

**LAKE VICTORIA ENVIRONMENT MANAGEMENT
PROJECT (LVEMP)**

Community Participation Assessment Report

Final Draft

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ABBREVIATIONS

AIDS	Acquired Immune deficiency syndrome
ADRA	Adventist Relief Agency
BMU	Beach Management Unit
CBOs	Community Based Organizations
CCS	Christian Community services
CIGs	Common interest groups
DDC	District development committee
DPhil	Doctor of Philosophy
FADCs	Focal area development committees
GOK	Government of Kenya
GSi	Geographical Information System
HCDA	Horticultural Crop Development Authority
HIV	Human Immuno deficiency virus
IRM	Integrated Resource Management
IRP	Integrated Resource Planning
JICA	Japan International Cooperation Agency
LVEMP	Lake Victoria Environment Management Project
MCH	Maternal and Child Health
MDGs	Millennium Development Goals
MOH	Ministry of Health
MSC	Master of Science
NGO	Non Governmental organization
PRA	Participatory Rural Appraisal
TORs	Terms of Reference

EXECUTIVE SUMMARY

The purpose of the assessment was to review community involvement, performance and generate a lessons' learnt report that would contribute to decision-support mechanisms and inform future interventions. The assessment methodology included extensive review of relevant documentation, interviews with key informants, specifically the component coordinators and other stakeholders; field visits to selected project sites, observation and discussions with community members.

In response to the terms of reference (TORs) and scope of work; the critical question to be answered was whether the significant role of community participation has been realized as envisaged in the project document and what evidence there is. To address this question it was critical to review outputs by objective and components as outlined in the TORs and scope of work. Across the components the broad guiding questions were: what is the nature of community participation, achievements and potential for sustainability, the challenges and lessons learnt from the community as well as project implementation.

The findings indicate that community participation cuts across all components and activities undertaken by community groups are at various stages of implementation. While micro-projects were a major boost for community participation, community groups were mobilized and engaged in other activities identified through Participatory Rural Appraisal (PRA) and flagged as opportunities. This was more evident within the soil and water conservation component. The activities have both direct and indirect relation to the sustenance of the environment. These are outlined and discussed within each of the relevant components.

Community participation in the various project components has progressed at different paces. In general, Water hyacinth, Wetlands, Soil and Water Conservation, and Afforestation have progressed at a higher pace compared to Capacity building, Fisheries and Water Quality components. Fisheries Research by its orientation on research had little room for community participation. However, training in aquaculture was availed to farmers under the Capacity Building component through the Department of Fisheries, Moi University.

Given the complexity of the project design, LVEMP, embracing the strategy of Community Participation has done remarkably well. There have been substantial achievements in most of the project components notably Catchment Afforestation and Soil and Water conservation where community participation is most evident. Nevertheless, it is observed that if there had been a more concerted focus on community participation at the inception of the project; implementation would have been smoother, faster and the achievements would have been greater.

CONCLUSIONS, LESSONS LEARNT, RECOMMENDATIONS AND WAY FORWARD

The strategic directions of the LVEMP have evolved significantly over the life of the project due to a number of external causes, including a shift in the implementing and coordination ministries. This process affected the whole project but in particular the element of community participation, which was not fully integrated till 2002.

LVEMP implements the project through a three-pronged strategy: 1) Improving the capacity of technical staff 2) Research and 3) Working with communities to promote sustainable development. Linking the project components with the communities is a powerful approach and the three-pronged strategy is appropriate for LVEMP to achieve its objectives and goals.

Although community participation had a belated start and was not fully appreciated by the other components, over the project period tremendous improvements have been made in a very short period of time. In most components there is evidence of success and room for replication. Integration of component activities, specifically soil and water conservation, wetlands, catchment afforestation and water hyacinth is achieved through a joint work plan with community participation as the underlying vehicle. This is cognizant of the need to address issues in an integrated manner as well as maximizing time and expert knowledge from each of the components.

Under Community Participation component efforts have been made to enhance the capacity of component coordinators through specific skills in PRA and community mobilization. This training was organized in conjunction with ACTION AID and covered 40 frontline staff from all the components. There is now a critical mass of staff who appreciate the idea of and how to work with communities. The Community Participation Officer has done a tremendous job to try to coordinate the various components in which community participation is inbuilt. To systematize implementation a document: *“Guidelines for Community Participation in implementation of LVEMP Activities”* Draft- has been prepared. It is a comprehensive document that spells out participatory project identification, planning and implementation based on community-identified priorities.

Community participation approaches have had a positive influence on the knowledge, attitude and behavior of individuals in project sites. The community response to the Project has been positive and this is evident in the level of engagement where opportunities have been availed. In discussion groups, participants noted that they had benefited from the Project through education. The participatory methodologies have been particularly instrumental in facilitating self-examination and realization that development can be and is best initiated from within.

There is need for information and skills at the community level. The training and the scientific research through Moi University have been successful. However, packaging the information in a way that is useful to and understood by the community remains a challenge. There should have been a deliberate effort to engage in applied research that not only produces theses for certification but also leads to positive action at the community level. The Capacity building component will need to revisit its strategies in order to meet the demand at

the community level over and above the institutional level. A shift to action oriented research would go along way in embracing both project and community concerns.

The exposure visits have been lauded as providing learning experiences. In some instances communities have been motivated enough to organize and finance some of these tours; an indication that they recognize the value of exchange visits. For example a group from the Catchment Afforestation and Soil and water conservation components (South Nandi district) went to Eastern and Central provinces in Kenya as well as to Tanzania while one from the Wetlands component went to Uganda. Community members have implemented the experiences from these tours either as individuals or groups.

Contrary to the belief that fishermen are poor they actually have appreciable earnings and should be relatively better off than their catchment counterpart communities. What seems to be the issue is that the concept of saving and credit, and investment is still alien. In as much as they earn so much the value for money is not internalized and therefore rational use is absent. As one participant aptly put it: *the money comes so easily that it can always routinely be replaced the following day!* The concept of saving, credit and investment would need to be candidly addressed in the next phase of LVEMP for a positive influence on the lives of fishermen.

Dialogue is necessary with the local leaders as the issue of fishermen is more complex and goes beyond the officers in the project. The use of Beach Management Units (BMUs) in the collection of data, and as watchdogs of illegal fishing is an important element of community participation/policing and is a structure that is sustainable. The fishermen would benefit from the expressed need for training. Exposure tours have worked well in all components where they have been implemented. This has worked for Mainuga who visited Uyoma beach and were challenged by the developments there. They have since embarked on implementation of positive activities within their BMU.

The formation of or strengthening of CBOs, facilitation of the establishment of community structures such as the Focal Area Development Committees (FADCs), BMUs, Networks, and water committees is evident. These have now assumed their own life and are likely to be the pillars of sustainability and a springboard for other community activities. Some of them have been involved in proposal development to solicit for funds outside the project.

Recognizing that NGOs have a ground presence and will work with communities on a longer-term basis the Community Participation Officer has attempted to network and collaborate with NGOs to implement specific activities for example ICS in Busia, ADRA in Kericho, ACTION AID and KACE in Eldoret. However this has been on a very limited scale. The strategy to work with NGOs would not only increase the geographical spread but also the coverage in-depth and benefit from their strength in participatory approaches to development. Other NGOs include CCS, Horticulture Development Authority (HCDA) in Uasin Gishu. SIDA, a bilateral organization has also worked with communities in South Nandi with the Soil and water conservation component. As a result of numerous micro-projects, Project implementation has been very comprehensive and complex. While most of

the micro- projects have done well and in some instances jumpstarted others; most micro projects in health have performed poorly for lack of personnel, basic equipment and supplies.

Community activities are increasingly inclined towards income generation to address poverty as a priority problem. These activities rally around water and sanitation and afforestation, which directly address the developmental objectives of the Project. The protection of springs has spin offs that range from time saving for women, improved environmental health and diversification of food crops for a balanced diet. So far, the community initiatives on the ground indicate that they have great potential to address environmental issues. However they are on small scale and far in between. Environmental degradation observed in Lake Victoria basin is a product of community-based activities. It is therefore logical to invest more in sustainable community initiatives if a reversal of environmental degradation is to be realized.

The concept and strategy of community participation needs to be understood by all the components from the start to facilitate planning for it appropriately so that it does not appear as an afterthought leading to haphazard application. The involvement of the community as key stakeholders in the project is pertinent. In phase two of the Project; it will be necessary to undertake stakeholder analyses to identify the key actors, issues and possible solutions. These would guide the development of project activities based on a logical framework that facilitates setting targets and tracking them. The visioning exercise that involved the community as stakeholders through discussions is a major step and a good starting point to address issues of community concern ((Kenya Country Report 2003:57). The proposed implementation matrix can be used selectively to address community issues and challenges that are within the mandate of the project (See appendix 3).

CHALLENGES AND LESSONS LEARNT

Community Participation

- Initial appreciation of community as a primary stakeholder in the project, principally as a user/exploiter of the resources, and therefore should be in the forefront of maintaining/restoring the resources. In implementing projects, the Integrated Resource Planning (IRP) and Integrated Resource Management (IRM) concepts should be applied to ensure optimal utilization of resources at the community level.
- Micro-projects are a key-motivating factor in community participation especially when they are inbuilt into the project and focus on community-identified needs. Tailoring the community projects to the LVEMP is doubly beneficial as is the case with basketry in Busia district for income generation and weevil rearing in Kisumu district.
- Gender balance is not always easy to achieve. Much depends on the nature of the activity and willingness to change particularly for women. However where there is adequate interest as in CIGs, there are more women.

Capacity building

- The training and the scientific research through Moi University have been successful. However, packaging the information in a way that is useful to and understood by the community has been and remains a challenge. There should have been a deliberate effort to engage in applied research that not only produces theses for certification but also leads to positive action at the community level.
- A missed opportunity is holding stakeholder workshops involving community, NGOs industrialists, municipalities, CBOs and extension workers, among others to share the information more extensively in order to understand the problem and define roles and responsibilities for appropriate action.

Integrated Soil and Water Conservation

- From the perspective of the Project implementers, transport for monitoring and supervision is inadequate.
- For the Soil and Water Conservation component implementers, the duration of one year in a focal area then exit is not adequate. This is because the preparatory phase of the activities; PRA through to action plans takes most of the time. Without backstopping mechanisms, 60% of the projects became inactive. Some form of overlap and backstopping is necessary to support the communities until they are well on their feet. This will add value to both the LVEMP and the various communities.

- Community mobilization and implementation of community action plans is time consuming and adequate resources and times are needed for repeated visits and monitoring.

Water Hyacinth Component

- Training of more teachers for continuity to cover for retirement and transfers.
- As an institution of learning in the community, this should be used as an entry to the larger community through organization of field days to explain the importance of the Lake Victoria Environment Management project.
- Teachers and pupils want to feel that they are part of the Project. They felt that a tour particularly to the KARI station in Kibos would allow them learn more about weevils and hyacinth to sustain their motivation as well as expand their knowledge.
- Provide commendation or recognition towards participation in this as co-curricula activity especially for the participating teachers.

Water Quality Management Component

- The challenge in this component is how to actively engage communities in scientific research; particularly at the level of appreciating their role in water quality; noting that it is the community activities that contribute to water pollution and subsequently the quality.
- Sensitization of technical officers on the strategies and approaches in community participation is an important step prior to project implementation.

Fisheries Management Component

- More work would need to be done with the fishermen for a turn around in perception of resources and instill a sense of a working ethic that places value to the resources and the need for savings and investment for the future.
- Exposure tours are necessary for the fishermen to share experiences and learn. This has worked for Mainuga fishermen who visited Uyoma beach and were challenged by the developments there. They have since embarked on implementation within their BMU.
- Dialogue is necessary with the local leaders as the issue of fishermen is more complex and goes beyond the officers in the Project
- The use of BMUs as watchdogs of illegal fishing is an important element of community participation/policing and is a structure that is sustainable.

Wetland Management Component

- Systematic approaches in the community are important to capture the interest of the community and with dialogue it is possible to turn around people's perception of a resource to their advantage.
- Not all communities will respond in the same way depending on its dynamism or lack of it and cohesiveness. Conflict resolution therefore becomes a key process in the engagement of communities.
- Exposure tours are instrumental in not only providing new knowledge but also an opportunity to assess oneself against others and be enthused to work hard for tangible achievements
- There is a double gain in the wetlands through conservation and at the same time the community is able to earn a sustainable livelihood as well as a clean source of water. In the words of the chairman of Komosom group: ***"Maji inaweza kukuandika- water can employ you"*** in terms of support for horticulture and Napier grass to support zero grazing units.

Catchment Afforestation Component

- Exposure through tours or visits at district and national levels or across the borders is sufficient motivation that encourages people to exploit their potential towards a common goal. A motivated group or individual proceeds into diversification unabated.
- An activity well done is an eye opener to neighboring groups who replicate with very minimal inputs from the project yet helps to achieve the objectives of the project by increasing the geographical spread.
- Attitudinal problem in some of the communities who still look to the Government to provide everything. This was evident in the younger entrants in the project such as communities in Bungoma district's Tongaren area and South Nandi district where the project has not had adequate opportunity to fully sensitize the community.
- Gender representation in the various community structures is still biased towards men but should approach balance with time and has to be given this leeway.

Recommendations and Way Forward

- At the inception of phase two of the Project there is need to begin with a stakeholder analysis that spells out not only the stakeholders but also the place and contribution of each in the project. This would doubly sensitize the component leaders on communities as key stakeholders, the concept of community participation and how it fits in their components.
- Develop a logical framework that spells the overall purpose, possible activities and means of monitoring to harmonize the approaches in the community across components. The use of a matrix in the community work plans would then reflect activities that can be undertaken by the community and monitored against indicators or their proxy and the environmental issue under study.
- The micro-project approach is useful but has to assess the overall need and justification of the project and more so the fit in the Project mandate.
- Exposure tours have worked well in all the components where they have been implemented. This should remain a key strategy in phase two to spearhead information sharing and skills transfer.
- More work would need to be done with the fishermen for a turn around in perception of resources' utilization and instill a sense of a working ethic that places value to the resources and the need for savings and investment for the future.
- Networking and collaboration should become a central feature of a complex project such as this one in order to benefit from comparative advantage and also offload the community needs that are best handled by other projects/programmes within the region.
- Since the project targets environmental management with a view to long-term sustainability, and recognizing that communities are key in this process, more resources should be availed at community level for capacity building. The Capacity building component will need to revisit its strategies in order to meet the demand at the community level over and above the institutional level. A shift to action-oriented research would go along way in embracing both project and community concerns.
- Direct more resources and upscale all the activities in the Catchment Afforestation, Soil and Water Conservation and Wetlands components where the potential for community participation is very high. These are areas with direct benefits to communities and the potential for environmental impacts are fairly evident.

1.0. BACKGROUND: CONTEXTUAL ISSUES AND JUSTIFICATION

1.1. Introduction

Environmental management is grounded in the concept of *sustainable development*, which emerged in the late 1980s from a report by the World Commission on Environment and Development (the Brundtland Report). The Report defined sustainable development as: "... *development that meets the needs of the present without jeopardizing the ability of future generations to meet their needs.*"¹ Three major aspects of sustainable development are environment, economy and social. These three components form the tenets of human development. For sound environmental management to occur, humanity must take no more from nature than nature can replenish. This in turn means adopting life-styles and development paths that respect and work within nature's limits. The guiding rules are that people must share with each other and care for the Earth. The principles of a sustainable society rooted in communities, are interrelated and mutually supporting.

The early 1990s witnessed sustainable development as a new paradigm and in 2002; the Secretary-General of the World Summit on Sustainable Development stated that:

Box 1: Sustainable Development

"Since the Rio Earth Summit in 1992, sustainable development has emerged as a new paradigm integrating economic growth, social development and environmental protection as interdependent and mutually supportive elements of long-term development. Sustainable development also emphasizes a participatory, multi-stakeholder approach to policy making and implementation, mobilizing public and private resources for development and making use of knowledge, skills and energy of all social groups concerned with the future of the planet and its people."

Source: International Hydrology Association – IHA (2003); White Paper: The Role of Hydropower in Sustainable Development page 19.

Sustainable development to a large extent may be thought of as a vision for transforming our currently growth-oriented socio-economic system to one that is predestined on a global vision of environmental sustainability and social justice. In this context, there is emerging agreement on a broad set of principles for sustainability to provide guidance toward the international development goals.

The United Nations (UN), the Organization for Economic Co-operation and Development (OECD), The International Monetary Fund (IMF) and The World Bank are discussing the human-centeredness and sustainable development with a view to developing a common set of international development goals. This set of development goals is very similar to those set

¹ <http://www.google.com/> - Roy's Home page; Study on Hydroelectric Projects: Great Whale Project sources of Information Niagara Generators Biodata

forth in the UN's Millennium Declaration, and focuses on seven broadly agreed goals, as stated in box 2 below.

Box 2: International Development Goals

- *Eradicate poverty and hunger*
- *Achieve universal primary education*
- *Reach gender equality and empowerment of women*
- *Reduce child mortality*
- *Improve maternal health*
- *Combat HIV/AIDS, malaria and other diseases, and*
- *Ensure environmental sustainability.*

Source: IHA (2003): White Paper; The Role of Hydropower in Sustainable Development page 20.

The UN's Millennium Declaration has an additional goal of “***Develop a global partnership for development***” over and above those stated in box 2 above.

1.2. Lake Victoria Environmental Management Project (LVEMP)

The Lake Victoria Environmental Management Project (LVEMP) is a comprehensive regional environmental program involving the three East African states: Kenya, Tanzania and Uganda aimed at rehabilitation of the Lake Victoria ecosystem and its catchments. The fundamental vision of this project is to restore a healthy, varied ecosystem that is inherently stable and that can support, in a sustainable way, the many human activities in the catchment areas and in the lake itself. It is a holistic regional approach to the management of an ecosystem with community participation perceived as central to its success.

The implementation framework was jointly identified and developed by the three partner states of East Africa through a process of consultation with Governments and other stakeholders. It is against this background that parallel activities of the project are being implemented in the three partner states and coordinated by similar National Secretariats of LVEMP. The project was initiated as a regional activity through a Tripartite Agreement signed on 5th August 1994 in Dar es Salaam to address the major threats to Lake Victoria and its Catchment at the time, which included:

- Decline in biodiversity and apparent disappearance of vital species
- Deteriorating water quality in the lake
- Poor land use systems
- Increased discharge of effluents into the lake
- Misuse and destruction of wetlands
- Invasion by water hyacinth

1.3. The LVEMP Objectives

- Maximize the sustainable benefits to riparian communities from using resources within the basin to generate food, employment and income, supply safe water, and sustain a disease free environment;
- Conserve biodiversity and genetic resources for the benefit of the riparian and global community;
- Harmonize national and regional management programs in order to achieve the maximum extent possible, a reversal in environmental degradation;
- Promote Regional cooperation among the East African countries.

1.4. Funding

The Project is funded by the International Development Association (IDA) and the Global Environmental Facility (GEF) in the form of Credit and Grant respectively. A total of US\$ 79.6 million was provided for LVEMP of which US\$ 26.92 million was allocated to Kenya. Each country is bound to contribute 10% of its allocation as counterpart funding.

1.5. Implementation Arrangements and Project Components

In Kenya, the Project is divided into eight implementation units (components) with overall Project Coordination being managed by Kenya Agricultural Research Institute (KARI). The project Components are:

- Fisheries Research component, implemented by Kenya Marine and Fisheries Research Institute (KEMFRI)
- Fisheries Management component, implemented by Fisheries Department
- Water Quality Management Component, implemented by Ministry of Water Development
- Water Hyacinth Control component, implemented by KARI
- Catchment Afforestation component, implemented the Forest Department
- Integrated Soil and Water Conservation component, implemented by Ministry of Agriculture
- Wetlands Management component, implemented by National Environmental Management Authority (NEMA)
- Capacity Building component, implemented by Moi University, Eldoret.

1.6. Change of Project Management

In the initial 5 years (1997 – 2002), the Project was under the management of the Ministry of Environment and Natural Resources. The first phase of the Project came to an end on December 31st 2002. However, the three East African countries negotiated with the World Bank for a 2-year extension. The Kenya Government and World Bank further agreed that

there was need for change of the Project management so as to effectively implement the pending activities. In this regard the Kenya Agricultural Research Institute (KARI) was identified as the best placed government agency to steer the Project to its completion in December 2005.

1.7. Why Community Participation?

The significance of community participation lies in the recognition that the community is a key stakeholder and beneficiary of the process. Community involvement from the onset improves the conceptualization process and participation in the implementation of the programmes through available community structures. This is an imperative consideration for ownership, continuity and eventual sustainability of environmental management by communities.

1.8. Community Participation Objective

To develop a community that is knowledgeable and managing Lake Victoria's resources in a sustainable way within the context of maximizing benefits to riparian communities by adopting strategies that allow people to chart their own development.

1.9. Community Participation in the Project

Lake Victoria Environmental Management Project envisaged that community participation would be woven into virtually every component to reflect a people-centered project and that community participation would play a significant role in the successful implementation of the project. It was on the basis of this rationale that efforts were made to involve local communities, strengthen their capacities for effective participation and instill a sense of ownership that is critical for sustainable development.

1.10. Types of Community Participation Activities

Community participation cuts across all components of the project and as a result various activities were undertaken by community groups, as stakeholders and other stakeholders. These activities are at various stages of implementation. While micro-projects were a major propel for community participation, community groups were mobilized and engaged in many other activities identified through PRA. Within the soil and water conservation component identified concerns were flagged as opportunities and addressed in an integrated manner. The activities have both direct and indirect relation to the sustenance of the environment. These are outlined and discussed within each of the relevant project components.

2.0. OBJECTIVE OF THE COMMUNITY PARTICIPATION ASSESSMENT

To review community involvement, performance and generate a lessons' learnt report that would contribute to decision-support mechanisms and inform future interventions in the management of the environment.

2.1. Scope of Work

- Determine the extent to which the LVEMP has achieved its original aims and objectives of enhancing community participation in all the project components.
- Review the approach/methodology applied in achieving the above objectives. (These shall include such areas as catchment committees, district micro-project steering committees, village/project implementation committees, and other institutional arrangements).
- Assess the entry processes of community based projects and identify gaps.
- Determine to what extent gender concerns and issues were addressed by the Project and degree of gender integration.
- Determine to what extent other crosscutting issues such as HIV/AIDS and natural resource agenda were addressed.
- Determine to what extent community priority needs were met/addressed including training needs and other capacity requirements.
- Outline achievements made by community participation initiatives.
- Outline achievements made by the community participation initiatives against output/outcome indicators.
- Identify gaps, problems and bottlenecks encountered during implementation of community related activities.
- Assess extent to which communities have benefited from community related activities (direct or indirect).
- Determine the degree and nature of participation (contributions in cash, materials, labor, decision-making organs, and types of participation).
- To what extent did the Project leverage partnerships with other CBOs/NGOs?
- Give a list of other programs related to the sub-component activities in the Lake Basin and its Catchments.

- Assess the degree of sustaining community activities after phase out.
- Establish institution arrangement appropriateness, including capacity building for community projects.
- Based on the above, draw lessons of experience (both positive and negative) and their underlying factors and provide recommendations.
- Propose possible scale up of the approaches or technology to other areas within or outside the Lake Basin and its Catchment, and indicate the reasons why.

2.2. The Focus of the Assessment

In response to the terms of reference (TORs) and scope of work; the critical question to be answered is: Has the significant role of community participation been realized as envisaged in the project document? What is the evidence- quantitative and qualitative? To address this question it was critical to review outputs by objective and components as outlined in the TORs and scope of work. Across the components the broad guiding issues are: the nature of community participation, achievements and potential for sustainability, the challenges and lessons learnt from the community perspectives as well as Project management.

2.3. Assessment Methodology

The assessment methodology included extensive review of relevant documentation, structured interviews with key informants, specifically the component coordinators and other stakeholders; field visits to selected project sites, observation and discussions with community members. The assessment methodology included extensive review of relevant documentation, and structured interviews with key informants. As much as possible data were gathered from various documents produced for the project and other documents as considered necessary. These included strategic plan and operations documents, progress and annual reports. Evaluation reports, including mid-term reviews and Aide memoirs were also reviewed.

The main instrument used for primary data collection was an open-ended guide (interview checklist/guide containing guiding questions). Several interview guides were designed for different types of respondents. Individual based interviews were conducted with project Task Leaders, component Coordinators, community leaders, NGOs and CBOs. The interviews were complemented by field observations of project-supported activities.

Eleven districts were selected from a total of 29 districts covered by the project. Given the time frame a purposive selection of project activities were identified that were representative of each of the components. They also reflect the different kinds of activities, the successful and not too successful projects. A review of these projects by component and geographical spread was expected to provide evidence for level of participation and best practices. The districts, components and activities are indicated in the summary Table 1.

Table 1: Sites visited

District	Component	Site and group
Uasin Gishu	Catchment Afforestation	Kiplombe Tree nurseries and horticulture Kaplolok Tree and Tea nurseries plus spring protection Sosiot tree nurseries
Bungoma	Catchment Afforestation	Tongaren- tree nursery and spring protection
Nandi North	Catchment Afforestation	School- tree nursery
Uasin Gishu(Moi University)	Capacity building	Moi University School of environmental studies
Nandi South	Soil and water Conservation	Kapsaos Focal area
Busia	Wetland	Siteko wetland- fish ponds Neela Marachi Handicrafts
Uasin Gishu	Wetland	Kamoson Spring
Kericho	Soil and water Conservation	Chepkunyuk Focal Area Ogirgir Focal Area
Homa Bay	Fisheries	Lela beach BMU Koginga beach BMU Koginga women group
Rachuonyo	Fisheries	Mainuga beach Obaria beach
Kisumu	Water Hyacinth	Kaloka primary school

3.0. FINDINGS

3.1. Introduction

Based on the review of the initial project document and subsequent reports, community participation was envisaged to play a key role in the implementation of the broader Project through the defined components. To motivate the communities to participate, micro-projects are inbuilt in the project as an incentive so that core project activities would become spin-offs of the micro-projects. Community participation is a critical avenue for promoting collaboration between the community, the project and other stakeholders (GOK, NGOs and CBOs).

Community participation as the vehicle for the realization and success of the project resonates in all the documents and aide memoirs. But community participation as a strategy has a belated entry into the project and therefore somewhat negates its role as the vehicle for project implementation. There is a broad objective for community participation but there are no specific objectives, targets and strategies to achieve broad objective. The community has been incorporated along the way as need arises. Where this has happened, there is evidence of transformation and the community's willingness to participate in the various activities. Achievements have been realized at various levels and could have been more had there been a more concerted effort to engage the community strategically and timely.

Community participation is crosscutting and therefore the findings are presented by component. Where there is evidence of collaboration among the components, this is emphasized partly because this is not only synergistic and incremental but also because it is a departure from the traditional vertical programmes through line ministries.

3.2. Approaches and Methodologies for Community Participation

Several approaches were used in involving the communities in planning, executing, and monitoring of various projects. These include:

- (i) Village meetings, public barazas, field days and ASK Shows
- (ii) Seminars and conferences
- (iii) Trainings for specific groups such as fisher folks, farmers, tree planters etc
- (iv) Study tours to different areas for experience sharing and tapping best practices
- (v) Distribution of pamphlets, brochures, posters, etc written in user friendly language
- (vi) Use of drama and theatre as a social mobilization tool. For example, with the collaboration of a theatre group; HEMNET; there was radio drama in three languages (Luo, Kalenjin and Luhya) and a play: "Misango Okonyo Lolwe"

The Participatory Rural Appraisal (PRA) approach that emphasizes community analysis of their environment, resources, priorities and challenges has been an important step to start to engage the community. This is due to the fact that over time it has been realized that for good project implementation it is critical to mobilize, sensitize and create awareness among the

community about the project. The PRA process formed the basis for specific community activities. In the selected projects visited during the assessment, community members made reference to this approach as having been critical in their self-assessment and recognition of their potential to initiate development. The use of participatory methodologies and the generation of activities as identified by the communities has ensured sustained interest and ownership directed towards promotion of natural resource management with minimum support from the project.

Another approach which is useful but which is sometimes overlooked by project implementers is banking on what is on the ground. Sometimes project implementers assume that the communities have done nothing on specific development areas and that the project is starting a leaf. From the interviews with the project staff and the beneficiaries, it was found that efforts were made to understand the indigenous knowledge on the ground before embarking on project activities. This was done in the form of baseline surveys. For instance, communities were involved in identifying the fish breeding centers in the lake, the species available in the lake, historical trends in appearance and disappearance of certain fish species, type and uses of various tree species, to mention a few. This knowledge helped the project implementers know what was on the ground and build on that.

Over time it was realized that for good project implementation it is critical to mobilize, sensitize and create awareness among the community about the project. The Participatory Rural Appraisal (PRA) approach that emphasizes community analysis of their environment, resources, priorities and challenges has been an important step to start to engage the community. This process was initiated in 2001 and formed the basis for specific community activities. In the selected projects visited during the assessment, community members made reference to this approach as having been critical in their self-assessment and recognition of their potential to initiate development. The use of participatory methodologies and the generation of activities as identified by the communities has ensured sustained interest and ownership directed towards promotion of natural resource management with minimum support from the project.

Community Participation as a strategy has focused on capacity building for the implementing frontline officers and the community. This is evidenced by community organization workshops that involved government department representatives from the collaborating ministries (2002) to expose them to community concepts, group dynamics and the tenets of community organization as a pre-requisite to their operation or working with communities. Under the rubric of community participation, community sensitization workshops and PRA have been undertaken. In the stocktaking report of 2003 it was observed that there has not been a strong capacity building to support community participation. From the discussion with the component coordinators and the Community Participation Officer it is evident that strides have now been made to address this issue by equipping the frontline personnel and partner extension staff with skills related to community participation and project support communication.

Capacity building at the community level is evidenced by training of committees in the basic skills of financial management, leadership and project management. It was gratifying to note that in instances the committees had managed the funds allocated to them by the project for micro-projects. Examples are the construction of the health facility at Chepkunyuk in Kericho district, protection of springs and other micro-projects. In addition there are tailor-made trainings that respond to particular needs. So far the key areas are: water supply (caretakers and artisans) horticulture, food production, food preparation where new food items have been introduced and adapted as the case with sweet potatoes and fish. The Home Economics section of the Ministry of Agriculture were supported by the project to conduct training in food preparation, the making of fireless cookers and the improved energy saving jiko- *kuni mbili jiko*.

Recognizing the importance of gender mainstreaming in the project, the Gender Audit training was also undertaken in 2003. It focused on each of the components and it was found that on the whole there are still gender disparities across the board. However, some components were beginning to pick up as confirmed by observation in the sites visited. In the oncoming groups in Bungoma there was equal number of membership in the committees by gender. In most communities, the type of activity and availability of time for women was an issue. This was particularly evident with the Focal Area Development Committees (FADCs) in the Soil and Conservation component and the BMUs in the Fisheries component where fewer women are in leadership on account of lack of time but more important was that traditionally there are fewer women in leadership.

3.3. Community participation objectives and indicators

Based on the review of the initial project document and subsequent reports, community participation was envisaged to play a key role in the implementation of the broader Project through the defined components. To motivate the communities to participate, micro-projects are inbuilt in the project as an incentive so that core project activities would become spin-offs of the micro-projects. Community participation is a critical avenue for promoting collaboration between the community, the project and other stakeholders, such as NGOs and CBOs.

Community participation as the vehicle for the realization and success of the project resonates in all the documents and aide memoirs. But community participation as a strategy has a belated entry into the project and therefore negates its role as the vehicle for project implementation. There is a broad objective for community participation but there are no specific objectives, targets and strategies to achieve broad objective. However, the Community Participation Officer has done a tremendous job to try to coordinate the various components in which community participation is inbuilt. To systematize implementation a document: “*Guidelines for Community Participation in implementation of LVEMP Activities*” Draft- has been prepared. It is a comprehensive document that spells out participatory project identification, planning and implementation based on community-identified priorities.

It was further found that, due to late entry of community participation activities, the communities have been incorporated along the way as need arises. Where this has happened, there is evidence of transformation and the community's willingness to participate in the various activities. Achievements have been realized at various levels and could have been more had there been a more concerted effort to engage the community strategically and timely.

3.4. Capacity Building Component

Moi University had the mandate for developing capacities under the project. Although Moi University has developed short courses, some of which could be repackaged for community-based capacity building and offered as on-site training, this did not happen. However, in one instance there was a concerted effort to mount community dissemination workshops to share the research findings with the community even though the level of delivery remained far more technical than the community could fully grasp.

In the discussion with the capacity component it was reported that these courses are needs driven. The relevant courses include the following: -

- Management of wetlands and their resources
- Project design, monitoring and evaluation
- Community-based Water Supply and Sanitation
- Methods of soil erosion control
- Mainstreaming gender issues in environmental management.

From the discussions it is therefore plausible to argue that capacity building in this project though crosscutting was much more evident at the institutional level: Improvement of physical facilities especially laboratories that are relevant for the LVEMP project. In the area of human resource development, MSC and DPhil degrees have been offered and are essential for research and analytical aspects of the Project. However, comparatively, there was very little interaction with the communities. There are some topics that closely cover community perspectives. Between 2000 and 2005, 61 thesis topics have been covered out of which 12 have a direct bearing on the community. These are listed in the appendix 2. The closest they have come to interact with the community is through other project components. In soil and conservation in Kericho three students worked on the research component of the impact of soil conservation on food production and yield.

Through the Department of Fisheries of Moi University, ponds were developed and currently 47 are fully operational. Some ponds are for breeding while others are for commercial purposes. This serves as a sensitization centre for community members on aquaculture. The fish ponds at Chepkoilel campus in Uasin Gishu district under the component have provided an opportunity for interaction with the local community as part of learning and "demonstration" of aquaculture and the relevant technologies have been adapted. Farmers are trained on construction and management of fish ponds. It was reported that in Kakamega and Butere-Mumias fish ponds have been initiated and farmers are on the verge of abandoning sugar cane and maize growing, which contribute to land

depletion. They are converting to an alternative that is more sustainable in land use and addresses conservation. There is now a strong linkage between the university and the local community through the ponds. Farmers and managers from Uganda have benefited from this training.

Short courses that last 3 days included fish quality assurance, environmental impact assessments and GSI for officers. The Capacity building component conducted one workshop on community dissemination of findings and several CBOs participated. The general observation is that there has not been a strong capacity building to underpin the community development initiatives particularly with respect to dissemination of scientific information. (Stock taking report 2003)

Learned Lessons

- The training and the scientific research through Moi University have been successful. However, packaging the information in a way that is useful to and understood by the community has been and remains a challenge. There should have been a deliberate effort to engage in applied research that not only produces theses for certification but also leads to positive action at the community level.
- A missed opportunity is holding stakeholder workshops involving community, NGOs industrialists, municipalities, CBOs and extension workers, among others to share the information more extensively to understand the problem and define roles and responsibilities for appropriate action.

3.5. Fisheries Management Component

Beach Management Units (BMUs) is a new concept adopted by the Government under the project to co-manage fishing resources with the community. This was adopted regionally in the year 1999 following the LVFO technical committee recommendation. Co-management is a substantive sub-component of the fisheries component. This has been triggered by the retrenchment of staff and the need to create community structures on the ground for sustainability. BMUs are elected by stakeholders and form the entry points to the beach. In Kenya, these are in the initial stage and the plan is to legalize and entrench them into the Fisheries Act. Every district that has a lakeshore line has a BMU. By 2000 Kenya had 245 increasing to the current 306 BMUs. Between 1998 and 1999 the BMUs were playing lead roles in fighting against chemical fishing and improvement of beaches as part effort of lifting the EU ban.

The activities identified through consultative forums included identification and legislation of one closed season for omena. Through indigenous knowledge 113 fish breeding grounds were identified out of which 98 were gazetted in 2001. Communities were involved in the Frame surveys of 2000, 2002 and 2004. Forty (40) BMU members were trained in data capture and data analysis to help them understand resource-monitoring trends. The BMUs are involved in the protection of breeding areas, vetting of fishermen/crafts for licensing hence sideline perpetual lawbreakers. Some BMUs have been trained in radio

communication so they are involved in passing information during MCS patrols and in case of boat capsizing in remote islands. Further, the BMUs were involved in CAS (Catchment Assessment Surveys) and has helped in changing the attitude of fishers from hunters to responsible owners of the resource. The BMUs have served as entry points for points for other agencies to the beach, HIV/AIDS, saving front office services (beach banks) for example in Bondo and Suba. In fish farming, farmers were trained in pond construction, budget enterprises. Some farmers are private seed producers in Busia, Rachuonyo, Kisii and Siaya. An extension manual has been developed for fish farmers. Border BMUs exchange visits have enabled communities to sign MOUs and to settle the cross-border local conflicts on their own.

For this assessment four BMUs were visited; 2 each in Homa Bay and Rachuonyo districts, respectively. Table 2 below provides a summary of the activities implemented under the Fisheries Management component.

Table 2: Activities implemented under the Fisheries Management Component

Activities	Number
1. Fish breeding areas have been identified and 98 protected	113
2. Fish breeding areas identified and protected	98
3. Closed breeding season for ' <i>omema</i> ' was enforced with fishermen participation.	-
4. Several sessions of field demonstration on appropriate fish capture and culture techniques were undertaken at selected beaches in collaboration with EMPODEV.	
5. BMUs have been established. Beach Management Units (BMUs) across the lake were sensitized on fish biodiversity conservation.	200
6. Surveillance and monitoring activities in the Lake undertaken in collaboration with BMUs	
5. Micro-project recipient communities trained in PRA and developed Community Action Plans (CAP)	
7. Fishermen trained as enumerators and participated in data collection in Frame Survey 2002 and 2004.	300
8. Sample beaches identified for routine data collection and members of the beach community to collect this data have been identified.	30
9. Micro-projects supported implementing various activities	69
10. Several fishermen went on an exchange tour to Tanzania for learning and shared experiences and skills	-
11. Officers trained in PRA and community organization skills.	10
12. Lake Victoria Days have now been held for 6 years running in collaboration with UHAI Lake Forum.	-

BMUs are considered beneficial in that for the first time fishermen have come together and work as a unified group with ground rules. Monitoring is in place and the number of boats and fishermen are known. Monopoly in the selling and buying of fish has been eliminated. This is particularly important for women buyers who can now get equal amounts of fish whatever the catch. Through the BMUs cleanliness is maintained at the beach and the male youth are occupied with lake patrol. Fishermen who have in the past operated individually were now contemplating registering as groups and eventually form a cooperative society. They also cited seminars as a source of information but also the realization that they could do

more as groups. In one group, an attempt was made to calculate their daily sales and proceeds from fish. Currently, on a good day, the harvest is about 400kgs per day and sells a piece at about Kenya shillings one hundred and fifty (Kshs. 150) thus yielding an income of approximately kshs. 60,000 per day for 60 fishermen!

In Koginga group there was special mention of the fact that due to the regulation by BMUs members have been able to protect breeding grounds and as a result, they now see fish that were thought extinct for example, *kamongo* and *Ningu*. The women who preferred smaller fish to fit their market expectations now understand that immature fish leads to depletion, ***“we did not know that we fish the mother, children and the eggs”***. In addition tree planting at the beach has also been initiated in appreciation of the need to protect the environment.

The sub-component of fisheries research and the development of aquaculture have improved production techniques that have been taken up by local farmers. During the visit to Siteko in the Wetlands it was evident that aquaculture had been entrenched and that the group has the skills to propagate catfish for the market. They are unable to meet demand locally and for the fishermen who use catfish as bait for Nile perch. Chebarus group in Uasin Gishu district is producing fish and wants to expand to meet demand. In Bungoma district, the group located in Tongaren, though young, is interested in fish farming and anxiously waiting for technical support from the project to start off.

Challenges

- Patrolling the lake and getting rid of all illegal nets is not easy and would require a change of heart among fishermen on their own volition. This would be preceded by repeated sensitization.
- The savings, credit and investment culture is absent in these communities yet this is what would steer them out of malnutrition, poverty and place them on the road to development. This is paradoxical given that on calculation of what they might get in a day it was turning out to be about Kshs. 10,000 (approximately US\$ 133) per day per fisherman tax-free!
- Fishermen are migratory and hence the need for continuous training.
- The fishing community has a unique sub-culture that calls for more dialogue to bring about change of attitude and perception of the lake resources, which they see as infinite rather than finite, and therefore requiring regeneration.
- Fishermen’s income is high and regular on a daily basis. But as they explained it is all spent because *“I will get more tomorrow.”* Unfortunately this regularity of income means exploitation of the lake resources by all means including illegal ones. Eliminating these and bringing order to the beach is viewed as *“impoverishing”* the fisherman and this is a major challenge to the fisheries department.

- Unlike the catchment communities, the fishing communities are largely addressing change that requires a shift from illegal activities to legal ones that are in the short term a setback to the fisherman. The farmer on the other hand is adopting production systems that will bring about observable improvement.

Lessons Learnt

- Exposure tours are necessary for the fishermen to share experiences and learn. This has worked for Mainuga fishermen who visited Uyoma beach and were challenged by the developments there. They have since embarked on implementation within their BMU.
- Dialogue is necessary with the local leaders as the issue of fishing is more complex and goes beyond the officers in the project
- The use of BMUs as watchdogs of illegal fishing is an important element of community participation/policing and is a structure that is sustainable.

3.6. Fisheries Research Component

The major achievement made under this Component is development of improved aquaculture production techniques that have been taken up by local farmers. During the visit by Kenyan Research Team to Siteko in the Wetlands it was evident that aquaculture had been entrenched and that the group has the skills to propagate catfish for the market. They are unable to meet demand locally and for the fishermen who use catfish as bait for Nile perch. Chebarus group in Uasin Gishu district is producing fish and wants to expand to meet demand. In Bungoma district, the group located in Tongaren, though young, is interested in fish farming and anxiously waiting for technical support from the project to start off.

Activities

- Stakeholders' workshop held and document available on views of fisher folk on fisheries management documented.
- Farmer's sensitization on pond management under aquaculture has been done and was expected to lead to increased fish farming activities. This is evident in groups: Chebarus in Uasin Gishu catchment area, Mumias and Kakamega and the Wetlands- Siteko where fish farming as an economic activity is flourishing. There are potential groups that want to take on fish farming.
- Fisheries Management Component and KVIFRI towards BMUs strengthening developed joint strategies for co-management
- A technical paper on impact of LVEMP micro projects along the lake districts is available.
- Survey on contribution of Lake Victoria basin fisheries to the Kenya economy was undertaken (women involvement, marketing structures hinterland)_ economics and

distribution. Several other related socio-economic studies were done

- 2 Technical reports produced on community involvement in fish harvesting, processing and marketing within the hinterland.
- 4 Officers were trained in PRA and community organization skills.

3.7. Water Hyacinth Control Component

Water Hyacinth is an aquatic weed that obstructed transportation in the Lake and interfered with fisheries in the 1990s. Activities implemented under Water Hyacinth Control Component in Kenya include; establishment of 15 community-based weevil rearing units at various schools located near water hyacinth hot spots; training teachers on weevil rearing and release (28) and Beach youth (7). Adult weevils were reared and released by community weevil rearing units (8000); procurement and distribution of manual removal tools and equipment to local beach communities; PRAs carried out at Kusa and Aram; Community Action Plans (CAPS) developed for water hyacinth management; training of Project Officers in PRA and community organization skills. To date about 4.3 million weevils have been released under the project.

Following reduced hyacinth infestation in beaches, community members were reluctant to maintain the units and expected payment to sustain the units. As a result, the component re-strategized and focused on the schools as entry points in hot spot areas. According to the AIDE Memoir of 2004 and discussion with the component coordinator performance in this component continues to do well. Over the project period the component has been able to reduce water hyacinth by over 90% from the original levels. The community role has been instrumental in this tremendous progress. The task now is to sustain this equilibrium through community efforts. The current status of the project is presented in table 3 below:

Table 3: Activities Implemented under Water Hyacinth Control Component

Activities Implemented	Number
1. Established community-based weevil rearing units at various schools located near water hyacinth hot spots	15
2. Teachers trained on weevil rearing and release	28
3. Adult weevils reared and released by community weevil rearing units	8000
4. Procurement and distribution of manual removal tools (wheel barrows, gum boots, machetes), protective gear (gloves, gumboots first aid kits) to local beach communities	12
5. PRAs carried out at Kusa and Aram	2
6. CAPS developed for water hyacinth management	1
7. Training of Project Officers in PRA and community organization skills	1

In this component community participation has made a significant contribution to the scientific study by playing a remarkable role in the biological control of hyacinth. Community participation was enlisted in 2000 when there was a resurgence of water

hyacinth. The project was forced to turn to communities, specifically schools where students took it up with enthusiasm as a science project. Schools undertake the rearing, harvesting and releasing weevils into the lake. They also monitor and keep records of their activities. Incentives provided by the project are long lasting and are for the common good such as water harvesting tanks for schools and in addition tools to facilitate the activity.

When the assessment team visited Kaloka primary school the tanks were already in place, pending purchase and mounting of gutters to the buildings. The coordinator acknowledged that motivating the community in weevil rearing was fairly simple because this is a problem they relate to. This has worked well and is being replicated in Tanzania and Uganda. Initially primary school teachers are trained in the management of rearing units before these units are handed to them. At Kaloka the weevils are well taken care of, waiting for harvesting and release.

In discussing with the senior teacher who has taken over the project at Kaloka primary school, it is evident that this is a good project within a learning institution where students are introduced to scientific thinking early in life. It is also a good starting point to influence their mindset on environmental issues. Although the larger community is not directly involved in the project, one of the members was appreciative of the disappearance of the hyacinth and referred to the freedom they enjoy while fishing without fear of getting stranded or harassed by snakes that come with the hyacinth.

Challenges

- Only two teachers were trained and currently one has retired while the other has been transferred.
- Standard eight pupils were trained but this class has since graduated
- The community at large is not in touch with this project and yet it is important for them to know about the project and its benefits to them.
- Need to sensitize the community to the project.

Lessons learned

- Training of more teachers for continuity to cover for retirement and transfers.
- As an institution of learning in the community, this should be used as an entry to the larger community through organization of field days to explain the importance of the project.
- Teachers and pupils want to feel that they are part of the Project. They felt that a tour particularly to the KARI station in Kibos would allow them learn more about weevils and hyacinth to sustain their motivation as well as expand their knowledge.

- Provide commendation or recognition towards participation in this as co-curricula activity especially for the participating teachers.

3.8. Water Quality and Ecosystem Management Component

This component is involved principally in the collection of scientific data with minimal community participation. Water quality has not engaged communities optimally, yet technical issues aside, water and water quality is a community issue. What seemed evident is that the technical staff are not sufficiently grounded in the issues of community participation and subsequently, as a component they did not know how to engage the community apart from identifying a few individuals involved in river gauging, specifically recording river water flows. Community members were also involved in the installation of gauging equipment and taking care of them.

Table 4: Water Quality and Ecosystem Management: Implemented Activities

Activities Implemented	Number
1. Mobilization meetings with petty trader community of Oile Park on beautification of the park	3
2. Stakeholders' sensitization workshop on institutional and legal reforms on water and sewerage services in Kisumu Municipal Council	1
3. A Sensitization workshop for Kisumu Municipal council Staff under Water and Sewerage department	200
4. Farmers, stockists and industrialists were reached on safe use and handling of agrochemicals	-
5. Training of Project staff in PRA and community organization skills	1

Challenge

- The challenge in this component is how to actively engage communities in scientific research; particularly at the level of appreciating their role in water quality; noting that it is the community activities that contribute to water pollution and subsequently the quality.

Lesson Learnt

- Sensitization of technical officers on the strategies and approaches in community participation is an important step prior to project implementation.

3.9. Wetlands Management Component

“When we talk of conservation it is the Community”- Wetlands Component

The mapping of all wetlands in the project area is now complete and it is envisaged that the component can now fully engage the community not only in wetlands management but also in initiatives that would uplift their livelihoods. This is a vibrant component and accommodates community issues. It has a good working relationship with other components

such as fisheries management, catchment afforestation, Moi University and Integrated soil and water conservation. The component has continued to facilitate communities through the use of participatory approaches to obtain community priorities that are addressed as micro projects. According to available information, over 30 CBOs have been reached and undertaken various activities such as: spring protection, catfish propagation, and fishpond construction amongst other activities. Two handicraft showrooms have been constructed at Mubwayo and Neela. Bunyala handicraft center started having and selling products in February 2002, leading to increased incomes for the community members. It is important to note that the Marachi sofa set, a product of this group is now patented.

Table 5: Wetlands Management Component: Implemented Activities

Activities Implemented	Number
1. Community members trained in catfish propagation	4
2. Establishment of production units (Siteko)	1
3. Patenting of indigenous intellectual rights for Marachi basketry	1
4. Wetland resource users from Siteko trained on sustainable wetlands management, product quality improvement, financial management, marketing and group dynamics	22
5. World Wetlands Day celebrations organized at various sites for awareness creation	-
6. Facilitated CBOs from Nambale, Butula and Budalangi divisions (Busia district) to exhibit their products at the Kakamega ASK show and World Wetlands Day exhibition	4
7. CBO leaders' study tour to Uganda for exchange information on marketing strategies	10
8. Training of Project environment staff in Community Organization skills	6
9. Training of Project environment staff in PRA skills	6
10. Trained Okana wetland resource users on wise use of wetlands and water management	

During the assessment three areas for wetland were visited; Siteko and Neela in Busia district and Kamoson in Uasin Gishu district. Based on the reports and further discussions with the group members it is evident that Siteko CBO is doing well. There is a turn around in the use of the wetlands based on the training that the community could relate to.

Prior to the project, the community perceived the wetlands as wastelands and drained them for farming particularly horticulture, maize and beans. They had so far reclaimed 50 acres of land. They noted that the initial crop would have high yields but would reduce subsequently. However, in their own experience the new way of managing the wetlands is yielding more profit through the propagation and sale of catfish and the production of high quality handicrafts from papyrus for income.

The protection of springs is particularly instrumental in good sanitation. The group proudly reported that the cholera that hit Busia was not in their area because of clean water. As in other areas, it was argued that protected springs not only give clean water but also reduce the time required to fetch water and subsequently release women for other productive chores. This observation was reiterated among other groups visited where water protection has lead to reduction in complains that would mirror typhoid.

Members of the Siteko group noted that they have benefited from tours to Uganda. They have also been to Moi University to learn more about aquaculture; the Sagana government farm; Kitale fish farm, Alupe and Chwele as well as Malenga beach in Busia district to see how the bait (catfish) is used. The Kamoson group in Uasin Gishu district on the other hand is still in the formative stages and clearly would need exposure as a way of opening to new ideas.

Outside the swamp the Siteko group has the potential to expand on horticultural production for the market. Already they have been approached by HCDA to grow chilies that they can sell to MACE in Eldoret at the rate of Khs. 100 per kilogramme. It was noted that this is a lucrative crop because monkeys, which are notorious in the swamp, do not eat it. The group can also take on agro-forestry such as oranges, mangoes and grafted fruits that are doing very well in Uganda.

Given the experience of the CBO they plan to graduate into a training centre for others and charge a fee. Currently institutions and schools are willing to pay for such training. From the perspective of the component the pilot phase can now move into upscaling by coming up with 6 wetland management plans. (Tionisoyet in Kerichio; Siteko is underway; Sitatunga in Kitale, Sirona in Nyamira; Kiringwal in Nandi and Marula in Eldoret.

Challenges

Getting the community to work together and adopt new ideas has not always been easy. There are those who are still adamant and operate in the swamp. But the majority, 70% have adopted the new method of wetland management.

- Although water is now available to the community in Komoson, Uasin Gishu district the spring is not completely protected. It is still a long distance for the women. It requires an additional 3 million Kenya shillings to be raised yet this community is not sensitized enough to take on this.
- Although catfish was introduced in Bondo it did not take off because the community who were getting water from the lake for the ponds did not take extra effort to fetch water when the water level of the lake went down.
- The Bumala organization- Neela that had been supported by a micro project has not moved as expected to form a cooperative because of lack of cohesion and infighting. The community participation officer has been involved in conflict resolution and hope that the activities can be revived in the near future.
- With increased production of handicrafts the need for a showroom in town where they can sell their products with a centralized marketing system is pertinent.
- Burning of farms remains a threat but will go down in due cause as people begin to value the wetland as a resource and not a wasteland.

Lessons learned

- Systematic approaches in the community are important to capture the interest of the community and with dialogue it is possible to turn around people's perception of a resource to their advantage.

- Not all communities will respond in the same way depending on its dynamism or lack of it and cohesiveness. Conflict resolution therefore becomes a key process in the engagement of communities.
- Exposure tours are instrumental in not only providing new knowledge but also an opportunity for self-assessment against others and be enthused towards tangible achievements
- There is a double gain in the wetlands through conservation and at the same time the community is able to earn a sustainable livelihood as well as a clean source of water. In the words of the chairman of Komosom group: *“Maji inaweza kukuandika-(read kukuajiri) water can employ you”* in terms of support for horticulture and napier grass to support zero grazing units.

3.10. Integrated Soil and Water Conservation Component

This component was initially a pilot project for three years with a focus on Nyando catchment areas alone. However, the increased concern for soil erosion and pollution in the project was such that this pilot project was extended. This component is community based and operates largely within the framework of the Ministry of Agriculture- it is participatory and uses the existing structure of extension personnel. The main focus of the component has been mobilization of farmers and dissemination of soil and water conservation technologies. The component has facilitated the establishment of Focal Area Development committees (FADCs), which are dully elected by community members. They are trained in technical issues such as laying of terraces. The establishment of this community-based structure is an assurance that this will steer the process long after the project, an important consideration for sustainability.

A more viable approach is the flagging of opportunities and the formation of Common Interest Groups (CIGs), which only call for tailor- made training. This tends to attract more women, at least (45%). In the FADCs the component has only managed to achieve 30% of women in membership. The ideal is to have 50/50 but women were said to shy away from leadership roles.

Collaborative efforts are evident based on joint work plans under land use management components: Integrated Soil and Water Conservation, Catchment Afforestation, Wetlands, Agrochemicals and management of Pollution Loading sub-components. Some collaboration with the capacity building component was noted although this was not based on a joint work plan. This collaboration should be maintained for greater impact as it maximizes the contribution of each component.

Table 6: Activities implemented under Soil and Water Conservation Component

Activities Implemented	Number
1. Fruit nurseries introduced in groups	32
2. Water pans established	5
3. Focal area community action plans prepared	63
4. Staff trained through short courses	58
5. Community groups sensitized through participatory process	55
6. Training of Focal Area Development Committees on a variety of topics	756
7. Farms planned and documented for soil and water conservation	6339
8. Springs protected in Kericho, South Nandi and Nvando districts	15
9. Officers were trained on community organization skills	39
10. Demand-driven trainings were conducted	58
11. Community excavated water canals (in metres)	3000
12. Establishment of community based tree nurseries (average 3000 seedlings per tree nursery)	24
13. Participation of community members in inter-catchment district visits	278
14. Organized Field Days	30
15. Exposure visits by Community members (inter-country)	14
16. Frontline workers also went on an exchange tour to Tanzania.	-
17. Gender integration	30%
18. HIV/AIDS is now an integral part of all community sensitization and training.	-

During the current assessment, four sites were visited- two in South Nandi and two in Kericho district. In South Nandi district, Kapsaos Focal area started work with the project in 2003. It is involved in the protection of springs. One spring at Cheptorot has already been done with the community contributing labour and materials to the tune of Kshs.52,000. The benefits from this are evident including the reduction in waterborne diseases as well as the reduced time women have to spend at the well fetching water. They have also addressed food security by adopting sweet potatoes and cassava. The sweet potatoes are particularly important because they are early maturing- 2-3 months. They serve diverse needs, including food, the leaves are vegetables, the vines are sold and the plant is good for soil conservation. The potatoes are an idea borrowed from a tour in Vihiga district sponsored by the project. They are also involved in seedling production and each of the group members have planted trees in their homes totaling up to 6000.

In the current focal area the emphasis is on terraces and farmers have responded very well. There are plans to visit Kakamega and get a new breed of Napier grass that can be planted on the terraces for harvesting but also as a good form of soil conservation. A youth group in Kapsaos is engaged in horticultural production for sale as well as tending of tree/fruit nurseries. They have a bank account and deposit Kshs, 100 per month. They are also into tree nursery for sale. Now they want to get into growing the popular trees of blue gum. In addition they want to get in HIV/AIDS community activities.

In Kericho district, Ogirgir group, one of the youngest entrants, is engaged in spring protection and upgrading of livestock. The group is also involved in energy saving initiatives such as the two-piece firewood jiko and the fireless cooker, which have been successfully experimented under the guidance of the Home Economics department of the Ministry of

Agriculture. They also have kitchen gardens and are open to new ideas to improve food production. Committee members visited Naivasha to see the hybrid goat and are convinced that most of them will reduce cows and opt for the hybrid goat because it has higher yields of milk with less feeding. This group is likely to benefit from a tour to South Nandi where the soil and water conservation component is well established.

Of the focal areas the most challenging is Chepkunyuk in Kericho district. It is among the oldest sites. This community has already benefited from water that is now piped to their homes. Each family contributed Kshs. 1000 and now 200 homes have got water by gravity. Livestock are now fed from the homestead and this has contributed to reduced soil erosion. Community members are enthusiastic and through their committees are involved in tree and tea nurseries, tree planting and terraces to address soil erosion. As a result of effective soil protection the community reported that their maize yields have increased substantially. In future they want to upgrade their livestock for increased milk and plant a better variety of Napier grass. They also require more education on tea planting and management.

During the PRA in 2001, health ranked as the top priority problem in Chepkunyuk and is closely linked to problems of accessibility to health facilities. It is hilly and transport system is extremely poor. Through the micro-project funds and community contribution a health facility has been constructed, with input from the project to the tune of Kshs. 900,000; Kshs. 88,000 from the Kipsigis county council and Kshs. 192,000 from the community. The ministry of health has posted a health provider but medicines are provided sporadically. The construction of the maternity wing is incomplete and the group was assured that disbursement of funds for completion would be soon. This is the community where the youth, 30 in number, have come together to fix the road and hope that they can be assisted with tools to do this. They also want to get involved in horticulture production and HIV/AIDS awareness creation. It is important to note that the dispensary has triggered community activities that are relevant to the management of the environment.

The community is very appreciative of the project support towards the much needed health facility. However, on observation, very limited health services, especially MCH services are being provided. This is an area that the project would need to look into for completion and to ensure that the services are well underway particularly through linking this facility to the relevant organizations whose mandate is health. For example a link with JICA, which has a safe motherhood programme in Kericho district through MOH, could have been more viable. This would release the project from this initiative and would then concentrate on soil and water conservation. On discussion with the component coordinator it was reported that the health facility has been passed for gazetement by the DDC and hopefully that more support will be realized.

Challenges

- From the perspective of the Project implementers, transport for monitoring and supervision is inadequate.

- For the Soil and Water Conservation group the duration of one year in a focal area then exit is not adequate. This is because the preparatory phase of the activities; PRA through to action plans takes most of the time. Without backstopping mechanisms, 60% of the projects became inactive. Some form of overlap and backstopping is necessary to support the communities until they are well on their feet.

Lessons learnt

- Community mobilization and implementation of Community action plans is time consuming and adequate resources and time is needed for repeated visits and monitoring.
- Communities are receptive to new ideas and go on to innovate so long as they are adequately mobilized in a participatory manner

3.11. Catchment Afforestation Component

The objective of the Catchment Afforestation component is to conserve river catchments by increasing tree/vegetation cover to minimize loss of soil and eventually reduce sedimentation in Lake Victoria. The initial approach was that Government departments in the project districts planned for the production of seedlings centrally then distributed for afforestation. At project mid-term review LVEMP Project was criticized for having many components that did not cover community aspects. This resulted in a shift in approach that involved the community, starting with sensitization, training in nursery management and seed collection in the Nzoia, Nyando and Yala river systems.

Under the Catchment Afforestation Component, the key activities are: tree nurseries, involvement of schools in afforestation, mobilization of communities and formation of local CBOs which are involved in diverse activities including raising seedlings, tree planting and spring protection (27). Currently 1.5 million seedlings are produced and marketed per year. The table below outlines the activities under this component.

Table 7: Implemented Activities under Catchment Afforestation

Activities Implemented	Number
1. Mobilization and formation of CBOs	80
2. Protection of springs	14
3. Schools in environmental conservation programs	60
4. Farmers trained in tree nursery management in catchment areas	1000
5. KBC radio programmes in Dholuo, Luhya and Kalenjin	
6. Produced and distributed (English and Swahili) brochures to communities within the catchment areas.	4000
7. Several on-site field trainings done in Bungoma. Uasin Gishu and Nandi South and North districts	-
8. Tree seeds distributed to CBOs, individual farmers and institutions (schools).	1250 kg
9. Hand tools, and production materials distributed to CBOs, individual farmers and institutions (schools).	-
10. Representatives of 13 CBOs trained (29 men and 7 women) in leadership skills, project management and proposal writing, creating skills that led to micro-project groups being able to develop their proposals well	36
11. Farmers went on an exchange tour to Tanzania	14
12. PRA conducted for officers	12
13. Critical catchment areas planted on people's farms in Nandi (1 hectare), Rachuonyo (5hectares) and Keiyo (5hectares) districts.	11 Hectares
14. CBOs have formed catchment wide network umbrella groups for exchange of ideas and skills.	
15. Seedlings were raised and planted in the critical catchment areas per year.	1.5million
16. Contact farms have been established and are in use by communities and schools as learning grounds for tree nursery management.	4
17. One farmer in Nandi has held field days on forest conservation and agro forestry.	4

The achievements are in double dose; afforestation is now a source of employment at the same time ensuring tree cover in the process. Communities now appreciate that a tree has value and some trees have already been sold for school fees. In Bungoma district one man reported that trees had enabled him pay school fees for three of his children in high school. The diversified and integrated approach is closely linked to the natural resource agenda. Other areas of natural resource management include bee keeping on the same trees since 2003; the income from which has began to address poverty reduction at this basic level. Communities that traditionally do not eat fish have embraced fishponds. Fish is now part of their diet as well as a source of income. Communities are now enthusiastic about environmental conservation through maximization of sustainable benefits.

Conservation of water sources through spring protection is a direct benefit to communities. In some areas such as Kapkwang and Museset, water is piped for populations below the spring. The water and sanitation project is so successful that beneficiaries of a Plan International funded project from Embu district who visited this community are considering protecting water and bottling it for commercial purposes. The idea has now been sown in this community too. As a result of the protection of springs, the Ministry of Water and Irrigation has now allocated funds to protect springs using public health officers in South Nandi

district. Fruit farming is being explored as a viable income generating activity. The Horticultural Crop Development Authority (HCDA) has contracted one community, Kiplombe, for passion fruit production.

The Catchment Afforestation component also works with youth, women and self-help groups. The school programme involves conservation through environment clubs and the teachers. To date the project has reached 20 schools of which two are secondary schools. Requests for tree nurseries and planting are overwhelming and homes are reached through school children. The component has now decided to use schools as demonstration centres.

Based on the reports reviewed and the site visits, this component is performing extremely well and the community activities address adequately objectives one and two of the project. In two of the sites visited; Kaplalok in Uasin Gishu district and Chebarus in North Nandi district, communities were undertaking tree, tea nurseries and fish farming as income generating activities to address poverty and in so doing, concomitantly playing a key role in soil conservation. More importantly is the activity replication or magnification that has followed. For example Kaplolok activities of tree and tea nurseries are an offshoot of a similar activity in South Nandi that is a micro-project. Apart from the group project, every group member has planted 200 seedlings and there are plans for each to plant tea of not less than 0.4 of an acre.

The group was already selling seedlings. The income is available for borrowing by members and much of it is ploughed back into the project. This is one group where it was said that they have in one go addressed crime among the youth. The youth are too busy either working on the tree nurseries or transporting the seedlings for sale for which they are paid per trip. It was claimed that poverty would soon be something of the past. Already even the old people who would have been dependants now own their own seedlings for sale. One such is a 90-year old man who is a member of the group. Because of their success people from within the country and from outside- Tanzania have visited them including members of parliament. This has been overwhelming and fueled their energy for greater participation in developmental activities.

The success of Kaplolok has become a satellite and influenced other communities. There are now 25 groups with similar activities with minimum input from the project. These are really replication groups who are enthusiastic about the project activities because of the observed and real benefits.

The Chebarus Chenjing'ei group is in Uasin Gishu district with a membership of 36, of which 8 are women. This is originally a merry-go-round group that was eventually linked to the project through the Ministry of Agriculture. Apart from tree seedlings they have embraced fish farming and have a demand they cannot fully satisfy. They are also involved in beekeeping. Currently they have over 40 beehives most of which they have made themselves, reducing the cost by roughly half. Beehives normally cost Kenya shillings 1,500 but instead cost the group members Kshs. 800 each. As in the Kaplolok case they are a satellite group and have influenced the formation of other groups with similar activities. The keeping of fish is even more exciting and have received visits from Nyando farmers to come

and see highland farming of fish! This group is part of a network of the five districts and visits each other for learning experiences. The highlight in this group is that some of its members have gone to Tanzania for exposure visits.

The Kiplombe Chebarus started as a self-help group in the year 2000 to address poverty and unemployment having noted that there are many youth in the community who are idle. In addition they also planned to address the deteriorating environment through conservation. They registered in 2001 and have a membership of 20 members- 13 men and 7 women. They have worked with the extension officers of the Ministry of Agriculture to produce vegetables on each other's farms. In 2002 they approached the Christian Community services (CCS) under ACK for capacity building particularly in water and the construction of bore holes. Relentlessly and on their own initiative they approached LVEMP in 2002 for tree nurseries.

Challenges

- Attitudinal problem in some of the communities who still look to the Government to provide everything. This was evident in the younger entrants in the project such as communities in Bungoma district's Tongaren area and South Nandi district where the project has not had adequate opportunity to fully sensitize the community.
- The community is demanding more attention from the project, at a faster pace than the project can move. In the sites visited the project officers were in very high demand.

Lessons Learned

- Exposure through tours or visits at district and national levels or across the international borders is sufficient motivation that encourages people to exploit their potential towards a common goal. A motivated group or individual proceeds into diversification unabated.
- An activity well done is an eye opener to neighboring groups who replicate with very minimal inputs from the project yet helps to achieve the objectives of the project by increasing the geographical spread.
- Gender representation in the various community structures is still biased towards men but should approach balance with time and has to be given this leeway.

4.0. EMERGING ISSUES

Given the complexity of the project design, LVEMP has done remarkably well in a majority of the areas. Reported and observed access to safe water, improved incomes, and attempts to reverse environmental degradation are indications that the Millennium Development Goals (MDGs) are beginning to be addressed at the community level. These activities are linked to the national objectives of poverty reduction (Poverty Reduction Strategy (2001) and further amplified in the Economic Recovery Strategy for Wealth Creation (2004)).

Nevertheless, it is the observation of this assessment that if the project had more focus on community interventions, implementation would have been smoother, faster and the achievements would have been greater. The different communities are at various stages of implementation of the project. Due to the late inception of community activities a majority still need training and initiation of project activities. This is more so for the recent entrants such as Tongaren in Bungoma district and Ogirgir in Kericho district. Across the board there is willingness to participate in environmental conservation and therefore there is enormous potential for expansion of the project. This is so much so that in the groups visited there was evidence of healthy competition for the attention of project officers, if only to keep pace or outdo other groups in development activities!

As noted in the individual components, there is ample evidence of significant improvements at the community level in terms of improved food production, sanitation, household incomes and the potential for this to go up. Tremendous strides and enthusiasm are observed in communities whose experience with the project spans 2-3 years and others only one year, as is the case of Ogirgir community in Kericho district. The role of the provincial administration in community mobilization is particularly critical and needs to be acknowledged. In the groups where chiefs are members, the motivation is high and are good monitors for the project activities

4.1. Programme Design

The programme design to a large extent determines not only the pace of implementation of a project but more so the quality of the results. Community participation remains pivotal in the implementation of the project. The observations in the stocktaking report of 2003 are pertinent here. Although the importance of community participation is stressed in the project document and in Staff Appraisal reports this was not evidently translated on the ground with the same thrust. Discussions with component coordinators indicated that in the initial stages it was not clear to them how they would engage communities. Because of the belated entry of community participation as a strategy this has meant that the community elements of the project were not well articulated in the critical initial preparations.

It is important to note that because of the project design, there are no output/outcome indicators against which one can outline achievements made by the community participation initiatives. In spite of this, there have been some notable achievements related to consultations with stakeholders, involvement of communities in, for example, co-management of fish landing sites, afforestation schemes and promotion of micro-projects.

These achievements are described in the community participation stocktaking reports and in the various technical reports of the project and are reiterated in the current report under the individual components.

The community participation officer faces the challenge of stimulating and coordinating activities across the different components of the Project. It is important to recognize that the induction of frontline officers in each of the components in community mobilization skills and participatory approaches is slowly easing the problem off the shoulders of the Community Participation Officer. The entry processes are primarily through PRA and community dialogue. This is as a result of capacity building of the frontline officers within the components who have now embraced participatory approaches. They have seen this approach catalyses rural economy and bring incomes to community members including women who now have an independent source of income; reducing dependence on men. The approaches are adequate and appropriate only that they should have come sooner in the project inception. This is an issue that was raised at one of the sensitization meetings in Siaya- *“Why has this come so late into the project?”* (Community Sensitization Report, 2000).

4.2. Networking and Collaboration

Networking and collaboration are essential to address the various concerns but more so make use of comparative advantage. Although through the Community Participation Officer, there have been efforts to work with CBOs and NGOs in this project it is the feeling that networking and collaboration has not been exploited to the full yet it is evident that there are other organizations working on the ground. An NGO-LVEMP workshop in which 18 out of 25 invited deliberated on areas of possible collaboration including the modalities but this was not followed to fruition. However there have been on and off NGO supported activities or participation in LVEMP. ADRA facilitated community based training with Soil and water component targeting catchment communities while ICS facilitated community based training for 9 CBOs under micro-projects grant scheme with fisheries management component. IUCN, which came on board in 2002 funding training and exposure visits for BMUs among fishermen. There are community initiatives under the Project, which are incomplete. Through networking perhaps these would have been mainstreamed either within the district development interventions or the parallel programmes that are ongoing within the Project area. A list of some of these projects is provided in **Appendix 3**. Greater government departments’ involvement to provide support for sustainability should have been pursued more vigorously.

It is commendable that some community groups, out of their own volition have reached out to organizations to work with. This was evident in Kaplembo where the group is working with Horticultural Crop Development Authority (HCDA) and Christian Community Service (CCS) on production of passion fruits. KARI (Kitale) has identified this group as one where a new variety of passion fruit will be piloted. The Mainuga fishermen were working with Homa Hills to address community concerns that go beyond their group and the Project. This included sensitization on HIV/AIDS.

There are instances where the project has worked with NGOs and other ministries but this could be more especially in an environment where needs are vast yet the project can only address so many. For instance HIV/AIDS is a major problem in this region to the extent that it can only be addressed cursorily in this project. Within all the project components, HIV/AIDS is now an integral part of all community sensitization and trainings using drama and theatre. However, taking comparative advantage as a consideration, the project should be proactive in linking the communities to other partners working in the same region to address crosscutting issues more comprehensively. One group, Kaplombe on its own accord- had written a proposal in 2004 and had received funding of Kshs. 200,000 to create HIV/AIDS awareness. As the team visited the group training for TOTs was going on for 2 days. The youth groups in Kapsaos and Chepkunyuk had plans to include HIV/AIDS awareness creation in their activities.

There is also local collaboration where several groups have come together to form networks. Examples are ASCON in Kaplombe, which has a membership of 20 groups while in Bungoma, Tongaren Kabuyefu network comprises 24 groups both of which want to see their groups move forward with development activities. These approaches should be entrenched in phase two of the project.

4.3. Community Perception of the Project and Sustainability

The community response to the project has been positive and this is evident in the level of engagement. In the selected discussion groups, participants noted that they had benefited from the Project through education, contributing to behavior change in the community particularly with regard to resource management and development in general. Water and good sanitation have contributed to improved health status as reduction in incidence of typhoid was reported in the discussion groups. Education has created the awareness of the unexploited potential in their environment.

In the community groups there was reference to resource maximization and diversification as key ingredients in their new approach to production. The project related activities have contributed to creation of employment especially among the youth for the established groups such as Kaplalok; and increased incomes in all the groups that sell seedlings. In Tongaren one participant reported that he had paid school fees for three children in secondary school from the sale of seedlings. Availability of water is time saving especially for the women who can now divert the saved time to other activities. The *kuni mbili jiko* and the fireless cooker in Ogirgir has benefits to the community especially women, and has a direct bearing to sustaining the environment. It was observed that with the new technology one tree could be used as an energy source for a year! This idea should be sold to all other groups.

In communities where the project is operational members have been catalyzed and have taken on initiatives that will spearhead development. This is evident in their contributions within their means. In Ogirgir in Kericho, the community has been with the project for the past one year but is so motivated that they have set aside Saturday for community service. As we visited they were producing and transporting stones in readiness for the protection of the

water point. Perhaps the most rewarding statements are to hear from communities that they are addressing poverty alleviation from within rather than expectations from without.

Expansion in livelihood options especially in food production; a revamped working ethic among community members, reassessment of their resource potential and value was evident in the groups visited. The link to income generation is particularly powerful. This is compelling in an environment where poverty and unemployment especially among the youth are high.

In all the groups visited, the community response and sense of ownership of initiatives is present. In the case of spring protection the community has contributed labour, materials such as stones, sand and land. The local leadership particularly the chief is instrumental in overall mobilization of the community. Because of the self-drive that is evident in the community groups visited, the establishment of community structures and the identification of priority problems, there is a very high level of identification with the initiatives. This is a key ingredient for sustainability.

Communities are not homogenous and working with fishermen is especially a major challenge. Their perception of development is one of quick fixes. Currently the level of dependency and expectation that development has to come from outside is still an issue with the fishermen. Fishermen referred to poverty as an entrenched institution--- that they needed to be assisted extensively. Self drive among the fishermen is clearly a challenge and a lot more time will have to be invested to bring them to the level of the catchment communities who, in spite of being more exposed to the vagaries of the environment, were willing to do more to protect it. Catchment communities seemed to be aware of potential opportunities in their environment and were beginning to perceive poverty as something they could, with a little facilitation push to the past.

4.4. Replication

Replication is an important qualitative indicator of the acceptability and success of a project. Replication of activities by communities that are merely borrowing from their neighbors is a good sign that the project is not only appreciated but also that communities indeed have embraced the ethic of environmental protection within the context of overall sustainable development. In several of the discussion groups a particular activity, for instance tree planting, food production or horticulture was as a result of a similar activity transforming a community elsewhere. It is important to note that even without the direct intervention of the project adjacent communities were already replicating the activities especially tree nurseries. For example, in Kaplalok it was said that as a result of their project, 25 other communities were involved in spring protection and tree nurseries.

In other instances communities were curious to know how they could learn new ideas to improve their livelihood. Pockets of rural communities in the project area are experiencing rural transformation based on comparatively little input from the project. Tours within the project area, to other provinces and regionally are a source of motivation and the urge to excel. Investment in these tours is a hallmark for the project. Even the most rigid, the fishermen, have been moved to act having visited their counterparts who had initiated

changes. The Mainuga BMU has initiated positive changes based on a visit to Uyoma in Bondo where incomes have increased as a result of adoption of appropriate fishing methods. Replication is also an indication that the project could facilitate scaling up of all the community activities appropriately.

At the national dissemination workshop, the representative of ADRA noted that as an NGO they have been able to use the CBOs trained under the LVEMP to reach out to other communities; emphasizing the multiplier effect of this project at the community level.

4.5. Community Participation

In invoking the element of community participation the basic premise is that it is community activities that precipitate environmental degradation. Logically the thrust of the project should therefore be on the community aspects. Looking at the community initiatives across the board one does not get the sense that these are adequately facilitated. In several instances the community contribution is more than the project contribution. In one community, it was estimated that the community had contributed to the tune of Kshs. 450,000 against the contribution of the project of Kshs. 192,000 towards the spring protection. Both contributions were inadequate for the completion of the activity. The expectation of community participation should go hand in hand with project facilitation at least as a jumpstart for activities. The total cost of the project would be close to Kshs. 3 million and because the community cannot raise this immediately all their plans that would benefit them as well as contribute positively to sound resource management have stalled.

For purposes of sustainability and a sense of ownership it is important that communities make contributions towards projects that are set up. In each of the micro-projects visited community members have contributed in various ways. These are simple initiatives in which the project contribution is much less than that from the community. Because of the positive benefits of these investments one would expect that the project takes advantage and supports more of these in needy communities in the catchment area. This is critical because it is the outcome of these simple investments that does not only benefit the community but would in the long run contribute to the attainment of the project objectives. Investment in the catchment communities is partly the answer to the problems downstream and in the Lake.

4.6. Micro-Projects as a Strategy for Community Participation

The Project's responsiveness to the needs of the communities is lauded. Communities tend to respond to Project issues only after addressing what they perceive as their priority needs. Environmental management may therefore not be perceived immediately as a high priority need for stakeholders, especially the communities. Micro-projects programme has a very broad focus and often tends to incorporate projects that may not address direct environmental issues. However, the Project implementers are convinced that environmental issues resulting from human actions cannot be addressed out of context. Thus, LVEMP's dilemma has been responding to and meeting the needs of the stakeholders, in particular the beneficiaries while keeping a focus on its mandate and core business of environmental resource management.

This is one area where application of stakeholder analysis and log frame in developing LVEMP would have been very useful. In future there is dire need to take these into account.

Identification of relevant linkages for communities should be a priority so that the Project can concentrate on its core mission. There is need for strategic focus so that the Project is not spread thinly and run the risk of initiating activities that stall. A visit to two health facility stalled projects (Chepkunyuk and Homa Bay) indicates that a lot more needs to go into the planning and justification for initiation of such projects. The health facility at the beach in Homa Bay was probably not necessary given, in the first place that the district hospital is within proximity. The case of the health facility at Chepkunyuk is pertinent and would serve a needy community. But it is important to acknowledge that provision of health services is far much more than providing a building structure. The need for safe motherhood and child health is clearly evident but relevant equipment and supplies need to be in place for the facility to be useful to the community. Health service provision is outside the mandate of the Project, hence the need for further consultations with the Ministry of Health and networking with other organizations with similar programmes in the area to adequately address this issue.

The Project is better placed to initiate health micro-projects that focus on preventive and health promotion measures, as is the case with spring protection, which has done extremely well. The micro-projects could have been guided by the Project document rationale to center around sustainable livelihood and changes in productive systems identified as major threats to the lake ((Staff Appraisal report, World Bank 1996: 6-7). Specifically it was noted that:

“The lake basin is used as a source of food, energy, drinking and irrigation, shelter, transport and a repository for human, agricultural and industrial waste. With the populations of the riparian communities growing ---- the multiple activities in the lake basin have increasingly come into conflict. This has contributed to rendering the lake environmentally unstable.

“Water hyacinth choking water ways and landings” with ramifications that affect the community directly and indirectly- physical interference with fishing, transport, access to water supply and breeding habitat for host of waterborne diseases.

“...Although the lake and its fishery show the evidence of the dramatic changes in the lake basin over the past century, the lake is not the source of the problem. The problems have arisen in the surrounding basins through human activity” (Staff appraisal report June 18 1996)

Water-borne diseases have increased in frequency” (This is reiterated in the discussion with community members that flooding and deteriorating water quality has led to waterborne diseases significantly affecting the health of the population especially children.” Kenya Country Report final draft 2003: 21)

4.7. Evidence of Gender Balance/Dynamics in Project Participation

The Gender Analysis Framework aims to demonstrate that there is an economic rationale for investing in women as well as men. In this way it assists planners to design more efficient projects and improve overall productivity by emphasizing the importance of better information as the basis for meeting the efficiency/equity goal. It also involves mapping out the work of men and women in the community and highlight the key difference taking into account the activity profile, access and control and the influencing factors. (Overholt 1994) A gender audit has been done for all the project components identifying gender concerns with regard to staffing and physical facilities, training and capacity building; gender integration, flexibility in programs; the role of culture in the management of lake resources; organizational changes in project implementation and the need for a gender strategy. As result a gender sensitization workshop for Project staff was organized in 2003 at which each component developed gender objectives, entry points and monitoring indicators. In addition, a gender strategy was developed in line with the partner institutions; KARI and Ministry of Agriculture and Rural development

In this project gender balance may be analyzed in terms of committee composition and participation in the projects. In terms of committee membership this is still skewed towards men. However in terms of official positions there was an effort to allocate women some key positions. In discussing with the BMU representatives it was clear that the committee membership was predominantly male. In the Koginga group it was clarified that gender considerations aside; because of the nature of the tasks; patrolling the lake was considered too dangerous for women. They listed their tasks as patrolling the lake for illegal fishing, regulating the fishing gear to ensure that it is appropriate and that over-fishing particularly of immature fish is avoided.

The project has made a deliberate effort to target gender balance. In the tours that have been undertaken there was also an effort to balance or at least include women in the trips/tours. With regard to direct participation in project activities there was an element of appropriate/complementary division of labour. In Ogirgir men split the stones while the women carried them down to the river. There was unity in terms of work so that there is equitable contribution to the tasks. Women also own seedlings in their own right for sale. At one of the beaches women were said to own boats for which they hired fishermen. In Kaplolok the women provide food for sale while men worked on the seedlings. Overall it was felt that the project has drawn community members together for a purpose. Although gender balance is not yet at 50/50 level, it was noted that with time this should be so given that cultural inclinations take time to thaw.

5.0. CONCLUSIONS

The strategic directions of the LVEMP have evolved significantly over the life of the project due to a number of external causes, including a shift in the implementing and coordination ministries. This process affected the whole project but in particular the element of community participation, which was not fully integrated till 2002.

LVEMP implements the project through a three-pronged strategy: 1) Improving the capacity of technical staff 2) Research and 3) Working with communities to promote sustainable development. Linking the project components with the communities is a powerful approach and the three-pronged strategy is appropriate for LVEMP to achieve its objectives and goals.

Although community participation had a belated start and was not fully appreciated by the other components, over the project period tremendous improvements have been made in a very short period of time. In most components there is evidence of success and room for replication. Integration of component activities, specifically soil and water conservation, wetlands, catchment afforestation and Water hyacinth is achieved through a joint work plan with community participation as the underlying vehicle. This is cognizant of the need to address issues in an integrated manner as well as maximizing time and expert knowledge from each of the components.

Under Community Participation component efforts have been made to enhance the capacity of component coordinators through specific skills in Participatory Rural Appraisal (PRA) and community mobilization. This training was organized in conjunction with ACTION AID and covered 40 frontline staff from all the components. There is now a critical mass of staff who appreciate the idea of and how to work with communities. The Community Participation Officer has done a tremendous job to try to coordinate the various components in which community participation is inbuilt. To systematize implementation a document: "*Guidelines for Community Participation in implementation of LVEMP Activities Draft- has been prepared.*" It is a comprehensive document that spells out participatory project identification, planning and implementation based on community-identified priorities.

Community participation approaches have had a positive influence on the knowledge, attitude and behavior of individuals in project sites. The community response to the Project has been positive and this is evident in the level of engagement where opportunities have been availed. In discussion groups, participants noted that they had benefited from the Project through education. The participatory methodologies have been particularly instrumental in facilitating self-examination and realization that development can be and is best initiated from within.

The need for information and skills at the community level is there. The training and the scientific research through Moi University have been successful. However, packaging the information in a way that is useful to and understood by the community remains a challenge. There should have been a deliberate effort to engage in applied research that

not only produces theses for certification but also leads to positive action at the community level. The Capacity building component will need to revisit its strategies in order to meet the demand at the community level over and above the institutional level. A shift to action oriented research would go along way in embracing both project and community concerns.

The exposure visits have been lauded as providing learning experiences. In some instances communities have been motivated enough to organize and finance some of these tours; an indication that they recognize the value of exchange visits. For example a group from the Catchment Afforestation and Soil and water conservation components (South Nandi district) went to Eastern and Central provinces in Kenya as well as to Tanzania while one from the Wetlands component went to Uganda. Community members have implemented the experiences from these tours either as individuals or groups or groups.

Contrary to the belief that fishermen are poor they actually have appreciable earnings and should be relatively better off than their catchment counterpart communities. What seems to be the issue is that the concept of saving and credit is still alien. In as much as they earn so much the value for money is not internalized and therefore rational use is absent. As one participant aptly put it: *the money comes so easily that it can always routinely be replaced the following day!* The concept of saving, credit and investment would need to be candidly addressed in the next phase for a positive influence on the lives of fishermen.

Dialogue is necessary with the local leaders as the issue of fishermen is more complex and goes beyond the officers in the project. The use of BMUs in the collection of data, and as watchdogs of illegal fishing is an important element of community participation/policing and is a structure that is sustainable. They would benefit from the expressed need for training. Exposure tours have worked well in all components where they have been implemented. This has worked for Mainuga who visited Uyoma beach and were challenged by the developments there. They have since embarked on implementation of positive activities within their BMU.

The formation of or strengthening of CBOs, facilitation of the establishment of community structures such as the Focal Area Development Committees (FADCs), BMUs, Networks, and water committees is evident. These have now assumed their own life and are likely to be the pillars of sustainability and a springboard for other community activities. Some of them have been involved in proposal development to solicit for funds outside the project.

Recognizing that NGOs have a ground presence and will work with communities on a longer-term basis the Community Participation Officer has attempted to network and collaborate with NGOs to implement specific activities for example ICS in Busia, ADRA in Kericho, ACTION AID and KACE in Eldoret. However this has been on a very limited scale. The strategy to work with NGOs would not only increase the geographical spread but also the coverage in-depth and benefit from their strength in participatory approaches to development. Other NGOs include CCS, Horticulture Development

Authority (HCDA) in Uasin Gishu. SIDA, a bilateral organization has also worked with communities in South Nandi with the Soil and water conservation component.

As a result of numerous micro-projects, Project implementation has been very comprehensive and complex. While most of the micro- projects have done well and in some instances jumpstarted others; most micro projects in health have performed poorly for lack of personnel, basic equipment and supplies.

Community activities are increasingly inclined towards income generation to address poverty as a priority problem. These activities rally around water and sanitation and afforestation, which directly address the developmental objectives of the Project. The protection of springs has spin offs that range from time saving for women, improved environmental health and diversification of food crops for a balanced diet. So far, the community initiatives on the ground indicate that they have great potential to address environmental issues. However they are on small scale and far in between. Environmental degradation observed in Lake Victoria basin is a product of community-based activities. It is therefore logical to invest more in sustainable community initiatives if a reversal of environmental degradation is to be realized.

The concept and strategy of community participation needs to be understood by the components from the start to facilitate planning for it appropriately so that it does not appear as an afterthought leading to haphazard application. The involvement of the community as key stakeholders in the project is pertinent. In phase two of the Project; it will be necessary to undertake stakeholder analyses to identify the key actors, issues and possible solutions. These would guide the development of project activities based on a logical framework that facilitates setting targets and tracking them. The visioning exercise that involved the community as stakeholders through discussions is a major step and a good starting point to address issues of community concern ((Kenya Country Report 2003:57). The proposed implementation matrix can be used selectively to address community issues and challenges that are within the mandate of the project (See appendix 4).

6.0. CHALLENGES AND LESSONS LEARNT

6.1. Community Participation Component

- Initial appreciation of community as a primary stakeholder in the project largely as a user/exploiter of the resources, and therefore should be in the forefront of maintaining/restoring the resources.
- Micro-projects are a key-motivating factor in community participation especially when they are inbuilt into the project and focus on community-identified needs. Tailoring the community projects to the LVEMP project is doubly beneficial as is the case with basketry in Busia district for income generation and weevil rearing in Kisumu district.
- Gender balance is not always easy to achieve. Much depends on the nature of the activity and willingness to change particularly for women. However where there is adequate interest as in CIGs where there are more women.

6.2. Capacity Building Component

- The training and the scientific research through Moi University have been successful. However, packaging the information in a way that is useful to and understood by the community has been and remains a challenge. There should have been a deliberate effort to engage in applied research that not only produces theses for certification but also leads to positive action at the community level.
- A missed opportunity is holding stakeholder workshops involving community, NGOs industrialists, municipalities, CBOs and extension workers, among others to share the information more extensively to understand the problem and define roles and responsibilities for appropriate action.

6.3. Integrated Soil and Water Conservation Component

- From the perspective of the Project implementers, transport for monitoring and supervision is inadequate.
- For the Soil and Water Conservation group the duration of one year in a focal area then exit is not adequate. This is because the preparatory phase of the activities; PRA through to action plans takes most of the time. Without backstopping mechanisms, 60% of the projects became inactive. Some form of overlap and backstopping is necessary to support the communities until they are well on their feet.
- Community mobilization and implementation of Community action plans is time consuming and adequate resources and time is needed for repeated visits and monitoring.

6.4. Water Hyacinth Component

- Train more teachers for continuity to cover for retirement and transfers.
- As an institution of learning in the community use this as an entry to the larger community through organization of field days to explain the importance of the project.
- Teachers and pupils want to feel that they are part of the Project. They felt that a tour particularly to the KARI station in Kibos would allow them learn more about weevils and hyacinth to sustain their motivation as well as expand their knowledge.
- Provide commendation or recognition towards participation in this as co-curricula activity especially for the participating teachers.

6.5. Water Quality Management Component

- The challenge in this component is how to actively engage communities in scientific research; particularly at the level of appreciating their role in water quality; noting that it is the community activities that contribute to water pollution and subsequently the quality.
- Sensitization of technical officers on the strategies and approaches in community participation is an important step prior to project implementation.

6.6. Fisheries Management Component

- More work would need to be done with the fishermen for a turn around in perception of resources and instill a sense of a working ethic that places value to the resources and the need for savings and investment for the future.
- Exposure tours are necessary for the fishermen to share experiences and learn. This has worked for Mainuga who visited Uyoma beach and were challenged by the developments there. They have since embarked on implementation within their BMU.
- Dialogue is necessary with the local leaders as the issue of fishermen is more complex and goes beyond the officers in the project
- The use of BMUs as watchdogs of illegal fishing is an important element of community participation/policing and is a structure that is sustainable.

6.7. Wetlands Management Component

- Systematic approaches in the community are important to capture the interest of the community and with dialogue it is possible to turn around people's perception of a resource to their advantage.
- Not all communities will respond in the same way depending on its dynamism or lack of it and cohesiveness. Conflict resolution therefore becomes a key process in the engagement of communities.
- Exposure tours are instrumental in not only providing new knowledge but also an opportunity to assess oneself against others and be enthused to work hard for tangible achievements
- There is a double gain in the wetlands through conservation and at the same time the community is able to earn a sustainable livelihood as well as a clean source of water. In the words of the chairman of Komosom group: ***“Maji inaweza kukuandika- water can employ you”*** in terms of support for horticulture and Napier grass to support zero grazing units.

6.8. Catchment Afforestation Component

- Exposure through tours or visits at district and national levels or across the borders is sufficient motivation that encourages people to exploit their potential towards a common goal. A motivated group or individual proceeds into diversification unabated.
- An activity well done is an eye opener to neighboring groups who replicate with very minimal inputs from the project yet helps to achieve the objectives of the project by increasing the geographical spread.
- Attitudinal problem in some of the communities who still look to the Government to provide everything. This was evident in the younger entrants in the project such as communities in Bungoma district's Tongaren area and South Nandi district where the project has not had adequate opportunity to fully sensitize the community.
- Gender representation in the various community structures is still biased towards men but should approach balance with time and has to be given this leeway.

7.0. RECOMMENDATIONS AND WAY FORWARD

- At the inception of phase 2 of the project begin with a stakeholder analysis that spells out not only the stakeholders but also the place and contribution of each in the project. This would doubly sensitize the component leaders on communities as key stakeholders, the concept of community participation and how it fits in their components.
- In implementing projects, the Integrated Resource Planning (IRP) and Integrated Resource Management (IRM) concepts should be applied to ensure optimal utilization of resources at the community level.
- Develop a log frame that spells the overall purpose possible activities and means of monitoring to harmonize the approaches in the community across components. The use of a matrix in the community work plans would then reflect activities that can be undertaken by the community and monitored against indicators or their proxy and the environmental issue under study.
- The micro project approach is useful but has to assess the overall need and justification of the project and more so the fit in the Project mandate.
- Exposure tours have worked well in all the components where they have been implemented. This should remain a key strategy in phase two to spearhead information sharing and skills transfer.
- More work would need to be done with the fishermen for a turn around in perception of resources and instill a sense of a working ethic that places value to the resources and the need for savings and investment for the future.
- Networking and collaboration should become a central feature of a complex project such as this one in order to benefit from comparative advantage and also offload the community needs that are best handled by other projects/programmes within the region.
- Since the project targets environmental management with a view to long-term sustainability, and recognizing that communities are key in this process, more resources should be availed at community level for capacity building. The Capacity building component will need to revisit its strategies in order to meet the demand at the community level over and above the institutional level. A shift to action oriented research would go along way in embracing both project and community concerns.
- Direct more resources and upscale all the activities in the Catchment afforestation, Soil and Water conservation and Wetlands components where the potential for community participation is very high. These are areas with direct benefits to communities and the potential for environmental impacts are fairly evident.

8.0. REFERENCES

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Appendix 1: Range of Activities through Community Participation

- Tree nurseries
- Fruit tree nurseries
- Spring protection & community water supply
- Bee-keeping
- Focal area/catchment groups (conservation activities)
- Water gauge readings (water quality management)
- Fish ponds/fish farming
- Beach sanitation
- Wetlands product improvement
- Tea nurseries
- Horticulture
- Weevil rearing units in schools and beaches
- Manual removal of water hyacinth
- Establishment of Common Interest Groups (CIGs)
- Study tours and exposure visits
- Training and related capacity building activities (technical training, tailor-made e.g. HIV/AIDS, gender, PRA, Community Organization, radio programs, drama,
- Individual contact farmers (Afforestation & Agriculture)
- Collaboration and Partnerships with NGOs/CBOs

Appendix 2: List of Theses Relevant to Community Participation under Capacity Building

Name of Student	Degree Course	Research Topic	Status	Year of Graduation	LVEMP Funds in Kshs	Sponsor
Diana Mobagi	M.Phil	Effect of Exotic Tree Plantation on Understorey Vegetation and Soil Fertility	Graduated	2004	-----	Self
J. P. Owino	M. Phil	Towards co-management of fisheries resources in the Kenyan portion of Lake Victoria	Graduated	2002	-----	NES Wetlands
Stephen K. Mailu	M. Phil	Household welfare impacts of water hyacinth in the Kenyan side of Lake Victoria	Graduated	2004	-----	KARI Kibos
Philip Raburu	D. Phil	Effect of human activities on the micro-invertebrates especially fish in Nyando River	Graduated	2003	-----	Self
Noah Were Wawire	D. Phil	The economic impact of water hyacinth in the Kenyan side of Lake Victoria	Thesis being examined	2005	-----	KARI Kibos
Kiragu Serah Wambui	M. Phil	Community Participation in Policy Formulation for Forest Resources Management in Mt. Elgon Forest and Its Environs	Graduated	2002	99,550	Self
David K. Langat	M. Phil	Integrating Indigenous Knowledge in Forest Management in Kenya: A Case Study of the Ogiek Community in Tinet Forest, Nakuru	Thesis writing underway	2005	48,000	Self
Masinde E. Neyole	D. Phil	Health Impacts of Gold Mining Activities in Kakamega and Migori districts, western Kenya: An Epidemiological Assessment	Scheduled for defence	2005	100,000	Self
Veronica Ngure	D. Phil	The geochemical circulation of selenium in drinking water and soils and implications to human and animal health	Thesis writing underway	2005	180,000	Self
Njuguna Jesse	M. Phil	Planning and Management of Water resources in Densely Populated Rural Areas: The Case in Luanda Division, Kenya	Submitted for examination	2005	80,000	Self
G. Omondi	M. Phil	Changes in land use practices and ecological status	Thesis writing	2005	25,000	Self

SES/PGI/03/01		of Kibos River basin using remote sensing and geographical information systems	underway			
Toroitich Caroline J. SES/PGE/02/0 1	M. Phil	Women's participation at farm level in decision-making: A case study of Kilibwoni Division, Nandi District	Graduated	2004	25,000	Self
Ngige Kimani SES/PGM/04/0 1	M. Phil	Some Integrated Co-management Strategies in Saiwa Swamp National Park and its environs, Trans Nzoia District, Kenya: Towards resolving human/wildlife conflict	Graduated	2004	25,000	Self
Elvis Kimani Kiano SES/D. Phil/18/00	D. Phil	Economic Analysis of Industrial Air Pollution and Health in Kenya: A Case Study of Webuye	Research on-going	2004	50,000	Self
Nyamari Jakim SES/PGH/01/0 2	M. Phil	Assessment of heavy metals in meat consumed in Eldoret and its health implications on consumers	Submitted for examination	2005	120,000	Self

Appendix 3: List of Related Programs in LVEMP Site

Under Government of Kenya there are:

- Constituency Development Fund (CDF) that could be tapped for various development activities
- Catchment/Water Boards under the Ministry of Water
- Local Authority Trust Fund (LATF) for various activities

Africa Now- -Beach bank and afforestation in Rusinga

WIFIP- -Training of women in small business and beach banking

Plan International- several projects focusing on the poor and orphans

CARE -Water and sanitation/agriculture

IFAD -Focusing on agriculture

SIDA -Provides drugs through health

EU - Fisheries management,

ICRAF - Agro forestry

OSIENALA - Empowerment of fishermen through awareness/education/advocacy

VIRED - Wetland management and Flood control

UHAI Lake Forum Advocacy, Action for HIV/AIDS

ECOVIC - Building capacity of fishermen

HEMNET - Undertook a media excursion of LVEMP sites as part of community social mobilization

World Vision -Provided support towards LVEMP supported micro-project (Mumbwayo) in Busia district

ACTION AID - Has worked together with LVEMP in Budalangi CBO

Busia Wetland Network undertook participatory information and awareness creation on wetlands values in Butula, Busia district.

Appendix 4: Community Concerns, Strategies and Solutions

Challenges	Vision	Strategy	Indicators
Poor health, sanitation and hygiene	Healthy community	Promote pollution reduction on water resources and management of domestic and industrial waste disposal	Clean water sources, higher domestic and industrial hygiene
Threatened survival of fish and fishing industry	Abundant fish and vibrant fishing industry	Create awareness on fish industry and establish fish ponds Establish fish processing and storage facilities	Fisheries developed as a major and sustainable sub-sector for the local economy
Scarce water supply	Adequate portable water accessible to all for domestic and industrial use	Protect catchment and wetlands; preserve flood plains; design and implement sustainable water supply program	Access to adequate clean water
Decreasing fish and fish variety	Abundant fish and variety	Restocking, address marketing	Increased fish and variety
Diminishing agricultural land and poor livestock breeds	Efficient agricultural land use and production	Promote efficient land use; improved livestock breeds	Increased yields
Depleted forest cover and loss of biodiversity	Restored, protected, conserved forests	A forestation Reafforestation	Increased tree and forest cover