

Cooperation Fund for the Water Sector
Pilot Demonstration Activity
Request Form

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| Activity Title: Developing and Demonstrating Community-Based Water Resources Management Approaches for Hill and Mountain Ecosystems in Nepal | |
| Proposer (Name, Div/Dept): Agriculture, Natural Resources and Social Services Division | |
| Request Date: 15 June 2007 | |
| Country (DMC) : Nepal | Region: South Asia |
| Activity Proposed Start Date: 1 November 2007 | Activity Proposed Duration: 1 year |
| Cost Estimate: US\$50,000.00 | |
| Implementing Organization Contact: ECARDS-Nepal, Mr. Rudra P. Devkota, Chairperson 4602234 Telephone No. 977-1- | |
| Collaborating Institutions: 1. Community Managed Irrigated Agriculture Sector Project, Mr. Babu Ram Adhikari, Project Director 2. ICIMOD Dr. Eklabya Sharma, Programme Manager, NRM, | |
| Consultant Identified? | If so, Consultant(s) Contact: |
| ADB Activity Officer – name, position, division, telephone, and e-mail | Susanne Nebel, Rural Development Specialist, Agriculture, Natural Resources and Social Services Division, 6326325276, snebel@adb.org |

Background and Rationale

1. Rural communities in Nepal not only need clean water for drinking and hygiene, they also need water for growing crops and watering animals. At the same time water has a destructive potential. Heavy rainfalls over short period can lead to massive erosion of soil, particularly on slopes where the soil is exposed. Rainfall over longer periods can lead to nutrient leaching as well as landslides.

2. In Nepal, water is generally found high up (snow and glaciers) or deep down in the valley bottoms. Most human settlements however, lie in between on the mid slopes. Rainfall, the main source of water, is both seasonal and erratic in distribution, duration and intensity. Water scarcity is therefore a problem in most parts of the Hindu Kush area, including Nepal. In a typical mid hill area, 80% of the rainfall falls during the monsoon period, the remaining eight months are more or less dry. Poor land management has led to increased water problems in the region; deforestation has increased surface runoff and decreased groundwater replenishment. For most people in Nepal, water is a scarce commodity and improved water management practices are critical for ensuring availability of drinking water, production of food, meeting the need for biomass and improved living conditions. Irrigated agriculture on sloping lands has therefore been regarded as a highly valuable intervention to increase water availability in the dry season. Water related activities focus on methods of water harvesting (collection, storage, and use of run off of available sources of water), to provide water for irrigated agriculture and household use, and land management practices to decrease run off and soil erosion and increase water uptake. Sustainable harvesting of water, including rainwater can contribute to resolving the challenge of water scarcity for hill and mountain communities.

3. Soil erosion, soil degradation and declining soil fertility are also regarded as major problems in Nepal, threatening the sustainable use of sloping agriculture in the hills. The ADB Project Completion Report of the Second Irrigation Sector Project (SISP) has pointed out that soil erosion and declining fertility were major problems the project faced during implementation. Surface erosion is a natural process, but soil erosion in the hill region of

The views expressed in this paper are the views of the authors and do not necessarily reflect the

Nepal has increased drastically as a result of inappropriate land use and management, and the current amount exceeds the natural rates many times. The primary causes of soil erosion are excessive poor tillage practices that leave bare soil exposed to the eroding forces of wind and water. Prevention of erosion and management of soil fertility are among the most important issues in agricultural production. Therefore, it is recommended that agriculture and irrigation projects in hill areas incorporate bioengineering interventions for handling geological instability, soil erosion, and water scarcity outside the monsoon season such as gully treatment, contour bunding, trenching, and planting of soil-stabilizing nitrogen-fixing shrubs are expected to prevent soil erosion and landslides, enhance in situ moisture, and improve the vegetative cover.

5. The ADB funded Community Managed Irrigated Agriculture Sector Project (CMIASP), the successor project of the SISP implements farmer managed irrigation system improvements and micro irrigation. Water User Associations (WUA) are being supported under the loan project to take over ownership of the irrigation system and undertake O&M requirements. As CMIASP focuses on the improvement of the irrigation system, the PDA will introduce pilot demonstration activities in selected areas of CMIASP in one hill and one mountain site, to complement irrigation with activities to improve sloping agriculture, watershed management and soil stabilising activities, and will make use of existing WUAs. This integrated, holistic approach will contribute to sustainable development of an economically and environmentally sound hill eco system and to improved living standards of the hill population. In addition, it will be demonstrated that bioengineering interventions can contribute to reduce land slides, soil losses and run off. As a result of improved soil quality and moisture availability, land productivity would increase and groundwater recharge would improve due to reduced runoff. Thus landslides management, through the application of different bio-engineering aspects will be one of the major focuses of the proposed project. Gullies, which develop due to heavy water run off, are often observed along trails and on severely degraded, often community owned land. Gullies are often accompanied by land slides, threatening farmland, villages and roads. In the gullies, check dams can be constructed using soil filled cement bags and bamboos can be planted on the upper and lower side of each check dam. To make water resources management techniques sustainable in the long run, water resources management knowledge and experiences gained need to be shared with and ultimately owned by those who benefit from it best, farmers at the grass roots level.

4. The International Center for Integrated Mountain Development's (ICIMOD) Godavari Demonstration Site has developed a number of technologies and practices that are useful for water management, soil erosion and landslides control as well as increasing soil fertility and water retention capacity and income generation activities. ICIMOD demonstrated successfully the use of water collection reservoirs and gravity sprinkler irrigation, roof top rain water harvesting, stone lined and grass lined waterways (irrigation channels, contour hedgerows of nitrogen fixing plants to reduce run off and soil loss. Soil management activities of ICIMOD include agro-forestry and mixed hill farming system using the sloping agricultural land technology, and conservation farming. The NGO ECARDS-Nepal, as the initiator of this proposal for the pilot demonstration activity at the community level felt the need to look for an implementing and coordinating partner such as ICIMOD which can provide integrated water resources management technical capacity. ICIMOD's role will be to provide training and technical backstopping to ECARDS during the implementation of the proposed project, thus increasing the technical capacity of ECARDS for future similar interventions and increasing the capacity of community groups to manage water resources activities.. CMIASP will provide the overall guidance to the proposed project. ECARDS-Nepal is an NGO that has worked in different parts of the country with different communities on water management, soil conservation, income generation activities (IGAs) and application of appropriate technologies for their benefit.

Objective and Outputs

6. The objective of the project is to develop and demonstrate approaches for community-based water resources management that will respond to the specific conditions of hill and mountain ecosystems.

7. The specific outputs will be the following:

- (i) Replicable approaches for community-based water resources management for hill and mountain ecosystems; and
- (ii) Informed and empowered communities to be more involved in water resources management whose impacts greatly affect their livelihoods.

8. It is envisaged that if PDA funds will still be available, a follow up to this could be developed to actually test and apply the models in selected sites, thus the activities to be carried under this PDA includes site selection for eventual testing of the models.

Methodology

9. The demonstration project will be based on the demonstration of different IWRM practices of the ICIMOD Demonstration and Training Centre in Godavari. Site specific approaches according to ecological vegetation zones, vegetation types and water availability will be designed and models of IWRM for hill and mountain sites developed. Appropriate management systems will be later on tested for each of these in a follow on phase. The project will develop various appropriate IWRM models in the selected sites for demonstration of the viability and usefulness of proposed IWRM interventions to participating farmers for enhanced farm income and improved hill ecosystem. In a follow on phase, the models will be tested and IWRM implemented and carried out in clusters by the communities themselves, guided and supervised by the implementing partners. This approach, tested successfully by ICIMOD in Sikkim and Nepal will ensure community ownership and sustainability of the interventions. ICIMOD's Peoples and Resources Dynamics Project site in Jhiku Khola Watershed will be used for field visit of ECARDS professionals and interested farmers for demonstrating how IWRM has been applied by the communities.

10. The demonstration sites of the project will be established in two districts (Rasuwa, representing a mountain site, and Nuwakot, west of Kathmandu or Sindhuli, east of Kathmandu, representing hill sites) of the Central Development Region of Nepal where the CMIASP Project is under implementation. Proximity to Kathmandu and availability of ECARDS-Nepal field offices in the adjoining districts will be helpful in the efficient and effective implementation of the project. All the demonstration sites will have to be accessible by all-weather roads, to make the project implementation and its achievement, more efficient.

Activities

11. Activities to be carried will include:

- **Field team mobilization, baseline survey (ECARDS-Nepal), and capacity development by ICIMOD**
- **Social Mobilisation and Formation of Cooperating Farmers' Groups:** This will be essential for the implementation of the different activities of the project,

to bring the farmers together and to start saving/credit programmes, so important for the resource poor farmers targeted by this project.

- Implementation of pilot civil works to complement the demonstration process involving a holistic approach to empowering communities for community-based water resources management:

a. Water Management

- (i) Rain Water Harvesting: Construction of suitable structures will be needed for the purpose.
- (ii) Improved Pond Construction for Running Water Reserve: Construction of suitable structures will be needed for the purpose.
- (iii) Better Management of Existing Water Sources: Plantation as well as sanitation and protection of the water resources by mobilizing the community and by constructing suitable structures
- (iv) Provision of Drinking Water , construction of water lifting system or through gravity flow system
- (v) Utilization of Kitchen Drain and Other Surplus Water for Kitchen Gardening: By awareness training programmes and providing support to create certain structures and provision of vegetables seeds.

b. Soil Conservation and Landslide Management

- (i) Plantation of Fast-growing Perennial Species, such as Ipil-Ipil, mulberry and other nitrogen fixing species help prevent soil erosion.
- (ii) Hedge Row Plantation of Legumes for increasing soil fertility and porosity, planted along contour lines of terraced land help improve soil fertility through nitrogen fixation at the roots and incorporation of the hedge row trimmings into the soil. This is a method suitable for the mid hill area of Nepal.
- (iii) Plantation of Fodder and Forages (Napier grass, Stylo, Broom-grass). These activities will be undertaken in the fields of the cooperating farmers, and degraded land in an effort to revitalize barren land and vegetation cover.
- (iv) Application of suitable bio-engineering practices for landslide control and gullies that are /seem potential danger to the area.

c. Income Generating Activities

- i) Agro-forestry can provide the basis for establishing sustainable farming systems in the hills and mountain areas of Nepal. The integration of nitrogen fixing plants (NFP) into the system is one of the best and cheapest sources, of organic manure. Often NFP are pioneer species on degraded land and can be an important source of cash crops. NFPs can be used to maintain soil fertility in agro-forestry systems to increase forest productivity and to improve soils at degraded and eroded sites prior to the introduction of other species or cash crops.
- ii) Developing realistic opportunities for income generation is one of the most challenging tasks for mountain areas in Nepal, because mountain people are faced with numerous physical and social constraints that restrict the development of large scale cultivation of a single cash or food plant. On the other hand, mountain areas can offer

special opportunities due to the presence of diverse, rich and complicated niche areas.

- iii) Fruits, nuts and spices (ginger and turmeric) the cultivation of medicinal plants, broom grass and beekeeping have all been successfully tested in mountain environments elsewhere in the Hindu Kush. The Nepal Himalayas are widely acknowledged as possessing some of the most distinctive flora in the world. Medicinal and aromatic plants have been tested to grow in larger quantities by ICIMOD and some of their most promising plants will be introduced to the farmers participating in the Project. Farmer groups will be mobilized through creation of awareness and skills on these activities, as per their suitability, interest of the participating farmers and special ecological demand of the area.

d. Use of Appropriate Technology

- (i) Use of Hydraulic Ram for Lifting Water: Establish such structures, as per the suitability of the area.
- (ii) Improved Compost Production (Piling) Method (Biodynamic, vermin-compost, EM compost): By awareness training programmes and providing support to create certain structures and provision of ingredients that may be necessary for quick decomposition of the materials used.
- (iii) Improved version of Bio-gas Production and Bio-Briquette. By awareness training programmes and providing support to create structures (bio-gas plants) and on bio-briquettes.
- (iv) Improved version of drip irrigation and others forms of irrigation in water scare season. As per the suitability and interest of the farmers.

Implementation Schedule, Institutional Management Arrangements, and Proponents Qualifications

• **The Implementation Schedule**

13. The project will start in October 2007. ECARDS-Nepal will finalize the activities and mobilize the field team by October and preliminary management, capacity building activities by ICIMOD will be completed by the end of December 2007. In 2008, social mobilisation and group formation will be undertaken from January to March 2008, followed by the development of IWRM management models for two project sites with active participation by ICIMOD and the beneficiary communities. As a follow on, in the future, these models will be tested and IWRM activities will be established and implemented at the community based farm level, namely water management, soil management, IGAs, appropriate technology) and high value crops and plants.. The final reporting will be done in the last months in September 2008. This project has been proposed for a total period of 12 months (October 2007-September 2008).

Fig.1: Tentative implementation schedule of the proposed project.

| SN | Activities | Activities | | |
|----|--|-------------------|----------------|---------------|
| | | Dec 07 – Feb 2008 | Mar - May 2008 | June-Sep 2008 |
| 1. | Preparatory work, field team mobilization (ECARDS-Nepal), baseline survey and capacity | x | | |

| | | | | |
|----|---|--|---|---|
| | development by ICIMOD. | | | |
| 2. | Site Selection, Social Mobilization and Group Formation | | x | |
| 3. | Pilot Civil Works Implementation | | | X |

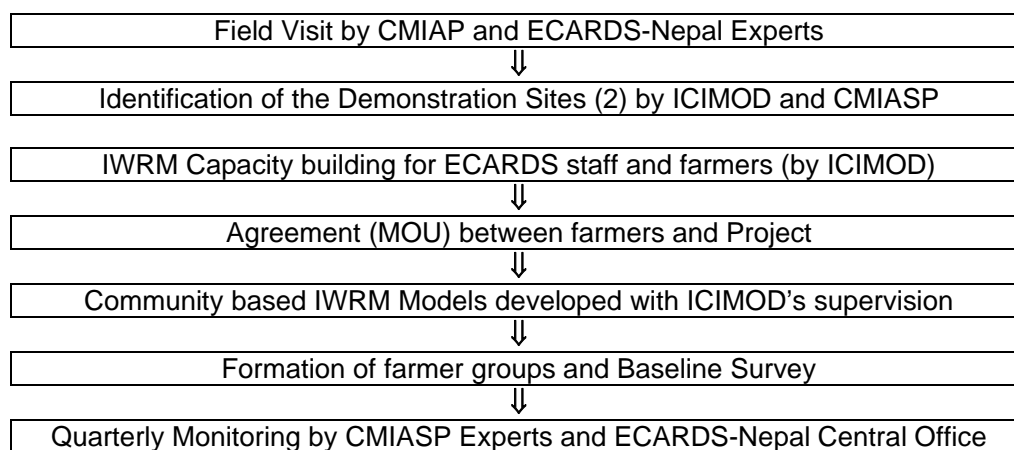
Institutional and Implementation Arrangements

14. ECARDS-Nepal has the policy of facilitating development programs through participatory/group approach as this always creates an increased participation of the people in the activities initiated in their area. When the programs are facilitated through the group approach, group members are trained in such a way that they could be capable to sustain their activities over time. Linkages of the groups are also developed with government and non-governmental organizations. It is taken that after three years of implementation, a capable user's organization / farmers' association is established and all activities can be handed over to the same, as a sustainable institution of the community. This approach will also be applied in the case of the present project, as this has been found to be a successful approach by ECARDS-Nepal in different parts of the country.

15. Existing Water User Associations (WUA) will be used for implementing the Project or as part of an existing Water User Associations (WUA) a Cooperating Farmers' Group (CFG) will be formed in each demonstration site, before the start of the implementation of the project. This group will be represented by local leaders, line agency technicians and facilitated by the Social Mobilizers (SM), an agriculture/forestry technician who will be stationed in the demonstration farm, to look after all the activities of the farm. S/he will be staff of ECARDS-Nepal. The CFG will be advising the SM for the implementation of a particular activity and also select the participants for a particular activity.

16. A saving and credit group (SCG) will also be formed where all the people of the area, to be decided by the CFG will be the members. This is felt necessary to bring the people together in a common platform and also to try to solve the small but immediate cash need of the beneficiary farmers. This can, thus, be an entry point of the programme. There may be need for some reservation in selection of the participants for this group as we have to focus to the most disadvantaged people of the community. ECARDS-Nepal will work to develop these CFG and SCG in such a way that they will be active in the present project implementation and also make it sustainable, later.

17. The following Flow-Chart will give the process of the project implementation



Detail of each of the activities to be implemented has been presented in Appendix-3.

Expected Results (outputs/ outcomes/effects/impacts)

18. The project will develop and demonstrate approaches to empowering communities for improved water resource management in hill and mountain ecosystems (water harvesting and utilization, soil management by controlling soil erosion through plantation and practice of appropriate technologies, such as improved version of bio-gas, compost making, water lifting and drip irrigation) and income generating activities for the benefit of the participating farmers in selected project sites. Each site will have different requirements according to the different physiographic conditions in the hills and the mountains. Therefore, the models will contribute to identifying site specific approaches according to ecological vegetation zones, vegetation types and water availability. Appropriate management systems will be designed and later on tested for each of these in a follow on phase. It is expected that in the long run, participating farmers will have better income, improved well being and ultimately their socio-economic status will also improve. Apart from this, it is expected that IWRM will improve soil and vegetation conditions, reduce landslide activity, and therefore protect valuable irrigation facilities. The activities implemented in these demonstration sites can be up scaled in similar areas under CMIASP or other projects.

Measurable Performance Indicators

19. At the beginning of the project implementation, a baseline study of the project will be carried out. The study will record both qualitative and quantitative indicators of the areas that will be helpful in assessing the performance of the project, after its completion. Some of the measurable indicators covered by the baseline survey will be:

- (i) nutritional as well as health status of the beneficiaries enhanced.
- (ii) soil fertility of the area improved.
- (iii) water management improved and soil erosion situation in the area decreased.
- (iv) landslides situation in the area decreased.
- (v) soil fertility status of the area improved.
- (vi) crops and livestock productivity status improved.
- (vii) income of each of the participating households increased.
- (viii) status of participating farmers in the society enhanced.
- (ix) positive effect of the programme in the neighbouring communities or villages.

20. These performance indicators will be measured against the status quo at project commencement, as noted in the Baseline Survey and reported in the Final Report of the project. The participation of ICIMOD in assisting with the baseline study and developing measurable indicators will be crucial, as the organisation is pilot testing and studying the performance of many of the water resources and soil management techniques developed under this Project.

Stakeholder Participation

21. The beneficiaries of the projects, the local leaders, the line agency staff as well as the implementing agencies are the major stakeholders of this project. Their participation will be made mandatory by coordinating the activities with them and also formalizing these through their central as well as regional or district offices. It has been taken due care that there will have to be programmes that will bring all the stakeholders, mainly the most disadvantaged communities, together. ECARDS-Nepal has the experience that activities that generate cash comparatively quickly are more accepted by such communities. Therefore, such income generation will be encouraged under this project.

Scope for Replication/Use in other DMCs

22. The activities that will be successfully implemented in these demonstration sites will be suitable for replication in other similar areas. The replicability will be taken as a major point of concern during the implementation of this project.

| 10. | Cost Estimate | |
|------------|--|---------------------------|
| SN | Inputs/Expenditure category | Total Costs (US\$) |
| 1 | Civil Works : | 4,000.00 |
| | Civil works will be the structures for water harvesting, bio-engineering, and structures for the use of appropriate technology (water harvesting ponds, compost pits, bio-gas and bio-briquette structures, structures for drip irrigation, fish ponds etc.) These will have to be constructed under the Models that will be identified, under Activity B3. | |
| 2 | Equipments and Supplies | 12,500.00 |
| | These will be: a video camera and screen, Polythene pipes, water taps, cement and stones as well as implements for masonry, saplings of fruit and fodder trees, seeds of grasses and vegetables, planting materials of NTFPs, small animals like goats, pigs and rabbits, beehives with bees, fingerlings, equipments for use of hydraulic ram etc.) These are only those that the proponent (ECARDS) needs to implement the project | |
| 3 | Training, workshops, seminars, public campaigns: | 10,255.00 |
| | a). Please refer Appendix 4 for the cost to be incurred through ECARDS | 8,255.00 |
| | b). Cost on ICIMOD's Training Package | |
| | i). Cost of ICIMOD (7 days for 5 participants @Rs.10,000/day) | 1,075.00 |
| | ii). Cost of Materials during Training | 925.00 |
| 4 | Specialists Services: ECARDS would engage the Specialist Services of a Project Manager (a well experienced Agricultural Specialist with more than 30 years of experience); two Site In-charges, with at least a B.Sc. degree in agriculture/forestry sciences and 2 local social mobilizers. This also includes the cost on the civil overseer and the Conservation Specialist to be engaged during the models development. | 13,200.00 |
| 5 | Project Management and Reporting (10% of the of the total estimated grant fund) | 4,395.00 |
| 6 | Other Inputs: These include the publication of books/reading materials/posters and pamphlets including the hiring of an artist. Observation Tour to ICIMOD demonstration sites will also be covered from this. | 2,500.00 |
| 7 | Contingencies | 1,500.00 |
| | Total PDA grant financed | 48,350.00 |

Appendix 1 ECARDS-Nepal Qualifications

1. Environment, Culture, Agriculture, Research and Development Society, Nepal (ECARDS-Nepal) was founded in 1991 to act as a non-profit, non-governmental, non-sectarian social development organization. It was set up to foster sustainable community development through people's organization and leadership. The basic philosophy of ECARDS-Nepal is to create awareness and promote understanding of the dynamics of the development process by empowering the local community. People need to be involved in problem identification, planning, resource mobilization, implementation and evaluation of a program. ECARDS-Nepal strives to serve as a vital link in the dynamic process of environmental management that helps to enhance and sustain agricultural productivity. It provides attention to socio-cultural factors that are critical to project planning and execution. ECARDS-Nepal is registered with the District Administration Office, Kathmandu and affiliated to the Social Welfare Council.

2. Since its establishment, ECARDS-Nepal has been involved in a number of development and research activities. ECARDS-Nepal has completed more than 5 dozens of projects in the last 15 years that were legally contracted by the client with ECARDS-Nepal recognizing it as partner institution. Of the total projects completed by ECARDS-Nepal, 35.00 percent are related with social mobilization for community and agriculture development projects, 41.00 percent are on social and economic development programs, 9.00 percent are on designing and conducting public awareness campaign and 15.00 percent are related with designing and conducting training programs. Thus, ECARDS-Nepal has a long experience of working in different fields of development, especially in social mobilization, agriculture and community development through skills development and their application for the beneficiaries of different parts of the country. Presently, ECARDS-Nepal has different 12 projects under implementation, in different parts of the country. Apart from the project activities, ECARDS-Nepal has also been maintaining three agricultural farms (one each in Chitwan, Kailali and Kabhre districts) that have been useful as training and demonstration sites to farmers and grass-roots level agricultural technicians.

3. ECARDS-Nepal is managed by a General Assembly that provides major policy guidelines to the Executive Committee, which consists of seven members and meets at least once every two months. The Executive Committee members of ECARDS-Nepal possess a multi-disciplinary background comprising specialists in agriculture, economics, sociology and other social sciences, management, engineering, environment and development activism. There is a team of staff headed by an Executive Director who undertakes the supervision of all activities.

4. Based on needs and specific nature of the project, ECARDS-Nepal forms project specific management and coordination committee of persons having an extensive knowledge and experiences in similar projects. Such committee helps in guiding the Implementation Team, policy advocacy and other specific need of the project under implementation.

5. ECARDS-Nepal maintains a roster of professionals in various disciplines and hires their services as and when needed. It has the policy of recruiting only limited number of staff as per the need of the projects it will be engaged to. For new projects that will be contracted by donors, ECARDS-Nepal has the policy of trying to adjust with the core staff of the organization. If that is not possible, new staff will be hired as per the personnel policy (Staff Recruitment) of ECARDS-Nepal. However, ECARDS-Nepal has the policy of retaining its human resources as far as possible. Apart from the regular staff, it also has a roster of consultants who will be hired as and when needed as demanded by the task/projects, at hand.

Experiences on Farm and Natural Resources Management

6. ECARDS-Nepal has established itself as an institution that has good records in social mobilization. Apart from it, it has also worked in the management of different natural resources at the grassroots level. Among them are: rain water harvesting, water sources protection and utilization, proper utilization of irrigation water (drip and sprinkler systems), introduction and cultivation of new and useful cultivars of different crop species, income generation activities and so on. These activities of ECARDS-Nepal can be seen in districts like Baitadi, Dadeldhura, Doti, Kailali, Kanchanpur and Achham in the far-western, Dailekh in the mid-western, Parbat and Tanahun in the western, Dhading, Bara, Rautahat and Kabrepalanchok in the central and Udayapur in the eastern development regions.

Appendix 2 IWRM activities for which models to be tested and implemented by communities at a later stage will be prepared

Water Management

- (vi) Rain Water Harvesting: Construction of suitable structures will be needed for the purpose.
- (vii) Improved Pond Construction for Running Water Reserve: Construction of suitable structures will be needed for the purpose.
- (viii) Better Management of Existing Water Sources: Plantation as well as sanitation and protection of the water resources by mobilizing the community and by constructing suitable structures
- (ix) Provision of Drinking Water , construction of water lifting system or through gravity flow system
- (x) Utilization of Kitchen Drain and Other Surplus Water for Kitchen Gardening: By awareness training programmes and providing support to create certain structures and provision of vegetables seeds.

Soil Conservation and Landslide Management

- (v) Plantation of Fast-growing Perennial Species, such as Ipil-Ipil, mulberry and other nitrogen fixing species.
- (vi) Hedge Row Plantation of Legumes for increasing soil fertility and porosity.
- (vii) Plantation of Fodder and Forages (Napier grass, Stylo, Broom-grass). (These activities will be undertaken in the fields of the cooperating farmers).
- (viii) Application of suitable bio-engineering practices: In landslides and gullies that are /seem potential danger to the area.

Income Generating Activities

- (i) Vegetables (Seasonal and Off-season) Cultivation: Provision of awareness and skills development training as well as mini-kits (seeds, leaflet with cultivation practices etc).
- (ii) Non-Timber Forest Product Cultivation in private lands: (Cultivation of medicinal plants etc).
- (iii) Raising of Small Animals (goat, pig, rabbit etc.): Farmer groups will be mobilized though creation of awareness and skills on raising these animals, as per their interest and demand of the area.
- (iv) Apiculture and Fish Farming: Farmer groups will be mobilized though creation of awareness and skills on these activities, as per their suitability, interest of the participating farmers and demand of the area.
- (i) Cash Crops (Coffee, ginger, turmeric, garlic, onion etc.) Provision of awareness and skills development training on production and marketing of these crops.

Use of Appropriate Technology

- (v) Use of Hydraulic Ram for Lifting Water: Establish such structures, as per the suitability of the area.
- (vi) Improved Compost Production (Piling) Method (Biodynamic, vermin-compost, EM compost): By awareness training programmes and providing support to create certain structures and provision of ingredients that may be necessary for quick decomposition of the materials used.
- (vii) Improved version of Bio-gas Production and Bio-Briquette. By awareness training programmes and providing support to create structures (bio-gas plants) and on bio-briquettes.
- (viii) Improved version of drip irrigation and others forms of irrigation in water scare season. As per the suitability and interest of the farmers.

Appendix-3: Detail Activity Schedule of the Project, including the Actors Involved

| SN | Activities | Activities Duration | | | Actors Involved (No. of Persons) |
|-----------|--|---------------------|---------------|---------------|--|
| | | Oct –Dec, 2007 | Jan-Mar, 2008 | Apr-Sep, 2008 | |
| 1. | Preparatory work* | | | | |
| | a). Contract Agreement | | | | ADB and ECARDS (4) |
| | b). Joint Site Visits of the implementation partners | | | | CMIASP, and ECARDS-Nepal Experts (4) |
| | c). Finalization of the Sites | | | | CMIASP, ICIMOD and ECARDS (6) |
| | d). Agreement between Beneficiaries and the Project | | | | ECARDS and Beneficiaries (4+beneficiaries) |
| 2. | Field Team mobilization | | | | |
| | a). Staff Recruitment | | | | Project Manager (PM) and the Site In-charges (SI)* (3 in each site) |
| | b). Identification/ Familiarization Visits | | | | CMIASP and ECARDS |
| | c). Project Orientation Workshops | | | | PM and SIs |
| | - Beneficiary Level (4) | | | | Project Team (PT)+Beneficiaries (40x4) |
| | - VDC Level (2) | | | | PT+VDC Level Stakeholders (40x2) |
| | - District Level (2) | | | | PT+ District Level Stakeholders (40x2) |
| 3. | Formation of Cooperating Farmers' groups | | | | PM+SIs |
| | a). Group Formation | | | | PM+SIs |
| | b). Recruitment of Social Mobilizers (Women) | | | | PM+SIs+ CFGs |
| 4. | Baseline survey | | | | |
| | - Questionnaires Preparation | | | | PM+SIs |
| | - Survey | | | | SIs and SMs |
| | - Data Analysis and Report Preparation | | | | PM+SIs |
| | - Report Presentation to the Beneficiaries | | | | PM+SIs |
| 5. | Capacity Development by ICIMOD | | | | ICIMOD and Project team (PT) of ECARDS (PM SIs and SMs) |
| B. | Site Selection, Community based IWRM models for two project sites developed | | | | ICIMOD and PT |
| 1. | Activity Sites Selection (for the Implementation of the Models) | | | | ICIMOD+ PT+CFGs |
| 2. | Exposure Visits of the Beneficiaries to the ICIMOD Demonstration Sites | | | | PT+ Beneficiaries (100) |
| 3. | Models developed | | | | ICIMOD+CMIASP+PM |
| | a) Water Management | | | | |
| | b). Soil Conservation and Landslide Management | | | | |
| | c). Income Generating Activities | | | | |
| | d). Use of Appropriate Technology | | | | |
| C. | Social Mobilisation and Formation of Farmers' Groups | | | | |
| 1. | Social Mobilization | | | | |
| | a). Home Visit with the IWWM Models (1 per week) | | | | SIs+SMs |
| | b). Group Meetings (1 per week) | | | | PT+ Beneficiaries (5x2x10) |
| | c). Publication of Posters and pamphlets | | | | PT |
| | d). Stakeholders' Workshops | | | | PT+CFG |
| | i). Local Level (4) | | | | PT+CFG+ stakeholders (4x40) |
| | ii). District Level | | | | PT+ District level stakeholders (2x40) |
| | iii). Project Level (In Kathmandu or in any appropriate place) | | | | PT+Rep. of the Beneficiaries +Stakeholder Ministries/Departments/ CMIASP+ICIMOD (40) |
| 2. | Formation of S/C Groups and Mobilization | | | | SIs+SMs |
| 3. | Joint monitoring by CMIASP and ECARDS-Nepal, Central Office (3) | | | | CMIASP+ ECARDS |
| 4. | Half yearly and Annual Reporting of the achievements | | | | PM+SIs |

Appendix-4: Training, Workshops, Seminars

| SN | Activities | | | | | Actors Involved (No. of Persons) |
|----------|--|----------|---------------------|-----------------|-------------------|---|
| | Type of Training/Workshops | No. | No. of Participants | Unit Cost US\$) | Total Cost (US\$) | |
| 1 | Project Orientation Workshops | | | | | |
| | a).Beneficiary Level (4) | 2 | 160 | 300.00 | 600.00 | Project Team (PT)+Beneficiaries |
| | b).VDC Level (2) | 2 | 80 | 400.00 | 800.00 | PT+VDC Level Stakeholders |
| | c). District Level (2) | 2 | 80 | 600.00 | 1,200.00 | PT+ District Level Stakeholders |
| 2 | Social Mobilization | | | - | | |
| | a). Group Meetings (1 per fortnight) | 25 | 500 | 4.00 | 100.00 | PT+ Beneficiaries |
| | b). Stakeholders' Workshops | | | - | | PT+CFG |
| | i). Local Level | 2 | 160 | 300.00 | 600.00 | PT+CFG+ stakeholders |
| | ii). District Level | 2 | 80 | 400.00 | 800.00 | PT+ District level stakeholders |
| | iii). Project Level (In Kathmandu or in any appropriate place) | 1 | 40 | 1,231 | 1,231 | PT+Rep. of the Beneficiaries +Stakeholder Ministries/Departments, CMIASP+ICIMOD |
| | Training and Visits on ICIMOD Sites | 2 | 100 | 2,000 | 2,000 | PT+ Beneficiaries |
| 4 | Joint Monitoring Field Visits | 3 | 9 | 308.00 | 924.00 | CMIASP+ ECARDS |
| | | | | Total | 8,255 | |

5. Specialist Services

| SN | Activities | | | | |
|----|---|-----|----------------------------------|----------------------|-------------------|
| | Type of Specialist | No. | Duration of Involvement (months) | Unit Cost US\$/month | Total Cost (US\$) |
| 1 | Project Manager* | 1 | 3 | 1,600.00 | 4,800.00 |
| 2 | Site In-charge | 2 | 24 | 250.00 | 6,000.00 |
| 3 | Social mobilizer | 2 | 24 | 50.00 | 1,200.00 |
| 4 | Services of Civil Overseer and Conservation Support | 2 | 4 | 300.00 | 1,200.00 |
| | | | | Total | 13,200.00 |

* Part-time involvement (25% of the total time)