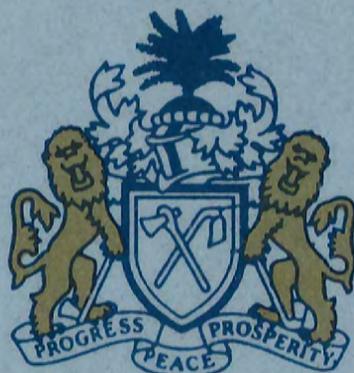


NATIONAL NATURAL RESOURCE POLICY

REPUBLIC OF THE GAMBIA

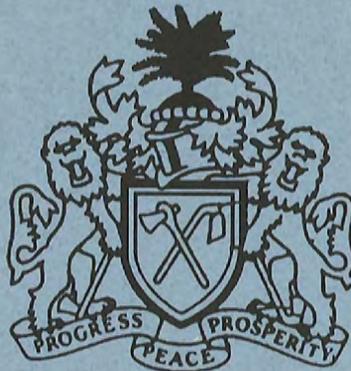
WEST AFRICA



FINAL POLICY DOCUMENT

February 1990

NATIONAL NATURAL RESOURCE POLICY
REPUBLIC OF THE GAMBIA
WEST AFRICA



FINAL POLICY DOCUMENT

Prepared by an Ad-hoc, Multisector Task Force with representatives from Agencies and Departments within The Government of The Gambia (GOTG) whose missions include protection, conservation and development of the natural resource base. Assistance was provided by the U.S. Agency for International Development (USAID), the Soil and Water Management Unit (SWMU), a host of Non-Governmental Organizations (NGO) and several Private Volunteer Organizations (PVO). Policy consultation was provided by Lawrence E. Clark, USDA-Soil Conservation Service.

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PREFACE

Institution strengthening, decentralized decision making, and coordinated assistance and program development are themes threaded through the policy document. Implicitly, they provide the guiding principles upon which much of the document is based. However, ownership of the policy, its mandates for action and ultimately implementation rest with the Government of The Gambia and the many people who could be affected by its provisions. Their success will ensure a sustained natural resource base for future generations.

The legislative authority to implement the policy will come through the Cabinet and His Excellency, The President. Appendix F records the Draft Cabinet Paper on Natural Resource Policy that was transmitted for review and adoption.

This document also traces a policy formulation process and presents findings regarding a number of resource issues. Certainly, this may be the first attempt on the African continent to transform a number of fragmented programs, projects, and activities into a more focused, holistic, programmatic framework for solving natural resource problems. The "Gambian Model" will transform many of its institutions from projects and interventions to policy to program. It also offers a logical process for returning to host governments and resource users more control over their own destiny. The potential for emulating this process through policy dialogue in other countries experiencing declining resource conditions is enormous.

An Ad Hoc Task Force made up largely of The Gambians, Permanent Secretaries from several Ministries and their staffs and the Cabinet Ministers were the major contributors to this document. It, therefore, records their vision and needs for the future.

Acknowledgement must be first expressed to the Ad Hoc Task Force. They guided me as I struggled to understand natural resource decision making and human behavior for a different culture and way of life. I feel that I learned much more than they during the process. The Permanent Secretaries and His Excellency, The Vice President must also be acknowledged for making themselves accessible and for their invaluable feedback.

Special appreciation goes to the USAID Staff-Banjul for their assistance. A special thanks to Don Drga, USAID-Banjul, Agriculture Development Officer for his support, counsel and advice.

Completion of the policy would not have been possible were it not for the relentless efforts of John Fye, Head, SWMU and his staff and Paul DeArman, SWMU Technical Advisor. Their tireless eyes reviewed and improved many rough drafts of this manuscript.

Expressions of gratitude would not be complete without thanking Rebecca Fletcher, Cara Beleer, Charlotte Mervar, Geraldine Osborn, Scott Henney and last but not least Robert Mast, all from USDA-Soil Conservation Service, Indianapolis, Indiana for their computer work and putting this document together. Thanks also to Robert Eddleman and Jerry Hammond for allowing me the opportunity to tackle such an important task. I also wish to acknowledge

USDA's Office of International Conservation and Development, specially Ron Jones, and the International Conservation Division Staff of the Soil Conservation Service for their assistance and support. And finally, thanks to those who helped me keep focused with letters and words of encouragement when the days seemed unproductive. I especially thank my family for their support and tolerance during my extended absences.

Lawrence E. Clark
United States Department of Agriculture
Soil Conservation Service
Indianapolis, Indiana

February, 1990

EXECUTIVE SUMMARY

The Natural Resources of The Gambia provides the base upon which prosperity and sustainable economic growth depends. Through evolutionary processes, The Gambia was endowed with a natural resource base that includes air, soil, water, flora and fauna. The longevity and sustainability of the country's growth and development depends largely on how its natural resource endowment is managed. If it is mismanaged and exploited for short-term gains, the inseparable economic survival as well as the livelihood of the people cannot last.

History has shown the rise and fall of many great empires. The demise of many can be linked directly to the manner in which their resources were managed. Huge demands are placed on natural systems when drought, such as that which has been occurring in The Gambia, is coupled with rapid population growth. However, if either trend continues, resource management will become an absolute necessity to ensure the survival of the people of The Gambia.

Population growth is perhaps the single most significant factor contributing to environmental degradation in The Gambia. The country's growth rate is approaching 3.4 percent, certainly one of the highest in Africa. At such a rate, the population will double in just twenty five years leading to what is considered national suicide. The rate of population growth is a major concern that will directly affect the long-term sustainability of the natural resource base. However, it is not appropriate to address the issue within the framework of a natural resource policy. The issue should be addressed within the context of The Gambia's cultural and religious norms and established social policy. Therefore, population growth was considered beyond the scope of this natural resource, multisector policy and will not be addressed in this document. Nor will it be addressed in the Cabinet Paper (Appendix F) which is the policy authorizing document.

Policy Objectives

The overall objective of the Natural Resource Policy is to bring about the long-term sustainability of the natural resource base of The Gambia. The Ad-hoc Task Force which framed this policy was very concerned with its implementability in a setting where several plans and blueprints for environmental action lay idle. Consequently, considerable attention was given to the question of institutional capacity of organizations to implement the policy.

The Ad-hoc Task Force recognized that organizational structure problems have hampered the ability of some units to carry out their responsibilities. However, the Task Force felt the expression of a clear mission as well as increased government support, i.e. funding and staffing, are larger, more important issues than organizational structure at the present time. Considerable discussion of the appropriate placement of the Environmental Unit in the government did occur at several meetings. It was concluded that an evaluation of the location of the Environmental Unit as well as other

governmental organizations could more accurately be evaluated through some other process and should be initiated at the Ministerial level.

The specific policy objectives are:

- (1) To institutionalize national and local governmental organizations working in the natural resource management arena.
- (2) To integrate natural resource sustainability concerns into agricultural development programs.
- (3) To improve the ability of national and local organizations to manage natural resources.
- (4) To establish priorities for addressing natural resource problems and establishing criteria for interventions.
- (5) To serve as a springboard from which specific environmental action plans for other sectors can be launched.

Long-term Goal and Priority Problems

The long-term goal of the Natural Resource Policy is to ensure increased land productivity by addressing the highest priority problems.

The high priority problems follow:

- (1) Loss of wildlife due to the expanding population's encroachment onto natural habitats and harvesting at excessive rates.
- (2) Loss of vegetation due to reduced rainfall.
- (3) Salt water intrusion and acid sulfate soil formation due to reduced flows in the River Gambia.
- (4) Loss of forest cover due to cutting for firewood at excessive rates and uncontrolled burning.
- (5) Loss of grass cover due to over-grazing and burning.
- (6) Loss of soil fertility and increased soil erosion due to lack of proper conservation and poor farming practices.
- (7) Periodic shortages of staple food due to low agricultural productivity.

The policy mandates that agencies and organizations working in the natural resource sector commit a significant portion of their resources towards addressing the seven high priority problems. Addressing these problems first will ensure the highest level of resource sustainability for future generations of Gambians.

Existing Laws, Policies and Programs

The Gambia has enacted many laws designed to achieve narrowly focused natural resource sustainability goals, yet the environment continues to deteriorate. Non-governmental organizations and donors have expended large sums of money for developmental projects and programs; however, noticeable changes in the quality of life can not be documented. Many of the policies, projects and programs have not been implemented or sustained because of the lack of funding and staff; unfocused priorities leading to watered down efforts; non-existent local institutional incentives and a lack of local involvement.

Ad-hoc Task Force Mission

This Natural Resource Policy was developed by an Ad-hoc Task Force representing multisector natural resource interest and expertise. The general charge assigned to the Task Force was to develop a systematic approach for bridging the gulf that exists between legislative intent, policy formulation and proposed plans designed to bring about long-term natural resource sustainability. The policy goes a step further than simply outlining objectives, setting priorities and goals for the natural resource sector. It also includes the key elements of an action plan needed to ensure implementation of a "natural resource program" in The Gambia.

The major thrust of the initiatives developed by the Task Force calls for decentralized implementation of a natural resource program through village based involvement at the watershed level. The approach will challenge traditional schemes of project type development currently being applied by natural resource managers.

Institutional Capacity

Implementation of the Natural Resource Policy and it's long term success depends upon development of and/or strengthening several governmental institutions. When institutions do not have the capacity to respond effectively and efficiently to priority problems, it follows that they will not be able to carry out their legislative mandates and goals.

All institutions in the natural resource sector were evaluated to determine their capacity to implement the Natural Resource Policy. Based on findings of the Task Force, in several instances either legislative or administrative actions designed to enhance the capacity of institutions is needed. These actions are considered essential to ensure implementation of the policy.

These actions are presented in the form of recommendations that should be carried out by appropriate authorities in the government of The Gambia (GOTG). To ensure their complete and effective implementation, recommendations require Ministerial support, multisector cooperation and coordination. This means that new institutional arrangements such as memorandums of understanding and reciprocal agreements must be developed to identify specific roles and responsibilities among a host of government and non-governmental organizations that must work closer together.

Ad-hoc Task Force Recommendations

1. That a Cabinet level group such as the National Environmental Council, which is currently supported by the National Environmental Committee (comprised of a technical working group to be titled "Natural Resource Sub-committee", formerly the Natural Resource Policy Ad-hoc Task Force), be charged with the following responsibilities:
 - (a) Reviewing natural resource management interventions, including private volunteer organization (PVO) and donor activities and ensuring consistency with national priorities and goals established in this document to achieve natural resource sustainability. Detailing standards and specifications for each intervention in a technical intervention manual (TIM).
 - (b) Conducting a comprehensive natural resource assessment (inventory) to be completed at five year intervals.
 - (c) Identifying emerging issues resulting from changes in resource conditions and outlining recommendations and ensuring that issues are addressed.
 - (d) Promoting the development and implementation of a multisector, comprehensive environmental education program.

It is intended that the activities of the Sub-committee (formerly the Natural Resource Policy Ad-hoc Task Force) be conducted within its current working arrangements and that Ministerial support be continued. Membership on the Sub-committee should be extended to NGOs and PVOs conducting natural resource intervention activities in The Gambia.

Budgetary Impact: This recommendation can be carried out without requiring additional budgetary resources from the GOTG. Donor support and technical assistance should be requested to carry out the base line natural resource inventory (See 1.b above) on a one time basis. Future inventories should be funded and conducted by the GOTG under the jurisdiction of the National Environmental Council. Funding support needed to development an environmental education program (See 1.d above) should also be requested from donor agencies.

The Ad-hoc Task Force recommends completion under the leadership of the Minister of Natural Resources and the Environment.

2. The mandate of the Department of Agricultural Services should be expanded to establish and legitimize a soil and water conservation program to promote efficient use and conservation of the resource base to ensure its long-term sustainability. The mandate should assign implementation of the program to the Soil and Water Management Unit (SWMU) within the Ministry of Agriculture. The mandate should outline a mission statement that would:
 - (a) Give the SWMU specific responsibilities for conducting an accelerated national soil survey program.
 - (b) Authorize SWMU to provide technical assistance which addresses soil and water problems within small watersheds.

A long-term objective should be to expand the functions and activities of the Unit throughout the country and to elevate it to the departmental level in the Ministry of Agriculture.

Budgetary Impact: Expanding the mandate of the Department of Agricultural Services will not increase the budgetary expenditures of the GOTG. Should the long-term objective of this recommendation be carried out such that SWMU has presence in all divisions, significant resources may be required. Currently, data needed to determine the cost of this objective are not known. The proposal to open an SWMU office at Basse should provide adequate data for estimating these costs

Donor funding and support should be considered to offset normal operating costs incurred to expand SWMU activities. No additional personnel costs are anticipated to staff SWMU area offices.

The Ad-hoc Task Force recommends completion under the leadership of the Minister of Agriculture

3. The National Environmental Management Act (NEMA) should be amended to clarify the mission of the Environmental Unit. The Unit's capacity to coordinate natural resource sustainability concerns for all sectors should be enhanced and strengthened through the amendment of NEMA.

The position of environmental education officer should be re-established in the Environmental Unit followed by the designation of environmental education liaisons within each department. These positions will form the core of the National Environmental Education Committee proposed in this policy. See Appendix B. The committee will be responsible for developing and implementing a national environmental education program.

Budgetary Impact: It is anticipated that implementing this recommendation will add one additional position (environmental education officer) to the GOTG. The environmental education liaison persons to be named according to the policy are currently on existing staffs of departments in the natural resource sector.

The Ad-hoc Task Force recommends completion under the leadership of the Minister of Natural Resources and the Environment.

4. The National Environmental Management Act (NEMA) be amended to create local natural resource conservation districts. Local districts should be made up of land users at the village level within defined watersheds. The districts will be headed by a board or committee which should be granted powers to set priorities for planning for the conservation of the natural resources of their district. They should also be charged with promoting consistency of local programs with national priorities and goals designed to ensure sustainability of the resources base. See Appendix C.

Budgetary Impact: Implementing this recommendation will not contribute additional expenditures to the budget of the GOTG. It is anticipated that a small amount of additional administrative support cost at the divisional level will be required.

The Ad-hoc Task Force recommends completion under the leadership of the Minister of Local Governments and Lands, the Minister Agriculture and Ministry of Natural Resources and the Environment.

Problem Interventions

Interventions are the menu of implementable actions that may be taken to solve selective natural resource problems at the watershed level. They may require multisector coordination and input and should be carried out through the "integrated watershed management" concept (see complete discussion of concept below)

All interventions were selected as solutions to problems as they individually or collectively will yield positive impacts on either sustainability of productivity income or the quality of life.

Since interventions require local acceptance and a long-term commitment, criteria for their adoption was established by the Task Force. Criteria was designed to ensure implementation of the interventions which will yield the highest probability of success. The criteria also provides a logical basis for screening interventions to be certain that they produce positive impacts on high priority problems.

Based on studies of successful interventions in West Africa, the following intervention criteria was developed:

- (1) The intervention can be incorporated into existing (farming) schemes and methods.
- (2) An education and training strategy is incorporated into the intervention.
- (3) The technology derived from the intervention is transferable.

- (4) Large capital outlays not are required to implement the intervention.
- (5) The intervention considers constraints imposed by the and tenure system.
- (6) The impacts of implementing the intervention can be easured or observed.
- (7) Implementation of the intervention provides pportunities for local participation, self-help and ownership.
- (8) The intervention is within the capabilities of recipients to operate and maintain.

In most cases, a good understanding of why an intervention succeeded or failed is essential. It is also recognized that interventions that work at one location may not be indiscriminately transferred to another due to differences in perceptions, lack of consistency, long-term traditions and methods, costs and suspected risk.

Appendix E is a problem-intervention matrix. The matrix lists some of the most successful interventions currently in use. A technical intervention manual (TIM) is proposed for development to provide detail information for resource planners.

Integrated Watershed Management Concept

The Natural Resources Policy mandates that problems be addressed through an "Integrated Watershed Management" (IWM) concept for resource planning, decision-making and implementacion at the local level. IWM requires that interventions be screened for consistency with national policy and proposed as alternatives only after a comprehensive inventory of all the problems and needs of the watershed have been evaluated.

The key to Integrated Watershed Management (See model in Appendix D) is reaching the beneficiary through "one window", the local natural resource conservation district. The selection and implementation of plans at the local level may also require considerable involvement and support from several departments and units in GOTG, private volunteer organizations, donor agencies, nongovernmental agencies and the public. There is no single agency or organization within The Gambia that has the expertise to solve all resource problems; therefore, the policy carries with it an overriding mandate requiring that problems be addressed by multisector teams working closely at the watershed level.

Since many of the watersheds in The Gambia originate in Senegal, international agreements and cooperation is needed to resolve problems that do not stop or start at National borders. International organizations such as the United Nations should be consulted for assistance.

PART 1.0

INTRODUCTION AND BACKGROUND

During discussions of an extension of the USAID-PASA which supports the Soil and Water Management Unit (SWMU), officials recognized the unit has achieved outstanding accomplishments over the past few years and has gained the full support of local beneficiaries at the village level where natural resource conservation interventions have been installed. Due to the success of SWMU in The Gambia, the Office of International Conservation and Development (OICD), United States Department of Agriculture (USDA) indicates that the Soil and Water Management Project is a model that should be emulated in other developing countries.

Too, it was recognized that if the SWMU was to reach its potential as a nationally viable organization, it had to become institutionalized in GOTG. If SWMU is to continue as well as expand its program of natural resource conservation through self help and local participation, it was recognized that management capabilities of land users should be improved. Local institutions and organizations also must be informed and educated about natural resource issues, organized and/or strengthened.

The formulation of a national soil and water conservation policy was concluded to be the most effective vehicle through which institutionalization of a natural resource program into the GOTG could occur. Implementation of a policy, it was thought, would lead to the long-term sustainability of the natural resource base, thereby, ensuring the survival of future generations of Gambians.

First, to facilitate the formulation of a policy the assistance of a national soil conservation policy specialist was requested from the USDA-Soil Conservation Service (SCS). The specialist's mission was to provide technical assistance as a policy consultant to the SWMU. The original scope of work requested assistance with the development of a national soil and water conservation policy for The Gambia.

The policy specialist arrived in early October, 1989 after spending several weeks researching environmental legislation and other resource materials relative to The Gambia and West Africa.

During the first few weeks of October, meetings were held between the policy specialist and Permanent Secretaries in GOTG to discuss natural resource policy issues. Meetings were also held with officials of non-governmental organizations (NGOs) and private volunteer organizations (PVOs) to discuss the formulation of a national soil and water conservation policy and to explore the possibility of establishing a task force to help develop such. Overwhelmingly, the Permanent Secretaries supported the idea and offered the full support and cooperation of their department heads.

Meetings were subsequently held with department heads to discuss their concerns and to solicit their participation on the Ad-hoc Task Force.

Appendix A is a listing of organizations that participated on the Task Force.

Most of the department heads recognized the solicitation as an opportunity to participate in the policy formulation process. They also recognized this as an opportunity to establish a forum through which ideas, concerns, policies, information and technological developments could be shared. The concern was expressed by several Permanent Secretaries that since such strong linkages exist between soil and water problems and other problems occurring in the natural resource sector the efforts should be consolidated and expanded for the purpose of developing a National Natural Resource Policy for The Gambia. This sentiment was also unanimously expressed by the Ad Hoc Task Force representatives. Thus, the policy objective and policy specialist's mission was expanded and revised in response to these concerns.

Beyond preparation of a draft policy document, multisector input and reviews of the document were ascertained for consistency with ongoing programs and activities. A final document was presented to an inter-Ministerial Committee for their concurrence in February 1990. It was intended that final adoption and implementation would occur through the legislative process. This occurs through the Parliament and the Office of the President.

The overall objective of the Natural Resource Policy established by the Ad-hoc Task Force is to bring about the long-term sustainability of the natural resource base of The Gambia.

The policy framers were very concerned about implementability since several plans and blueprints for environmental action lay idle. Consequently, considerable attention would be given to institutional capacity building including constraints to policy implementation.

The development process did not address the issue of organizational structure of departments and units in the government. However, the Ad-hoc Task Force viewed the expression of a clear mission and government support for organizations, i.e. funding and staffing, to be larger issues than organizational structure. Discussion of the location of the Environmental Unit in the government surfaced at several meetings. It was concluded that an evaluation of the location of the Environmental Unit as well as other governmental organizations would more appropriately be addressed through another process or activity.

The Ad-hoc Task Force's first action was to outline specific policy objectives:

- (1) To institutionalize the governmental organization working in the natural resource management arena.
- (2) To integrate natural resource sustainability concerns into agriculture development programs.

- (3) To increase the capacity of all entities to manage natural resources
- (4) To establish priorities for natural resource problems and interventions.
- (5) To serve as a springboard from which special environmental action plans for other sector can be launched.

At the outset, it was recognized that successful implementation of the policy could only occur through multisector-sector cooperation and support. The Task Force concluded that successful implementation of the policy would lead to long-term conservation of The Gambia's natural resources for the health, welfare, and economy of present and future generations.

PART 2.0

THE GAMBIA'S NATURAL RESOURCE SETTING

Located in a tropical setting between 13 degrees and 14 degrees N. Latitude, The Gambia's natural resource endowments include beautiful, clean beaches; year round warm temperatures; nearly level to gently sloping topography; declining hectares of valuable forest lands; and a large water area in the River Gambia. Along its coast, a tremendous potential exists for expansion of the fishing industry and increased tourism.

The Gambia is completely surrounded by Senegal except for the Western side bordering the Atlantic Ocean. The border serves political and administrative functions only as people move freely across it to farm and graze their livestock. Although it is the smallest nation in Africa, it's population has now reached about 800,000.

The Gambia stands at cross roads trying to cope with the notion of "constraint" in order to achieve natural resource sustainability. The decision will be difficult as few nations have been able to forego present consumption in order to preserve future demand. The country's consumption is approaching the point of exceeding the carrying capacity of its natural resource base. If it does not act to achieve sustainability of its natural resources and reliance in food production soon, the bank upon which its economic development depends will be depleted. At this point, the resource base will be unable to provide food, clothing, and shelter for a rapidly growing population. Resource managers, politicians, professional, students, laborers and farmers all clearly realize that population pressure will place even greater demands on a scarce, declining natural resource base in the future.

2.1 The River Gambia

One of The Gambia's most valuable natural resources is the River Gambia. It dissects this long narrow Republic from the Atlantic Ocean on the west to the Gambia-Senegal border to the east, a distance of over 470km. Over much of its distance it offers the capacity to handle ships, barges and other river traffic without the need to install expensive locks and dams for passage.

2.2 Rainfall and Temperature

The southern edge of the Sahel region includes The Gambia. Declining annual rainfall during the 1970s and 1980s is thought to be a contributing factor to the drought conditions now sweeping south across the sub-Sahel region. The most significant environmental change resulting from the drought is greatly reduced soil moisture levels. This condition is occurring throughout the region and it is considered to be one of the leading causes of desertification.

Annually, The Gambia experiences significant variations in its rainfall. Current rainfall patterns create short duration flood-drought cycles on a

localized basis. The months of May through October comprise the rainy season. During this period rainfall averages about 1200mm along the coast to about 800mm at Sapu. Temperatures are moderate. During the rainy season 27 degrees Centigrade is the norm. During the dry season temperatures average 30 degrees Centigrade.

The quality of air is thought to be good since there are virtually no polluting industries and low concentrations of automobiles. A major influence on condition of the air resource in The Gambia is the drying winds that come from the desert (the "Harmattan") to the north. These winds cause rapid soil moisture depletion and spread air polluting dust. Wind blown soil particles appears to be the only form of air pollution occurring in the country at the present time.

2.3 Employment

Most of the country's employment is in the agricultural sector (70 percent). Much of this employment occurs on farms where most workers are engage in the production of crops for cash income or domestic consumption and livestock management. It should be noted that about 50 percent of the employment in this sector is made up by women. Women produce most of the food grown for household consumption. Industry provides about 9 percent of the employment. The remaining 11 percent is comprised of employment in the government and the service sectors.

2.4 Population

Population growth has most recently been averaging between 3 and 3.4 percent. At a 3.4 percent growth rate, a population will double itself in less than 25 years. A 1973 Census reported a population of 493,000. By 1980, in less than 10 years, The Gambia's population was at more than 600,000. The population in 1988 had nearly reached 800,000. Assuming a continuation of current growth rates, the population will reach 1 million people around the year 2000.

<u>Year</u>	<u>Population Projection</u>
1988	787,412
1989 (Current estimate)	809,203
1990	836,716
1995	953,857
2000	1,095,771

Source: Central Statistics Department.

However, two population dynamics make the demographic data even more alarming. First, current estimates show that more than 50 percent of the population is less than 15 years old. As these individuals reach the child bearing age over the next five to ten years, a sharp increase in the population should be expected. This population growth surge will place increased demands on the natural resource base.

Pressure is also currently being placed on urban services because of the immigration of young men leaving rural villages in search of greater employment opportunities. The situation is diminishing the rural labor pool as well as reducing the family's ability to produce crops for cash income.

2.5 Land Use

Clearly, the population increases projected above will place additional stress on the natural resource base. The typical response is to expand agricultural production on to marginal land by removing forest and range vegetation. Cultivation, in this case, is only a short-term solution as marginal soils soon lose fertility because of leaching of nutrients, loss of organic matter and erosion.

Land use and cropping intensity in The Gambia often reflects the suitability of a soil for crop production. Cropping is most intensive on the colluvial slopes near the villages and decreases as the distance from the village increases. Typical crops grown are groundnuts, millet, maize, sorghum, and vegetables. Rice and dry season grazing of cattle occurs on the alluvial soils where salinity is not a problem.

Data on land uses in the The Gambia are summarized below:

1983
GENERALIZED LAND USE, BY DIVISION
THE GAMBIA

(IN 1,000 HA)
DIVISION

<u>Type</u>	<u>Western</u>	<u>Lower River</u>	<u>North Bank</u>	<u>Macarthy Island</u>	<u>Upper River</u>	<u>River Gambia</u>	<u>Total</u>
Cropland:							
Upland crops	60.6	27.0	68.0	70.7	47.8	-	274.1
Wooded upland crops	12.3	2.6	2.6	.5	-	-	18.0
Cultivated swamps	1.8	7.9	9.4	12.2	2.2	-	33.5
Fallow	<u>11.3</u>	<u>12.5</u>	<u>27.4</u>	<u>28.1</u>	<u>22.8</u>	-	<u>102.1</u>
Subtotal	<u>86.0</u>	<u>50.0</u>	<u>107.4</u>	<u>111.5</u>	<u>72.8</u>		<u>427.7</u>
Woodland ^{1/}	68.2	33.5	35.5	17.2	3.2	-	157.6
Tree & Savanna	15.0	52.3	38.8	136.6	105.0	-	347.7
Barren Flats ^{2/}	6.0	5.8	6.4	1.8	1.8	-	21.8
Water	4.9	1.8	5.1	8.2	1.8	52.7	74.5
Swamps uncultivated	1.2	11.2	15.8	29.8	12.7	-	70.4
Town/Villages	<u>7.2</u>	<u>1.2</u>	<u>2.4</u>	<u>2.3</u>	<u>1.6</u>	<u>-</u>	<u>14.7</u>
Total	<u>188.5</u>	<u>155.8</u>	<u>211.4</u>	<u>307.4</u>	<u>198.9</u>	<u>52.7</u>	<u>1114.7</u>

- ^{1/} Includes Mangrove, Gallery Forest, closed woodland, open woodland.
^{2/} Saline soil near water courses without vegetation cover.

SOURCE: FOSTER, H. 1983 EVALUATION OF THE NATIONAL FOREST INVENTORY OF THE GAMBIA.

2.6 Land Tenure System

Successful implementation of any local program in The Gambia requires an understanding of a complex land tenure system. Access is granted through a kin group or through application to local or higher authority. First cultivation rights gives a farmer long term control over land even though he/she never actually own it. This system forces new farmers to go out further from the village center to secure land for cultivation. The system ensures the inalienable long term right to cultivate. The condition of the resource or its capacity to produce food and fiber is never considered. Thus, marginal soils continue to be converted to cropland, gardens and to other uses to support increasing demands for food and income.

Occupation and use of land is governed by customary laws. With inconsequential effects, the Lands (Provinces) Act considers land as follows

- (1) Unused land outside village boundaries - the district owns such land and permission to clear the land is needed from the chief
- (2) Unused land within the village boundary - the village owns such land and the right to use it is given by the village head.
- (3) Ownership can be established by the act of clearing land and bringing it under cultivation.

In summary, an institutionalized, irreversible tenure system has encouraged clearing of marginal uplands; thereby, contributing to the degradation of the soil resource base. This is a complex issue that needs further study and recommendations.

PART 3.0

ENVIRONMENTAL DEGRADATION INDICATORS AND NATURAL RESOURCE PROBLEMS

Environmental degradation indicators and their trends in The Gambia have been well documented in the literature. However, an up-to-date, comprehensive survey or inventory of resource conditions and problems in The Gambia has not been conducted. Generally, independently conducted studies of resource conditions all agree that significant resource degradation has occurred and is largely still occurring. This is in spite of the passage of numerous laws and the development of regulations designed to raise environmental consciousness and to incorporate natural resources management concerns into decision making. There is little disagreement among resource managers as to the causes of degradation and its environmental effects.

For too long, drought alone has been thought solely responsible for West Africa's environmental degradation. There is growing evidence and recognition that human errors have played a major role in the degradation of the environment now being experienced. The current situation is a reflection of the sum of several fundamental acts of man. The situation characterized the attempt to cope and survive without being aware of or not caring about the effects individually made decisions will have collectively on fragile ecosystem. This recognition is, however, beginning to lead to very different policies and programs than in the past.

In many respects, the situation is analogous to what Garrett Hardin calls "The Tragedy of the Commons" (Hardin, 1968). Schilling (1978) provides an extensive description of this behavioral model. The model is used to illustrate the harm to others, individually made self-servicing, value-maximizing decisions can produce. It demonstrates how the individual's decision hurts others more than it helps the decision maker while all could be better off if a different choice was made.

3.1 Desertification

Declining annual rainfall is one of the major causes of desertification in The Gambia. Clement (1988) found annual rainfall averages, between 1970 and 1988, to be about 30 percent less than the period of 1930 to 1970. Associated with declining rainfall are reductions in soil moisture and lower groundwater levels. These conditions bring additional stress on forests, rangelands and crops. Under these conditions, cropland yields can only be maintained if supplemental irrigation is used.

Wildlife must also travel greater distances to find food, cover and water.

Well levels fall which increases the workload of women since they are responsible for drawing and hauling water used to irrigate gardens and for domestic uses.

Within the Gambian River system saltwater is moving further up river consuming valuable mangrove swamps and productive rice fields. Rice production must then retreat uphill to less productive areas or up river.

A USAID funded study ("Opportunities for Sustained Development") warns that the Saharian desert is moving southward. It further cautions that old rainfall norms should not be assumed into the future and used as the basis for estimating runoff, designing irrigation systems or for recommending crop mixtures, rotations and grazing schemes.

Farmers have tried to respond to declining rainfall by keeping production on fields having higher moisture levels and fallowing less often in hopes of replenishing needed organic matter and improving soil fertility.

During periods of reduced moisture, brush fires occur more frequently and are harder to control due to the increased availability of fuel.

Desertification in the region has also significantly induced increased migration of farm labor to urban centers. These population shifts disrupt social norms indigenous to rural life and places greater demands on currently inadequate social services, housing and schools.

An "Indicative Plan For Desertification Control" has been developed by the Ministry of Water Resource, Forestry, Fisheries, and Wildlife to address the problem. The plan is being forwarded by an inter-Ministerial committee for legislative action.

3.2 Deforestation

Deforestation is a natural resource problem that needs urgent attention. It is caused by clearing forest for new fields, felling trees for firewood, brush fires, and drought. Uncontrolled grazing contributes to the problem as animals are allowed to randomly eat new shoots of emerging tree seedlings.

Foster (1983) investigated land use changes in The Gambia between 1969 and 1983. His study did not reveal a decrease in forest areas. Clements, on the other hand, estimated a reduction from 58 percent closed woodland in 1946 to 0.8 percent in 1980 in the North Bank Division. Clements also reported a drop from 61 percent to 9 percent country wide in closed woodland. Over the same period, other estimates cite as high as 80 percent of the land area in the McCarthy Island and Upper River Divisions is burned annually to remove residue remaining from the previous growing season. It also allows better seed germination and new plant growth for grazing and makes planting easier. The process of natural regeneration is stopped, especially of those more desirable species. When the residue from burned terrestrial vegetation enters water ways, the Department of Fisheries reports that it clogs the gills of fish, killing them by suffocation.

The GOTG addressed one aspect of the deforestation problem by making it illegal to indiscriminately fell live trees for firewood. It is believed that there is little enforcement at the local level plus wood harvesters avoid the law by cutting around the tree so that it dies. Once the tree is dead, it is legal to take the firewood. There are no laws that make it illegal to kill a tree. If such a law was enacted, again, enforcement at the local level would be very difficult.

As previously mentioned, uncontrolled grazing of forest land due to the lack of forage impedes natural regeneration and growth.

Following are the populations of animals that graze The Gambia's crop, range and forest land areas annually:

Cattle	315,000
Sheep	163,330
Goats	190,000
Horses	17,575
Donkeys	40,870
Oxen	30,460
Poultry	500,000

Current policy makes livestock owners responsible for the maintenance and management of the rangeland and livestock watering points. Little is known of the impacts of the policy.

Deforestation displaces wildlife. Most animals move to new habitats that provide food, cover and water. Their populations will ultimately diminish unless the supply of food and water is maintained.

Watershed hydrology is also affected by deforestation through accelerated runoff. Increases in runoff causes flooding and increased soil erosion. Floodwaters carrying sediment reduce flow capacity in belongs and reduces water quality. Reduced water quality adversely affects fishery resources.

3.3 Soil Degradation

"Though not generally thought of in such terms, soil is indeed essential to the support of human life, not only in relation to our food supply but also for the production of fibre and shelter. While the demand for land increases rapidly as a result of population growth, technological progress and industrial development, soil resources remain fixed. The maintenance of their productivity is therefore of paramount importance" (Rauschokolb, 1971).

Soil degradation is occurring in two forms: increased soil erosion and reduced soil fertility. Both problems pose major threats to The Gambia's ability to increase agricultural output and secure reliance in the production of food.

Soil erosion, whether it is caused by water or wind, is a complex process of detachment of soil particles and their transport. Water induced erosion is divided into four types: splash, sheet, rill, and gully, with streambank sometimes included as a fifth. The rate of water erosion is determined by the erosiveness of the rain, the soil's inherent susceptibility to erosion, steepness of slope and its length and shape, the kind of ground cover present and the presence or absence of soil management practices. Manipulation of any one of the factors changes the erosion rate.

Wind erosion, although its significance is less than that which is caused by water, does occur in The Gambia. The Gambia is often the recipient of wind blown dust (soil particles) that come from beyond its borders. Wind erosion is affected most by the soil cloudiness, surface roughness, wind speed, soil moisture, field size and vegetative cover.

Rates of erosion vary considerably from one division to another. It has been estimated that continuously cropped fields with slopes of only 2 percent have soil losses greater than 12.5 tons/hectare/year. In addition to causing physical changes on cropland fields, erosion leads to down slope siltation which can hamper the effectiveness of irrigation works and water shortage and use facilities. Soil productivity is lost when infertile sediment is deposited on existing cropland.

Soil fertility is less visible and less dramatic than soil erosion. It can be evaluated through the processes of leaching of nutrients, loss of cation exchange, acidification, salinization and infestations of noxious weeds.

The principle causes of both soil problems relate directly to the clearing marginal soils for cultivation, shortened fallow periods, uncontrolled burning, over grazing, loss of forest cover and inadequate investments in soil conservation systems.

Some forms of off-site environmental degradation are also indirectly affected by soil erosion. For example, both the quantity and quality of water is affected by sediment (the product of erosion) that has traveled great distances from fields where it started. The most notable off-site soil erosion induced problems are: high sediment loads and siltation after storms, decline in fish populations and lower sub-surface water tables related to impaired groundwater recharge.

3.4 Surface and Ground Water Quantity and Quality

When raindrops fall to the ground, they have value to man as a natural resource and occurs in two mediums: as surface runoff which can be stored or diverted for many beneficial uses or as groundwater which can also be managed for multiple uses.

The primary surface water resources are the River Gambia and its many belongs. Although the river has prominent value as a natural resource, its uses are currently limited by its poor quality, salinity and water borne bacteria.

The major problem caused by surface water runoff erosion and flooding. Total estimates of floodwater damages are not known at this time. In order to address the problem at the micro-watershed level, diversions have been installed by villages to ameliorate the damages. As discussed earlier, the removal of vegetative cover leads to changes in the hydrology of watersheds by increasing runoff and reducing infiltration ultimately causing erosion and flooding to increase. Since the river's gradient is nearly flat throughout much of the country, its flow velocity and much of its energy is dissipated. This condition makes the river highly susceptible to sediment deposits

Groundwater is a significant water resource in The Gambia. Assessments of its quantity and quality are not available. However Humphrey et al (1974) conducted a comprehensive survey of the River Gambia which provides some useful points of reference. A major finding by Humphrey is that groundwater levels are not closely related to river levels. Thus, groundwater makes only a limited contribution to base flows in the river. Groundwater levels were also found to be highly correlated with the rainy season and the dry season. This infers that rainfall makes a significant contribution to recharge and subsequently to groundwater quantity.

In the shallow aquifer, high salinity concentrations in western Gambia are a problem. Measured concentrations are as high as 2000 ppm. While the effects of pumping for beneficial uses are not known, the data indicates that significant withdrawals would lower water levels for many rural people who depend on this source for both domestic uses and for livestock.

The deeper cretaceous (Maestrichtian) aquifer is artesian and constitutes a major groundwater reserve. However, Humphrey concludes "it has only marginal value as a water source for irrigation west of Georgetown." Little is known about its recharge sources and rates.

A major concern in the development of water resources is the provision of wholesome water for multiple uses. The Department of Water Resources reports that the country's water sources are prone to various levels of physical chemical and bacterial contamination. The major sources being from sewage and other wastes and chemicals from light industries. Due to the nature of many of the soils, improper use of chemicals and fertilizers could become a source of significant pollution.

3.5 Loss of Biological Diversity

According to Arnold, et. al, (1988), biodiversity is another word for germplasm. Germplasm consists of the packages of genetic material that makes up all species of both plant and animal life. It includes maintenance of enough of a specie in its population to ensure its long term existence. Maintenance also includes continuance of the communities of species it supports and those which supports it.

In The Gambia, these communities of species are found in three distinct biotic zones. The mangrove swamp, Guino Congolian lowland rain forest secondary grass mosaic, and undifferentiated Sudanian woodland. Each of these zones

contains a unique food web and vegetation that is different from other zones. Finer distinctions may occur in each zone which forms unique complexes of self-supporting germplasm. The primary focus of biodiversity initiatives in West Africa has been on habitat types, species and crop varieties.

Exploitation of the country's natural resources is threatening biological and genetic diversity. One contributing factor has been the inability to successfully inform and educate the public of the importance of maintaining species and their habitats. In many instances, the needs of man have not been considered as they should in land use and management decisions. However, the root causes of diversity losses are: overgrazing, fires, excessive harvest of firewood, and land clearing to expand cropland.

No known evaluations of diversity losses are available. However, as an example, consider the findings of a 1980 study by the University of Arizona:

- (1) Large mammals that once roamed The Gambia are almost gone.
- (2) 1913 was the last recorded sighting of an elephant in the country, once The Gambia's national symbol.
- (3) The status of 67 species of mammals known to exist in The Gambia are as follows: (i) 13 of 67 species of mammals are extinct, (ii) 13 of 67 are threatened and (iii) the status of two of 67 are unknown.

Diversity is also being threatened by the introduction of commercial agriculture. The fear stems from the concern that mangrove swamps will be cleared leaving banks unstable and prone to erosion.

3.6 Low Agricultural Productivity

The Gambia's farmers are trying to produce additional food for export to increase their incomes as well as produce enough food to feed a rapidly growing population. Currently, rice is being imported in order to satisfy the country's domestic demand. Total production has not changed significantly over the past 15 years, yet additional hectares of forest and rangeland have been converted to cropland. Clements (1988) found that over half the area that was in forest in 1946 is now cultivated land. Rice is the only crop that has experienced even modest productivity gains. Several situations help to explain the problem.

At first glance, the drought that has occurred over the recent period is blamed, but resource managers cite other reasons for The Gambia's low farm productivity. Clements reports that in 1968, 3 hectares of land were left fallow for every two hectares cultivated. By 1980, only 2 hectares were left fallow for each three cultivated. This practice of fallowing less often has not allowed the process of natural fertility regeneration to occur. The land is being farmed "to death" thus, yields can only be maintained when fertilizer or other nutrient sources are used. To satisfy the demand for more exports and food, farmers have brought marginal soils into cultivation and the cycle

is repeated over and over on an increasingly larger scale. The soils of The Gambia tend to have low natural fertility which diminishes quickly when cultivated and are prone to soil erosion unless they are well managed.

The lack of proper weed control has also reduced cropland production. Weeds compete with crops for moisture and nutrients. Weeds can also reduce the amount of sunlight that reaches low growing crops such as groundnuts thereby reducing production.

New technological advances have not been able to significantly improve productivity. Many proposals are not adopted by farmers because of their capital cost or they do not blend into with established farming systems or they fail to recognize social norms.

Nor have those in the agricultural research area been able to offer sustainable solutions. A USAID study indicates that research effects suffer from a lack of focus, continuity and relevance. If cropland yields are to be increased, research has a significant role to play. Research studies need to focus on self-sustaining farming techniques that reduce environmental damage such as mulch planting and multisector-crop and rotation systems that improve soil fertility and reduce erosion. New varieties need to be developed that place fewer demands on the ecology.

Production technologies are urgently needed to increase the outputs from labor and land without which farmers will not have the financial resources to make even modest investments in natural resource conservation.

SUMMARY

A review of available literature reveals six major environmental indicators that need to be addressed if sustainable productivity and reliance in food supplies is to be realized in The Gambia. These are: (1) Desertification, (2) Deforestation, (3) Soil Degradation, (4) Surface and Groundwater Quality and Quantity, (5) Loss of Biological Diversity, and (6) Low Agricultural Productivity. In the aggregate, the condition of these indicators help to explain much of The Gambia's state of deteriorating land productivity. This is The Gambia's fundamental natural resource problem.

Natural resource managers agree that these are the most visible forms of environmental deterioration. However, they are very difficult to address because they are complex and do not lend themselves to simple straight forward solutions. Hence, indicators must be addressed by further analyzing their intrinsic causes. Suitable interventions will be identified and ultimately implemented to address each problem before significant progress is made towards solving the nation's fundamental problem of low land productivity.

A substantive comment should be made here regarding this cursory assessment of the current natural resource situation and problems. First of all, the analysis is largely descriptive. It was also weakened because no current data was available. The most valuable information came from the specialists who served on the Task Force and a few single sector research or natural resource

studies from government departments. While several sector specific inventories have been conducted, there is a lack of current resource data available on The Gambia. If the goal of institutionalizing natural resource management into decision making is to be realized, this issue must be addressed. Efforts must also be made to increase The Gambia's capacity to inventory its resource conditions at all levels. Otherwise, huge investments in education and technical training will be wasted. The fishery management plan and the draft water policy document also cite the need for a comprehensive natural resource assessment because much of the existing information is inadequate, is of low reliability or the data is simply not available. Hence, a recommendation was formulated in the policy to address the natural resource data needs in The Gambia.

Recommendation 1:

That a Cabinet level group such as the National Environmental Council, which is currently supported by the National Environmental Committee (composed of a technical working group to be titled "Natural Resource Sub-committee", formerly Natural Resource Policy Ad-hoc Task Force), be charged with the following responsibilities:

- (a) Reviewing natural resource management interventions, including private volunteer organization (PVO) and donor activities to ensure consistency with national priorities and goals established in this document for natural resource sustainability. Detailing standards and specifications in a technical intervention manual (TIM).
- (b) Conducting a comprehensive natural resource assessment (inventory) to be completed at five year intervals.
- (c) Identifying emerging issues resulting from changes in resource conditions and outlining recommendations and insuring that issues are addressed.
- (d) Promoting the development and implementation of a multisector, comprehensive environmental education program.

It is intended that the activities of the Sub-committee (formerly the Natural Resource Policy (Ad-hoc Task Force) be conducted within its current informal working arrangements and that Ministerial support be continued. Membership on the Sub-committee should be extended to NGOs and PVOs conducting natural resource intervention activities.

Budgetary Impact: This recommendation can be carried out without causing a significant short-term budgetary impact on the GOTG. Donor support and technical assistance should be requested to carry out the base line

natural resource inventory on a one-time basis. Future inventories should be funded and conducted by the GOTG. Funding support needed to develop an environmental education program should also be requested from donor agencies.

The Ad-hoc Task Force recommends completion under the leadership of the Minister of Natural Resources and the Environment.

PART 4.0

NATURAL RESOURCE LAWS, POLICIES, PLANS AND INSTITUTIONS

Existing laws, policies, plans and institutions were examined to determine the effectiveness in which natural resource management activities are being conducted. An analysis of the guidance outlined in laws, policies and plans provides a basis for assessing the capacity of governmental institutions to implement a national natural resource program. It is anticipated that laws which pertain to natural resource management at all levels clearly outline government's intent, its goals and assigned responsibilities. Policies and plans should provide schemes for implementing legislative intent through specific programs. Governmental organizations and sometimes private institutions are also mechanisms of program implementation. However, institutions can best carry out legislative intent when policies and plans clearly establish priorities and sets goals as well provide methods of monitoring impact through successes or failures.

Funding needed to staff and support established institutions is a significant factor hampering implementation of existing natural resource laws in The Gambia. The problem is acute in several departments having responsibilities in the natural resource sector. This fact indicates that natural resource activities receive lower priority than other activities when funding decisions are made by the GOTG. Yet, it was found that the government has a long history of active involvement in natural resource issues both at home and abroad.

Dating as far back as 1949 with the enactment of the "Land Regulations", the development of natural resource laws have proceeded precariously through an evolutionary process. Most have been reactive as opposed to proactive with the government's lawmakers responding incrementally to most natural resource issues. Consequently, it is not surprising why The Gambia's governmental institutions and their policy development processes have mirrored this fragmented approach.

Internationally, The Gambia has been involved in multilateral conventions and agreements which addressed the natural environment. They include:

- (1) Convention On The African Migratory Locust (1963).
- (2) Convention On International Trade In Endangered Species Of Wild Fauna and Flora (1977).
- (3) United Nations Convention On The Law Of The Sea (1982).
- (4) Convention For Co-operation In The Protection And Development Of The Marine And Coastal Environment Of The West And Central African Region (1985).

- (5) Protocol Concerning Co-operation in Combating Pollution In Cases Of Emergency (1985)
- (6) The African Ministerial Conference On The Environment (Cairo, 1985)
- (7) African Convention On Nature And Natural Resources (1987).
- (8) World Heritage Convention (1988).

Hubbard (1978) conducted a thorough review of the development of pertinent environmental legislation in his report prepared for the United Nations Environmental Programme. Unfortunately, concomitant case law has not evolved suggesting inconsequential court activity relative to implementation and enforcement.

The President has taken steps to heighten the nation's consciousness regarding its natural resources through several instruments. In 1977, for example, when the loss of much of the nation's wildlife became paramount, President Jawara issued the now famous "Banjul Declaration." Again, on August 10, 1978, The President expressed concern that Gambians be able "to maintain and improve our environment so as to ensure our long-term survival." His message included a clear need for natural resource conservation and protection, but also lamented is a mandate for enhancement and restoration.

The five-year plan for economic recovery further reinforces a policy of sustained yield over short-term resource exploitation. The plan proposed that: (1) environmental controls be strengthened, (2) a land use program be developed, and (3) programs be developed for the conservation of soil, water, forest and other natural resources.

In the latter cases, several acts clearly established institutions to provide leadership and programs to ensure conservation of these resources.

Fisheries Act, 1977 - Established a Fisheries Department to ensure rational development and conservation of fishery resources. The department developed their National Fisheries Management and Implementation Plan in 1989. The plan focused on six objectives which were derived from the national objectives of increased food security, increased employment opportunities, improved revenue and foreign exchange earnings capacities and expanded recreational facilities. A sound investment strategy was developed to support the plan.

National Water Resources Council Act, 1977 - Established a National Water Resources Council to oversee water resource development and created the Department of Water Resources. The Council's three main functions are: (1) to formulate overall water resources policy, (2) to approve plans, and (3) to approve funding for implementing projects. The department has drafted a national water policy to guide implementation of "The Government's medium term water resources policies and strategies within the framework of its economic recovery programme

commitments." Policy recommendations addressed in the document are: (1) privatization of digging wells and driving boreholes, (2) maintenance and rehabilitation of water systems, (3) institutional framework and coordination, (4) research, investigations and exploration, and (5) planning and a master plan for water resources. The plan's thrust is pro-water development and is largely silent on issues involving water conservation and agriculture.

Banjul Declaration, 1977.

Legal Notice 32 and 36, 1978.

Wildlife Conservation Act, 1973 - Provides the basic organic legislation under which the Wildlife Development operates. The Department was started in 1968, but has not formulated a national policy on wildlife. However, most of its efforts lend strong support towards maintenance of genetic diversity.

Soil and Water conservation is mentioned as a resource concern in several laws, but this activity has not been legitimized through a legislative process. The Soil and Water Management Unit currently carries out this function. However, it is an organism created and funded almost entirely by USAID and GTZ. This fact, in part, helps explain the lack of support and recognition of soil and water in the budget process. The development and passage of organic legislation by the parliament would be a significant step towards institutionalizing those natural resource management functions now being carried out by the Soil and Water Management Unit within the Ministry of Agriculture.

Recommendation 2:

The mandate of the Department of Agricultural Services should be expanded to establish and legitimize a soil and water conservation program to promote efficient use and conservation of the resource base to ensure its long-term sustainability. The mandate should assign implementation of the program to SWMU within the Ministry of Agriculture. The mandate should outline a mission statement that would:

- (a) Give the SWMU specific responsibilities for conducting a national soil survey program.
- (b) Authorize SWMU to provide technical assistance to land users within small watersheds.

A long-term objective should be to expand the functions and activities of the Unit throughout the country and to elevate it to the department level in the Ministry of Agriculture.

Budgetary Impact: Expanding the mandate of the Department of Agricultural Services will not increase the budgetary expenditures of the GOTG. Should the long-term objective of this recommendation be carried out

such that SWMU has presence in all divisions, significant resources will be required. Currently, data needed to determine the cost of this objective are not known. The proposal to open an SWMU office at Basse should provide adequate data for estimating these costs.

Donor funding and support should be considered to offset normal operating costs incurred to expand SWMU activities. No additional personnel costs are anticipated to staff SWMU area offices.

The Ad-hoc Task Force recommends completion under the leadership of the Ministers of Agriculture.

Natural resource conservation has also been established as a high priority concern in planning and decision making as outlined in the following legislation, rules and regulations: (1) Minerals Act and Rules, (2) Mining Act and Regulations, (3) Monument and Relics Act, and (4) Land Act.

Concern for natural resource conservation is also obscured within agency operating policies and procedures which recognize the state of environmental degradation in The Gambia. For example, the Department of Livestock Services has a zero growth policy for the national herd. The Department's inventory policy seems to indicate that a cattle population of 300,000 approaches or may even exceed the carrying capacity of the country's grazing resources. Policies to reduce or control the number of other grazing animals have not been established. Efforts are being directed at improving the quality of herds as the principle means of increasing income from livestock; thereby, reducing pressure to increase animal populations.

Organizations, such as USAID, have gone so far as to propose a "Country Development Strategy." This document recognizes reduced soil fertility, overgrazing, unmanaged burning, soil erosion, and exploitation of forest for firewood as problems contributing to environmental degradation. It cites a declining natural resource base as one of The Gambia's most difficult problems to overcome, and that low agricultural productivity is one of its two most serious problems (with foreign debt being the other). USAID's strategy is to broaden policy dialogue in the agricultural natural resource sectors. One of its overall goals is to achieve sustainable increases in agricultural production.

USAID's Natural Resources Action Program was developed to explore ways to support more environmentally sustainable development. "Sustainable development", it states, "depends upon implementing activities that have positive, sustainable long-term impacts on soil fertility, soil conservation, vegetative cover, and germ plasm preservation." The action program supports The Gambia Indicative Programme for Desertification Control (IPDC). Further, because village based resource manage strategies have the best chance of succeeding, it supports local resource management initiatives.

The National Indicative Programme for Desertification Control outlines The Gambia's approach to the control of desertification processes. Specific objectives of the strategy are:

- (1) To halt the current degradation processes and abuse of the environment.
- (2) To promote the most rational sustained use of the national resources by adapting farming and land use patterns to the changing environmental conditions.
- (3) To achieve self-sufficiency.
- (4) To accelerate the processes of structural adjustment of government and non-government services.
- (5) To improve population involvement in all development activities.
- (6) To provide a basis for international consultation with financial sources for a better coordination of their long-term programmes and projects.
- (7) To establish and strengthen national capabilities for monitoring, evaluating, and collecting all socioeconomic and agro-meteorological data and information on the various processes of desertification.

While the legislative intent of natural resource laws in The Gambia are quite explicit, it's difficult to identify model implementation strategies that have led to or may lead to significant changes in natural resource conditions and to their sustainability. Rule making as well as implementation has been approached from a narrowly focused, fragmented point of view. With the notable exception of IPDC, policy initiatives have not capitalized upon known natural resource linkages and used them to foster multisector support and cooperation. Nor have local institutions been organized and trained such that they can become an important component in the implementation strategy. The caveat is that if local acceptance and participation is absent in the process of formulation and implementation, policies which require behavioral changes are candidates for failure.

An explicit structure for coordinated natural resource policy development is contained in the National Environmental Management Act (NEMA) of 1987. However no evidence of its thrusts are contained in the natural resource policies reviewed. Although the Law's origin is in the Convention of the Independent African States (1968), The Gambia enacted it to ensure that all sectors adopt measures that will lead to conservation, utilization and development of soil, water, flora and faunal resources.

NEMA, 1987 makes each Minister responsible for implementing the principles of the Act. Specifically, the Act requires that actions which effects the natural environment "shall be undertaken...having regard to the necessity to promote the sustainable utilization, rational development and conservation of these natural resources in accordance with currently recognized scientific principles..." It further empowers Ministers to make regulations for

monitoring and assessing the state of natural resources. Token enforce of the Act is through the National Environment Council. An Environmental Unit was also been organized and staffed to ensure compliance with the Act. The unit currently functions largely as a coordinating body without a clear mandate. Its institutionalization, thus its ability to comply with the spirit of NEMA, has been hampered by the lack of staff, funding and organizational stability.

Recommendation 3:

The National Environmental Management Act (NEMA) should be amended to clarify the mission of the Environmental Unit. The Unit's capacity to coordinate natural resource sustainability concerns for all sectors should be enhanced and strengthened through the amendment of NEMA.

The position of environmental education officer should be re-established in the Environmental Unit followed by the designation of environmental education liaisons within each department. These positions will form the core of the National Environmental Education Committee proposed in this policy. See Appendix B.

Budgetary Impact: It is anticipated that implementing the recommendation will add one position (environmental education officer) to the GOTG. The environmental education liaison persons are currently on existing staffs of departments in the natural resource sector.

The Ad-hoc Task Force recommends completion under the leadership of the Minister of Natural Resources and the Environment and/other Ministers as appropriate.

The following ministries and departments have been identified as having major natural resource management (including utilization, conservation and development) responsibilities either because of their professional expertise or their legislative mandate. Each has a major role to play, through their coordinated efforts, in the successful implementation of the Natural Resource Policy.

Ministry of Health, Labour, and Social Welfare
Public health unit

Ministry of Natural Resources and The Environment
Department of Water Resources
Department of Fisheries
Department of Forest
Department of Wildlife Conservation
Environment Unit

Ministry of Agriculture
Department of Agricultural Research
Department of Agricultural Services
Soil and Water Management Unit
Extension Service

Department of Livestock Services

Ministry of Economic Planning and Industrial Development

Ministry of Local Government and Lands
Department of Community Development

Ministry of Works and Communications
Department of Technical Services

Even though national laws have been passed to ensure natural resources conservation, they will not be implemented if they do not consider priority concerns of those who are impacted most. Local agendas, village concerns, and basic needs must be addressed, otherwise they will overshadow and obscure national goals and priorities. The family head at the village level does not view environmental degradation as his number one concern. His first priority is most likely to be food security. Income maximization, soil erosion, desertification, biodiversity are all lower priority concerns. The inability to provide staple foods for the family is basic and immediate. This basic priority has been recognized and is being addressed by many non-governmental organizations providing assistance in The Gambia. It must, too, be addressed along with natural resource concerns in the public sector if national policy goals are to be achieved.

A trenchant review of legislation, plans and policies reveals several recurring themes that must be considered and factored into to the formulation of a national natural resource policy. These themes are derived from existing policies and mandates. They further enhance and support the concerns mandated in NEMA.

- (1) Sustainability of the natural resource base.
- (2) Non-degradation of the environment.
- (3) Maintenance of biological diversity.
- (4) Rational utilization, development and conservation.
- (5) Self-sufficiency in staple food production.

A major weakness in the implementation of national policy has been a failure to recognize, build and strengthen local institutions. Many programs are being implemented from offices in Banjul. These local institutions are needed to help with training, influencing and shaping public opinion and acceptance. Local organizations also need legislated authorities, consistent with national goals, to manage local natural resources, manage funds and collect fees, and address and resolve issues such as those related to land use tenure. Therefore, a structure needs to be created through which local priorities and natural resource concerns can surface to help shape public policy. A

decentralized structure would give landusers greater control and responsibility for their own destiny.

Recommendation 4:

The National Environmental Management Act (NEMA) be amended to create local natural resource conservation districts. Local districts should be made up of land users at the village level within defined watersheds. The districts will be headed by a board or committee which should be granted powers to set priorities for planning for the conservation of the natural resources of their district. They should also be charged with promoting consistency of local programs with national priorities and goals designed to ensure sustainability of the resources base. Appendix C outlines a conceptual district model.

Budgetary Impact: Implementing this recommendation will not add cost to the budget of the GOTG. It is anticipated that additional administrative cost at the divisional level will occur.

The Ad-hoc Task Force recommends completion under the leadership of the Minister of Local Governments and Lands and the Minister Agriculture.

In summary, the laws enacted by the government of The Gambia provides an adequate framework in which coordinated natural resource conservation programs and management strategies can be developed and implemented. Two notable exceptions relate to establishing a national soil and water management program within the Ministry of Agriculture and legislation designed to give local citizens more control over those natural resource programs which affect them. Here to fore, program implementation models have failed to recognize and adopt this fundamental public policy maxim.

Natural resource program managers have not used an integrated, multisector approach to policy development. Many are formulated and perceived as single sector documents. Consequently, policies have not been formulated to ensure efficiency and consistency of their application.

Policy interventions have also been hampered by low acceptance, lack of ownership, and precarious understanding by the beneficiaries. It is, therefore, critical that policies and programs include an information education component targeted towards landusers and should involve extensionist, volunteers and others who work at the village level on a daily basis. Studies have shown that farmers are receptive to change and innovation. However, policy initiatives, which would appear constraining, have been met with resistance. Interventions must include alternatives and be able to demonstrate tangible benefits to those individuals and groups most directly affected.

PART 5.0

THE NATIONAL NATURAL RESOURCE OBJECTIVES, POLICY GOALS, AND PRIORITIES

The national resource laws passed by the Parliament of The Gambia have not resulted in significant improvements to the natural environment. They do, however, focus on several recurring policy goals. Likewise, studies of natural resource conditions conducted over the past few years point to a consistent set of policy goals and objectives. Resource laws, studies of resource conditions as well as the short term needs of the indigenous population provides a basis for the establishment of five goals which that should be addressed under the framework of a national natural resource policy. These are:

- (1) Sustainability of the natural resource base.
- (2) Nondegradation of the environment
- (3) Maintenance of biological diversity.
- (4) Rational utilization, development and conservation of natural resources.
- (5) Self-sufficiency in staple food production.

Assessments and studies indicate that the most severe problems in the natural environment relate to the land resource base and its use. Continued exploitation the land resource base is the major factor affecting environmental degradation in The Gambia. Thus, the long-term policy goal in the natural resources sector is to increase land productivity by holistically addressing the highest priority problems. The highest priority problems in the natural resource sector are:

- (1) Loss of wildlife due to the expanding population's encroachment onto natural habitat and harvesting at unsustainable rates.
- (2) Loss of vegetation due to reduced rainfall.
- (3) Salt water intrusion due to reduced flow in the River Gambia.
- (4) Loss of forest cover due to cutting for firewood at excessive rates and burning.
- (5) Loss of grass cover due to over-grazing and burning.
- (6) Loss of soil fertility and increased soil erosion due to lack of proper conservation and poor farming practices.
- (7) Periodic shortages of staple food due to low agricultural productivity.

The policy mandates that agencies and organizations working in the natural resource sector devote a significant portion of their resources towards addressing the seven high priority cited above. The highest degree of resource sustainability will be achieved for future generations of Gambians by first addressing these seven problems.

The Natural Resources Policy mandates that problems be addressed through an "Integrated Watershed Management" (IWM) concept for resource planning, decision-making and implementation at the local level. IWM requires that a comprehensive assessment of all the problems and needs of the watershed (See Appendix D) be evaluated prior to identifying alternative interventions. The selection and implementation of plans at the watershed level may include considerable involvement and support from several departments and units in the GOTG, private volunteer organizations, donor agencies, nongovernmental agencies and the public. There is no single agency or organization within The Gambia that has the expertise to solve all the resource problems at the watershed level; therefore, the policy mandates that problems be addressed by multisector teams working at the micro-watershed level.

Since many of the watersheds in The Gambia originate in Senegal, international agreements and cooperation is needed to resolve problems that do not start or stop at National borders. International organizations such as the United Nations should be consulted for assistance.

Other problems and needs of a natural resource nature may also exist at the micro-watershed level. These may include:

- (1) Flooding
- (2) Drainage
- (3) Polluted surface and ground water
- (4) Improve irrigation efficiencies.

While the latter listing of problems and/or needs should be addressed as part of the overall natural resource management strategy and incorporated into intervention schemes, they will not be treated as high priority candidates for interventions.

PART 6.0

IMPLEMENTATION STRATEGY AND INTERVENTIONS

6.1 Local Institutions

This policy attempts to place land use and management decisions at the lowest possible level. Decentralized decision making coupled with multisectoral technical support appears to be the most effective means of attaining sustainable natural resource conservation and development. If interventions designed to address the highest priority problems are to be successful and sustainable, considerable input and involvement will be required at the micro-watershed level. Since one of the important outputs of the national policy is to increase the capacity of local institutions to manage natural resources. A recommendation was made to establish natural resource conservation districts to address this concern. The districts should be charged with providing natural resource management leadership at the local level. The participation of such a group should be a prerequisite for providing technical assistance.

The district representatives should be trained and exposed to a broad array of natural resource interventions. They should be encouraged to establish demonstration practices and plots on their farms. A major responsibility of the district board members should be to help train and expose other farmers.

Donor agencies and PVCs could assist by providing training. They might be a source of funding for field trips and providing recognition for outstanding accomplishments. These agencies could also help with the development of environmental education material and exhibits.

The district structure proposed above is not intended to replace existing local organizations. To the extent possible, they should operate under established local decision making bodies.

6.2 Interventions

Interventions are the menu of actions that may be taken to solve selective natural resource problems at the watershed level. They may require multisector-sector coordination and input and should be carried out through the "integrated watershed approach." This approach prescribes a holistic view of the watershed in order to eliminate redundancy, duplication and inefficient implementation. The implementation of interventions should positively impact either sustainability of productivity, income and quality of life.

Since interventions require local acceptance and a long-term commitment, criteria of adoption was established to ensure the highest probability of success. Based on studies of successful interventions in West Africa, the following list of intervention criteria was developed:

- (1) It can be incorporated into existing farming schemes and methods.
- (2) It includes an education and training strategy.

- (3) Technology is transferable.
- (4) Large capital outlays are not required.
- (5) Considers constraint imposed by land tenure system.
- (6) Impacts can be measured or observed.
- (7) Opportunities exist for local participation, self-help and ownership.
- (8) Within the capabilities of recipients to operate and maintain.

In most cases, a good understanding of why an intervention succeeded or failed is essential. It is also recognized that interventions that work in one location may not be transferable to another due to differences in perceptions, lack of consistency, traditions methods, costs and suspected risk. Therefore, multiple solutions should be developed for each problem. The following matrix illustrates a menu of interventions designed to solve natural resource problems in The Gambia. So that interventions are fully specified, the Ad-hoc Task Force is proposing to compile an Intervention Manual. The manual will provide descriptions of interventions and include technical standards. Cross training on the use of interventions should be conducted for all organizations working in the natural resource area.

The menu (Appendix E) of interventions is based on the criteria and relates to specific priority problems considering multisector expertise and responsibility.

Appendix A

The AD Hoc National Natural Resource Policy

Taskforce Members

APPENDIX A

LIST OF CONTACTS MADE RELATIVE TO THE ESTABLISHMENT AND/OR PARTICIPATION ON THE AD-HOC NATIONAL NATURAL RESOURCE POLICY TASK FORCE

1. Permanent Secretary, Ministry of Agriculture
2. Permanent Secretary, Ministry of Water Resources, Fisheries and Forestry
3. Permanent Secretary, Ministry of Local Government and Lands
4. Permanent Secretary, Ministry of Health, Labour and Environment
5. Permanent Secretary, Ministry of Works and Communications
6. Head, Soil and Water Management Unit
7. United Nations Representative, Banjul
8. GRF/Credit Coordinator, Action AID, Kanifing
9. Program Support Office, Save The Children, Banjul
10. Representative, UNICEF, UN Children Fund, Banjul
11. GTZ Teamleader
12. USAID, Banjul
13. EEC Program Coordinator, Ministry of Economic Planning
14. GUC, Banjul
15. Freedom From Hunger Campaign, Banjul
16. Agricultural Project Officer, Catholic Relief Services
17. Director, Department of Livestock Services
18. Director, Department of Fisheries
19. Director, Department of Water Resources
20. Director, Forestry
21. Director, Agricultural Services
22. Director, Designate, Department of Wildlife Conservation
23. Head, Environmental Unit
24. Agricultural Communication Unit
25. Director, Department of Technical Services
26. Director, Agricultural Research

Appendix B

Environmental Education Program (EEP)

APPENDIX B

Environmental Education Program (EEP)

I. Environmental Education Program Design

Environmental education is integral to the sustainability of the natural resource base including development, conservation and protection. From policy makers at the national level to villagers who make decisions at the local level, environmental education improves the options and opportunities to enhance the quality of life while sustaining the natural resource base. The process begins with helping participants develop an awareness of their environmental and ends with individuals having the capacity to make environmentally responsible decisions. EEP has several objectives. These include to develop:

AWARENESS of the environment and our dependence on it, including the challenges and opportunities.

KNOWLEDGE of environmental processes.

ATTITUDES and values which foster environmentally responsible action.

SKILLS to act responsibly.

PARTICIPATION in environmentally responsible action.

These objectives are to be met through a program which develops a message, targets an audience, and proposes a strategy based on known conditions.

II. Environmental Education in The Gambia

Environmental education in The Gambia originated during the 1970s with initiatives by the Department of Forestry with a National Tree Planting Campaign, and the Department of Wildlife Conservation Centre. Through the past two decades, other EEP efforts have been made through the film and radio sections of the Extension Aids Unit, Non-formal Education's functional literacy program, and of the recent past the Environmental Unit's Education Officer. Other programs have been active through the primary school education projects by the Department of Forestry and the SWMU and school garden projects assisted by UNICEF and ACTION AID.

These efforts have been enhanced by the work of UNEP consultants Professor Ubani in 1984, G. Thomas' "CILLS Research Project on the Contribution of Education to the Control of Drought and Desertification in Sahelian Countries", "The First Interim Report on Environmental Education", 1987. Other efforts include those of C. Downey of the Environmental Unit and contribution made by Dr. Rugumayo at a Seminar on the Environment held in 1987.

Currently, environmental education is a perceived need of many individuals and agencies. The need is legislatively supported in NEMA of 1987 Article XIII.

1. (a) Contracting states shall ensure that their peoples appreciate their close dependence on natural resources and that they understand the need, the rules for, the rational utilization of these resources.
- (b) For this purpose they shall ensure that the principles indicated in paragraph (1):
 - (i) are included in educational programmes all levels;
 - (ii) form the object of information campaigns capable of acquainting the public with, and willing it over to, the idea of conservation.

However, although initiatives have been made individually or at the sectorial level, little inter-organizational coordination has evolved.

Bodies assigned the responsibility for coordinating a national EEP include the Advisory Committee on the Management of the Natural Environment established by NEMA, and the working group on EEPs established by the 1987 Seminar on the Environment. Program develop is lacking because responsibilities are being assigned without clear mandate and authority; the result being that responsibility has not been transformed into action.

III. EEP Proposal

Currently, environmental education needs are not being addressed by ongoing programs and activities. This fact is especially true for adults who are in need of education about their environment. Therefore, the following strategy is proposed:

1. **A NATIONAL ENVIRONMENTAL EDUCATION PROGRAM** be launched which will fulfill the intent of Article XIII of the NEMA. The structure of the program would consist of:
 - (a) **NATIONAL ENVIRONMENTAL EDUCATION PROGRAM COORDINATOR (NEEPC)**
 - (i) This entails the re-establishment of an environmental educator post in GOTG located within the Environmental Unit. NEEPC would sit on the technical working group to be established under Recommendation 1 of the National Natural Resource Policy of 1990.
 - (b) **ENVIRONMENTAL EDUCATION LIAISON OFFICERS (EEO)**
 - (i) selected technical experts in designated GOTG Departments and Units will be assigned EEO.

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It may also be necessary to establish EEOs within PVOs and NGOs.

- (c) NATIONAL ENVIRONMENTAL EDUCATION COMMITTEE (NEEC) be established consisting of EEOs and NEEPC.

2. Responsibilities are as follows:

- (a) NEEPC--Conduct national environmental education assessment and inventory.
 - (i) Develop national environmental education strategy in cooperation with NEEC.
 - (ii) Assist with the identification of EEOs.
 - (iii) Assist with the development of sector programs.
 - (iv) Coordinate inter-sector efforts.
 - (v) Keep donors informed of activities.
 - (vi) Serve as chair of NEEC.
- (b) EEO
 - (i) Develop sector strategies consistent with national policy.
 - (ii) Implement sector programs.
 - (iii) Participate in NEEC meetings.
- (c) NEEC
 - (i) Meet quarterly to plan, coordinate and review environmental education activities.
 - (ii) Review implementation of national strategy.

IV. Funding and Support

Funding for environment education activities and costs of the Environmental Liaisons should come from normal operating monies allocated to departments and units. Special funding should be provided the Environmental Unit to cover the cost of establishing the position of Environmental Education Officer. Funding for special initiatives and projects should be solicited from donor organizations.

Appendix C

Natural Resources District Conceptual Model

APPENDIX C

NATURAL RESOURCE CONSERVATION DISTRICT CONCEPTUAL MODEL

A natural resource conservation district is an area in which the majority of land owners or users have committed themselves to an organized plan which develops and uses natural resources according to their capability, and which treats the resources according to their need.

Typical natural resource conservation district objectives:

- (1) To broaden natural resources conservation awareness.
- (2) To involve district inhabitants in the planning and execution of rural development programs that take into account the natural resources of the district.
- (3) To foster the spirit of co-operation and understanding between farmers within the district and outside.
- (4) To strengthen the spirit of "TESITO" (self-help) by the organization and mobilization of the district inhabitants not as individuals but as a group.
- (5) To create a media for the much needed two-way communications channel between the farmers and rural development agencies either governmental or non-governmental.
- (6) To reduce duplication of development efforts.
- (7) To identify and control the use of the district's natural resources for the sustenance of production.
- (8) To facilitate the enforcement of natural resource conservation laws and regulations as are enacted by parliament.

With the channelling of all district development programs through the authorities of the conservation districts, better coordination of the programs will be facilitated. Thus the coordination of all development programs by the district conservation committees is a prerequisite to the conservation of the natural resources of the district.

1. THE ESTABLISHMENT OF A VILLAGE NATURAL RESOURCES CONSERVATION COMMITTEE

MEMBERSHIP: The committee shall consist of at least one male and one female selected by the villagers.

MEETINGS: The committee shall meet at least three times a year

FUNCTIONS: The following are the functions of the village conservation committee:

- (a) To keep a close watch over all of the natural resources of the village.
- (b) To report to the watershed committee any use and management exercises detrimental to the natural resources of the village.
- (c) To report to the entire village of any natural resource conservation and development decisions adapted at the watershed and/or district conservation committee levels.
- (d) To discharge any other duties as may be assigned by the watershed and/or district conservation committee.

2. THE ESTABLISHMENT OF A WATERSHED NATURAL CONSERVATION COMMITTEE

MEMBERSHIP: This committee shall consist of all the committee members from all of the villages within a given watershed.

MEETINGS: Meetings shall be held at least three times a year on a rotational basis from one village to another. Meetings are presided over by area councillors and chaired by an elected member of the committee.

FUNCTIONS: The functions of this committee are:

- (a) To coordinate all the natural resource conservation and development programs in all the villages within the watershed.
- (b) To prioritize all required interventions connected with natural resources conservation and development programs.
- (c) To enforce all natural resource conservation and development related laws and regulations at watershed level.
- (d) To report to the district committee of any natural resource conservation and development problems requiring district intervention.
- (e) To discharge any other duties as may be assigned by the district committee.

3. THE ESTABLISHMENT OF A DISTRICT NATURAL RESOURCES CONSERVATION COMMITTEE

MEMBERSHIP: Membership of this committee shall consist of elected persons from all the watershed conservation committee within a given district.

MEETINGS: This committee shall meet at least three times a year at the chief's compound. Such meetings shall be chaired by the chief and

assisted by his area councillors and presided over by an elected member of the district committee.

FUNCTIONS: This committee shall have the following functions:

- (a) To coordinate all natural resource conservation and development programs within the district.
- (b) To prioritize natural resource conservation and development problems within the district.
- (c) To enforce and administer natural resource conservation and development related laws and regulations.
- (d) To resolve all natural resource conservation and development conflict as may arise in the course of time.
- (e) To report to the divisional conservation committee any natural resource conservation and development problems that may require divisional intervention.
- (f) To report to the divisional conservation committee of all natural resource conservation and development programs and their progress.
- (g) To discharge any other duties as may be assigned by the divisional conservation committee

4. THE ESTABLISHMENT OF A DIVISIONAL NATURAL RESOURCE CONSERVATION COMMITTEE

MEMBERSHIP: The members of this committee shall consist of all of the chair-persons and presidents of all the district conservation committee within a given division.

MEETINGS: This committee shall meet at least twice annually at the division and headquarters. Such meetings are to be chaired by the commissioner of the division and presided over by the division's head chief.

FUNCTIONS: The functions of this committee shall be as follows.

- (a) To coordinate all natural resource conservation and development programs within the division.
- (b) To prioritize all natural resource conservation and development problems within the division.
- (c) To enforce and administer all natural resource conservation and development related laws and regulations outside the district's jurisdiction.

- (d) To resolve conflicts arising between districts on matters related to natural resource conservation and development.
- (e) To report to the national conservation committee of any natural resource conservation and development problems that may require national intervention.
- (d) Local Government funding be made available to support districts.
- (e) To report annually to the national resource committee on all efforts and results of natural resource conservation and development projects/programs.
- (f) To discharge any other duties as may be assigned by the National Conservation Committee.

5. **THE ESTABLISHMENT OF THE NATIONAL NATURAL RESOURCES CONSERVATION COMMITTEE**

MEMBERSHIP: Members of this committee shall consist of all the members of the divisional conservation committee plus representatives from Kombo Urban District and Banjul City.

MEETINGS: The meeting of this committee shall be in the form of a 2 days convention to be held once a year following the legal year celebration in Banjul. Such meetings shall be chaired by the Permanent Secretary, Ministry of Health, Environment, Labour and Social Welfare. The conventions shall be presided over by an elected member of the national conservation committee. The committee shall elect a secretary.

FUNCTIONS: This committee shall have the following functions:

- (a) The proposal, reviewing and forwarding of natural resources conservation and development related laws, regulations and by-laws to the advisory council on environmental management.
- (b) Discuss, adapt or otherwise dispose of proposals on natural resource conservation and development presented in the form of papers during the convention by various advisors engaged in natural resource conservation and development.
- (c) Discuss and adapt measures necessary for the continued effort of conserving our country's natural resources.
- (d) Hear reports from the various divisional conservation committees on the state of the art within their areas.
- (e) The suggestions of national priorities on national natural resource conservation and development to the advisory committee on environmental management.

- (f) The conducting of natural resource conservation awareness seminars nationwide.
 - (g) Discharge any other duties as assigned by the advisory council on environmental management.
6. ADVISORY COMMITTEE ON ENVIRONMENTAL MANAGEMENT (as detailed in the Environmental Act of January 16th, 1987).
 7. NATIONAL COUNCIL ON ENVIRONMENTAL MANAGEMENT (as detailed in the Environmental Act of January 16th 1987).

SUMMARY
CONSERVATION COMMITTEE STRUCTURE

1. Village Natural Resource Conservation Committee
2. Watershed Natural Resource Conservation Committee
3. District Natural Resource Conservation Committee
4. Divisional Natural Resource Conservation Committee
5. National Natural Resource Conservation Committee
6. Advisory Committee on Environmental Management
7. National Council on Environmental Management

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INSTITUTIONAL FINANCING

The financial aspects of these committees up to the district level been taken care of. In the case of the Foni Jarrol district, contributions have been collected at various times from all villagers within the district and such many is used to finance the district committee.

As divisional and national conservation committee are formed, their mode of financing will be discussed with the members

- (a) Funding from outside sources such as Embassies, NGO's CILLS, FAO, ACTION AID, etc.
- (b) Payment of district conservation committee dues to the divisional conservation committee. District conservation committee dues can be obtained from the subscriptions paid by villagers.
- (c) Financing of the national conservation committee to be from divisional conservation committee's dues and partly from the Government of The Gambia through the Ministry of Health, Environment, Labour and Social Welfare.

Appendix D
Integrated Watershed Management Concept

INTEGRATED WATERSHED MANAGEMENT A Conceptual Model For Holistic Planning

Present Conditions

Colluvial/Lowland Interface

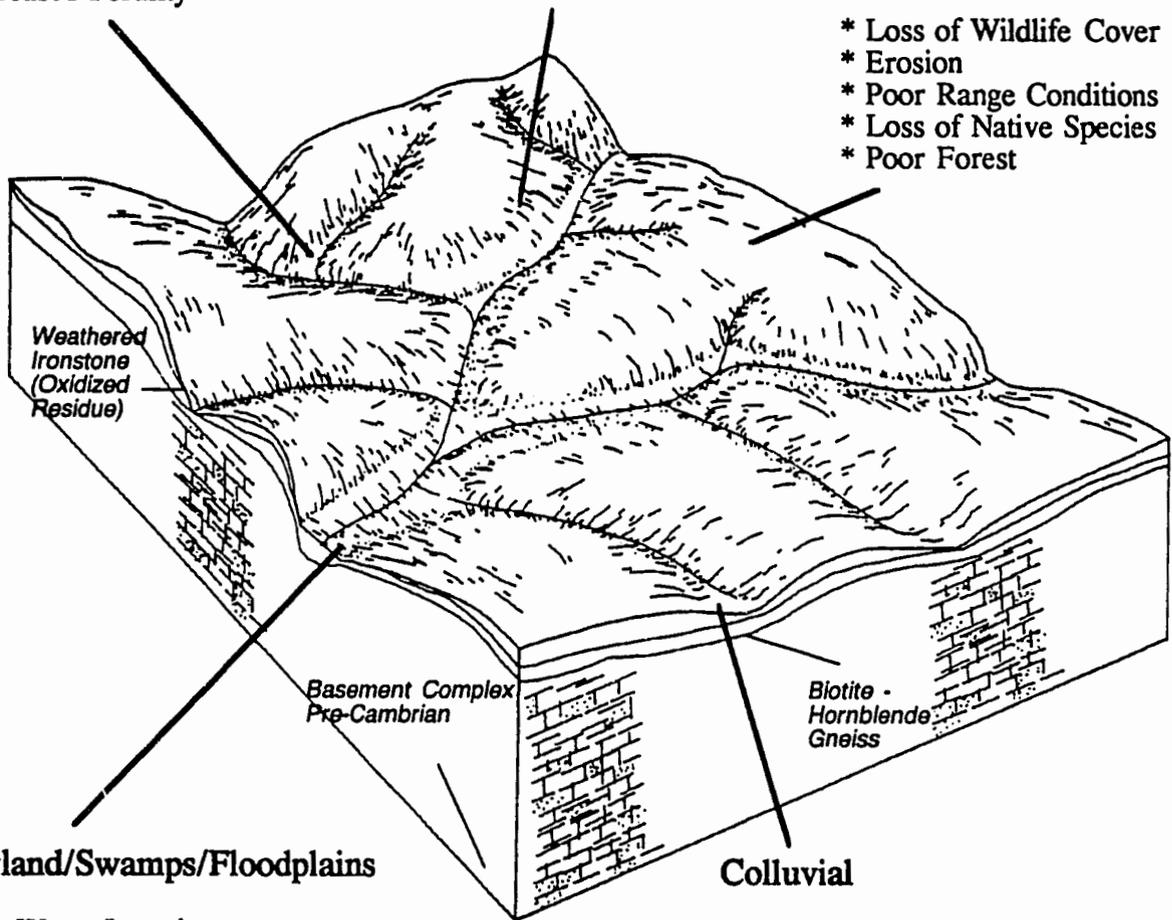
- * Erosion
- * Loss of Wildlife Cover
- * Decreased Fertility

Plateau/Colluvial Interface

- * Loss of Wildlife Cover
- * Erosion
- * Excessive Firewood Harvest
- * Decreased Fertility

Plateau/Crest

- * Loss of Wildlife Cover
- * Erosion
- * Poor Range Conditions
- * Loss of Native Species
- * Poor Forest



Lowland/Swamps/Floodplains

- * Salt Water Intrusion
- * Increased Pollution
- * Infertile Deposition
- * Low Groundwater Levels

Colluvial

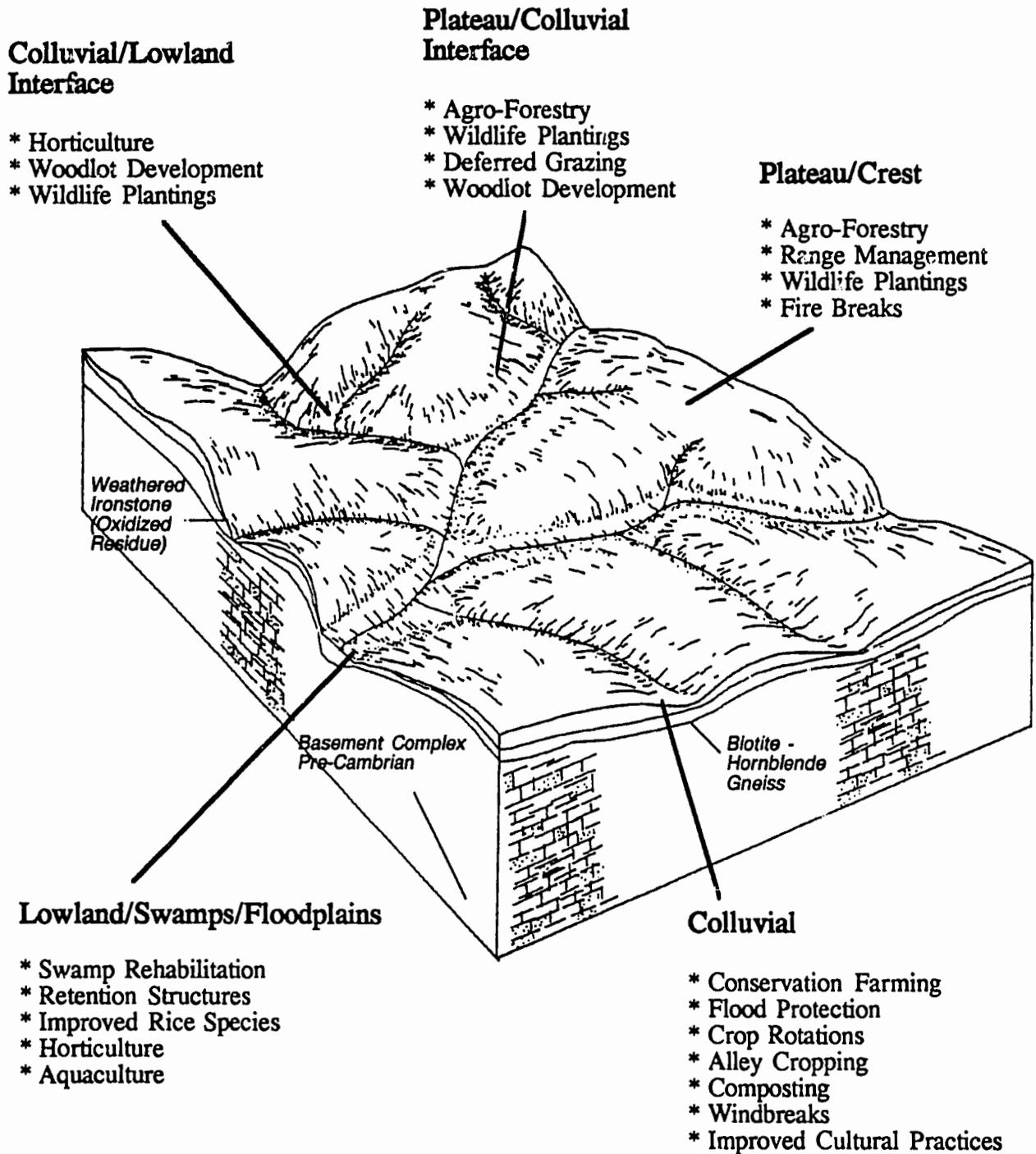
- * Low Yields
- * Erosion
- * Decreased Fertility
- * Poor Cultural Practices
- * Flooding (Villages and Cropland)

Typical Watershed

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INTEGRATED WATERSHED MANAGEMENT A Conceptual Model For Holistic Planning

Future Conditions with Interventions



Typical Watershed

Appendix E
Priority Problem Intervention Matrix

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**NATIONAL NATURAL RESOURCE POLICY (NNRP)
PRIORITY PROBLEM INTERVENTION MATRIX
FOR
ENVIRONMENTAL DEGRADATION INDICATORS**

INDICATOR	PROBLEM (PRIORITY)	INTERVENTIONS * MENU	RESPONSIBLE AGENCIES	COMMENTS
I. Desertification and deforestation	Declining Rainfall (H)			Standards and specifications for each intervention are detailed in NNRP-Technical Intervention Manual (TIM)
	Fish & Wildlife Habitat losses (H)	Reforestation Woodlot Developments Village based forest management Agroforestry buffer Wildlife plantings Develop aquaculture Habitat management Public Education Issue and control of fishing licences	Forestry SWMU Wildlife Fisheries	
	Lower groundwater levels (M)	Deforestation Contour bunds Water retention structures Public Education	Forestry SWMU SWMU Multi-agency	
	Saltwater intrusion (H)	Anti-alinity barrier Irrigation water management	SWMU SWMU	

A common intervention for all natural resource problems is Conservation Education which should be designed to improve public awareness and attitude towards natural resources and advocate for their judicious use, and raise environmental consciousness in general.

INDICATOR	PROBLEM (PRIORITY)	INTERVENTIONS * MENU	RESPONSIBLE AGENCIES	COMMENTS
	Uncontrolled bushfires (H)	Fire breaks Managed burning Public Education	Forestry Dpt Livestock Multi-agency	Standards and specifications for each intervention are detailed in NNRP-Technical Intervention Manual (TIM)
	Loss of rangeland (H)	Establish contract grazing sites Range stand improvement Coordinated Grazing system Crop residue use Herd limitation Training Liberalize Livestock marketing system Improve quality of livestock processing methods and products Deferred Grazing Living Fencing Hay Harvesting Extension of integrated rangeland and livestock projects	Dpt Livestock Agricultural Services Dpt Livestock Livestock Marketing Board Dpt Livestock	
	Loss of forest cover (H)	Reforestation Coordinated grazing system Tree planting Mangrove protection Village tree nurseries Private woodlot development Natural forest management	Forestry	
	Excess firewood harvest (H)	Develop alternative fuels Improved stoves Solar stoves Promotion of butane gas usage in urban areas	Multi-agency	

INDICATOR	PROBLEM (PRIORITY)	INTERVENTIONS * MENU	RESPONSIBLE AGENCIES	COMMENTS
	Expansion of Estuarian Aquaculture (H)	Minimize and/or enforce strict control of cultural zone	Fisheries	Standards and specifications for each intervention are detailed in NNRP-Technical Intervention Manual (TIM)
	Increased erosion (H)	Contour berms Check dams Grassed waterways Windbreaks Rotations Water retention structures Woodlot development Increased following	SWMU	
	Increased flooding (M)	Water diversion structures	SWMU	
II. Soil Degradation	Increased erosion (H)	Contour berms Check dams Grass waterways Reforestation Woodlots Agroforestry buffers Residue management	SWMU SWMU SWMU SWMU & Forestry Forestry Forestry & SWMU Agricultural Services	
	Decreased fertility (M)	Manure management Composting Alley Cropping Introduce crop varieties that demand less of ecology composting Consider appropriate technology for use of livestock manure	Agricultural Services Agricultural Research Dpt Livestock	

INDICATOR	PROBLEM (PRIORITY)	INTERVENTIONS * MENU	RESPONSIBLE AGENCIES	COMMENTS
	Beach erosion (M)	Stabilization structure Vegetative seedings Strengthen legislation to include protection of bunds	SWMU Environment	Standards and specifications for each intervention are detailed in NNRP-Technical Intervention Manual (TIM)
	Increased water pollution (M)	Contour berms Check dams Grass waterways Introduce crop varieties that demand less fertilizer and pesticides	SWMU Research	
	Reduce water storage capacity (M)	Reforestation Range stand improvement Residue management	Forestry Dpt Livestock Agricultural Services	
	Infertile deposition (M)	Manure management Composting	Dpt Livestock Agricultural Services	
	Reduced infiltration	Reforestation Contour berms Water retention structures Range stand improvement	Forestry SWMU SWMU Dpt. Livestock	
III.	Water	Increased flooding (M) Reforestation Range stand improvement Water retention tanks (Rain Harvesting)	Water diversion Forestry Dpt Livestock Action Aid	SWMU

INDICATOR	PROBLEM (PRIORITY)	INTERVENTIONS * MENU	RESPONSIBLE AGENCIES	COMMENTS
	Increased Sedimentation (M)	Filter strips Contour berms Reforestation Range stand improvement	SWMU Forestry Dpt Livestock	Water retention structures
	Inefficient Water Use (M)	Concrete lining Irrigation water management Water control structures	SWMU	Standards and specifications for each intervention are detailed in NNRP-Technical Intervention Manual (TIM)
	Waste discharge (H)	Proper disposal Improved sanitation Increased environmental sanitation and health awareness	Public Health Unit	
	Low Soil Moisture (H)	Water Retention Structs	SWMU	
	Surface Water Pollution (M)	Setting of Safe Level Standards Enforcement of Industrial Waste Disposal standards Revise pesticide management Act of 1983	Min. of Natural Res. & Environ. Min. of Health Envir. Unit & Nat. Res. Environmental Unit	
	Lack of Effective Environmental Protection Machinery (H)	Strengthening of Envir. Unit	Min. of Natural Res. & Environment	
	Groundwater contamination (L)	Control types of chemicals used Control manner of disposal of chemicals Promote crop varieties that requires less fertilizer & pesticide	Envirn. Unit Envirn. Unit Research	

INDICATOR	PROBLEM (PRIORITY)	INTERVENTIONS * MENU	RESPONSIBLE AGENCIES	COMMENTS
IV. Loss of biological diversity	Loss or threatened habitat types and species (H)	Enrichment plantings Water retention structures Agroforestry buffer Forest reserves Habitat Management Introduce appropriate species	Forestry SWMU Forestry/SWMU Forestry/SWMU Forestry Forestry	Standards and specifications for each intervention are detailed in NNRP-Technical Intervention Manual (TIM)
	Loss of native species (H)	Reintroduction of native species Reintroduction of extinct species Adequate protection measures e.g. legislation) Conservation of native genetic materials	Forestry	
	International Wildlife Trade (H)	Law Enforcement Worldwide wildlife trade ban through international conventions	Wildlife Dpt.	
	Uncontrolled grazing (H)	Deferred grazing Living fencing Freeze herd size	Dpt Livestock	
	Uncontrolled bushfire (H)	Fire breaks Formation of village fire brigades	Dpt Livestock Forestry	

INDICATOR	PROBLEM (PRIORITY)	INTERVENTIONS * MENU	RESPONSIBLE AGENCIES	COMMENTS
Excessive firewood	Woodlot development harvest (H)	Forestry/Local Alternative fuels Improved stoves Solar stoves	Gov.	Standards and specifications for each intervention are detailed in NNRP-Technical Intervention Manual (TIM)
	Land clearing	Land use planning	SWMU	
V. Low Agricultural Production	Drought (H)	Develop drought tolerant varieties Tree crops Early maturing Swamp rehabilitation		
	Lost soil fertility (H)	Alley Cropping Manure management Composting Crop rotations Increase fallowing (? Is this practice sustainable)	SWMU	
	Increased soil erosion (H)	Contour berms Check dams Grassed waterways Wind breaks Rotation Water retention structures Woodlot development	SWMU Forestry	
	Poor cultural practices (M)	Establish demonstration plots On-farm field trails Crop rotations Diversify production (millet, maize, sesame, fruits, vegetables) Increased fertilizer use Planting density	Agricultural Services & Research	

INDICATOR	PROBLEM (PRIORITY)	INTERVENTIONS * MENU	RESPONSIBLE AGENCIES	COMMENTS
	Poor seed quality (L)	Collect and improve native species	Research	Standards and specifications for each intervention are detailed in NNRP-Technical Intervention Manual (TIM)
	Lack of focused research (H) Solicit farmer input in program	Develop adaptable technology	Research	

Appendix F
Draft Cabinet Paper On
Natural Resource Policy

DRAFT CABINET PAPER ON NATURAL RESOURCE POLICY FOR THE GAMBIA

BY HONOURABLE MINISTER OF AGRICULTURE

A *National Natural Resource Policy* has been outlined in a comprehensive policy document to ensure the long-term sustainability of our natural resource base and to ensure that our people have the natural resources needed to provide food, clothing, and shelter for future generations. The policy outlines natural resource objective, priorities and goals for the natural resource sector and it includes elements of an action plan designed to ensure implementation of a "*natural resource program*" in The Gambia.

1.0 The overall objective of the Natural Resource Policy is to bring about the long-term sustainability of the natural resource base of **The Gambia**. The specific policy objectives are:

1.1 To institutionalize national and local governmental organizations working in the natural resource management arena.

1.2 To integrate natural resource sustainability concerns into agricultural development programs.

1.3 To improve the ability of national and local organizations to manage natural resources.

1.4 To establish priorities for addressing natural resource problems and establishing criteria for interventions.

1.5 To serve as a springboard from which specific environmental action plans for other sectors can be launched.

2.0 The policy mandates the completion and monitoring of several interdependent actions to achieve the objectives:

2.1 Commitment of resources to highest priority problems established by the policy

2.2 Decentralized implementation of a natural resource program through institution building and organizing village based involvement at the watershed level.

2.3 Use of eight criteria designed to ensure interventions are sustainable and produce positive impacts on high priority problems.

2.4 Use of an "Integrated Watershed Management Concept".

3.0 The long-term goal of the Natural Resource Policy is to ensure increased land productivity by addressing the highest priority problems:

3.1 Loss of wildlife due to the expanding population's encroachment onto natural

habitats and harvesting at excessive rates.

3.2 Loss of vegetation due to reduced rainfall.

3.3 Salt water intrusion due to reduced flows in the River Gambia.

3.4 Loss of forest cover due to cutting for firewood at excessive rates and uncontrolled burning.

3.5 Loss of grass cover due to over-grazing and burning.

3.6 Loss of soil fertility and increased soil erosion due to lack of proper conservation and poor farming practices.

3.7 Periodic shortages of staple food due to low agricultural productivity.

4.0 Implementation and the long term success of a policy depends upon developing or strengthening several governmental institutions. Therefore, several actions (recommendations) designed to enhance existing institutions are proposed to ensure implementation of the policy.

4.1 That a Cabinet level group such as the National Environmental Council, which is currently supported by the National Environmental Committee (be comprised of a technical working group to be titled "Natural Resource Sub-committee", formerly the Natural Resource Policy Ad-hoc Task Force), be charged with the following responsibilities:

4.1.1 Reviewing natural resource management interventions, including private volunteer organization (PVO) and donor activities, to ensure consistency with national priorities and goals established in this document to achieve natural resource sustainability. Standards and specifications for each intervention will be detailed in a Technical Intervention Manual (TIM).

4.1.2 Conducting a comprehensive natural resource assessment (inventory) to be completed at five year intervals.

4.1.3 Identifying emerging issues resulting from changes in resource conditions and outlining recommendations and insuring that issues are addressed.

4.1.4 Promoting the development and implementation of a multisector, comprehensive environmental education program.

4.2 **Budgetary Impact:** This recommendation can be carried out without requiring additional budgetary resources from the GOTG. Donor support and technical assistance should be requested to carry out the base line natural resource inventory (4.1.2) on a one time basis. Future inventories should be funded and conducted by the GOTG under the jurisdiction of the National Environmental Council. Funding support needed to development an environmental education program (4.1.4) should also be requested from donor agencies.

4.3 Leadership for completing this recommendation has been concurred in by the Minister of Health, Labour, Environment and Social Welfare.

5.0 The mandate of the Department of Agricultural Services should be expanded to establish and legitimize a soil and water conservation program to promote efficient use and conservation of the resource base to ensure its long-term sustainability. The mandate should assign implementation of the program to the Soil and Water Management Unit (SWMU) within the Ministry of Agriculture. The mandate should outline a mission statement that would:

5.1 Give the SWMU specific responsibilities for conducting an accelerated national soil survey program.

5.2 Authorize SWMU to provide technical assistance to land users within small watersheds.

5.3 A long-term objective is to expand the functions and activities of the Unit throughout the country and to elevate it to the departmental level in the Ministry of Agriculture.

5.4 **Budgetary Impact:** Expanding the mandate of the Department of Agricultural Services will not increase the budgetary expenditures of the GOTG. Should the long-term objective of this recommendation be carried out such that SWMU has a presence in all divisions, significant resources may be required. Currently, data needed to determine the cost of this objective are not known. The proposal to open an SWMU office at Basse should provide adequate data for estimating these costs.

Donor funding and support should be considered to offset normal operating costs incurred to expand SWMU activities. No additional personnel costs are anticipated to staff SWMU area offices.

5.6 Leadership for completing this recommendation has been concurred in by the Minister of Agriculture.

6.0 The National Environmental Management Act (NEMA) should be amended to clarify the mission of the Environmental Unit. The Unit's capacity to coordinate natural resource sustainability concerns for all sectors should be enhanced and strengthened through the amendment of NEMA.

6.1 The position of environmental education officer should be re-established in the Environmental Unit followed by the designation of environmental education liaisons within each department. These positions will form the core of the National Environmental Education Committee proposed in this policy. The committee will be responsible for the development and implementation of a national environmental education program.

6.2 **Budgetary Impact:** It is anticipated that implementing this recommendation will add one additional position (environmental education officer) to the GOTG. The environmental education liaison persons to be named according to the policy are currently on existing staffs of departments in the natural resource sector.

6.3 Leadership for completing this recommendation has been concurred in by the

Minister of Health, Labour, Environment and Social Welfare, the Minister of Agriculture, the Minister of Water Resources, Fisheries and Forestry, the Minister of Local Governments and Lands and the Minister of Works and Communications.

7.0 The National Environmental Management Act (NEMA) be amended to create natural resource conservation districts. Districts should be made up of land users starting at the village level within defined watersheds and extending up to the Chieftaincy level. The district committee will be headed by the seyfo. The natural resource conservation district committee should be granted powers to set priorities for planning for the conservation of the natural resources of their district. They should also be charged with promoting consistency of local programs with national priorities and goals designed to ensure sustainability of the resources base.

7.1 **Budgetary Impact:** Implementing this recommendation will not contribute additional expenditures to the budget of the GOTG. It is anticipated that a small amount of additional administrative support cost at the divisional level will be required.

7.2 Leadership for completing this recommendations has been concurred in by the Minister of Local Governments and Lands and the Minister Agriculture.

8.0 The Natural Resources Policy mandates that problems be addressed through an "*Integrated Watershed Management*" (IWM) concept for resource planning, decision-making and implementation at the local level. IWM requires a comprehensive inventory of all problems and needs be evaluated prior to identifying alternative interventions. Since many of the watersheds in **The Gambia** originate in Senegal, international agreements and cooperation is needed to resolve data coordination and collection issues the boarder. International organizations such as the United Nations should be consulted for assistance.

9.0 Overall implementation of the policy, monitoring and periodic reporting of progress to the Cabinet shall be assigned to the Minister of Agriculture.

10.0 Cabinet is kindly requested to consider and approve the Natural Resources Policy as outlined.

11.0 This Cabinet Paper has the support of the *Honourable Ministers of Water Resources, Fisheries and Forestry; Local Governments and Lands; Health, Labour, Environment and Social Welfare; and Works and Communications.*

A POLICY UPDATE

May 1991

The **DRAFT CABINET PAPER ON NATIONAL NATURAL RESOURCE POLICY** was transmitted to the Cabinet Ministers of The Government of **The Gambia** in May, 1990. The Cabinet has added the Fishery and the Wildlife Resources as priority areas of concern. In subsequent deliberations, Fishery and Wildlife will have co-equal status as other priority concern areas.

Since the Draft Cabinet Paper was prepared:

A. *The Ministry of Water Resources, Forestry, and Fisheries* has been renamed **Ministry of Natural Resources and Environment**.

B. *The Environmental Unit, formerly in the Ministry of Health, Labour, Environment Social Welfare* is now in the **Ministry of Natural Resources and Environment**.

These structural changes in the government will yeild efficiencies in the implementation of this policy and will move **The Gambia** a step forward in sustaining its resources for future generations.

Lawrence E. Clark
UDSA-Soil Conservation Service
May, 1991

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