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**Semi-Arid Food Grain Research And Development  
Recherche et Développement des Cultures Vivrières dans les Zones Semi-Arides**

**PARTICIPATORY APPROACH FOR THE  
MANAGEMENT OF AFRICAN AGRICULTURE  
AND THE ENVIRONMENT  
AT THE VILLAGE LEVEL**

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## PROJECT OUTLINE

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## **A C R O N Y M S**

<b>ADB</b>	<b>African Development Bank.</b>
<b>AEWP</b>	<b>Annual Environmental Work Programme.</b>
<b>ARD</b>	<b>Agricultural Research and Development Division (OAU).</b>
<b>FSR</b>	<b>Farming Systems Research</b>
<b>GEST</b>	<b>Grassroots Environmental Support Team.</b>
<b>NCGEA</b>	<b>National Coordination for Grassroots Environmental Activities.</b>
<b>NEAP</b>	<b>National Environmental Action Plan.</b>
<b>NSC</b>	<b>National Steering Committee.</b>
<b>OAU</b>	<b>Organization of African Unity.</b>
<b>PASD</b>	<b>Poverty Alleviation and Sustainable Development Division (UNECA).</b>
<b>RSC</b>	<b>Regional Steering Committee.</b>
<b>STRC</b>	<b>Scientific, Technical and Research Commission (OAU).</b>
<b>UNCED</b>	<b>United Nations Conference on Environment and Development.</b>
<b>UNECA</b>	<b>United Nations Economic Commission for Africa.</b>
<b>VEC</b>	<b>Village Environmental Committee.</b>
<b>VLEAP</b>	<b>Village Level Environmental Action Plan.</b>

## I. BACKGROUND

The agrarian crisis which is engulfing Africa can be attributed to several causes prominent among which are : degradation of the environment as a result of human activities (e.g., soil depletion, deforestation, and physical alteration of land and surface water habitats); excessively high human population growth rates (with the population of many African countries expected to double during the next 20 to 30 years); lack of technological advancement leading to stagnation or even decline in food and agricultural production; and climatic changes, especially during the past three decades, resulting in reduced and/or more uncertain precipitation. Furthermore, the future of the agro-ecological systems in the region is threatened by human activities such as accelerated deforestation and inappropriate land use and management. In short, the quality of the environment in most areas of Africa is severely stressed at present and is experiencing continuing degradation.

At the United Nations Conference on Environment and Development (UNCED), States called for more responsible management and utilization of resources throughout the world to meet present needs without compromising those of future generations. Indeed, the recent meeting to agree on a United Nations Convention to Combat Desertification in Africa, held in Burkina Faso in February, 1994, called on all African Governments to prepare and implement National Environmental Action Plans (NEAP) as a matter of urgency. These NEAPs are supposed to identify factors contributing to the degradation of the environment including agricultural production and to propose measures for combating them. The African Nations who are party to the convention have also resolved<sup>1/</sup> that the NEAPs should be integrated and be area based and should address the basic needs of local communities including income generation and employment creation. Furthermore, they should be long-term in perspective and flexible in design so as to allow for the changing needs and circumstances of different countries in order to guarantee long-term sustainability.

Several countries have already embarked on the preparation of their NEAPs and a number of them, who took the initiative much earlier, are already implementing aspects of their new environmental plans. Because the rural sector dominates most African economic, political and social systems, most of the NEAPs have a strong rural component. However, despite these good intentions, many African countries are facing serious difficulties in their efforts to translate the rural elements of their NEAPs into practical, coherent, and sustainable environmental activities on the ground. Several reasons are responsible for these difficulties. First, up until recently, most of the efforts have been top-down with emphasis on how to persuade local rural people to provide support to government and/or donor sponsored environmental projects designed outside the community. Secondly, because of the multi-disciplinary and multi-

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<sup>1/</sup>See the Proceedings of the African Expert Group Meeting of the Intergovernmental Negotiating Committee for the Elaboration of an International Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, Ouagadougou, Burkina Faso, 10-15 February, 1994.

departmental nature of the projects involved, they have often been implemented from several fronts resulting in serious problems of conflict and coordination. Thirdly, difficulties associated with traditional land tenure systems and common property rights over natural resources at the village level, have often dampened the enthusiasm of villagers to fully appreciate the usefulness of investing their time and resources to conserve and manage the natural resources involved in a sustainable manner.

## II. PROJECT OVERVIEW

### 2.1. Justification

Following the Rio Conference on the environment, African Governments committed themselves to take bold decisions and actions aimed at managing demographic changes and population pressures, achieving food self-sufficiency and food security, ensuring efficient and equitable use of water resources, securing greater energy self-sufficiency, conserving endangered species and ecosystems and preventing and/or reversing desertification. There have, however, been several constraints to the successful attainment of these laudable objectives. **These have included lack of clear direction on critical natural resource management issues, difficulties in establishing genuine partnership at the grassroots level in the formulation and implementation of resource management initiatives, limited capacity by governments to absorb and administer the aid on offer, and limitations on human, institutional, and infrastructural capacities.**

African soils are more fragile, the timing and quantity of rainfall more variable, and the predominance of arid and semi-arid areas greater than in other regions of the world. The continent also has a long history of devastation brought about by droughts, floods, typhoons, diseases and political conflicts. It is a measure of the strength of their resilience and ingenuity that, in the past, African communities were able to evolve systems of natural resource use and management that, by and large, simultaneously secured their livelihood and the integrity of the environment. Post-independence initiatives have, however, failed to fully exploit this resilience and ingenuity. Instead, they have focused more on ways by which local people should be persuaded to provide the needed labour input into environmental projects designed outside the community rather than on ways in which grassroots initiatives, stemming from indigenous environmental concerns, can result in sustainable agricultural management.

Fortunately many African Governments and their development partners now recognize the fact that future agricultural development efforts will require significant modification in existing mechanisms for planning and implementing activities to curb environmental stress. A collaborative and consultative mechanism is needed so that African communities can be involved in the definition of environmental interventions in their ecological systems, based on local priorities and needs. An implementation mechanism must also be available at the grassroots level so that much needed support can be channelled directly to community based environmental interventions.

On-going efforts by African Governments to establish and implement National Environmental Action Plans will be a time-consuming process requiring action programmes, administrative reforms and extensive training. **However, given the growing urgency of environmental degradation in Africa and its consequential impact on food security and rural needs, quick but sizeable experimentation with new approaches involving local participation, including empowerment and the use of indigenous knowledge systems must begin immediately to test the effectiveness of such approaches and introduce the necessary adjustments and modifications necessary for their successful extension country-wide and region-wide.** The primary objective of this project is to facilitate this process, by initiating, on a pilot basis in selected African countries, activities to support genuine grassroots management of agriculture and natural resources.

## 2.2. Objectives

The primary development objective of the project is to promote the attainment of food security and self-sufficiency in African countries without damaging the essential environmental integrity of their food and agricultural systems.

The project has the following immediate objectives:

- i) To put in place, on a pilot basis in selected African countries, mechanisms that will provide a better understanding of and communication with local communities with a view to overcoming the most important environmental problems associated with efforts to increase food security and sufficiency;
- ii) To strengthen the capacities of the village, district, and provincial institutions to plan, implement and manage the rural components of NEAPs and to develop, test, and further improve the procedures for village level management of natural resources in support of sustainable food security and sufficiency;
- iii) To evolve a community-based village-level natural resource management mechanism that, with time, can be easily extended nation-wide. Such a mechanism will be expected to:
  - a. Integrate existing sub-systems of agricultural production (i.e., cropping, agroforestry, livestock, forage legumes, fishery, etc.) in an environmentally sustainable manner;
  - b. Prevent degradation of the resource base while concurrently inducing the improvement of soil fertility through enhancement and recycling of renewable resources between sub-systems of production, for example, cropping and livestock systems;

- c. Strengthen sustainable management of village ecosystems by adopting appropriate traditional and indigenous methods of land conservation and rehabilitation complemented, whenever necessary, by appropriate and relevant new technologies;
  - d. Develop, at the village level, simple and easy-to- use environmental protection techniques such as those required for water use efficiency, water harvesting and soil conservation;
  - e. Introduce agroforestry techniques which can reduce soil degradation arising from, among other causes, run-off and erosion on depleted soils; and
  - f. Address the immediate food, shelter, and energy needs of farmers and the long-term conservation needs of villages.
- iv) To establish a regional mechanism for coordinating rural environmental efforts in African countries so as to promote the exchange of information and experiences between and among government environmental administrators, researchers, farmers and external and non-governmental agencies.

### 2.3. Design Considerations

#### i) Community Participation

Community participation is seen by the project as essential mechanism to enhance at grass roots level environmental conservation and agricultural production action plans. The project emphasizes that local level participation is a pre-requisite for sustainable development.

This focus on grassroots participation is supported by compelling logic and impressive evidence.<sup>2/</sup> Indigenous communities in Africa have a deep and intimate knowledge of their local ecology, flora, and fauna born out of centuries of constant interaction with the environment and handed down from generation to generation. Local communities are also in a very good position to assess the relevance and validity of solutions to their environmental problems devised by outsiders. The project's logic is therefore centred around the proposition that effective participation of local people in devising and implementing programmes and activities of environmental conservation provides the best guarantee for achieving the objectives of sustainable food security and sufficiency. There are many success stories about indigenous African inventiveness and creativity in devising environmentally harmonious adaptations in

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<sup>2/</sup> See for example D. Ghai and J. Vivian (1992), *Grassroots environmental action*, London, Routledge.

production systems to changes in social and material conditions and environmental projects which combine external resources with community initiatives and participation.<sup>3/</sup>

The project will aim to capitalize on these successful African experiences by **emphasizing: meaningful democratic participation by the local people; adequate preparation and focus on livelihood concerns; use of community organizations; reliance on locally available tools materials and skills; preference for low-risk activities with attractive pay-offs; use of existing systems of marketing and extension and government and donor support and commitment.**

ii) Preparation of Village Environmental and Agricultural Production Action Plans

Each project community will devise and implement, with the aid of project assistance, a Village Level Environmental Action Plan (VLEAP) as well as Annual Environmental Work Programmes (AEWPs) designed to translate the principal elements of the plan into concrete environmental activities. The VLEAPs and the AEWPs will reflect the short-, medium-, and long-term objectives of the community as well as the natural resource constraints and the limitations of their own human, institutional, and infrastructural capacities. Their design and implementation will be guided by procedures aimed at: sensitizing the community; determining the magnitude and dimensions of the environmental problem; providing support to the creation of village environmental committees and other village organizational arrangements; supporting the actual elaboration of the VLEAPs and AEWPs; the establishment of working relationships between and among the government and the community; and the establishment of monitoring and evaluation mechanisms.

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<sup>3/</sup> See for example: C. Conroy and M. Litvinoff, eds., (1988), *The greening of aid*, London, Earthscan Publications Ltd.; ECA-FAO (1992), *Land degradation and food supply*, Addis Ababa, ECA; P. Egger and J. Majeres (1992); "Local resource management and development: strategic dimensions of people's participation", in D. Ghai and J. Vivian, (eds.), *Grassroots environmental action*, London, Routledge; B. Ledea Ouedraogo (1990), *Entraide villageoise et développement*, Paris, l'Harmattan; P. Harrison (1987), *The greening of Africa: breaking through in the battle for land and food*, Glasgow, Penguin Books; P. Pradervand (1990), *Listening to Africa: developing Africa from the grassroots*, New York, Praeger; W.V. Reid et al. (1988), *Bankrolling successes: a portfolio of sustainable development projects*, Washington, D.C. Environmental Policy Institute and National Wildlife Federation.

### iii) Gender Focus (Women)

In many ways, women in rural areas have been the most affected by the environmental crisis facing African agricultural production. Nearly 80 per cent of the economically active women in sub-Saharan Africa are in agriculture and are responsible for over 70 per cent of the region's food production.<sup>4/</sup> In their capacity as food producers, they have seen the returns to their labour reduced by declining soil fertility and cultivation in marginal areas. The migration of male members of the household induced by scarce or degraded resources has further increased their responsibilities and work load. Labour force surveys estimate the total working time for women in Africa at 67 hours per week. Micro-studies suggest that women and girls spend, on average, 5 to 17 hours per week collecting and carrying water and fuelwood with adverse effect on family nutrition and health.<sup>5/</sup>

The VLEAPs will be designed so as to have a positive effect on the women members of the village. Mechanisms will be designed, including separate village environmental committees for women, whenever necessary, to ensure that gender focus is maintained. For example, the annual work programmes will pay special attention to strengthening women tenure rights. The provision of additional water sources, if required, will also focus on the reduction of the time and effort required for water collection, an activity normally undertaken by women. Afforestation activities will be designed to reduce the time required for fuelwood collection, another task normally performed by women in many African countries. Commercial and marketing opportunities of direct importance to women will also be promoted.

### iv) The Role of External and Non-Governmental Organizations

Most African nations have a large number of foreign agencies, including multilateral, bilateral, and non-Government Organizations (NGOs), active in the different villages of their countries. Many of these agencies are engaged directly in rural development. A number of the bilateral and multilateral agencies are also financing projects in several African countries which include strong environmental and agricultural development components. Furthermore, many of these NGOs are now reformulating their country programmes to better address environmental concerns. In this regard, many of them have gained invaluable local experience in implementing

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<sup>4/</sup> See United Nations (1991), *Women's world: trends and statistics*, New York, United Nations.

<sup>5/</sup> See E. Cecelski (1987), *Energy and Rural Women's work: crisis, response and policy alternatives*, *International Labour Review*, Volume 126, Number 1.

projets for a variety of donors. African development projects, however, have had a history of insufficient consultation between external agencies and NGOs and local administrations and a lack of consistency among the programmes of different agencies. To avoid this problem and to fully exploit the complementary benefits derivable from involving both government agencies and NGOs in the implementation of the present project, whenever possible and feasible, the NGOs will be encouraged to integrate their activities with those of the present project in the different country sites.

v). Project sites

Country-level pilot projects would be based in sub-regional economic units (ECOWAS, SADC, PTA region, North Africa and Central African Countries Economic Cooperation Unity, etc). As indicated in Fig. 1, the six-country level pilot projects in each sub-region would serve as "focal programme" for networking activities. As summarized in Table 1, that two to three representative villages would be selected in each country. Depending on the population density, the number of households could vary from 250 to 1000. The criteria for choosing villages is expected to vary among countries. The extent of agricultural production and environmental degradation, the climatic pattern, and population pressure, etc. are among the global criteria that could influence the selection of village sites.

Table 1. Project sites, ecological distribution and estimate of participating households.

Country*	Number of villages	Sub-region	Number of households	Ecological zone
A	2-3	West Africa	300-800	Semi-Arid low land Tropics
B	2-3	Eastern Africa	300-700	Mid-Altitude Tropics
C	2-3	Central Africa	250-500	Humid Tropics
D	2-3	Southern Africa	250-400	Semi-arid mid-altitude Tropics
E	2-3	West Africa	500-600	Moist Savanna zones
F	2-3	North Africa	200-300	Semi-Arid Sub tropics

\* Six countries each representing the sub-regional economic unit (Fig. 2) are approached to develop country-level pilot project activities.

## 2.4. Project Strategy

### i) Capacity building.

The project strategy at the national level is, therefore, based on the proposition that most African peasants have a greater interest in the integrity of their environment than any outside parties since their very existence and way of life is at stake. Community participation is, therefore, essential if the advantages of these customary systems are to be restored.

Capacity building at national level, is, therefore, intended to:

- a) Provide technical support to enhance the collective resource management operations of the communities involved;
- b) Provide the needed technical support for the development of human, institutional, and infrastructural capacities at local level;
- c) Establish a regional mechanism to facilitate the exchange of information and experiences between and among development workers, institutions, villagers, external and non-governmental organizations in each African country; and
- d) Effectively utilize existing technical talents and facilities of participating countries to build up the desired "critical mass" in the management of agricultural production and the environment at regional and national levels.

One of the essential components of the project both at national and regional levels is to train cadres that will be well versed with technologies to effectively manage agricultural production problems and prevent the degradation of the environment at village level. At regional level, over 300 technical cadres from pilot projects and other countries would be trained in various fields of environmental management and agricultural development. These cadres, in each country, not only would provide technical support for the implementation of the project, but also provide training to communities in villages.

### ii) Regional Perspective and Networking.

Recognizing that environmental degradation and decline in agricultural productivity are not limited to political frontiers and boundaries, the programme is anchored around a strong regional perspective. **The thrust of this perspective is to create the favourable institutional conditions and mechanisms which are essential for solving common problems of food production and environmental degradation.**

The regional component of the project is intended to ensure that African countries work together so as to attain the technical development critical mass that is essential for tackling each country's environmental problems. The focus will be on the identification of common environmental and agricultural production research and development priorities for solving the food, shelter, and energy production problems of African countries, based on constraints with a regional dimension and the installation of a sustainable mechanism for successfully meeting these priorities. This way, African countries will be able to learn from each other's successes and failures. Each of the pilot project would serve as focal programme to enhance networking at sub-regional level in the management of agricultural production and the environmental protection (Fig. 1). Seminars, workshop and project visits by farmers in different countries would facilitate the exchange of experiences among countries.

The project has been designed to respond to the reality that African countries working alone would find it very difficult to achieve their environmental protection development objectives. This is particularly true in connection with the attainment of their food production objectives. In this regard, sustainable agricultural development in Africa requires that local communities enjoy genuine autonomy, have control over adequate resources and be provided, where necessary, with minimal technical assistance to restore their resource base and re-establish control over natural resources. **The technical assistance needs of the project are, therefore, limited to those that will reinforce the capabilities and effectiveness of grassroots arrangements and organisations to manage their natural resources.** The focus is to build on a base of existing local knowledge, skills and technology and lessons from participatory experience and experimentation. There will, therefore, be a strong emphasis on indigenous human resource development. The progressive building of skills and know-how of local staff and community administrators will be taken into account in the evaluation of the impact of the project.

### III. PROJECT COMPONENTS

Africa possesses a varied environment comprising diverse ecological systems. These include the extensive savanas, vast stretches of semi-arid and desert regions; tropical forests humid and sub-humid coastal areas. This varied ecosystem has given rise, over time, to a wide variety of human activities which seek to exploit local and regional specificities to assure food security and sufficiency. As a result, contrasting systems involving shifting cultivation, intensive agriculture, organic fertilizer, intercropping, mixed farming, hillside, wetland and dry plain

cultivation, water harvesting and irrigation, soil and forest conservation, and nomadic and transhumance pastoralism, now form part of the traditional production systems of African communities.

It is now, however, clear that environmental degradation caused by soil erosion, desertification, deforestation and inadapted agricultural practices is seriously undermining the very resources on which many African farmers and their families depend for their survival. It is also becoming increasingly obvious that, to be successful and sustainable, any effort to increase food and agricultural production in Africa to keep pace with the increased demands of the population, must be strongly linked to complementary strategies aimed at managing the natural resource base in a sustainable manner.

**The continent's future food security situation will, therefore, depend heavily on the effectiveness of African efforts in reversing environmental degradation and in managing their natural resource base to produce enough food and raw materials to meet and even surpass the needs of the continent's rapidly increasing population without damaging the essential ecological integrity of the food and agricultural systems.**

### **3.1. Integrated Resource Management.**

To enhance sustainable agricultural production and environmental protection, the integration of the different farming production and environmental action plan modules at farm and village levels as well as at the district and national levels is the essence of this project. As depicted in Fig. 2, the main objective is to integrate resources naturally available on-farm to achieve efficient management and provide maximum agricultural outputs with minimum inputs, that is, minimum loss of natural resources and minimum investment of agricultural inputs including labour, particularly, household labour from women and children. This can only be achieved in a farm, if the surrounding farms, rangelands, westlands and other components, with an environmental impact, are also well managed.

The integration of different farming production modules will be dependent on: farm size, farm location, agro-ecological and economic conditions, farmers' preferences and requirements, etc. In any case farming production modules will be selected to ensure economic as well as agronomic complementarities. For example, crop production module may be integrated with either agroforestry and soil and water management module or livestock production module or both.

The systematic application of technologies and the pursuit of the measures recommended in the integrated farming production and environmental action plan modules would lead to the regeneration of the resource base, resulting in the following:

- Accumulation of organic matter as a consequence of the application of animal manure, return of crop residues and litter from hedgerow trees or shrubs and green manuring;

- Reduced runoff and erosion from field plots as well as rangelands and wastelands;
- Improved soil physical properties as the ensuing effect of increased soil organic matter; the beneficial effects being: improved soil structure, increased water infiltration rates and soil water holding capacity, reduced soil temperatures, etc.;
- Increased soil cation exchange and nutrient retention capacities and soil fertility;
- Revegetation and/or afforestation of wastelands;
- Establishment of improved rangelands;
- Reduced sedimentation along riverbanks and in surface waters; and
- Restoration of sound biotopes favourable for diverse species of plants and animals to flourish in.

The fragile African ecosystems could, thus, be rejuvenated through efficient management of the renewable resources in integrated crop-livestock-tree production systems.

The components of each production modules and inputs that could evolve to an integrate resource management are described below:

i) Crop production module.

This module will promote crop selections based on their economic and/or feed values, and on their ability to minimize nutrient losses, maximize agricultural outputs as well as their acceptability to farmers. Appropriate production technologies including high yielding cultivars which are genetically well buffered against changing environmental conditions, time of planting, plant populations, crop rotation schedules, soil and soil water management including tillage techniques, mineral and organic fertilizer, amendment rates and time of application; weed control, crop residue management including compost production and application techniques, etc.; all these will be extended to farmers.

ii) Agroforestry and soil and water management module.

This module will have four sub-modules as follows:

. Agroforestry: This sub-module will involve interplanting trees or shrubs with crop species as well as planting them as hedgerows for use as windbreaks in farms for shade, shelter, fuelwood, fiber, feeds and for soil conservation. The growing of trees or shrubs in rows with food crops planted between the rows (alley cropping) will form an important part of this sub-module. The objective here would be to reduce the incidence of pests, diseases, weeds and soil loss; to enable different plants to exploit different soil regimes to recycle nutrients that would

otherwise be lost through percolating water, runoff and erosion or immobilized in deep soil; to provide continuous supply of food and feed and to increase overall agricultural output and productivity of the land with minimum inputs. Species of multipurpose leguminous trees or shrubs such as Prosopis, Albizia, Acacia, Leucaena, Gliricidia, Casuarina, Sesbania and Cassia, which are commonly used in agroforestry, will be experimented with as appropriate.

. Development of Fuelwood for Village Development: This sub-module will deal with setting aside pieces of land for growing trees specifically for provision of fuelwood. The growing of trees on public land is generally known as communal forestry. It will be the responsibility of the Village Environment Committees to administer the establishment and harvesting of trees from the communal forest. Proper knowledge of fast growing trees - combined with other characteristics - will be required. Needless to add, the need to encourage the use of fuel efficient stoves as well as the development and exploitation of alternative renewable sources of energy, in order to give time to the planted seedlings to grow and mature. The development of communal forestry and renewable forms of energy will also relieve women and female children from spending most of their working hours collecting firewood from distant places for household needs. In addition, this will halt devegetation resulting in increased biodiversity, soil conservation and enhanced agricultural productivity. Also through the integration of the agroforestry systems, an important component for soil-water conservation, nutrient recycling and a source for fuel and shelter, it is possible to prevent the expansion of agricultural production into degraded marginal lands.

. Soil Conservation Measures: There are many factors which cause land degradation. This submodule will endeavour to identify them during the preparation of the Annual Environment Work Programme so that remedial actions can be taken. Some of the likely remedial actions to be taken for land improvement may involve any of the following, depending on various circumstances: (i) introducing appropriate technologies; (ii) reforming land tenure systems; (iii) reforming agricultural price strategies; and (iv) making farm inputs more readily available. Soil conservation reduces water run-off as well as increasing vegetative cover over the land surface. Furthermore, soil conservation measures stabilize and increase crop yields through increased water infiltration rate and improved soil water and nutrient holding capacities. Soil conservation may also result in additional fodder and fuel. The most common soil conservation techniques include the following: (i) terracing on steep sloping lands; (ii) contour farming reinforced by planting of permanent grass strips such as Vetiveria zizanioides; and (iii) construction of earthen or stone bands and stone lines along contours.

. Water Resource Management: The soil conservation measures addressed earlier reduce water run-off in order to maximize water infiltration into the soil. The other techniques which this sub-module will need to focus upon include the construction of gabions as well as the inclusion of cover-crops and mulch in the cropping system. Collection of water run-off from large catchment areas such as hill tops using stone bands and conveying the water harvested through channels to cultivated fields will also need to be explored. The interception of desert streams that carry water seasonally has been used in many countries since time immemorial. There will be need, however, to explore ways of reducing surface evaporation from reservoirs

constructed for storage of such waters. Also availability of water, whether from ground aquifers or from surface run-off, will enhance agricultural production through irrigation if necessary. With regard to irrigation schemes, priority will need to be given to the less costly ones which can be maintained and managed by the villagers themselves.

iii) Livestock production module.

This module will promote livestock speculations selected on the basis of their economic values as well as complementarities with crops produced in the farms. For example, crop residues and other lignocellulosic biomass from the farm would be converted into high value marketable commodities such as meat, milk, etc. Also, forage legumes would be cultivated not only to provide quality animal feeds, but also to enrich the soil with nitrogen. In turn, animal manure would be collected and composted and used to fertilize field plots for crop production. Animal traction would be promoted to reduce labour bottlenecks and the drudgery of manual labour.

iv) Waterland, marshland, riversbank and stream water module.

In Africa, wastelands, marshlands, unexploited riverbanks and stream water, like rangelands, are, in general, village communal properties. Since management of these sites may have repercussions transcending village boundaries, their management responsibilities shall, therefore, fall in the hands of Village Environmental Committees as well as those of Grassroots Environmental Support Teams and the National Coordination. Actions to be carried out will include: soil conservation, and revegetation and/or afforestation for the wastelands; drainage and reclamation of marshlands; building of dams to retain stream water, clearing and levelling of riverbank for irrigated crops and/or fish ponds. Also, a selected number of improved varieties of plant and animal species including fishes with economic value and acceptable to farmers and consumers could be introduced for use by the farmers.

### 3.2. Training.

i) Purpose and areas of training.

The purpose of the training is to strengthen the capacity of the village communities, technical cadres, managers, coordinators, etc. in order to enhance the development of sustainable agriculture with concurrent improvement of the environment in general, and the rejuvenation of the resource base in particular. Since the project is inward looking and community based, local level training will feature prominently in its activities. The type, level, and training requirements are expected to vary among the pilot projects. The village environmental and agricultural production support team would play key role both in the identification of training needs and the execution of each training work plan at village, district and provincial levels.

As summarized in Table 2, some of the broad areas of training are: environmental management at village level, integrated natural resource management, leadership development of women through the improvement of technical skills, etc. Over 300 trainers would be trained. These technicians and few high level experts will train the required technical cadres and managerial personnel in the six pilot project countries. Depending on the resources that could be made available, about 110 participants from 30 countries are expected to benefit from the training activities.

A number of regional and national collaborating institutions would be utilized both to develop and carry out training programmes. The comparative advantages of these institutions in certain fields of training capabilities is indicated in Appendix 1. The budget required for the development of various technical cadres as trainers is summarized in Appendix 4.

Table 2. Training of Trainers for Pilot Project Countries and Networking.

Type of Training	Burkina Faso	Ethio- pia	Ghana	Mozam- bique	Cam- eroon	Egypt	Other* countries	Total
I) Village level environmental management for development	5	6	4	6	6	5	18	50
II) Integrated natural resource management	5	6	5	5	5	6	20	52
III) Training of women to enhance development and leadership	10	15	10	10	10	7	25	87
IV) Planning, management and coordination of projects	3	3	3	3	3	3	10	28
V) Crop/livestock/agroforestry production systems	8	10	7	10	8	6	35	84
TOTAL	31	40	29	34	32	27	108	301

\* Countries participating in the regional networking activities.

#### IV. PROJECT IMPLEMENTATION

##### 4.1. At the national Level

###### a) National Steering Committee

Each country will have a National Steering Committee comprising one representative each from the principal ministries concerned, i.e., agriculture, livestock, forestry, water, health, fisheries, etc. Other agencies and organizations such as research institutes, universities, development projects and NGOs will also be represented, as appropriate, in the Steering Committee. The Permanent Secretary (Secretary General) of the Ministry of Environment and Natural Resources will chair the meetings. The National Coordinator for Grassroots Environmental Activities will serve as the Secretary to the committee. The functions of the committee will include the following:

Provide guidance on the identification and implementation of project activities at a village level;

Review, adjust, and approve VLEAPs and AEWPs and make recommendations on village level activities and annual budgets;

Ensure the provision of support by all the concerned agencies including line ministries, research institutes, universities, NGOs, etc. and establish, maintain and follow up on the needed relationships between project villages, districts, provinces and the central government;

Provide other support as requested by the National Coordinator.

###### b) Grassroots Environmental Support Teams

Each country project will have a national Grassroots Environmental and Agricultural Development Support Team (GEST) based in the project village and comprising a Team Leader (a routine ministry field staff chosen according to the environmental priority of the village) and technical assistants representing the major production systems in the community, and representatives of NGOs and development projects operating in the village. The team will be based in the village and its primary responsibility will be to provide the needed support to the Village Environmental Committee on all aspects of its work to evolve and implement a VLEAP.

###### c) National Coordinator

Each project country will appoint a National Coordinator for Grassroots Environmental Activities to carry out overall coordination of the project's activities in the country. The National Coordinator should be an experienced Agronomist or Agricultural Economist with requisite experience in environmental and resource management.

##### ii) At the regional level

a) Regional Steering Committee

There will be a Regional Steering Committee (SC) for the project comprising the Permanent Secretaries (Secretaries General) or equivalent level authority of the Ministries of Environment and Natural Resources of the Project countries where such ministries exist or, where they do not exist, the Permanent Secretaries of relevant ministries. The Steering Committee which will be chaired by the OAU/STRC-SAFGRAD, will meet at least once a year in one of the project countries to:

Provide guidance on project implementation;

Approve the Village Level Environmental Action Plan and the Annual Work Programmes and recommended project budgets for the coming year;

Approve annual project monitoring and evaluation reports; and

Provide other support as requested by the Regional Coordinator of the Project and/or the Director of Research of SAFGRAD.

b) Regional coordinator

The Regional Coordinator of the Project will serve as the Secretary to the Steering Committee. He/she will be the only internationally recruited staff at a regional level. Coordination of the project activities in various countries will be carried out by the Regional Coordinator (under the supervision of OAU/STRC-SAFGRAD), according to the agreed schedule of implementation. The Financial Management Unit of SAFGRAD will provide its efficient services in the administration, disbursement and management of the funds of the project.

c) Sponsors of the Project.

First, this project is implemented through participatory approach and it is sponsored by the recipient communities.

Second, as a continental activity for sustainable agricultural development and environmental management, the project would be sponsored by the Organization of African Unity (OAU), which provides the coordination framework and the political umbrella; the United Nations Economic Commission for Africa (UNECA), which provides the technical support; and the African Development, which could possibly anchor donor support.

iii) Regional Coordination.

The Food Grain Research and Development of the OAU/STRC, an autonomous Technical Agency, will be responsible for the regional coordination and implementation of the pilot project activities in selected countries and to enhance networking in the curbing of environmental degradation and the management of sustainable agricultural development in more than 30 countries.

#### 4.2. Project Inputs and Financial Requirements.

It is anticipated that the governments where pilot projects are based would support salaries and associated expenses for technical staff and partially for field technicians. Infrastructures, such as office space, furnitures, field level facilities, etc. would also provided by the governments. Furthermore, the village communities, the beneficiaries from the project will contribute in kind, in cash, and labour, towards the investment on the project (these include livestock, trees, crops, soil-water conservation measures, etc.).

The NGOs (non government agencies), could play a key role through joint efforts with the project in order to maximize available resources and minimize duplication of technical efforts. Some important areas of NGOs collaboration with the project include literacy, health services, water harvesting, marketing, mechanization, agricultural activities, and the organization of joint farmers' seminars and workshops on similar themes.

The budget proposal for the implementation of the pilot project activities in the six countries is summarized in Appendix 2. Project technical support which includes the development of rural infrastructure, field equipments, the realization of the project modules, etc. constitute about 55% of the total budget. The budget allocated for the women special projects development constitute about 19% of the total budget. The coordination and management budget covers costs for village organizational functions and travel for the national steering committee, which govern each pilot project, and to support the grassroots environmental support teams based at the village level, and the travel and related expenses of the national coordinator (except salary). Farmers training would be provided by each pilot project.

Annual workshop involving farmers, development workers, NGOs, researchers, etc. will constitute an important activity of each pilot project. This constitute occasional exchange and visits of farmers between pilot projects. The proposed budget for the six pilot projects during the five years period is about six million, six-hundred and ninety five dollars (Appendix 2).

As depicted in Appendix 4, budget for the training over 300 cadres in the environmental management and sustainable development is proposed. These technicians and experts would be trainers in both technical, organizational and management aspect in the six pilot country projects and in other 30 countries, that would benefit from the regional networking activities.

The budget proposal for regional technical support and networking is given in Appendix 3. The project will recruite only one professional staff, a regional coordinator in charge for monitoring the implementation of the six pilot projects and enhancing networking to improve the management of the environment and agricultural production at sub-regional levels. The coordinator being based within OAU/STRC will share facilities with other organizations. About 12% of the regional coordinator budget is for the project management committee meeting activities; another about 13% of the regional budget includes for travel; the operation cost (20%) includes consultancy services to the pilot project activities.

Donor support is required in the building national capabilities; to support activities at the field level ; to implement the grassroots environmental actions plans; to support the development of trainers ; for the organization of seminars, workshops, etc. at village, district, provincial, national and regional researchers levels; for the management and coordination of project activities. The budget support also includes the evaluation of the project involving beneficiaries, public and private organizations, donors, etc.

#### **4.3. Project Evaluation and Impact Assessment.**

The monitoring and evaluation system will be specifically designed to: provide national, provincial and district staff with up-to-date information on the project to enhance decision making; improve communication among and between agencies and institutions involved with the project and provide a benchmark for periodic evaluations of the project's impact. The system will track village level organizational arrangements and management intervention to ensure that key implementation strategies are being met.

Each national project will prepare semi-annual reports describing progress in the implementation of the project as well as reviewing the physical, organizational, and economic progress of the project and its impact on improving the environment and attaining food security and sufficiency. Although these reports will be primarily for the use of the communities involved to improve upon their VLEAPs on a continuous basis, they will also be available to national governments and donor agencies. In any case, the reports will reach the donor no later than three months after the end of each year.

Data required for the reports will be generated by a monitoring and evaluation system that compares the targets described in the VLEAPs and AEWPs with impact evaluation data. The national Grassroots Environmental Support Teams will generate the data needed for the day-to-day management of project activities, review the previous year's activities, and identify needed changes in the VLEAPs and the AEWPs.

Furthermore, an external technical and socio-economic evaluation of the project would be carried out every two years. Depending on the availability of funds, the composition of the evaluating will include socio-economist, environmentalist, agriculturist, representatives of the villages, donors representatives of the villages, donors representatives etc. It is anticipated that ECA would design the monitoring and evaluation system and the term of reference and also develop indicators for the impact assessment, which could be undertaken every four years. The OAU will provide the administrative and the coordinating services both for the evaluation and impact studies.

#### **V. EXPECTED PROJECT OUTPUT.**

The project goals, purpose and means of verifications of expected output are summarized in the logical framework matrix (Appendix 5). This project, if fully implemented, is expected to produce a positive impact on the environment within the fifth and tenth years of its duration. Its outputs could then be measured both at the national and regional levels.

### 5.1. National Level.

At the national level, the following outputs are expected after the fifth year:

- i) Enhancement of the recycling of natural resources as a result of integrating different farming production and environmental action plan modules in an integrated natural resource management;
- ii) Development of sustainable agricultural production systems to meet the food, shelter, and energy needs of rising village populations, while at the same time building the resource base and improving the quality of the environment;
- iii) Development of land use systems that are technically, economically and socially viable in the short-run and ecologically sound in the long-run; and
- iv) Promotion of the practice of collaborative agricultural development in the village sites involving the three major partners, i.e., the farmers, the rural development workers, and multi-disciplinary research groups.

The success recorded in pilot villages is expected to strengthen the commitment of national governments in member countries to extend the approach nation-wide and to share the results with other countries in the continent.

### 5.2. Regional Level.

At the regional level, an approach would have been tested, which involved the management of natural resources and soil conservation strategies and which combined community participation with government commitment and donor support. This could serve as a model for other countries to emulate continent-wide. The project is, therefore, expected to provide an invaluable basis for African Governments to learn from lessons of successes as well as failures from one another. This will ensure a speedy extension and replication of successful local experiences not only country-wide but also continent-wide.

### 5.3. Benefits and Risks

This project is expected to provide benefits at four levels. First, **it will prepare the conditions for large-scale implementation of national programmes to sustainable management of natural resources at the village level while at the same time attaining national objectives of food security and sufficiency.** It will do this by developing and testing an approach that is action oriented and focuses on technologically simple activities with very significant community involvement and the participation of government agencies, development projects and NGOs in their implementation.

Secondly, the project will develop a functional institutional capacity in the project countries for evolving and implementing environmental conservation plans and work programmes based on the community's own initiatives to solve their resource use and

management problems. The project recognizes that African villagers cannot or do not always provide solutions to their environmental problems. The project will, therefore, fully **exploit the potential of grassroots environmental action for solving environmental conservation problems while at the same time recognizing the importance of externally generated technologies in advancing the search for sustainable development in rural areas.**

Thirdly, the villagers will benefit from a consolidation of development activities in their villages with a focus on the environment which will reduce wasteful and, often, contradictory duplication of efforts.

Fourthly, support provided by the project for developing environmental infrastructures such as water supply points, erosion control facilities, will improve the health of everyone in the village. For example, by spending less time collecting water, villagers will have more time for other productive activities. As their health improves, they will also be able to work more intensely on environmentally sustainable productive activities.

It is appreciated that national environmental rehabilitation and conservation cannot be based on village level environmental projects alone. By their very nature they can only reach a limited number of villages and villagers. **One of the major benefits of this project, therefore, is to evolve and test a new approach and a set of techniques for sustainable management of natural resources, working in close collaboration with the local producers.** In this regard, the contributions made by the project to evolve an overall approach and strategy for the participating countries and, by extension, to all countries in Africa, is most invaluable.

The existence of successful records of participatory initiatives in resource management and rural development in several African countries, is a powerful indication that the approach and strategy of the project is both feasible and viable. There is, however, a risk that the approach, even though viable and effective, will not be able to spread rapidly to cover major parts of each participating country and the African region at large. Apart from problems of finance, technology, knowledge, skills and organization, which the project aims to address, there are other problems of a political nature which are outside the control of the project. For example, the project literally calls for a transfer of power, responsibilities, and resources to local institutions and organizations. This is bound to work against the vested interest of powerful groups including politicians, bureaucrats, commercial enterprises and even international agencies and bilateral donors. The situation will be further confounded in areas with sharp inequalities in wealth and organizational power at the local level. As a result of this, despite its potential for success, progress in extending the approach and strategy throughout each country and across the continent is likely to be slow and halting.

There are, however, a number of developments which provide much optimism for high expectations. These include a growing perception by national governments and rural people themselves of the economic, social, and ecological unsustainability of present patterns of agricultural development, heightened awareness of the disastrous consequences of environmental degradation at the local, national, and international levels, mutuality of interests in promoting environmental integrity among different producers and social groups within and across national boundaries in Africa and a powerful global momentum for democracy and human rights.

Recent democratic reforms in a number of African countries can only improve the enabling environment for overcoming these risks. **Ultimately, it is the evolution of strong, democratic and self-reliant organizations of rural producers and their communities which will guarantee the long-run success of the project.**

Appendix 1. Collaborating Institutions for Implementing Training Programmes.

Region	Collaborating Institutions	Type of Training
i) West Africa Sudano-Sahelian	Pan African Institute for Development (Ouagadougou, Burkina Faso)	a) Village level planning and programming. b) Integrated resource management.
	The University of Ouagadougou and the Institute of Agricultural Research (INERA)	a) Socio-economic studies, b) Integrated rural development, c) Farming systems, d) Training of trainers.
ii) Central Africa and Coastal Zones	Pan African Institute for Development (based in Douala and Buea, Cameroon) and the University Dchang and Institute of Tropical Agriculture.	a) Environmental management b) Project management c) Training of trainers d) Women in development e) Human resources development
iii) Eastern Africa Middle Altitude and Low- Lands	International Livestock Research Institute (ILRI), Addis Ababa University, Institute of Agricultural Research and the Alemaya Agricultural University	a) Integration of crop/livestock production b) Integrated rural development c) Conservation of natural resources d) Agricultural management training e) Socio-economic studies.

<p>a) Sustainable development b) Planning, management and evaluation of project c) Farming systems development d) Environmental study for development</p>	<p>University of Zimbabwe and the Pan African Institute for Development (based in Zambia)</p>	<p>iv) Southern Africa</p>
<p>a) Rural technology and infrastructure b) Sustainable agricultural development c) Natural resource management d) Management of the village ecosystems e) Improvement of technical skills of women.</p>	<p>University of Science and Technology, Kumasi, Ghana; International Institute for Tropical Africa and the Pan African Institute for Development based at Buea, Cameroon.</p>	<p>v) Northern-Guinean and Coastal Africa</p>
<p>To be identified</p>	<p>To be identified</p>	<p>vi) North Africa</p>

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Appendix 2. Budget proposal (in thousand US dollars) for the Pilot Project Activities in the Six Countries.

PROJECT ACTIVITIES	Y E A R S					Total
	1	2	3	4	5	
(i) Project Technical Support	600	600	700	700	650	3250
(ii) Training at National Level	90	90	100	110	80	470
(iii) Women's Special Project Support	200	210	250	360	250	1270
(iv) Workshop and Seminars	120	120	120	120	120	600
(v) National Project Coordination and Management	160	180	180	180	180	680
(vi) Publications.	45	60	60	60	60	285
<b>TOTAL</b>	<b>1260</b>	<b>1215</b>	<b>1410</b>	<b>1470</b>	<b>1340</b>	<b>6695</b>

Appendix 3. Budget proposal (in thousand US dollars) for the Technical Support and Networking in the Management of African Agriculture and the Environment at Village Level (MAAEVL).

PROJECT ACTIVITIES	Y E A R S					
	1	2	3	4	5	Total
(i) Project Coordination	120	100	100	100	100	520
(ii) Training	150	150	140	100	80	620
(iii) Workshops	70	-	70	-	80	220
(iv) Travel	20	20	18	17	19	94
(v) Equipments	65	-	15	-	10	90
(vi) Project Management Committee	18	18	18	18	18	90
(vii) Monitoring and Implementation	16	25	30	25	25	121
(viii) Operation Cost	28	32	30	35	26	151
(ix) Publications	15	18	20	20	20	93
<b>TOTAL</b>	<b>502</b>	<b>363</b>	<b>441</b>	<b>315</b>	<b>378</b>	<b>1999</b>
Admin. Overhead Charge (15%)	75.3	54.5	66.2	47.3	56.7	300
<b>GRAND TOTAL</b>	<b>577.3</b>	<b>417.5</b>	<b>507.2</b>	<b>362.3</b>	<b>434.7</b>	<b>2299</b>

Appendix 4. Budget Estimates for Training of Trainers at Regional Level.

	Areas of Training	Total trainees from pilot countries	Total trainees from other countries	Grand total of trainees	Y E A R					Total US \$
					1 US\$	2 US\$	3 US\$	4 US\$	5 US\$	
1	Village level environmental management for development	18	32	50	102,500					102,500
2	Integrated natural resource management	32	20	52		106,600				106,600
3	Training of women to enhance development and leadership	62	25	87			178,350			178,300
4	Planning, management and coordination of projects	18	10	28			57,400			57,400
5	Crop/livestock/agroforestry production systems	49	35	84				172,200		172,300
	TOTAL	179	122	301	102,500	106,600	325,750	172,200		617,050

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# PARTICIPATORY APPROACH FOR THE MANAGEMENT OF AFRICAN AGRICULTURE AND THE ENVIRONMENT AT THE VILLAGE LEVEL

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