36

The other activity of the school club is making the school compound attractive where the actual performance of which is summarized below:

Planned	Actual (%)
Planting flowers on 10M X 2M beds in front of 13 class rooms	100
Planting flowers on 4 M X 2M beds in front of 14 teachers home stead	100
Students brought Various species of flower seed from their area s	50

Another important activity of this project is production of various vegetables. The entire purpose of this activity is three-fold: firstly, to practically demonstrate how to grow vegetables and other crops in the school compound where students understand that food mainly obtained from school feeding aid; secondly, to bring some change in the food habit of the students and their family which are not known in the area before; and thirdly, provide income source for the school club. The targeted out put, actual production and income obtained from the vegetable production during 2008 -2009 is presented in the table (3) below.

Table (3)

Type of vegetables	Planned on bed	Actual in seed bed	Sales in USD
Onion	2	2	88.76
Garlic	2	2	9.06
Carrot	2	1	-
Lettuce	1	1	1.36
Cabbage	1	1	-
Eucalyptus tree	4	4	-
Beet Root	1	1	22.64
Total			121.82

Since these activities are also carryout last year, the total sale from that was expressed as 91 USD. During the last two years earning had been used for the revolving fund intended to sustain the activities and fulfillments of education materials.

The school project plot has served as practical demonstration for students and support students to know their environment by supporting the theory they had in class. As school principle, teachers and students expressed, for every subject that has topics on environment, students use the project site as center of practical demonstration. Tree planting activity of the project has been success full as compared to what has planed. Table (4) below presents types of trees actually planted as compared to the respective planned figures and their survival rates.

Table (4)

Type of trees	Planned number	Actual planted	Survival rate
Tide	1000	500	60%
Exculpates	8000	5000	80%
Casuarinas	200	10	-

The students indicated that for them the benefits could be summarized as: (a) improvement of the quality of education by having practical demonstration site for different subjects; (b) beautification of the school compound; (c) provision of source of income earning for the sustainability of the project after NTEAP; (d) building of the students confidence; and (e) avoidance of dependency on the school feeding programme.

17.5.1 Sustainability:

During the discussion it has been confirmed that the school environmental club activities will be sustained through the income generated from the sale of the vegetables.

17.5.2 Replicability:

Several school communities and individual students form the surrounding schools have been visiting the environmental protection intervention of the club. Accordingly, a total of six schools had visited the activities of the project where five of them had replicated the same activities in their compound; a total number of 25 students of the school replicated the activities in their parents plot; ten family heads from the surrounding communities visited the school and replicated the project activity in their plots; and five teachers of the Sadani Biyyo school started those activities in their homesteads.

As a witness during field visit three students who replicated the production of vegetable had got promising amount of cash income and additional food source for their families. According to the information obtained from the students, in a single season of harvest, each was able to obtain up to 150 USD in addition to what have been consumed at home..

17.5.3 Limitations and Challenges:

The three major constraints of the school project are: (a) water shortage where the source is very far from the school and, as such, it hinders the expansion of the project activities; (b) financial limitation where the school principle indicated that the only source of finance for the school project is budget obtained from NTEAP which would not be continue in the future; and (c) termites which usually constrain vegetable and fruit production in the area.

18. Conclusion:

In schools where students' enrolment is totally dependant on school feeding, the intervention of the school project had achieved tangible outcomes. This includes confidence of students that they can be able to attend schools by producing the various vegetable and fruit trees as sources of income for their educational material and provide additional source of food for their families. Furthermore it created greater awareness on the causes of land degradation, soil erosion, low crop production and its mitigation measures. However, to sustain or upscale the school activity, there is a need to:

- Look for dependable sources of finance;
- Provide additional source of water;
- Provide different fruit tree and vegetable seeds;
- Provide different nursery equipments; and
- Arrange exchange visit in areas where similar and successful activities have been conducted.

If the above recommendations are fulfilled, the school project can be labeled as a model for all schools which primarily depend on school feeding.

19 Best practice (9): Highland Fruit Production and Natural Resources Conservation Initiatives

19.1 Problem Statement:

The Highland Fruit and Natural Resource Conservation Initiative project is implemented in three Kebele Administrations (i.e. Genbichu, Bole-Bacho, Babo-Badoye KAs) in Wuchale Wereda, North Shewa Zone of the Oromiya Regional State, situated in central Ethiopia. The project area is located within the Blue Nile Basin, about 80 km northwest of Addis Ababa, along the main highway to the Amhara Regional State.

The project is implemented by Professional Alliance for Development in Ethiopia (PADET); an indigenous, non profit making, non-governmental humanitarian organization, established by a group of voluntary development professionals working in government and non governmental organizations; enthused with a view to serve the poorest, most vulnerable and marginalized segment of the population particularly women, youth and children. PADET was established in 1998 and registered with the MoJ in 1999; under registration number 395.

PADET's organizational Vision is to see "a society where children youths and women are empowered and enjoy their rights"; whereas its Mission Statement is "Supporting Ethiopian women, youth and children in their endeavor to improve their livelihood through promotion of participatory and sustainable development programmes focusing on advocacy, promotion of reproductive health and income diversification." The organizational values include equality, accountability, transparency, participation, partnership, impartiality and empowerment

The Highland Fruit and Natural Resource Conservation Initiative was intended to engage 100 young farmers and women headed households in fruit production and conservation activities (compost making, terrace construction, Forestation etc) through sensitization programmes conducted in three target Kebeles. In terms of duration and timeframe, the Project was initially planned for one year as of 1st July 2006 and to be completed by 30th June 2007. Nevertheless, the actual implementation took longer time that required extending the completion date to 30th December 2008. The approved funding by the NSC in order to support project implementation was a total of US \$ 25,000 (ETB 217,000).

The direct impacts of the present natural and socioeconomic situations have resulted in rampant poverty, severe environmental and natural resources degradation and deterioration of the bio-diversity in the area. This is further aggravated by widespread incidents of malnutrition, out migration and unemployment. The traditional agricultural livelihood system is characterized by poor performance and, as such, remained below the subsistence level is support of various communities. The dire need is thus improved natural resources management and sustained production intended for higher yields and additional income. While resource degradation resulted from erratic rainfall distribution, water logging, frost, increasing population pressure and intensified land fragmentation; poor agricultural production is perpetuated by rudimentary traditional practices and lack of access to improved technological inputs and services.

The project area, being located at the extreme upstream parts of the Blue Nile River Basin, the deteriorating environmental degradation in the area directly and indirectly affects the sustainable management of the Nile Basin with adverse implications to its hydrological and ecological processes as well as the biodiversity conservation.



Plate (1): Degraded land

19.2 Justification for Selection (innovativeness):

The goal of the project is to introduce highland fruit production and conservation of the natural resources with a focus on disadvantaged farmers and women headed households constantly engaged in deforestation for charcoal making, fuel wood and fuel dung as means of survival. The target beneficiaries will be engaged in self supporting income generating activities and thereby protect the area from degradation. In the intervention, the main fruit tree recommended is apple due to its smaller land demand, tolerance of frost, high yield with organic fertilizers, and high market value. In this context, support programmes include effective agricultural extension and creation of alternative income source. Thus, the major features considered for accrediting this project as a best practice include:

- Clear conceptual base: the project concept is based on the fundamental understanding of the reciprocal relationship between poverty (lack of livelihood opportunities) and environmental challenges (land degradation and increasing effects of climate change). This further calls for addressing environmental issues through poverty reduction, promotion of sustainable livelihoods and enhancement of environmental awareness at the grassroots level. It is worth mentioning that the conceptual base of this project squarely fits within the NTEAP environmental framework – i.e. Integrated approach to environmental management, poverty reduction and income generation;
- Providing alternative livelihood opportunities: emphasis given to providing alternative livelihood opportunities (e.g. highland fruits, vegetable production, tree planting) to disadvantaged communities who had been engaged in deforestation for their;

- Effective sensitisation and awareness raising: notwithstanding the infamous legacy of soil and water conservation, afforestation and related interventions carried out in the past (e.g. destruction of terraces, requiring incentives/payments for conservation activities ... etc), the project has managed to persuade community members towards conscious and wilful participation in SWC activities as a result of its strategic focus on intensive awareness raising; and
- Transfer of technology: through mutual learning and collaboration and strong partnership of the project proponent with the line offices of the local administration has not only enabled a good opportunity to provide technical backstopping, training, close follow-up and support throughout the project implementation, but also allowed technical personnel from the local administration to get experience in persuasive approaches in creating ownership and strengthening development at the grassroots.

19.3 Technical Approach: Design and Methodology:

The project's major activities include: (a) conducting awareness raising sessions for concerned communities; (b) training of beneficiaries and partner professionals on apple production and sustainable natural resource management; (c) supporting water resource development through construction of shallow hand dug wells and spring and ponds development; (d) purchasing and distribution of hand tools and other material like (pruning shears, saw) for agro forestry interventions and apple seedlings; (e) producing and distributing Multi Purpose Tree for target farmers; and (f) supporting the local communities to implement physical and biological soil and water conservation on communal and private lands, including gullies.

19.4 Partnership:

The project holder, PADET, has achieved encouraging development experiences in Wuchale Wereda. This close collaboration with government agencies and sector office as well as local/international NGOs and donors (international/bilateral) has benefited the project through direct and indirect supports that enabled its successful implementation. In Wuchale Wereda, PADET has been working in partnership with Save the Children Denmark (SCD), Save the Children Canada (SCC), Pact, German Foundation for World Population (DSW), German Development Service (DED), Hope 87, Canada Embassy, Action Aid, and CRDA. Organizations like Save the Children Sweden (SCS), Save the Children Norway (SCN), and LUPO/GTZ are assisting technically, through providing training ... etc. An interesting partnership aspect that benefited the project is PADET's good working relationship with GTZ - supported LUPO (Land Use Planning for Oromiya), a bilateral development programme on land use management in Oromiya Regional State. Accessibility to apple seeding was solved due to the partnership built with GTZ/LUPO.

Apple seedlings are produced at a nursery site established in Hidabu Abote Wereda, North Shoa Zone of the Oromiya Regional State; and the imported type is also collected from GTZ/LUPO with reasonable price to the farmer. The major partners engaged in the implementation of this project, however, involved PADET, the target community, NBI/NTEAP/MGC Office and Wereda Agriculture and Rural Development Office (WARDO) as well as the Wereda and Kebele Administration Offices.

19.5 Essence of the Best Practices: Benefits and lessons learnt:

The essence of a best practice project takes into consideration three key issues namely, accrues benefits and lessons learnt, sustainability and replicability.

Community Sensitization:

Community sensitization workshops targeted 310 (107 females 203, male) farmers at their site with the focus on resource conservation in their surroundings. As a consequence of that the perception and attitudes of farmers towards the environment witnessed gradual, albeit significant change. Farmers stopped waiting for the government to get some incentives, but rather they started implementing different physical and biological conservation measures. Some of the biological measures that the farmers used locally were planting "Argisa, kencheb", a type of plant material locally used by farmers in bonds and check dam. The project also utilized awarding prizes as an incentive to motivate community members' involvement in natural resource management. Accordingly, a farmer's day was organized and conducted in small villages of Bedoye Genbichu kebeles through a collaborative undertaking between PADET and WARDO. The day was focused to give prize and award for those farmers who were actively involved in natural conservation activities. In the event a total of 428 (301 males and 127 females) were attended. A total of 61 households were selected and awarded different types of farm tools. The award recognition motivated many farmers to do more in the future.



Plate (2) Rehabilitation Efforts

Capacity Building:

Intensive training was organized and conducted for development agents and Wereda experts on sustainable natural resources management and apple production and managements. The training was held for two experts and three development agents (all DAs are male and one expert is female) for a total duration of five days in Muketri town. This group would remain to be the future trainers. Thereafter 100 farmers participated in apple production and management training porgrammes, being both theoretical and practical (37 females and 63 male). The training was facilitated by professionals from the Ministry of Agriculture for 6 days in two sessions. The training created enabling situation where target farmers took a lead in conservation works and had show significant participation/performance in apple production. The project also organized and conducted a two days exchange visit for the farmers who had been trained on apple fruit production and management. The experience sharing visit was conducted in the backyard of farmers who planted apple seedlings in Muchala-Salle Kebele of Wuchale Wereda. On the event, different practical aspects of apple tree management including preparation of planting pits, step during planting of the seedlings and nursing of seedlings following plantation were explained.

Water Resource Development:

Twenty nine hand dug well were constructed in the backyard of farmers, to be used for production of Apples and vegetables. The construction work partially supported by the project through providing different construction material like cement, sand and technical support; whereas labor, stone and other construction expenses had been covered by the farmers. The constructed hand dug wells have the capacity of cultivating 1.25 hectares of land.

Purchase and Distribution of Apple Seedling:

The project distributed 1000 Apple seedlings to 100 beneficiary farmers. The selected farmers had already prepared the land for planting the seedlings before the seedling arrived. The land preparation includes fencing the yard, preparing compost and confirming availability of water accordingly, each farmer had been provided with 10 legs of apple seedling. After distribution of the apple planting materials, DAs followed up on each of the recipient farmers to ensure that they planted them on properly prepared pits in a good manner. The planted apples are now found in good condition with high survival rates (about 90 % of the seedlings were, reportedly, in good condition). It is worth mentioning that Apple seedling can give 20-40 kg of yield per year per tree. Although harvesting fruits could start after two years of planting apple seedlings; it reaches peak production in 7 years time and can give production for consecutive 30 years.

Production and Distribution of Multi Purpose Trees:

The project had distributed more than 10,000 MPT seedling and vetiver grass in the form of split for 78 households. The distributed plant materials had been planted in gullies, bands, and backyard of the farmers.

Erosion Control:

The project had supported the farmers constructed 8.5 Km of stone and soil bund through voluntary participation and without payment or incentives. The bunds were constructed in Badoye Genbichu Kebele. The stone and the soil bands were now found in good condition and were able to protect eroded terrain. Seven sessions of community mobilization work and twelve small community gatherings within sub villages had been undertaken to discuss natural resource conservation in Badoye Genbichu and Dayu Keta PAs of Wuchale Wereda and reached a consensus to construct band and check dam in roughed terrain and highly eroded gullies. To that effect, a total of 622 (399 males and 223 females) community members had involved in gathering stone, transporting and constructing check dam works with Wereda and zonal experts.

Consequently, 166.3 M3 check dam had been constructed in highly eroded and gully lands of Genibichu and Dayu keta kebeles. The constructed check dam fully maintained and revived the land to the normal condition h which, through by all means the community failed to achieve the same result through the last five years.

19.5.1 Sustainability:

The intensive awareness raising conducted by the project had made the community in the area to understand the severity of land degradation and soil erosion which ultimately laid the ground for social sustainability. The technologies applied in the different interventions were neither alien to the community nor too complicated to adapt/adopt, which implies that there is no risk of technological sustainability. Technically, the improved natural resource management and production systems are easily applicable by any ordinary farmer, once the basic trainings and orientations are done. Since the target groups and other community members have their traditional knowledge and practices in the different aspects of land management and resource utilization the training provided through the project is basically building on the existing indigenous knowledge and practices; and therefore, sustainability is guaranteed in this regard. The demand for apple tree seedlings had increased dramatically such that farmers had started to buy the seedlings up to Birr 75. This had enabled farmers to venture on it at a larger scale which, in turn, a good indicator for the sustainability of the project. Most hand dug wells were constructed at places that were long considered to lack potential for production of crops. Henceforth, the water development interventions had enabled many farmers to generate from Birr 300 – 400 from sale of vegetables and potato (i.e. in addition to improved household nutritional pattern).

In some cases, farmers had reportedly managed to harvest three times in a year. This had shown the incentives for farmers' continued interest to sustain investing their time and energy on water development (hand dug wells, spring development and ponds).

The institutional linkage of the project with the WARDO provided a solid ground for continued support as part of the Government's extension services (technical backstopping, facilitation of input delivery, ... etc) for all components of the project intervention including NRM, water development and highland fruit trees expansion. The national development drive with its well articulated rural development policy and strategic focus on "Rural Economic Development and Food Security (RED&FS)"; comprising Sustainable Land Management (SLM), Agricultural and Rural Growth, and Food Security (FS); provided tangible commitments of the National (Federal) Government of Ethiopia towards creating an enabling environment for rural transformation. The growing affirmative tones of the global and regional development outlooks encourage collaboration to address the interlocking relationship of poverty and livelihood issues with environmental challenges and climate change.^v These views also uphold collective actions towards ensuring poverty reduction, sustainable livelihoods and enhanced environmental awareness of grassroots communities.

It would be reasonable, therefore, to anticipate a brighter future for successful community based achievements like the one in question as a result of the impetus created with the advent of the emerging global initiatives.

19.5.2 Replicability:

The Wereda Agriculture and Rural Development Office (WARDO) has a plan to scale up similar activities into neighboring Kebeles. Farmers exchange visits have already been conducted between those in the project target KAs and those from KAs identified by the WARDO for scaling up. A GTZ supported government project and Sun-Oromia (a local NGO), have replicated the apple seedling distribution intervention into two nearby KAs. The experience has been a good lesson for PADET and it is now preparing a project proposal for funding by its other partner, DSW (German Foundation for World Population). As a consequence of that, five individual farmers (non-targeted) who saw the results of SWC structures (check dams and soil/stone bunds) started similar construction in their own plots.

19.5.4 Limitations and Challenges:

- High flood occurrence, which can not be stopped by the SWC structures built across seasonal runoff courses;

- Biological conservation measures also could not work as expected, because the planted vetiver grass was covered by the sediment;
- Inflation was the major challenge in the project implementation period;
- Prevalence of prolonged drought affected the planted apple not to grow in the good manner and some of them desiccated;
- Technical backstopping and monitoring activities were more difficult due to the unsuitable topography of the area;
- The fact that the different interventions are dispersed to many locations without being integrated on (micro) watershed basis has been observed to have limited effectiveness (e.g. gully treatment and terraces or bunds are constructed at different places; while not all SWC structures are supplemented by vegetative measures);
- Because of farmers being occupied by many other farm activities and other social obligations, community mobilization for natural resources conservation works were not executed on scheduled timetable (seasonal calendar); and
- As field level activities of the project were facilitated by the DAs from WARDO who have overlapping tasks henceforth, they were usually lagging in carrying out project activities on a timely basis. In addition, expectation of incentive from staff of government partners for providing technical support (at times) created some differences with the project management.

20. Conclusion:

The project's success began at the very stage of defining the underlying problem, which correlated poverty with environmental degradation. Such reciprocal relationship had enabled the project design to focus on the provision of alternative livelihood opportunities. The positive nature of this approach is two-fold: firstly, helped in reducing the destruction on natural resources caused by the disadvantaged groups as a means of subsistence; and secondly, it paved the way towards opening up hitherto unknown alternative livelihood opportunities and, yet better rewarding with improved living conditions of target community members. Thus, one of the key issues yet, fundamentally determined the direction of the project towards its successful completion, was the clearly demonstrated poverty – environmental degradation linkage. With appropriate analytical approach, this has naturally led towards opting for the “integrated approach to environmental management”, which necessitates sanctioning interventions that simultaneously address physical and socio-economic constraints.

There are two important strategic aspects that helped the success of this project: community sensitization and collaboration with WARDO. While effective community sensitization and awareness raising enabled fostering community's ownership of the project, the linkage and strong collaboration with WARDO has facilitated access to the available technical and institutional capacities.

Both aspects are meant not only to have enabled smooth implementation of the project activities, but also provided good grounds for sustainability and replication of the project. In addition, the collaborative approach followed in the project implementation process has facilitated mutual learning among development facilitators as it allowed technical personnel from the local administration to accept the notion of ownership of development interventions by communities.

Despite the inescapable variations in intervention approaches and/or implementation strategies, the project seems to miss some important strategic elements viewed from contemporary “people-centered” development initiatives. For instance, for effective environmental regeneration and natural resource management, it is necessary that the interventions be oriented towards poverty reduction and livelihood improvement through people-managed process. While empowering the people remains contextual and varies in terms of what elements it involves or to what extent an element of empowerment could be, there is always a need to have some form of community organisation to take the lead. Apparently, the project has attempted to empower the people in terms of facilitating their participation and voice their needs along with providing training to better understand their environment and further enhance their technical and management capacity. Yet, the empowering process remains incomplete without facilitating their preparedness for collective environmental action by establishing some form of a community organisation. That is an important gap that needs serious consideration for similar initiatives in the future. Experiences around the world and within Ethiopia have ascertained beyond doubt that natural resource management interventions could be served effectively if “participatory watershed management” is taken as an approach.

This approach involves a participatory process and tackling natural resource degradation problems along the watershed, which also need to be integrated as discussed above. This is another important gap that needs consideration for similar/related interventions in the future.

21. Best Practice (10): Addis Zeman Preparatory School Environmental Education Club:

The rationale behind this integrated project is to use the school, in addition to its mandated role for education, as a center of excellence in order to promote environmental management through the establishment of school based Environmental Club. Furthermore, the club is to forge the link between the school and the community in order that the latter gets engaged in addressing critical environmental issues pertaining to siltation in Lake Tana, land degradation, erosion and deforestation. The key components of the project include afforestation and erection of shelter belts, fruit and vegetable production and nursing of honey bees. In this regard, a set of indicators were produced

mostly focusing on extent and survival rate of seedlings under the arid environment, income generation, water harvesting, recycling of waste and capacity building.



Plate (1): The School Surroundings Turned into a Thick Forest



Plate (2) Shelter Belt Protecting Zeman School

Remarks: Creation of effective school based environmental management clubs necessitates that:

- clubs should remain active in engaging both the students and their respective communities in environmental management and conservation;
- in order to enhance the capacity of the villagers in environmental management and conservation regular outreach programmes and school days at demonstration plots, should be arranged;
- enhanced community participation can only be ensured through appropriate economic incentives, mostly inclusion of viable income generation activities.

It is noticed that for massive afforestation programmes a viable list on the relative performance of exotic species as compared to indigenous ones under arid ecosystems has to be produced through appropriate nursery based trials. This provides a clue towards survival rates at the field level of different selected species.

23. Best Practice (11): Shiret Debere Genet Medhanealem Monastery Project Best Practice from Religious Community NRM Initiatives:

23.1 Problem Statement:

Over 600 monks and nuns dwell within Shiret Debere Genet Medhanealem Monastery. Like the other inhabitants in the area, they make their living through agricultural activities cereal crops, fruits and livestock husbandry, which are mainly based on rain-fed traditional production methods with limited practices of irrigated agriculture. In the past, the area was said to have abundant natural resources (land, water, forests and fodder) to provide enough for its inhabitants' basic needs. Since the last few decades, nevertheless, there had been a declining availability of basic natural resources due to misuse/mismanagement of these resources. Natural forest cover has decreased significantly over the past years as the result of increasing human population and the removal of trees to create space for agriculture. Likewise, the agricultural lands have shown decline in their soil fertility causing alarming reduction in crop productivity, which required chemical fertilizers in order to restore to optimum production. However, use of chemical fertilizers remains far beyond the purchasing capacity of the subsistence farmers in the area; and thus, resulting in continued mining of the soil and deforestation for the ever-declining production the land might give. Many of the natural springs in the area, which used to give water supply for domestic consumption and irrigation needs had dried out and get reduced in number over the last few years.

As of late, incidents of drought and peoples inability to survive on their traditional livelihood systems had inevitability resulted into adverse implications like migration of the population, dependence on food aid from outside and unsustainable ways of using the natural resources, including wildlife poaching, selling of fire wood, charcoal and timber. This is in addition to the local communities' increasing use of the natural forest for fire wood, house construction and production of implements. These deteriorating trends had led to serious challenges that jeopardized the livelihoods of many people in the area. The problem is even more for the Monastery community whose religious practices don't allow them to go elsewhere to earn a living. Moreover, the degradation of the prevailing natural resources and the subsequent degeneration of livelihoods will have a negative impact on the Nile ecosystem as a whole.

Seen from social consideration of the overall situation, women are the most vulnerable group in the community. As in many parts of Ethiopia, there is a major problem of integrating women in environmental activities within the project area.

To that effect, women have never been given the chance of making decisions on the resources they use and this in turn has become an obstacle to the success of a number of environmental initiatives. In addition, the growing practice of prostitution in the rural towns within close distance from the project area has resulted in trapping an increasing number of women in the community, which at the end is an escape from the livelihood problem they are experiencing. The effect of this social and economic dilemma has made women of all ages and even those married and living within the vicinity of the Monastery to become vulnerable to HIV/AIDS. Women in the area are also subject to early marriages and many of them have been rendered to bear the burden of suffering from maternal health complications. Lastly, the problems resulting from natural resources degradation could be summarized as follows:

- decreased forest resources to provide for firewood, construction and domestic needs;
- increased soil erosion and decreased availability of water from springs.
- remarked loss of biodiversity mainly in terms of birds and larger mammals;
- increased incidence of HIV/AIDS and other diseases;
- overgrazing as the result of increased heads of cattle and uncontrolled use of grasslands; and
- drudgery of women and time spent to collect firewood and water from the ever-increasing distant locations.



Plate (1): Fruit Tree Plantation using Spring Development

23.2 Justification for Selection:

The innovativeness of this programme is based on the role of the Church in advocating for and promoting environmental protection/conservation and natural resource development through directly involving the potential resource users. The key components of the programme include capacity building of 50 Monks, 60 women and 600 farmers in massive afforestation, rural energy saving, household gardening, spring water harvesting, pest control and compost making. The surroundings of the church now constitute a rural center of excellence for capacity building in intergraded approach to resource management through popular participation and community incentives.

23.3 Technical Approach: Design and Methodology:

The concept of this project advocates for the role of the Church in promoting environmental protection/conservation and natural resource development through the direct involvement of potential resource users. The overall goal of the project is to reinstate the role of women in the community by creating awareness and strengthening their positive contribution to society, harmonization of human interests with needs of the state of the environment within the framework of the larger picture of the Nile Basin and to create conducive habitat and living space for wildlife. The main objective is to strengthen the community value for the environment through practical application of environmental protection, health and livelihood development activities. The specific project objectives include:

- carry out awareness raising campaigns at schools and community centers;
- promote the culture of raising seedlings and tree planting;
- empower women through family planning, HIV/AIDS awareness and building capacity through the use of energy-saving cook stoves;
- introduce better pasture management systems to control overgrazing; and
- carry outreach exchange visits to District MOA nursery sites.

23.4 Partnership:

The project is carried out by the community itself without requiring hired project staff except limited inputs from voluntary individuals; which imply that it required no or very minimal overhead costs to run the project. The strong partnership with the line offices of the local administration and schools provided close follow-up and support through the project implementation. NTEAP, through its Microgrant component, is an important partner for both funding and technical backstopping. It was envisaged during documentation that a number of relevant NGOs should be invited to provide technical support on very vital areas.

23.5 Essence of the Best Practice: Benefits and Lessons Learnt:

The project's major achievements at its current status of implementation include:

- established a tree nursery (capacity of over 100,000 seedlings) with essential nursery equipment purchased and provided, and, 30 seed beds prepared for seedling production;
- produced 188,556 tree seedlings of different species (i.e. 188% of the plan) in the nursery; which have been planted out under different planting strategies, with survival assessment performed and found to be 90%;
- a spring development work completed and partially lined canal constructed, and started supplying supplementary irrigation to the tree nursery and an additional 8 hectares of put under horticultural production;
- created awareness and promoted the objectives of NBI through a briefing session to the staff of the different local government offices, including the district administrators and heads of district sector offices as well as 41 teachers and 780 students at different local schools;
- organized the Nile Tree Day observation involving planting of trees by students and teaching staff of 8 primary schools in the Wereda as well as DAs of the WARDO;
- 60 women farmers selected and awarded with energy saving cooking stoves;
- trained 50 nuns for 4 days on seedling raising activities and nursery management;
- 12 community members from the Monastery as well as Yezeleka and Gedeb Kebeles provided with training of trainers on production of energy saving cooking stoves; and
- established 3 demonstration centres for energy saving cooking stoves at the Monastery as well as Yezeleka and Kendamo Kebeles and provided each with a mould for producing the stoves.



Plate (2): Briefing about Energy Saving Stove

The simple alternate energy technology adopted by the project led to energy conservation of up to 75% in the total biomass. The extensive use of the compost had doubled the growth rate of fruit trees and tripled the total production of vegetables.

The spring development cement lining technique adopted by the project was effective both for good quality drinking water as well as supplementary irrigation. One unique outcome of the project was the restoration of the wildlife habitat. As a consequence of that monkey, birds, wild pigs, antelope, wild cat, foxes and hyenas were seen in the area after thirty years of absence. Conclusively, these religious attachments are in a way analogous to the school projects, albeit popular mobilization is more effective in the former arrangement as compared to the latter.



Plate (3): Project based Learning going at Shiret Medhanealem Monastery

23.6 Sustainability:

The very engagement of a religious community like that of Shiret Debere Genet Medhanealem Monastery in environmental interventions has important implications providing added values of far reaching opportunities in different ways. Traditionally, people residing in monasteries have different views and aspirations of their own; and, are far from being concerned about the worldly things that an ordinary person might less bother about. Yet, the fact that this community in Shiret Debere Genet Medhanealem Monastery has taken the initiative to carryout a successful environmental intervention will have, at least, two major opportunities of extraordinary importance: firstly, engagement of the monks and nuns of that number means that a huge resource would be availed for managing the natural resources and improving their livelihoods (with the peculiar level of seriousness and concerted effort of a group in their setting); and secondly, the example this community is setting to the communities outside the monastery (the respect and trust they command amongst the followers of their religion) is an asset to ensure continuation and sustainability of their initiative. The project being carried out by the community itself without requiring hired project staff except limited inputs from voluntary individuals and the minimal overhead costs to run the project, are conducive to is sustainability. The active participation of the project beneficiaries and strong sense of ownership are not only guaranteeing the smooth implementation of the project but also provides a solid base for sustainability of the intervention.

This is further enhanced by the strong partnership with the line offices of the local administration and schools, which provided close follow-up and support through the project implementation. Moreover, the attention given towards addressing specific problems/needs of women community members (e.g. energy saving cooking stoves and spring development) is a key factor for the sustainability of the project.

23.7 Replicability:

The significant success made in environmental conservation, utilization of efficient alternate energy sources, the household vegetable gardening, improved sustainable livelihoods and significant income from fruit growing encouraged many communities to replicate the project.



Plate (4) The Monastery Leader & a Monk Devotedly Mobilizes the Community

23.8 Limitations and Challenges:

One basic limitation is the high population of the termites, particularly following the use of compost. This problem warrants the active engagement of the Government Department of Crop Protection or a relevant NGO working in the area. Another issue is that the use of cement in designing the Cook stoves is costly, henceforth an alternate material is worth considering.

24. Conclusion:

Experience of the Shiret Debere Genet Medhanealem Monastery's environmental Projects could be taken as a model by which thousands of monasteries could be engaged in environmental and livelihood improvement interventions in different parts of the country.

The outcomes of this project are progressively impressive which means that the project has a huge potential for replication and up-scaling in nearby mountainous ecosystems that are presently suffering from massive sheet and gully erosion, serious land degradation and loss of fertility. The simple alternate energy technology adopted by the project led to significant energy conservation of the total biomass. The extensive use of the compost had doubled the growth rate of fruit trees and tripled the total production of vegetables. Albeit one ke The spring development cement lining technique adopted by the project was effective both for good quality drinking water as well as supplementary irrigation. One unique outcome of the project was the restoration of the wildlife habitat. As a consequence of that monkey, birds, wild pigs, antelope, wild cat, foxes and hyenas were seen in the area after thirty years of absence. Conclusively, these religious supported projects are in a way similar to the school projects, albeit popular mobilization is more effective in the former arrangement as compared to the latter.