

CONTENTS

5.1	PLANNING PRINCIPLE	1
5.2	PROCESS OF PLANNING	2
5.3	FACILITIES FOR STRENGTHENING PROGRAM	9
5.4	MAJOR PLAN AND UTILITY SERVICES	9
5.5	PRIORITY PROGRAMS	13

CHAPTER 5

COMMUNITY EMPOWERMENT PROGRAM PLANNING

**The Development Study on Environmental
Conservation of Phewa Lake in Pokhara,
Nepal**

CHAPTER 5

COMMUNITY EMPOWERMENT PROGRAM PLANNING

5.1 PLANNING PRINCIPLE

The Program will focus on the promotion of optimum use of local existing services, supports and resources. The Program will be basically environment-oriented and demand-driven to be stimulated after the communities being environmentally educated by the Environmental Education Program.

5.1.1 Goal and Objective of the Program

The goal of Community Empowerment Program will be to reduce poverty and improve the standard of living of poor through community-initiated sustainable social, economic and environmental development efforts ultimately leading to the environmental conservation of Phewa Lake.

Overall, the Community Empowerment Program will:

- generate productive income opportunities, reducing disparities in income and poverty incidence
- provide equitable improvements in basic social services and community development to enhance human development
- reduce the degree of social exclusion facing women and disadvantaged groups
- ultimately help protect and improve the environment sustaining the gains achieved.

5.1.2 Planning Principle

The program will adopt the principle of process-oriented intervention. It includes the followings:

- **Environmental Education:** The target community will participate in environmental education program where they will identify the environmental improvements needs and the factors preventing them to undertake the improvement. This will help them identify the community development and empowerment program leading to the environmental conservation.
- **Participatory and Appreciative Assessment of Community Empowerment and Development Needs and Goal Agreement:** The environmental education will be followed by participatory assessment of existing situation of community development and empowerment issues relating to environmental conservation by the participants and identifying specific target people and tailor-made community empowerment program for them. In the meantime, the target participants will be involved in well defining and pursuing the tangible, measurable, quantified and time-bound objectives of the community empowerment program.
- **Well-being Ranking:** The participatory well-being (wealth) ranking exercise by the community groups will help identify the target groups of the community empowerment program specially the target group under the income poverty.
- **Participatory Planning:** Based on the finding and conclusion of participatory assessment, goal agreement and identification of target groups, the target groups will be involved in the planning of

the program by using the participatory tools including the tools of Participatory Urban Appraisal (PUA) and Participatory Rural Appraisal (PRA).

The planning should be tangible and specific result-oriented rather than keeping it vague and not being able to practically follow. The cycle should follow as given in the following Fig. III-5.1.

Fig III-5.1: Result-oriented Strategic and Operational Planning Cycle



- **Target and Result-oriented:** The program requires more to be target-oriented than general welfare-oriented. The process will adopt the methods of mobilizing the community initiative rather than the project initiative.

5.2 PROCESS OF PLANNING

The following process of program has been planned, which though consumes adequate time and human resources have proven effective, result-oriented and sustainable (refer Fig. III – 5.2 A, B, C and D).

Fig. III-5.2 A: Process Flow Chart of Community Empowerment and Development Planning (CEP) Program Preparation, Participatory Plan, Institutional Development

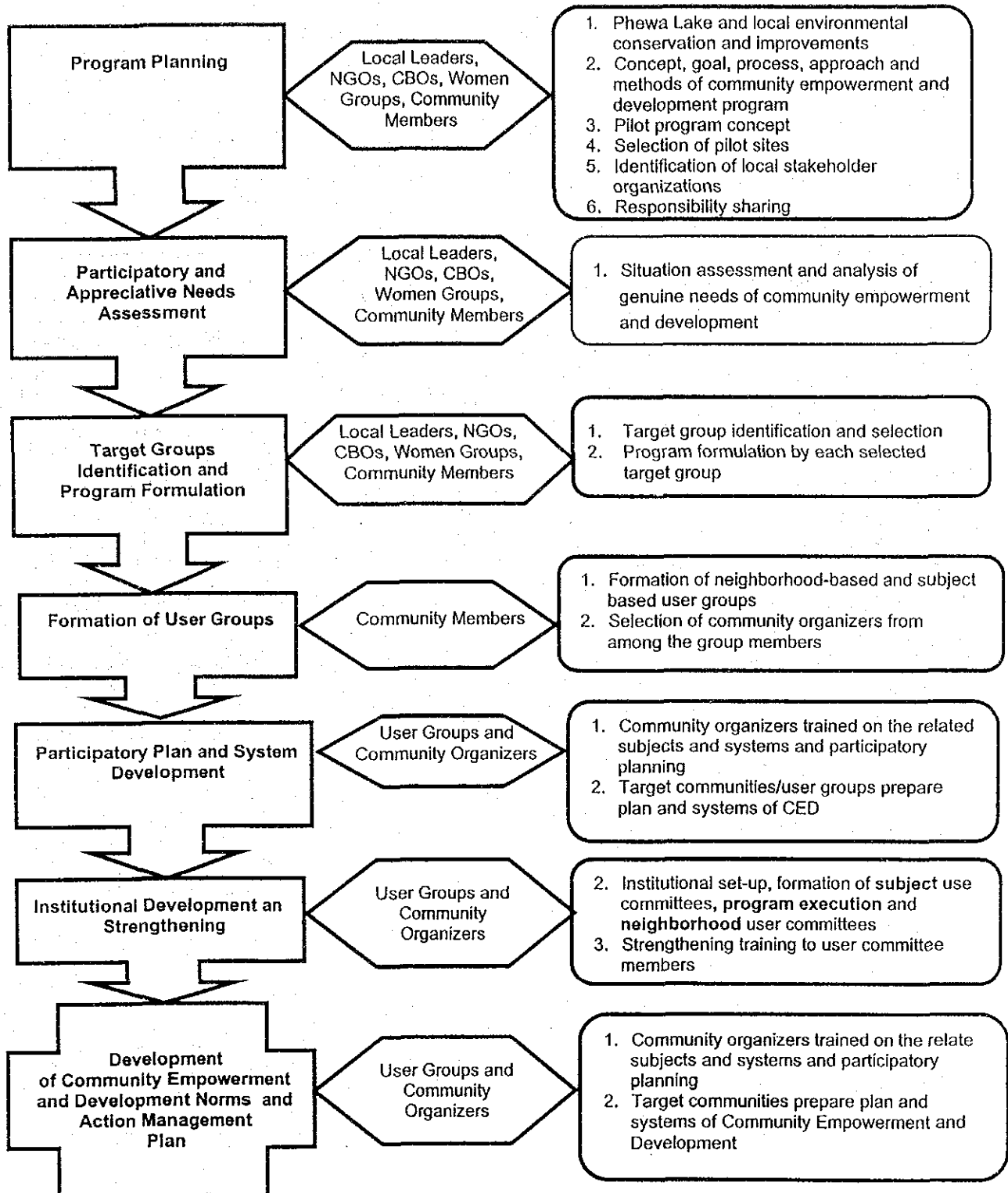


Fig. III-5.2 B: Process Flow Chart of CEP - Plan Implementation Arrangement, System Development, and Capacity Building

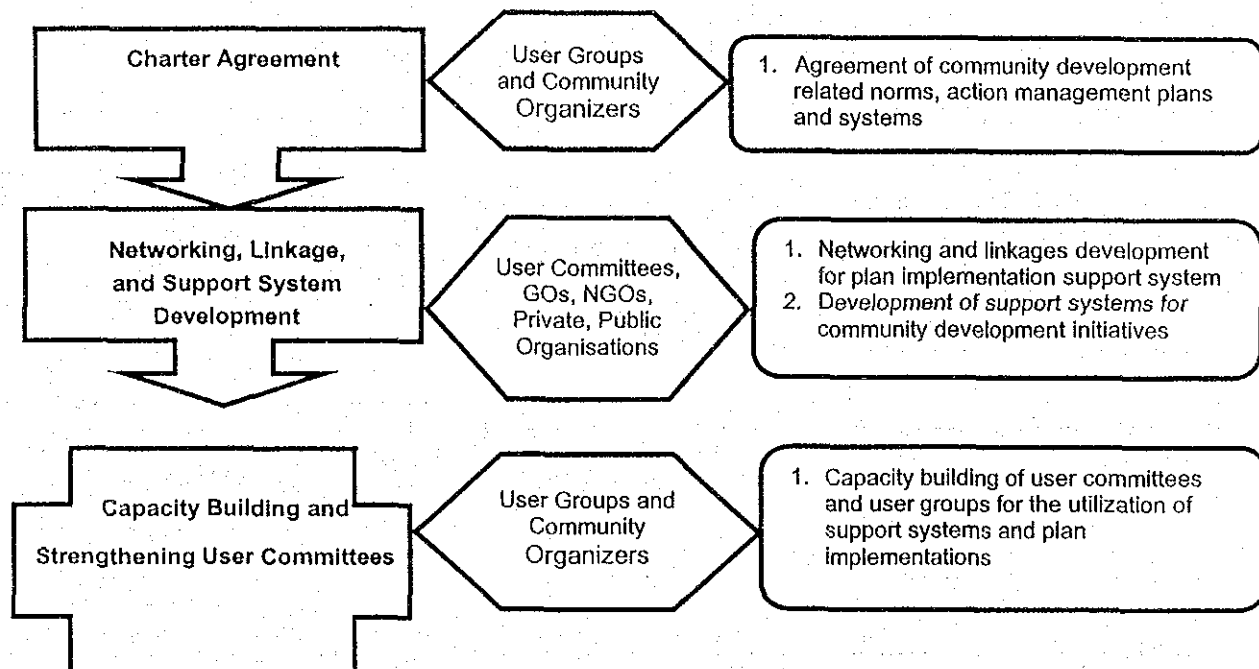


Fig. III-5.2 C: Process Flow Chart of CEP - Plan Implementation, Monitoring and Strengthening

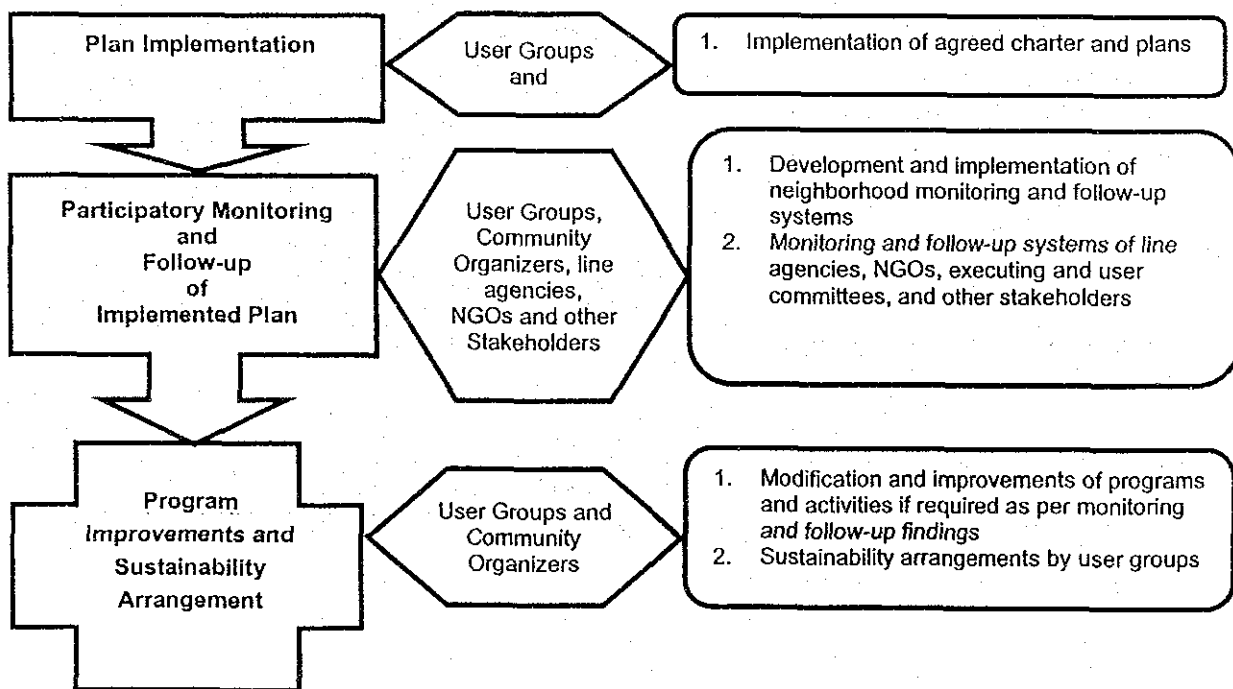
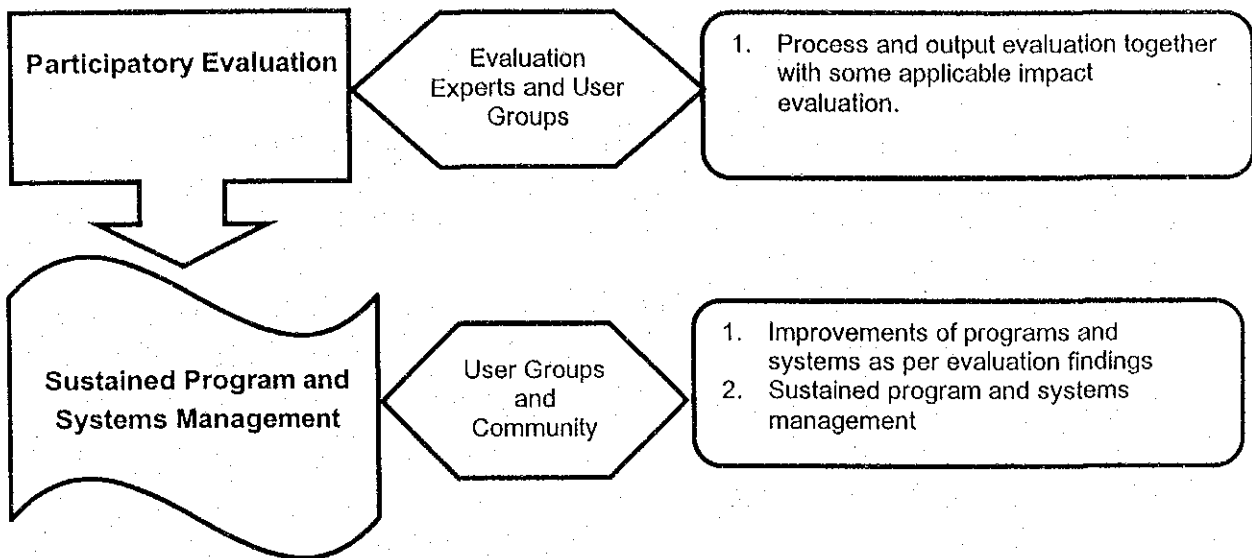


Fig. III-5.2 D: Flow Chart of CEP - Evaluation and Sustainability Arrangement



5.2.1 Description of Planning Process

(1) Program Preparation, Participatory Plan, Institutional Development

(a) Education and Awareness

Mobilizing and stimulating community for the initiative participation is the basic requirement of a sustainable community empowerment and development. Education and awareness often results in the mobilization and stimulation of communities for the initiative participation, provided that the approaches are appropriately used. Environmental Education Program, as described in **Chapter 11** of **Part I** of this Report, will be therefore initiated prior to undertaking the process of community empowerment and development planning initiatives.

(b) Participatory and Appreciative Needs Assessments

Working with communities is the beginning point for a project for developing a stage of community mobilization. During the process of Environmental Education Program, the communities will be supported to undertake the rational, reasonable and analytical assessment of the genuine needs of community empowerment and conservation-oriented community development. Participatory rural and urban appraisal and appreciative inquiry tools are proposed for the purpose.

(c) Identification of Target Groups and Program Formulation

The findings and conclusion of the needs assessment will be disseminated to the communities. A **dialogue Program** will be carried out on the findings and conclusions of the needs assessments. The communities will be facilitated to identify and prioritize the target groups for program intervention and identify the needs of community empowerment and development, based on which the Program will be formulated. The communities participatory **well-being ranking** exercises will identify the actual target groups of the community development.

(d) User Group Formation

Whatever kind of community development program is to be implemented, the formation of users' groups

is a key for success. The community-based organization (CBOs) is a basic supporting point for working together for both internal and external forces as well as for sustainable organizations and operation of programs and systems. Prior to the formulation of the CBOs, it is important that the individual households, businesses and members of the community are brought together into a group. The local neighborhood user groups will therefore be formed in the whole community, composed of more or less 10 neighboring households in a group. Each user group will select alternative community organizer volunteers to co-ordinate with the users and implement the 'Community Empowerment Development Programs (CEDP). By undertaking 1 organizer per 10– 15 households, the numbers of community organizers estimated to be required are as presented in following Table III-5.1, when all the Lake watershed households are to be covered:

Table III-5.1: Estimated Number of Community Organizers

S.N.	VDC/Municipality	Households	Estimated No. of User Groups and Community Organizers
1.	Urban PSMC Ward 1 – 9 and 17	29,260	2,926
Rural Area			
2.	Sarangkot	1,433	143
3.	Kaskikot	1,522	152
4.	Dhikurpokhari	1,702	170
5.	Pumdi Bhumdi	1,590	160
6.	Chapakot	641	64
7.	Bhadaure Tamangi	766	76
	Rural Total	7,654	765

However, the proposed number of community organizers and user groups may not be applicable in the case of areas where community-based organizations have already been formed and women group organizations are active. In such cases, the existing CBOs itself will undertake the roles of community organizers. In all 10 numbers of Phewa watershed wards in urban sector, 10 numbers of Ward Level Environment Committees, Toile-level Environment Improvement Committees and Women Group Organizations have already been formed and active after working together with the ADB-funded Public Environment Education Program of Pokhara Sub-Metropolis. Almost less than 50% reduction on the *required number of community organizers is therefore assumed*. Volunteer community organizers will also be formed. The community organizers will play a vital role as role model in the community.

(e) Participatory Plan and Systems Development

The community organizers will be trained on participatory plan and system development on community empowerment and development. The organizers will work together with their respective community groups in planning the program and required systems for implementing the program.

(f) Community Development Norms and Action Plan Development

The main objective of this process is to empower the communities in participatory planning with consensus or majority agreements. The trained community organizers will mobilize their respective communities and facilitate their respective community groups to develop their community empowerment and development rules and action plan to achieve the goal of participatory bottom-up planning. The plan developed at the cluster communities will be compiled to formulate the plan at village level in rural areas and tole level in urban areas. The village level and tole level plans will be compiled to formulate the plans at ward levels. The ward level plans will be compiled to formulate the plans at VDC level and municipal level.

Proposed participatory environmental and community development planning is an innovative method of planning based on people's participation, which integrates planning with resources with emphasis on implementation for the environmental conservation.

Community level, small cluster level, and household level meetings are the corner stone of participatory exercise, which are organized to make planning process more participatory and people-oriented. This is the bottom-up type of planning with people at the center rather than people at the periphery. Thus, it is not a planning for the people as in the conventional planning approach but planning with people.

A flow diagram of Action Planning is presented in Fig. III-5.3.

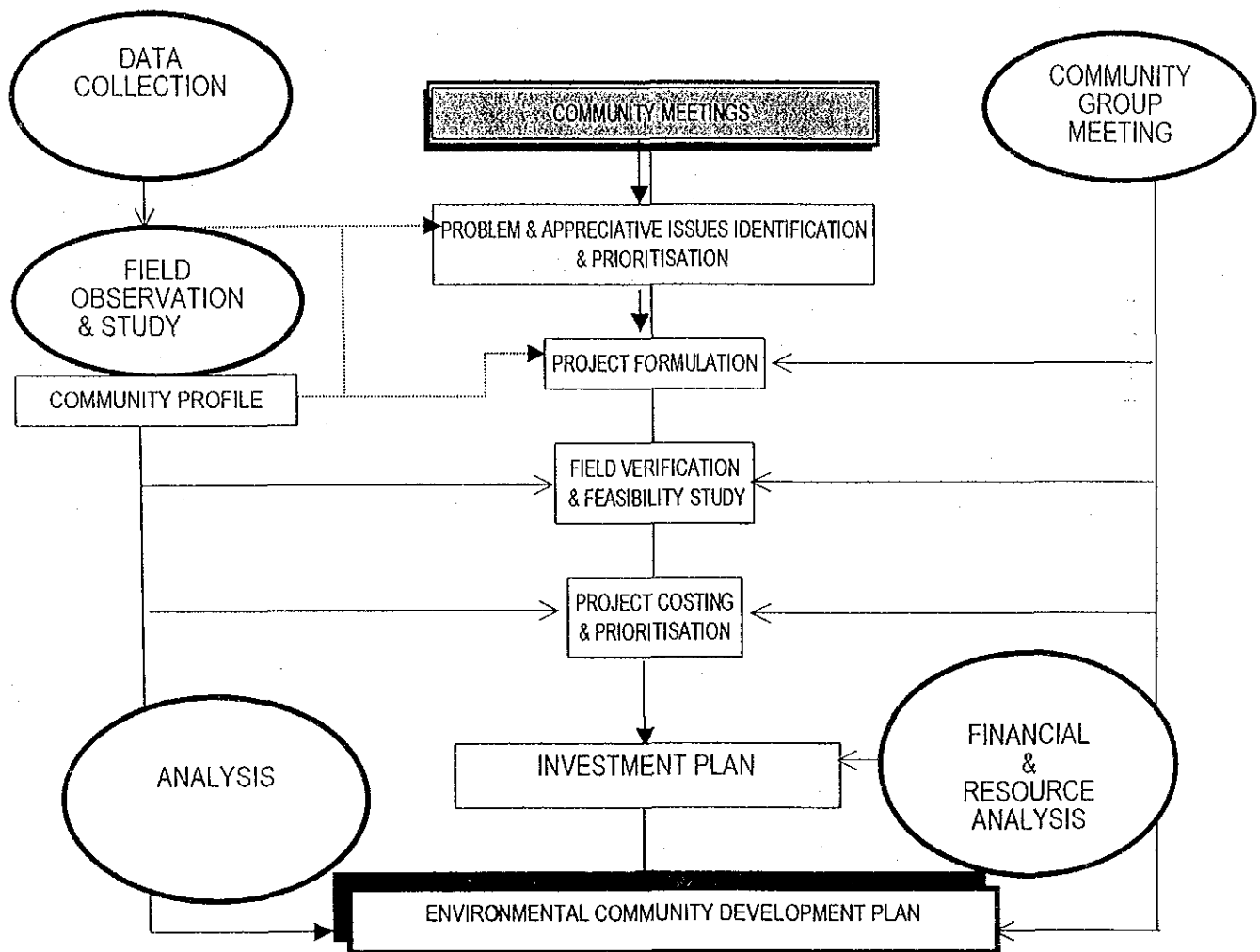


Fig. III-5.3: Flow Diagram of Action Planning

(g) Institutional Development/Formation of User Committees

Institutional development planning will take place from very beginning of community action plan development stage at cluster community level to Phewa Lake watershed and catchment area levels. The formation of users committee will take place by subject areas such as income generation user committee, soil conservation user committee, environment-friendly agro-enterprise committee, community forestry user committee etc. as well as program execution and neighborhood level committees at village level, tole level, ward level, VDC level, municipal level and overall Phewa Lake

watershed area and catchment area level.

(2) Plan Implementation Arrangement, System Development, and Capacity Building

(a) Charter Agreement

The process of charter agreement will start from agreeing at cluster communities to villages and toles; villages and tole to wards; wards to VDCs and municipal levels; and municipal and VDC levels to overall Phewa Lake watershed area level. General assembly will take place at each level for the agreement on the plan and charter on the respective roles, rules/norms, action plans and institutional set-up and formation of execution committee/s.

(b) Development of Networking, Linkages, and Support Systems for Plan Implementation

The executing committees will be facilitated for the development of networking, linkages and support system for plan implementation.

(c) Capacity Building and Strengthening User Committees/Institutions

The main objective is to improve the planning and implementation capabilities of communities in order to increase the effectiveness of environmental and community development planning and service delivery. capacity building and strengthening of User Committees / Executive Committees will take place on organizational strengthening, management and operation; program and project planning and management; community/user management; monitoring, follow-up and evaluation; human resource development; and activity management.

(3) Plan Implementation, Monitoring and Strengthening

(a) Plan Implementation

The respective communities will undertake the implementation of the plan as agreed on the charter.

(b) Participatory Monitoring and Follow-up of the Implemented Plan

Participatory neighborhood monitoring and follow-up systems will be developed by the user groups and incorporated into the community rules and action management plan. The methods of undertaking the monitoring and follow-up will also be agreed during charter agreement and will accordingly take place. The line agencies, NGOs, executive and user committees and other stakeholders will support the monitoring and follow-up system.

(c) Program Improvements and Sustainability Arrangement

Based on the implementation experience, monitoring and follow-up results, the program will be modified and improved as required.

(4) Evaluation and Sustainability Arrangement

(a) Participatory Evaluation

Outsiders will be involved in carrying out the evaluation by using participatory tools of evaluation.

(b) Sustained Program and Systems Management

Based on the evaluation findings, additional input required for the sustainability will be identified and process will accordingly take place.

5.3 FACILITIES FOR STRENGTHENING PROGRAM

The following Table III-5.4 presents facilities required for capacity building and strengthening of community empowerment and development Program.

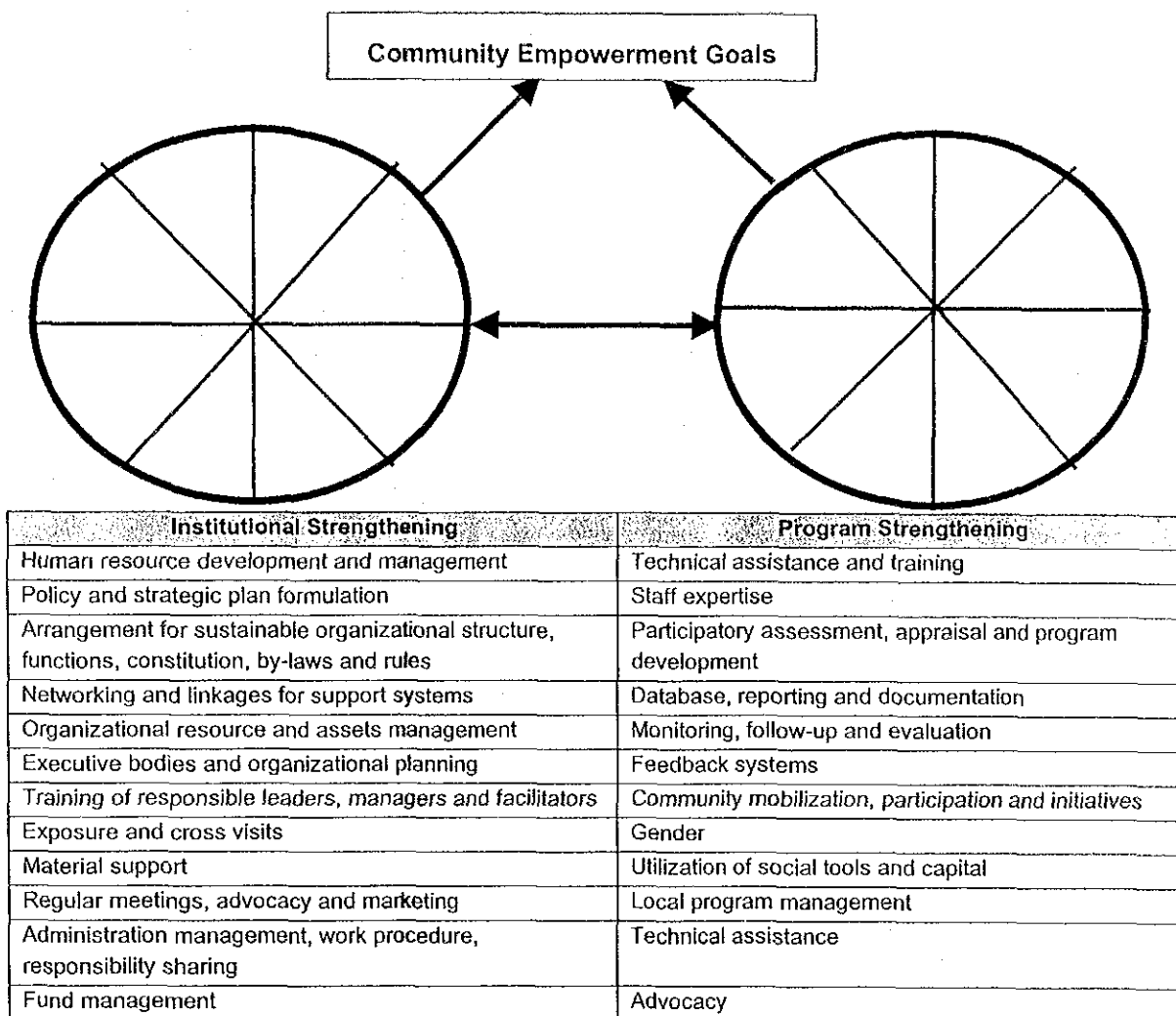


Fig. III-5.4: Program Strengthening and Capacity Building Bicycle

5.4 MAJOR PLAN AND UTILITY SERVICES

Major plans and utility services identified during the field study with reasoning are presented in Table III-5.2 below.

Table III-5.2: Major Plan Components of Community Empowerment and Development Program

Program Component	Sub-components
Social / Community Development	
1. Community Development	1.1 <u>Environmental Tourism:</u> <ul style="list-style-type: none"> Eco-tourism promotion-oriented local environmental improvements initiatives Local community-based tourism promotion for economic opportunities, tourist facilities development, market availability of their local products Inter-linkage of tourism promotion caused by the Phewa Lake conservation with the

Program Component	Sub-components
	<p>improvements in local livelihood and community development</p> <p>1.2 <u>Community Road and Trail Improvements:</u></p> <ul style="list-style-type: none"> • Road improvement for preventing soil flow from road, easy mobility of people and tourists, improving market and transport of agricultural products, health security and safety, protection of roadside landslides with the provision of gabion wall along the roadside; aesthetic improvement through plantation along the road; dust pollution control. <p>1.3 <u>Soil Conservation for Control and Prevention of Soil Erosion, Sediment Yield Flow and Landslides:</u></p> <ul style="list-style-type: none"> • Gully control and slope stabilization works to reduce the sediment yield and transport to downstream Phewa Lake areas. • River and stream control by riparian buffer strip along the banks of rivers and streams • Check-dam in feasible spots for checking sediment yield flow to the Phewa Lake. • Appropriate plantations in all erosion prone areas including trees and improved grass plantation. <p>1.4 <u>Land Development:</u></p> <ul style="list-style-type: none"> • Land development and reclamation of the buried and eroded farmland for economic development, increased agricultural improvements, and environmental improvements. <p>1.5 <u>Water Supply:</u></p> <ul style="list-style-type: none"> • Water supply improvement for improved health, and use of saved time in productivity enhancement. <p>1.6 <u>Telecommunication Facility Development:</u></p> <ul style="list-style-type: none"> • Telecommunication facility for tourist service and local development <p>1.7 <u>Agricultural Conservation:</u></p> <ul style="list-style-type: none"> • Irrigation development for stable and intensive agricultural production • Promotion of environment-friendly alternative agro-farming • Promotion of medicinal herbs as an alternative agriculture • Better terrace farming with soil conservation • Promotion of alternatives to the chemical fertilizers and insecticides in crops, kitchen garden including the promotion of organic farming not requiring chemical fertilizers and insecticides • Intensification, diversification and effective use of farmland. <p>1.8 <u>Forest Conservation:</u></p> <ul style="list-style-type: none"> • Promotion, expansion and strengthening of community forestry for sustainable protection against deforestation and conservation-oriented usage • Public participation in national forest conservation in watershed areas for watershed protection. <p>1.9 <u>Agro-forestry Development:</u></p> <ul style="list-style-type: none"> • Agro-forestry development for promotion of fodder trees plantation including Kimbu – Silkworm mulberry, Khanyu, Kabro, Koirala, Dudhilo, etc. • Agro-forestry by tree-crops like fruits for better use of unused slope land for income generation
Economic Development / Income Generation	
2. Income Generation	<p>2.1 Promotion and technical assistance on cash crops productions and optimization of cropping pattern with effective marketing</p> <p>2.2 Promotion and technical assistance on horticulture development</p>

Program Component	Sub-components
	<p>2.3 Environment-friendly animal husbandry and livestock development</p> <p>2.4 Promotion and technical assistance on environment-friendly fisheries farming including environmental management of fish-ponds for pollution protection</p> <p>2.5 Local skill-based, market-feasible and environment-friendly income generation activities</p> <ul style="list-style-type: none"> • Manual wheel spinning • Rope and belt production • Bamboo products • Poultry farming • Handicrafts; • Mushroom farming; • Knitting and sewing; • Foreign employment; • Goldsmiths; • Blacksmiths; • Coffee farming; • Bee farming; • Ginger, turmeric, cinnamon, and amriso; • Vegetable, nurseries, flower and other seed productions. <p>2.6 Feasibility for the plantation promotion, processing the products and marketing of <i>Arghele</i> (used for Japanese Yen production)</p> <p>2.7 Transport and marketing management of local products</p> <p>2.8 Sericulture development / silkworm rearing / plantation of mulberry trees in marginal land, unstable lands, slopes and ridges to improve their stability, conserve the environment and control the soil erosion and generate income sources.</p> <p>2.9 Agro-forestry by tree-crops like fruits for better use of unused slope land for income generation</p> <p>2.10 Income-oriented washing place and laundry facilities development</p>
Environmental Conservation	
3. Environment, Health and Hygiene Education and Support and Services	<p>3.1 <u>Commitment-oriented and Behavioral Education</u></p> <ul style="list-style-type: none"> • Commitment-oriented and behavioral environment, health and hygiene education at interpersonal door-to-door, community groups and stakeholders levels. <p>3.2 <u>Accessibility to the Systems, Supports and Services</u></p> <ul style="list-style-type: none"> • Provision and development of access to the facilities, supports and services, and networks for the adoption of the learning of health and hygiene education.
4. Reproductive Health Initiatives	<p>4.1 <u>Education</u>: Education on family planning, safe motherhood including antenatal and postnatal care, prevention of sexually transmitted diseases/HIV/AIDS and reproductive tract infection, new-borne baby care</p> <p>4.2 <u>Access</u>: Access to the contraceptives (pills, condoms and depo-provera, etc)</p> <p>4.3 <u>Linkage Development</u>: Networking, linkages and service development for reproductive health service and supports</p>
5. Living Environment Improvements	<p>5.1 Improvements of household and surrounding environment</p> <p>5.2 Promotion of plantation around the households</p> <p>5.3 Aesthetic improvements around the households and settlements</p> <p>5.4 Laundry facility to control clothe washing in the Phewa Lake and prevent laundry wastewater flow to the Lake</p> <p>5.5 Environmental hazard mapping and preventing for better land-use and improvements</p> <p>5.6 Sanitation improvements</p>

Program Component	Sub-components
	5.7 Domestic wastewater management 5.8 Solid waste management
6. Children's Environmental and Health Improvement	6.1 Promotion of children's environmental organizations and their capacity in environmental peer and community education 6.2 Children welfare program for their environmental and health improvement
7. Community and Women Empowerment	7.1 <u>Women Empowerment:</u> <ul style="list-style-type: none"> • Improving the conditions for women's involvement in Phewa Lake and local environmental conservation and improvements • Development and strengthening of women leadership in community development initiatives • Reducing women's work burden i.e. water supply network expansion for reduction of women's work load • Improving income sources for women • Gender training to the males and females both • Legal education to the females focusing on women empowerment • Promotion of girls' enrolment in schools and reducing their drop-out rates. • Non-formal education for women for capacitating them with knowledge, skills decision making and participation. 7.2 <u>Community Empowerment:</u> <ul style="list-style-type: none"> • Facilitating community and women participation and initiatives for environmental conservation and improvements • User's institution building and strengthening for sustainable community development • Self-help promotion for community development including fund raising, contribution and sustainability • Development of access and capacity of participating in developing, planning, implementing and monitoring the environmental and community empowerment rules and action management plans.
8. Capacity Building for Empowerment	8.1 <u>Community Self-Assessment:</u> <ul style="list-style-type: none"> • Resource mapping for identification and appropriate management of non-used and under-used natural, human and social resources • Community-self assessment of their leadership, management and participation in environmental improvements and community empowerment 8.2 <u>Community Leadership and Management Skill Building:</u> <ul style="list-style-type: none"> • People's leadership and management skills development for effective, efficient and sustainable user management of community empowerment. 8.3 <u>Community-based Institutional Development and Strengthening:</u> <ul style="list-style-type: none"> • Organizing and strengthening user / community groups for their organizational sustainable leadership, management, marketing, production, operation and maintenance. • Official recognition of user's organizations/CBOs for official processing • Capacity building of user's organizations/CBOs in appropriate decision making and management of community empowerment • Transfer of knowledge, skills and know-how for community empowerment initiatives to the user committee/ organizations/ CBOs • Developing the capability of the user committees / organizations / CBOs as the implementing organizations and submitting the proposals to the concerned governmental and non-governmental agencies for technical and financial assistance.

Program Component	Sub-components
	<p>8.4 NGOs Capacity Building in Supporting and Facilitating Communities:</p> <ul style="list-style-type: none"> • NGOs capacity building for their roles of building and strengthening user's organizations/ committees / CBOs <p>8.5 Capacity Building of Poor:</p> <ul style="list-style-type: none"> • Developing confidence of the poor, creating environment and strengthening their capacity for their active participation in community empowerment initiatives. • Land reclamation and social housing for land-less poor for their capacity building <p>8.6 Financial Resource Management:</p> <ul style="list-style-type: none"> • Fund raising, organizing, strengthening and proper and transparent management

5.5 PRIORITY PROGRAM

A sample preference ranking exercise with community groups in Pame including the participants from Kaskikot, Sarankgot, and Chapakot VDCs was carried out during the Study. Further the Program priority was discussed with the local leaders in a Public Consultation Program participated by the DDC and VDC Chairpersons and members. The priorities were determined by the consensus among all participants.

The priority programs selected by combining the assessment results from the communities and stakeholders' preference ranking are as follows:

Component	Objective, Approach and Activity
Watershed Management	<p>Objective:</p> <ul style="list-style-type: none"> • Prevent, reduce, and mitigate sediment yield in the watershed, protect water sources and encourage the local people to participate in the watershed management activities. • Manage watershed through participatory approach in institutionally and financially sustainable way. • Ensure effective reduction of the Nitrogen and Phosphorus load flowing into the Phewa Lake originating from non-point sources. • Reduce the soil erosion causing the reduction of land productivity and supplying pollutants to the water area, and • Promote rising of river bed and reclamation of swamps and marshes. <p>Approach and Activity:</p> <ul style="list-style-type: none"> • Watershed management will involve agriculture, pasture, forestry, water resources and other green line agencies. • The activities will be initiated with the farmers need, backed up by technical and economic feasibility and implemented through community/users group.
Environmental Conservation-oriented Sustainable Agriculture	<p>Objective:</p> <ul style="list-style-type: none"> • Promote and sustain the agriculture geared towards environmental conservation, effective for soil erosion prevention and reduction of chemical fertilizer and pesticide use • Reduce the pressure on use of farmland to meet the increasing demand of food production, where approximately 33% of the watershed area is used as hill agriculture land and more than 70% of the households suffering from food deficit for more than 9 months. • Reduce the practice of converting the grass and shrub lands to marginal agricultural land leading to more soil erosion. <p>Approach and Activity:</p> <ul style="list-style-type: none"> • The program will be promoted and strengthened through technical guidance, environmental education and income generation activities for farmers as an incentive in helping to promote the establishment of an agricultural structure geared towards environmental conservation. • Farmers groups will be set up and strengthened. • On farm conservation will be initiated which, will include bench terrace, contour cultivation, cover crop, crop rotation with introduction of leguminous plants/cash crop, and minimum tillage. Silvi pasture with leguminous plants and fodder trees will be introduced. cash groups plantation in low crown density eg. coffee, ginger, farm grass

	<p>will be promoted.</p> <ul style="list-style-type: none"> • Agro forestry will promote the non –timber forest products and tree-crops like fruits. Plantation of fruit and fodder trees will be promoted. Non-timber forest products including asparagus farming and arghelo will be promoted. The marketing of the products will be organized. • Bio-fertilizers, composting and organic farming will be promoted to discourage the chemical fertilizers and pesticides and encourage the bio-conservation. Alternative agriculture practice will be promoted for soil conservation and minimizing chemical fertilizers.
<p>Control, Prevention and Reduction of Soil Erosion and Sedimentation</p>	<p>Objective:</p> <ul style="list-style-type: none"> • Promote erosion and reforestation to recover environmental conditions in the Phewa Lake watershed and reduce sedimentation in the Lake. • Reverse the trend of watershed degradation by rehabilitation of erosion prone areas. <p>Approach and Activity:</p> <p>a. User Group Management</p> <ul style="list-style-type: none"> • Activities will be initiated with the farmers' need backed up by technical/economic feasibility and implemented through community/user's group. <p>b. Bio-engineering:</p> <ul style="list-style-type: none"> • The measure includes bioengineering in cultivation lands and reforestation lands. <p>c. Grass Land and Shrub Land Management, Rehabilitation of Erosion Prone Bare Land and Afforestation</p> <ul style="list-style-type: none"> • Soil erosion prevention afforestation in non-agriculture bare lands prone to soil erosion will be implemented. • Improved grass variety will be introduced. • The grazing will be restricted at eroded and plantation lands through community-agreed community management systems of stall feeding or rotational grazing. • Reforestation with multipurpose trees will be promoted. • Shrub land management will also include reforestation with fodder and fuel wood. • Pasture grass planting will be promoted. The land estimated for riparian afforestation is about 8 hector with 2 meters wide belt. <p>c. Community and National Forestry</p> <ul style="list-style-type: none"> • Consideration will be given to the conservation and restoration of forests through community management to effectively prevent soil flowing into the river. In 4 VDCs including Kaskikot, Sarangkot, Dhikurpokhari and Bhadaure Tamangi, 6,196 households were found involved in community forestry. The total area covered by these 4 VDCs by 1998 is 1,432.65 hector. • The measures of promoting community roles in national forest conservation will be worked out. • Improved cooking stoves and solar cooking systems will be promoted to control and minimize the use of forest firewood. <p>d. Terrace Improvements and Maintenance</p> <ul style="list-style-type: none"> • The activities include the terrace improvements and maintenance through the community initiatives stimulated by the awareness programs <p>e. Improvements of Roads and Trails</p> <ul style="list-style-type: none"> • The activity include the improvement of the road and roadside land and other erosion prone areas with drainage disposal systems. Road improvements are proposed for the drainage slope stabilization, soil erosion control. The road to be improved is estimated about 44 km of road including the roads in Khahare – Pame, Sarangkot-Naudanda etc. • Trail to be improved is estimated about 92 km. <p>c. Gully Treatment:</p> <ul style="list-style-type: none"> • About 20 number of gully to be treated have been identified. <p>d. Landslide Treatment</p> <ul style="list-style-type: none"> • About 15 numbers of landslide treatment areas have been identified <p>e. River and Stream Training, Embankment and Erosion Treatment:</p> <ul style="list-style-type: none"> • About 29 km of river embankment and about 10 km of stream bank erosion treatment has been estimated. Sediment trap near the mouth of Harpan is proposed. The trap will collect the sediment before flowing to Phewa Lake and transport it to safe disposal area and thus increase the longevity of the Lake. The proposed site is the mouth of the Harpan Khola at Chankhapur vicinity after confluence with Andheri Khola and before entering the delta region.
<p>Conservation Ponds (Constructed Wetland)</p>	<p>Objectives:</p> <ul style="list-style-type: none"> • Reduce sediment load in Phewa Lake from watershed through small sized ponds to act as sediment trap • Promote local economy through aqua cultural practices in terms of fishery development in constructed ponds

	<ul style="list-style-type: none"> • Improve water quality through settling of sediments at base of the ponds <p>Approach and Activity:</p> <ul style="list-style-type: none"> • The activity include the construction of ponds at sediment collection points. The conservation ponds with the capacity to check the sediment flow and with the provision of fisheries farming will be promoted. The conservation pond with capacity to block the sediment flow and for the animal washing will also be considered in order to prevent the animal washing practice in the Phewa Lake. • The ponds will be constructed at strategic places of sediment flows • Fish at constructed ponds will be farmed without external feeding • Regular removal of deposited sediment and use in filling depressions
<p>Lakeshore Buffer Zone</p>	<p>Objective:</p> <ul style="list-style-type: none"> • reduce the soil erosion and pollution load in Phewa Lake • beautify the Lakeshore area • ensure the conservation of habitat of varied birds, insects and bio-diversity. • recreate the visitors • help check the encroachment of land adjacent to the Lake • check point sources of pollution load specially drains with less human disturbance. <p>Approach and Activity</p> <ul style="list-style-type: none"> • A buffer zone is proposed to be carried out around the Lakeshore lands. • The belt plantation will be done. About 70 hector of lands covering 10 m wide plantation along the Lakeshore buffer belt has been proposed. The proposed width of the zone is 65 m in urban area and 30 m in rural area. • Proper landscaping with flower gardens will be done in this zone.
<p>Phewa Environment / Nature Center and Phewa Festivals</p>	<p>Objective:</p> <ul style="list-style-type: none"> • disseminate the environmental conservation information including environmental conservation situation, activities, experiences, and the ways of improvements. • help sustain the effort of conservation • promote rural-urban partnership for Phewa preservation • get support from both the tourists and local community for Phewa and local environmental conservation. • improve the natural and aesthetic environment <p>Approach and Activity:</p> <ul style="list-style-type: none"> • There will be provision for <u>Camping and Picnic Spots</u>. The nature center, picnic spots and campsites will be developed with toilets, cooking place and waste management system. • Promotion of <u>botanical garden</u> in the center and around the Phewa Lake • <u>Phewa festival</u> will promote the tourism and promote rural-urban partnership. • <u>Fee</u> will be collected from the users of camping sites, picnic spots and from Phewa festivals exhibitors. • <u>Development of small gardens</u> in private housing compounds and non-housing private lands, and along the public lands by the sides of the road will be part of the environmental improvement initiatives. • The center will include the museum display of important floral and faunal species of Phewa Lake to provide scientific information to the public at large on its biodiversity wealth and bio-prospects.
<p>Eco-tourism</p>	<p>Objective:</p> <ul style="list-style-type: none"> • Involve the rural community in local environmental improvements and ultimately Phewa Lake conservation. • Help in increasing the income and generate direct interest and involvement in the conservation of the Lake. • Create visible and strong linkage between the economic upliftment, the Lake and local environmental conservation. • Help in utilizing the untapped socio-cultural and natural resources. <p>Approach and Activities:</p> <ul style="list-style-type: none"> • <u>Development of eco-villages:</u> Feasibility of eco-villages and eco-tourism villages will be studied. Based on it, the activities will be designed and promoted. • There is possibility of tourism activities expanded from Gaira Chautara and Sarangkot to the adjacent rural areas to cater both the foreign and domestic tourists, through eco-tourism approach.

CONTENTS

6.1	GENERAL	1
6.2	ADMINISTRATION OF COMMUNITY EMPOWERMENT	1
6.3	PROPOSED OPERATIONAL STRUCTURE FOR CEP	2
6.4	PRINCIPLES OF THE ORGANIZATION PLAN	3

CHAPTER 6

INSTITUTIONAL CONSIDERATION AND ORGANIZATIONAL PLAN

**The Development Study on Environmental
Conservation of Phewa Lake in Pokhara,
Nepal**

CHAPTER 6

INSTITUTIONAL CONSIDERATION AND ORGANIZATIONAL PLAN

6.1 GENERAL

There are operational difficulties for institutional arrangement for the implementation of community empowerment program. The government has different agencies. Local governance bodies including municipality and VDCs have mandate of intervention in urban and rural areas separately. Kaski DDC that has mandate for both urban and rural areas lacks the institutional set-up required for the specific program intervention as required. The NGOs might be effective in the project approach and not for the sustainable institutional consideration. It is therefore proposed that the proposed Phewa Lake Environment Conservation Committee (PLECC) to be formed with sustainability arrangement function as executing body of the program.

6.2 ADMINISTRATION OF COMMUNITY EMPOWERMENT

Sustainable community-based institutionalization process including its structure, role and responsibility will be initiated in consultation with the communities during the environmental education process. The institutionalisation of PLECC will take time and process. It is therefore proposed that the present Steering Committee act as an executing body on ad-hoc basis until the establishment of the PLECC is accomplished. However, in view of Committee's lack of experience in such an effort, the Committee will be assisted in the execution of the program. The program's relationship with different level of agencies including government, non-government, private-public, municipalities and communities is critical to its success. A collaborative intervention program is required. Experience indicates that the key to sustainability is developing strong partnerships among local organisations, stakeholders and the government.

The program will need the cooperation and support of government agencies as well as NGOs, and most importantly community groups/leaders at the ward and tole and village levels. The main instrument for achieving coordination of action will be a committee composed of representatives of all the above, which will participate actively in the planning, organization, supporting and evaluating project activities.

The PLECC is to be formulated through a process-oriented approach. It is proposed that the environmental education program (EEP) and community empowerment program (CEP) be simultaneously carried out to supplement the approaches of each other and make the program cost-effective.

The PLECC will undertake its role with the support of its program staff, consultant and governmental and non-governmental organizations. The role of the committee in the context of CEP will be as given in the following Fig. III-6.1.

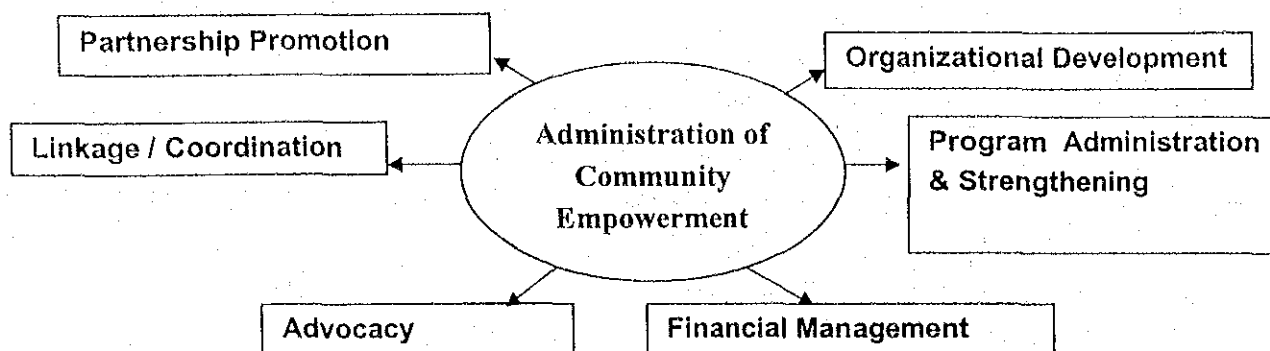


Fig. III - 6.1: Administration of Community Empowerment Program

The Consultant will undertake the role of support agency for NGOs to undertake their role of facilitating and supporting the community groups and CBOs. NGOs will undertake the frontline role of working together with the communities. It is therefore important that the NGOs selected be very appropriate ones for the types of proposed CEP. A total of 547 NGOs are registered in the Kaski District Administration Office. Of them, about 450 NGOs are reported to be active. However, professional NGOs that might be capable to undertake the CEP are identified to be very few. The compatible guidelines for NGO selection should be as follows:

- Previous performance experiences.
- Credibility/reputation.
- Openness/willingness to learn/share.
- Transparency.
- Basic infrastructure.
- Commitments/attitude and dedication.
- Area coverage and professionalism.
- Social acceptance.
- Represents community beneficiaries.
- Locally based.
- Legal status.
- Non religious, political and non-profitable.

Qualified experts will be required to assist the executing body in designing, preparing and launching the programs including providing required training to staff and selected NGOs, and for other specialized tasks as may be needed.

6.3 PROPOSED OPERATIONAL STRUCTURE FOR CEP

The following Fig. III-6.2 graphically presents the proposed institutional setup for undertaking the community empowerment programs.

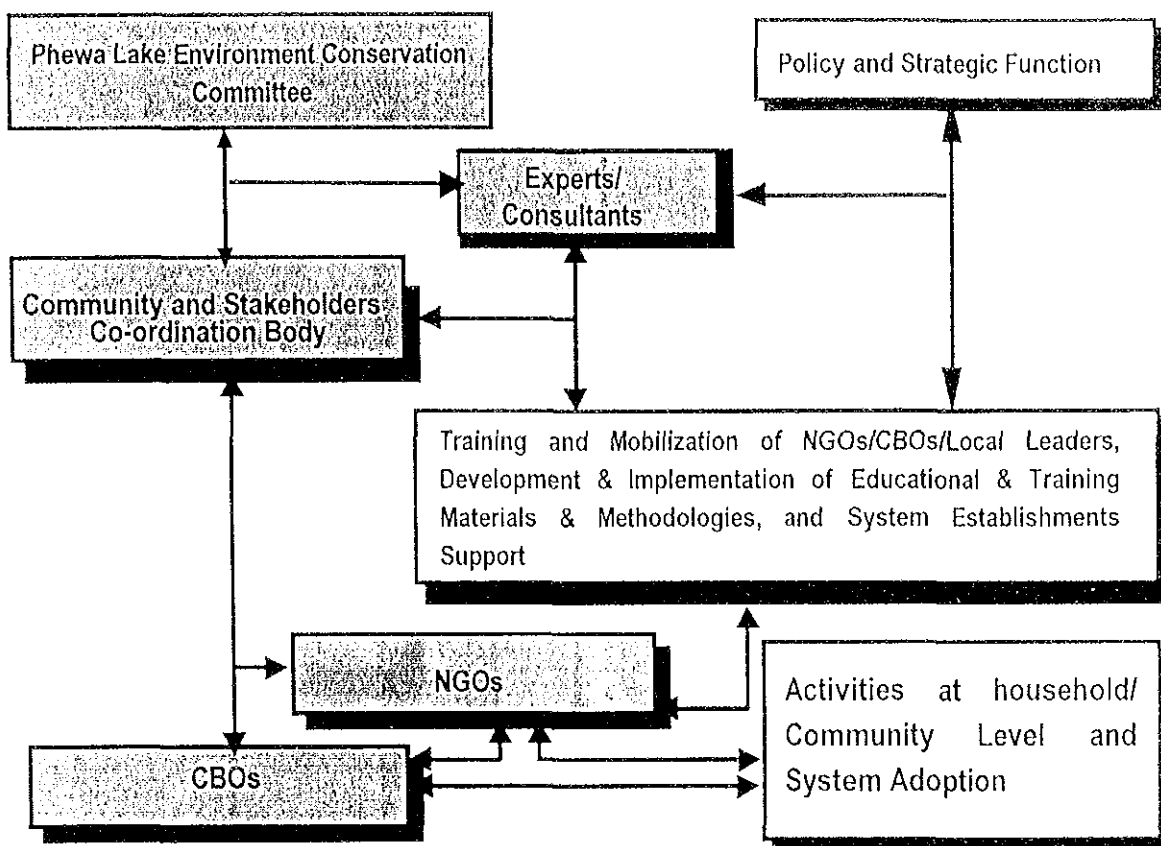


Fig. III -6.2: Proposed Institutional Set-up for Community Empowerment Programs

6.4 PRINCIPLES OF THE ORGANIZATION PLAN

It is proposed that the organizational development for community empowerment and development be initiated from very grassroots level of the target communities. Organization development plan will include its modality, structure, roles and responsibilities of various bodies and structures under it, constitutions and by-rules of the organization, its legal status and empowerment, and modality of community/user participation and women participation in its structure and decision making. The plan development will take place from the very beginning stage of community action plan development at cluster community level to Phewa Lake watershed area levels.

The formation of specific users' committee will take place by subject areas such as income generation user committee, soil conservation user committee, environment-friendly agro-enterprise committee, community forestry user committee, waste management committee, sanitation committee and so on. The program execution level committees will be formed at village level, tole level, ward level, VDC level, municipal level and overall Phewa Lake watershed area level. The execution committees will function as the supreme institutions, represented by the subject committees.

CONTENTS

7.1	COST ESTIMATE	1
7.2	IMPLEMENTATION PROGRAM	2
7.3	PRIORITY PROJECTS	3

CHAPTER 7

COST ESTIMATE AND IMPLEMENTATION PROGRAM

**The Development Study on Environmental
Conservation of Phewa Lake in Pokhara,
Nepal**

CHAPTER 7

COST ESTIMATE AND IMPLEMENTATION PROGRAM

7.1 COST ESTIMATE

The following Table III-7.1 presents the Cost Estimate detail for Environmental Education and Community Empowerment Programs.

Table III-7.1: Environmental Education and Community Empowerment Programs

S.N	Program	Estimated Cost	Estimated Target / Output
1.	Program Management	100,000 \$	<ul style="list-style-type: none"> Phewa Lake conservation representative institution of all stakeholders set-up Sustainable program execution bodies established, strengthened and functioning EEP and CEP programs implementation human and program resources and mechanism established
2.	Technical Assistance of Consultants and/or NGOs	95,000 \$	<ul style="list-style-type: none"> Phewa Lake conservation representative institution of all stakeholders set-up NGOs selected and capacity built-up to function as catalytic Support Organizations of community groups, CBOs and women groups EEP and CEP set-up within NGOs, CBOs, organized women groups, PSMC and other local governance bodies, schools, campuses, and other private-public organizations.
3.	EEP and CEP of NGOs	200,000 \$	<ul style="list-style-type: none"> 900 CBOs representing 9,687 households and about 50,000 target population established and/or their inputs streamlined to the goal of Phewa conservation and their capacity built in participatory planning, sustainable execution/ implementation and monitoring of EEP and CEP
4.	EEP and CEP of CBOs and Organized Women Groups	50,000 \$	<ul style="list-style-type: none"> About 18,000 households with 100,000 target population receive behavioral environmental education Minimum 75% households of urban Phewa proximate catchment areas and rural watershed and catchment areas provide agreed and signed commitment of implementing PERAMP and implement accordingly Minimum 75% of target households with about 25,000 target population categorized under the income and human poverty plan and implement the conservation-oriented community development initiatives
5.	School and Campus EEP and CEP	10,000 \$	<ul style="list-style-type: none"> About 150 environmental teachers and head teachers trained and oriented.
6.	Municipal EEP	25,000 \$	<ul style="list-style-type: none"> About 100 tole level and ward level environmental committees strengthened and strengthening of municipal environmental education section.
7.	Governmental EEP and CEP	25,000 \$	<ul style="list-style-type: none"> About 50 governmental staff trained, oriented and supported
8.	Local Governance Bodies Program	10,000 \$	<ul style="list-style-type: none"> Local governance bodies including Kaski DDC and VDCs
9.	Private-Public Partnership	5,000 \$	<ul style="list-style-type: none"> About 25 organizations are expected participants
10.	Income Generation Marketing Support, Services, and Technology and Trade	15,000 \$	<ul style="list-style-type: none"> About 4,500 households are the estimated participants.

S.N	Program	Estimated Cost	Estimated Target / Output
	Information System Development		
11.	Income Generation Product Development, Skill Upgrade and Quality Improvement	25,000 \$	<ul style="list-style-type: none"> About 4,500 households are the estimated participants.
12.	Entrepreneurship Development	5,000	<ul style="list-style-type: none"> About 1,000 participants
13.	Sanitation Facilities	25,000 \$	<ul style="list-style-type: none"> About 1,500 households
14.	Income Generating Program	90,000 \$	<ul style="list-style-type: none"> Direct benefits for about 30,000 rural population of Phewa watershed
15.	Sediment Yield Control Local Measures	100,000 \$	<ul style="list-style-type: none"> Phewa sedimentation control
16.	Chemical and Pesticide-Free Organic Farming Demonstration	15,000 \$	<ul style="list-style-type: none"> Phewa pollution control
17.	Alternative Environment-Friendly Agriculture	15,000 \$	<ul style="list-style-type: none"> Phewa pollution control and sedimentation control
18.	Community-based Solid Waste Recycling and Composting	15,000 \$	<ul style="list-style-type: none"> Phewa pollution control, support to waste management, resource recovery
19.	Laundry Place	15,000 \$	<ul style="list-style-type: none"> Phewa pollution control
20.	Exposure Trips	5,000 \$	<ul style="list-style-type: none"> Environmental conservation and community development ideas
21.	Monitoring	5,000	<ul style="list-style-type: none"> Effective and quality program
22.	PERAMP Development Materials	5,000	<ul style="list-style-type: none"> Agreed plan and programs of conservation

7.2 IMPLEMENTATION PROGRAM

The implementation program schedule for various activities to be carried out under Community Empowerment Program, as presented in the following Fig. III-7.1.

**Fig. III-7.1: Community Empowerment and Development Programs
Tentative Program Implementation Schedule**

S.N.	Tasks Quarter	Project Year I				Project Year II				Project Year III				Project Year IV			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	Prepare and organize environment, health, hygiene and social education	■	■	■	■												
2	Prepare and carry out participatory and appreciative needs assessments		■	■	■												
3	Formulate overall program framework			■	■												
4	Form user groups in all project sites				■												
5	Design and develop plan and systems on component programs of community empowerment and development					■	■	■	■								
7	Orient and train the target groups on the specific program components of the selection of target groups						■	■	■								
9	Develop community empowerment and development rules and action management plan (CEDRAMP) on oriented and trained subjects (At each user group level, village and tole level, ward level, VDC and municipal level, Phewa Lake conservation area level)						■	■	■								
10	Organize general assembly of user groups representatives and undertake Community Charter Agreement on CEDRAMP								■								
11	Form Executive User Committee and Subject Committees									■							
12	Build the capacity of user committees and strengthen the institutions of user groups										■						
13	Develop networking, linkages, and support systems for plan implementation											■					
14	Negotiate with line agencies for support items and systems												■				
15	Implement the agreed community empowerment and development programs components by respective user groups													■	■	■	■
16	Participatory monitoring and follow-up of the implemented plan																■
17	Program improvements and sustainability arrangement																■
18	Participatory evaluation																■
19	Sustained program and systems management																■

7.3 PRIORITY PROJECTS

Some of the priority projects with their cost is presented below.

(1) Project: On-Farm Conservation

Description

The software components used in On-Farm Conservation are: contour cultivation, crop rotation with introduction of leguminous plants/cash crop and minimum tillage. With these activities the soil is conserved. Improved varieties of cereals like maize will be cultivated leading to higher income for the farmers. This project activity will be carried in the farms of the disadvantaged poor farmers. The activities carried by these farmers will help to motivate other farmers to involve in these types of activities. In addition to the cultivation of maize, other crops are also cultivated in the area covered by on-farm conservation.

Coverage

It covers 20 hectares of land in the watershed area involving directly 133 households with 630 population.

Beneficiaries Group

Women from poor and disadvantaged family will be involved. Poor farmers belonging to different ethnic and social groups living in marginal land will be benefited.

Costs and Benefits

The following costs and benefits have been estimated:

Items	Area (ha)	Rate (Rs.)	Total (in '000 Rs.)
Costs			
Farm Conservation	20	40000/ha	800
Operation Cost (5%)			40
Benefits			
Income from the Improved Variety of Maize		4050/ha	81

Indirect Benefits

- Control in soil erosion
- High productivity
- High income and increase standard of living

(2) Project: Goat Raising

Description

In the watershed area, the grassland will be improved with the intervention of the project. More fodder trees will also be planted. The poor families specially women will participate in goat keeping activities. Goats being small animal, the initial costs for goat-shed need not be incurred, because they can be kept inside the house. Goats can be sold easily in Pokhara. When the poor and disadvantaged group will raise goat, they will also maintain the grass land properly.

Beneficiaries Group

Women from poor and disadvantaged family will be involved. About 720 households with the population of 3,405 will be benefited.

Costs and Benefits

The following costs and benefits have been estimated:

Items	No. of HH	No. of Goats	Rate (Rs.)	Total (in '000 Rs.)
Costs				
Goat Purchase Cost	720	2	1000/goat	1440
Feeding Expense	720		1095/annum	1577
Benefits				
Income from the Sales of Goat		1440	2000/goat	2880
The Value of the Mother Goats		1440	500/goat	720

Indirect Benefits

- Sustainable income for the poor
- Helps in the improvement of agriculture
- Checks in the Import of goats
- Helps in improving grassland and silvi pasture for fodder

(3) Project: Washing and Laundry Platform

Description

Phewa Lake has become a major center for washing clothes for all hotels, lodges, restaurants and local residents. About 100 kg of washing soap and detergent per day is estimated to be discharged in to the Lake while washing clothes. This is one of the factors for polluting cause of the Phewa Lake water. Unfortunately, there are limited alternatives for washing clothes. With the growth of the tourism industry, laundry activities will automatically place with adequate increase. To prevent this, a well-designed clothes washing facility is important.

Coverage

Three sites will be identified to locate the washing place along the sewerage line. In case more projects will be needed, other units can also be built up.

Beneficiaries Group

Women from poor and disadvantaged family will be involved. About 40 poor families belonging to different ethnic and social groups living in urban and rural areas will be benefited.

Costs and Benefits

The following costs and benefits have been estimated:

Items	Sites	Rate (in 000 Rs)	Total (in '000 Rs.)
Costs			
Laundry Platform	3	1500	4500
O&M Cost			500
Benefits			
Per Annum Income from Washing Clothes			416

Indirect Benefits

- Water quality purification.
- Check in pollution.
- Generates additional income for the disadvantaged groups of people.

CONTENTS

8.1 PROGRAM IMPACT ASSESSMENT 1

CHAPTER 8

PROGRAM IMPACT ASSESSMENT

**The Development Study on Environmental
Conservation of Phewa Lake in Pokhara,
Nepal**

CHAPTER 8

PROGRAM IMPACT ASSESSMENT

8.1 PROGRAM IMPACT ASSESSMENT

The Phewa Lake will have a range of social, economic, natural and environmental impacts at both macro and micro level from community empowerment and development program. The followings are some of the impact assessments of the community empowerment and development program.

- One of the major positive impacts include non-polluted access to Phewa from rural and urban areas, which the community can utilize as used during past i.e. the use of Phewa water for household purpose.
- Other social services for people within the influence on subsistence level of the life of the people will provide potential diversification of rural as well as urban economic activities.
- The expansion of tourism in the Pokhara Valley itself may influence the poorer people for economic gains and improvements on their subsistence level of income and livelihood. The rural people will be able to sell their traditional products in the form of foods and crafts.
- The community empowerment and development will enable the people to contribute to the conservation of Phewa Lake. Consequently, the beauty and aesthetic value of Phewa will attract not only foreign tourists but also the local tourist thereby providing ample diversification of works and business.
- At present agriculture is the main occupation of rural areas. Farmers are still using the traditional type of cultivation to produce crops like paddy, maize, millet, soybean, bean etc. The implementation of program will assist them for diversification of crops with introduction of cash crops, horticulture and animal husbandry. This will provide them additional income and increase their quality of life.
- Fruits like orange, guava, banana, papaya and other fruits will come to urban areas through the improved road access and rural farmers will get market. Off-farm economic activities are very limited in the Study Area. Retail shops, labor in the fields of local landlords, craftsmanship, fishing and pottering are the major off-farm economy. Traditional skills are there in the form of craftsmanship for example bamboo, pottery works, weaving, etc., but due to the lack of market for their products their traditional skill is not developed. The program will raise the employment opportunity to local people and will raise the local and urban economy.
- People of lower economic strata will be conscious through the social reform program. This will uplift them qualitatively with the diversification of their economic activities.
- At present, unemployed people pass their time in gambling and drinking alcohol products. After the community empowerment program they will leave this kind of practices.
- Freshwater is a critical resource in the transition to a sustainable future of Pokhara Valley for its happy cycle. In other hands, water demands are increasing dramatically driven by relentless growth of human activity in the recent years. This indicates that water should be used in a sustainable manner in order to survive. The domestic wastewater, including the septage is openly discharged into rivers and lakes, making them unsafe for people. There are people, especially at the sides of Phewa Lake, who still rely on the Lake water for all the domestic use. Under such

situation, the public health is always at risk and potential of waterborne disease increase in future too. The conserved Phewa will reverse the situation.

- Participation by communities in Phewa Lake conservation and development can be a very important social tool for the sustainable social life of the people of rural and urban area of Pokhara Valley. There is still lack of provision for community involvement in an organized way. User committees are not formed in many localities. Many formed user committees are not functioning well. The proposed organizational development plan of the community empowerment program will improve the situation.
- A clear understanding of who use the Phewa resource, for what purposes and how frequently are important. The community is needed to ensure that small problems do not become big ones. Contribution of users in improvements will develop the ownership feeling. Local strengthening of available institution and creation of new users group committee will involve communities in an institutional way. They will feel part of the process. This will have a genuine stake in the outcome.
- Promotion of public health and environment is poor. The people lack the amenities and technical know-how. The program will empower the communities perception and behavior on cleanliness, hygiene and sanitation improving the health and environmental situation.
- A joint effort of line agencies, I/NGOs, CBOs, women groups will create uniformity, standardization, systematic and integrated process and input resources providing greater and tangible impact.
- This Study on community empowerment and development has identified a large number of Community-based Organizations in the project sites in both rural and urban areas. The program will work with and through existing allied community based organizations. These groups will be involved to the maximum extent possible in local aspect of participation and implementation. CBOs will strengthen communities capacities to achieve project benefits.
- The project will promote, with the help of NGOs, the formation of community based organizations (CBOs) representing project affected persons, groups, and communities. This will further strengthen the community empowerment.
- The program will provide an important link between rural and urban communities. This will provide micro level plan and program for conservation of Phewa Lake and local environment. This will help make responsive arrangement for the smooth implementation of the conservation activities.
- The proposed program has planned for the involvement of CBOs in the participatory monitoring of the community empowerment program as well as the monitoring of the local environmental situation. This will have sustainability impact of the environmental improvements.

CONTENTS

9.1	ECONOMIC EVALUATION	1
-----	---------------------	---

CHAPTER 9
PROJECT EVALUATION

**The Development Study on Environmental
Conservation of Phewa Lake in Pokhara,
Nepal**

CHAPTER 9

PROJECT EVALUATION

9.1 ECONOMIC EVALUATION

9.1.1 Analysis

It is estimated that the cost for environmental education will be US\$ 200,000; management cost of the project would be of US\$ 195,000 and the remaining fund of US\$ 405,000 will be for implementation cost.

Software projects are to empower the community and for the conservation of Lake Phewa. It is estimated that all together about US\$ 800,000 will be needed for the implementation of the program proposed in Part III of the Project.

The small software project that need to be implemented with the partnership of the community will be formulated and reformulated in collaboration with the project implementing NGOs. To provide guideline to the NGOs and to find out the magnitude of fund needed, three sample projects have been developed and included in this Chapter. The project on laundry platform is also included in Water Quality Management Master Plan given in Chapter 4 of Part I of this Report.

The economic analysis of three projects have identified that the average capital cost of a software project is of US\$ 16,000, and thus, with US\$ 405,000 about 24 projects can be implemented.

The sample projects developed for economic analysis are:

- 1) On-farm conservation project
- 2) Goat raising project
- 3) Washing and laundry platform

The economic analysis has shown that the IRR varies from 13.12% to 19.72 %. The integration of the three projects has also provided an IRR of 17.66%.

With the addition of the cost of environmental education and management, the IRR for the software project is 11.08%. Therefore, based on these results, it is found that the investment in software project is feasible.

9.1.2 Results of Economic Analysis

The results of the economic analysis of the three projects are presented in presented in the Annex 3 to this Report. The summary of the analysis is presented in Table III-9.1.

Table III-9.1: Summary of Economic Analysis

Analysis of the Software Component with the Environmental Education & Management Cost				
Table III:1-B(a): On-Farm Conservation Project, Without conversion		(373)	5.22%	0.83
Table III:1-B(b): On-Farm Conservation Project, With conversion		(382)	5.10%	0.82
Table III:2-B(a): Goat Raising Project, without conversion		3,777	13.48%	1.17
Table III:2-B(b): Goat Raising Project, with Conversion		2,647	11.72%	1.12
Table III:3-B(a): Washing and Laundry Platform, Without Conversion		1,215	11.16%	1.21
Table III:3-B(b): Washing and Laundry Platform, With Conversion		1,139	11.08%	1.21
Table III:4-B(a): Integrated Analysis of the Software Components, Without Conversion		4,570	11.08%	1.15
Table III:4-B(b): Integrated Analysis of the Software Components, With Conversion		3,404	10.21%	1.12
Analysis of the Software Component only with Project Cost				
Table III:1-A(a): On-Farm Conservation Project, Without Conversion Factor		700	13.12%	1.60
Table III:1-A(b): On-Farm Conservation Project, With Conversion Factor		665	13.12%	1.60
Table III:2-A(a): Goat Raising Project, Without Conversion Factor		4,843	18.12%	1.23
Table III:2-A(b): Goat Raising Project, With Conversion Factor		3,671	15.60%	1.18
Table III:3-A(a): Washing and Laundry Platform, Without Conversion Factor		2,260	19.72%	1.48
Table III:3-A(b): Washing and Laundry Platform, With Conversion Factor		2,163	19.94%	1.48
Table III:4-A(a): Integrated Analysis of the Software Components, Without Conversion		7,803	17.66%	1.29
Table III:4-A(b): Integrated Analysis of the Software Components, With Conversion		6,499	16.27%	1.25

REFERENCES

REFERENCES

- Adhikari A. 1998. Urban & Environmental Planning in Nepal, IUCN, Nepal
- Asian Development Bank, 1996. Towards Effective Water Policy in the Asia and Pacific Region, Edited by Wouter Lincklaen Arriens.
- Banskota, K and B. Sharma, 1998. Mountain Tourism for Local Community Development in Nepal. A Case Study of Phewa Lakeside, Pokhara. ICIMOD. Discussion paper. Series No. MEI 98/2.
- Baral K.J., March 2000. Cost Recovery Scheme of Septage and Solid Waste Management System: Financial Package I, II and III, Second Tourism Development Project, Pokhara Environmental Improvement Project.
- Chow Ven Te, 1986. Open Channel Hydraulics, Mcgraw Hills International Editions, 1986
- Das K. Rajesh etl. 2001. Design of Urban Drainage and collection for Lakeside City on Waste water Engineering Design, A Term Paper Prepared for Masters Degree in Environmental Engineering, IOE Kathmandu.
- DHM, HMG Nepal, Department of Hydrology and Meteorology, Climatological Records of Nepal - 1971 to 1995
- Dixon A. Jhon, Sherman P.B., 1991. Economics of Protected Areas, AMBIO VOL. 20 NO. 2, APR. 1991.
- DSC, 1994. Sedimentation survey of Phewa Lake. Department of Soil Conservation, Kathmandu.
- Fleming, W.M., 1978. Phewa Tal Catchment Programs: Benefits and Costs of Forestry and Soil Conservation in Nepal. In: Forest and Watershed Development and Conservation in Asia and Pacific. West View Press. Boulder, Colorado.
- Garga S.K. 1984. Sewage and Waste Disposal Engineering, A Text Book for Bachelor of Engineering, Khanna Publication, New Delhi
- HMGN/ADB, August 1999. Second Tourism Development Project, Pokhara Environmental Improvement Project, Septage & Solid Waste Management in Pokhara Sub-metropolis, Unit Cost of Waste Handling
- HMGN/ADB, February 1999. Second Tourism Development Project, Pokhara Environmental Improvement Project, Sanitation By-laws, Pokhara Sub-metropolis.
- HMGN/FINNIDA, April 1992. Integrated Watershed Management Project, Watershed Management Plan of Phewa Tal Watershed.
- HMGN/JICA, August 2001. Community Development and Forest/Watershed Conservation Project II, Operational Guideline, Ver.3, Ministry of Forest and Soil Conservation, Department of Soil Conservation and Watershed Management.

- HMGN/JICA, January 1998. The Development Study of Integrated Watershed Management in the Western Hills of Nepal, Final Report VOL I & II. Japan Forest Technical Association (JAFTA, Kokusai Kogyo Co. Ltd..
- HMGN/JICA, June 1999. Community Development and Forest/Watershed Conservation Project. Project Terminal Report.
- HMGN/Ministry of Culture, Tourism and Civil Aviation, 1998, 1999, 2000. Nepal Tourism Statistics.
- HMGN/MoFSC, Jan. 1994. Sedimentation Survey of Phewa Lake, Research and Soil Conservation Sections
- HMGN/MOWT/Department of Housing, Building & Physical Planning, 1974. An Outline of Physical Development Plan of Pokhara.
- HMGN/udle/gtz, 1992. Urban Environmental Guidelines for Nepal, Urban Development Through Local Efforts Project, Federal Republic of Germany in cooperation with Local and Urban Development Training Centre, Pokhara, Nepal.
- HMGN/UNDP/IAO, 1979. Hydrometeorology and Sediment Data for Phewa Watershed 1979 Data – IWM Jorrent and Land Use Development Project IWM/WP/II.
- HMGN/WECS, December 2000. Water Resources Strategy Formulation, Phase II Study, Water Supply and Sanitation, Annex 6, WRSF.
- HMGNN/IUCN, November 1992. Solid Waste Management In Urban Nepal, A Review, National Conservation Strategy Implementation Programme, National Planning Commission, IUCN – the World Conservation Union.
- ILEC, 1995. Lake Phewa. Asia No.4. Databook of World Lake Environments – A Survey of World Lakes. (Chief T.Kira) Lake Biwa Research Institute and Int'l Lake Environment Committee.
- Institute of Engineering, Kathmandu 1995. Hill Irrigation Engineering with special emphasis on planning, design and Implementation of Farmers' System, The Ford Foundation, New Delhi.
- IUCN, 1995. Guidelines for Phewa Lake Conservation. National Conservation Strategy Implementation Program. HMGN/NPC and IUCN/Nepal
- IUCN, 1996. EIA Training Manual for Professionals and Managers, IUCN
- IUCN, Nepal 1998. Linking Economic Development and Environmental Policy in Nepal, IUCN, Nepal.
- IUCN, 1997. Phewa Lake Conservation Action Plan. HMGN/NPC and IUCN/Nepal.
- Jamwal, I. 2001. Reeds to the Rescue. Down to Earth, July 21, 2001.
- JICA, 2000. The Feasibility Study on Wastewater Treatment Along the Danube River Downstream Reach in Romania. Final Report.
- JICA, 2000. The Study on the Environmental Management of the Hydrographic Basins of and Mirim Lakes in the Federative Republic of Brazil, Kokusai Kogyo Co. Ltd. and Pacific Consultants International, Tokyo, Japan.

- JICA, January 2000. The Feasibility Study on Wastewater Treatment Along the Danube River Downstream Reach in Romania, Final Report Summary, Pacific Consultants International and Nihonsuido Consultants.
- JICA, March 1999. The Study on Environmental Improvement of Lake Balaton in Republic of Hungary, Pacific Consultants International and Shin-Nippon Meteorological & Oceanographical Consultant Co. Ltd.
- JICA, Ministry of Agriculture, Forestry and Fisheries, Japanese Institute of Irrigation and Drainage., 1991. Operation, Maintenance and Management (OMM) of Land Improvement Facilities, TAJIMA M., Kokusai Kogyo Co. Ltd.
- JICA, 1997. The Study on the Water Pollution Control in the Upper Manyame River Basin in the Republic of Zimbabwe.
- Jorgenssen ,S.E and Voellenweider R.A., 1989. Guidelines of Lake Management. International Lake Environment Committee and UNEP.
- Karki J., 2002. Interaction between Urbanization and Indigenous Irrigation Systems in Katmandu Valley, International Water Management Institute, Colombo, Sri-Lanka
- Karki J. etl. 1998. Final Evaluation Report of Natural Resources Management Project, Mustang District, CARE/DANIDA
- Lacoul, P., 2000. Need and Prospect of Nutrient Management Through Harvest of Aquatic Macrophytes for Agriculture in Nepal. Environment and Biodiversity: At the Cross Road of Millennium. pp. 366-378.
- Lant C.L., 1991. Potential of the Conservation Reserve Program to Control Agricultural Surface Water Pollution, Environmental Management Vol. 15, No. 4. pp. 507-518, Springer-Venag, New York Inc.
- Masters G. 2000. Introduction to Environmental Engineering and Sciences, Prentice-Hall of India, New Delhi.
- Mc. Eachern P., 1995. Limnology of Pokhara Region Lakes. Discussion paper. IUCN/Nepal.
- Ministry of Environment and Population, 1996. Environmental Protection Act and Regulation, His Majesty's Government of Nepal
- Ministry of Population and Environment 2002. Water Quality Standard for Domestic, Irrigation and Recreational Usage, Water Quality Research Group, Institute of Engineering, Pulchowk, Khathmandu (unpublished).
- Mishra V. S. 2000. Water Accounting for East Rapti River Basin in Nepal, International Water Management Institute, Colombo and Department of Irrigation, Nepal
- Nakamura M., 1997. Preserving the Health of World's Lakes. Environment 39 (5): 18-40
- Nepal Rastra Bank, Banking Development and Research Unit, Pokhara Branch, 2001. Pokhara Ma Paryatan Vyabasaya: Samasya, Chunaufi Ra Upalabdhi (Tourism Industry in Pokhara: Issues, Challenge and Achievement), Special Study, 2057 BS.
- Plummer J., Slater R., January 2001. Building Municipal Capacity for Private Sector Participation Series, Working Paper, Just Managing the Solid Waste Management Partnership in Biratnagar, Nepal, DFID, UNDP.

- Pokhara Sub-metropolis/Second Tourism Infrastructure Development Project, Pokhara Environment Improvement Project, July 2000. Land Use Concept Plan for Pokhara Sub-metropolis.
- Pokhara Sub-metropolis/Second Tourism Infrastructure Development Project, Pokhara Environment Improvement Project, 1998. Drawing, Drainage Improvement Component.
- Pokhrel, K.K., 2000. Fish Biodiversity of Lakes in Pokhara Valley. Procedure of IIIrd National Conference in Science and Technology. Kathmandu.
- Rai, A.K., 2000. Limnological Characteristics of Subtropical Lakes Phewa, Begnas and Rupa in Pokhara Valley, Nepal. *Limnology* (2000) 1;33-46.
- Rana, K., 1990. Water Pollution Assessment of Phewa Lake, Pokhara. M.S.Thesis Submitted to the Asian Institute of Technology (AIT), Bangkok.
- Rast W., Holland M., 1988. Eutrophication of Lakes and Reservoirs: A Framework for Making Management Decisions, *AMBIO VOL. 17 NO. 1*, 1988.
- SAIC,1993. Environmental Protection Study of Phewa Lake, Pokhara Project, Nepal. Final Report Submitted to ADB, Philippines. Science Applications International Corp., USA.
- Shrestha, P. and Janauer G.A., 2001. Management of Aquatic Macrophyte Resource: A Case of Phewa Lake, Nepal. In: *Environment and Biodiversity: Agriculture and Populations in South Asia*. pp.99-107.
- Shrestha, P., 1997. Ecological Study on the Aquatic Macrophyte Vegetation of Lake Phewa and Lake Rupa, Nepal. Ph.D.Thesis Submitted to University of Vienna, Austria.
- Shrestha, R.R., 2001. A New Step Towards Wastewater Treatment Plan in Nepal. *Environment* 6(7): 78-88.
- Shwab G. etl,1993. *Soil and Water Conservation Engineering*, John Wiley & Sons New York
- Singh, D.B., 1999. *Public Private Partnership – A Sustainable Solution for Urban Waste Management*. M.Sc. Thesis, Urban Planning, Submitted to Institute of Engineering, Tribhuvan University, Nepal.
- Srikrikar S.M., Rimal I.N., Gager S., April 1998. *Landslide Hazard Zonation Mapping in the Phewa Lake Catchment Area Pokhara*, HMGN/Federal Republic of Germany.
- Sthapit K.M. and Balla M.K., 1998. Sedimentation Monitoring of Phewa Lake, Kaski Nepal Sustainable Forest Management, *Proceedings of an International Seminar, 31 August – 2 September 1998*, Pokhara Nepal.
- Tajima, M., 1995. A Practical Method of Calculating Runoff Load from Nonpoint Sources- A Case Study from the Patos-Mirim Lake Basins, Brazil. 6th int'l Conference on Conservation and Management of Lakes-Kasumigaura'95. Japan.
- Unnati Adhar Kendra (CeProIn), 1997. *Solid Waste Management*, udle, GTZ, Nepal

