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EVALUATION REPORT ON THE
NATIONAL ENVIRONMENT SECRETARIAT
Ministry of Environment and Natural Resources
Government of Kenya

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NES EVALUATION

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EVALUATION REPORT
NATIONAL ENVIRONMENT
SECRETARIAT
MINISTRY OF ENVIRONMENT AND
NATURAL RESOURCES

EXECUTIVE SUMMARY

In 1972, on the eve of the Stockholm Conference on the Environment, Kenya Government created the National Environment Secretariat (NES). Its mandate then, as now, was: (1) to increase awareness of environmental issues among all the people of Kenya; and (2) to regulate use of the nation's productive resources.

The occasion of NES' fifteenth anniversary seemed a fitting time to look back at what NES had achieved over these years as well as to look forward to challenges for the next fifteen. The Ministry of Environment and Natural Resources, in conjunction with the Directorate of Personnel Management, approved an evaluation exercise; NES sought help from the International Institute for Environment and Development (Washington); the United States Agency for International Development (US-AID) through its Environmental Planning and Management Project, provided financial assistance.

NES and IIED assembled a team of seven members and asked them to review the impact of NES on Kenya's private, government, NGO, school, rural, and international organizations. The team spent one week in the field gathering data and three weeks writing up the results.

The principal findings can be simplified into two major conclusions:

1. NES has achieved good if not excellent results in raising environmental awareness and in bringing together different groups and constituencies who have interest in productive and sustained use of the environment. The report is filled with examples (see especially Section 11, Summary, Conclusions, and Recommendations) of NES' success in spreading the word.
2. NES has done less well in hammering out an environmental policy, in stimulating the passage of environmental-oriented legislation, in attaining a capacity to monitor environmental trends, and in achieving capabilities to regulate and enforce environmental protection.

The reasons for success in stimulating awareness are many. Staff have been active, external support generous, cooperation from other ministries usually freely given, support from the Kenya media helpful, participation by school and community groups abundant, NES publications and posters well executed, and moral backing from high officials forthcoming.

Explanations for less achievement in environmental protection are more complex. NES has not been formally authorized through legislation or executive order, to regulate environmental practices; resources to monitor and enforce environmental activities have not been provided; powers to conduct and enforce environmental impact assessments for development activities have not been granted; and training to impart such skills to NES staff has not been systematically organized.

This report makes fifteen recommendations which would, in part, correct some of these difficulties and give NES the capacity to assure both management and protection of Kenya's environment.

The Evaluation Team notes the importance of these recommendations. Kenya is in the vanguard of resource management and environmental protection in Africa. NES is among the oldest environmental agencies in Africa; it is the largest; Kenya provides the home for the the world headquarters of the United Nations Environment Programme; Kenya is endowed with good university and technical personnel who are knowledgeable about environmental matters; the Government has been supportive over the years on environmental issues. For all of these reasons, the Evaluation Team has taken particular care in casting the recommendations in practical terms that can be considered and implemented directly into day to day practices of Kenyan institutions.

The evaluation is important for another reason. Many African nations are beginning to create institutions comparable to NES. Though the structures vary and the mandates are suited to the particular needs of each nation, there is a common core of environmental management and protection that pervades all of the emerging agencies. For this reason, a review of NES as well as recommendations for its future may bring insight and perspectives to those dealing with environmental organizations in other parts of Africa.

The fifteen recommendations are presented here in abbreviated form. They are spelled out in detail, beginning on page 38.

General Recommendations

1. Environmental Policy.

Set in motion a process to prepare a Sessional Paper on environmental policy.

2. Environmental Law.

Review existing environmental law and begin the task of preparing new legislation that integrates existing law and fills gaps so that the nation will have systematic and comprehensive environmental legislation and therefore a clear set of guidelines to manage the environment.

3. Training and Staff Development

A scheme of service should be considered for NES staff as well as a vigorous training program to enable NES officers to acquire the necessary technical skills to do their jobs.

4. Budget

Given additional duties recommended in this report, NES, in conjunction with the Ministry of Environment and Natural Resources, should review its present budget for both recurrent and development expenditures and make appropriate requests to support the recommended additional work.

Institutional Recommendations

5. Structure of NES

NES should consider restructuring its internal organization in order to reflect more accurately its functions. It seems that the basic functions are (1) environmental coordination/management/catalytic activities and (2) environmental monitoring/regulation/enforcement. Two divisions reflecting these duties may be a more effective means to manage NES.

6. Organizational Fit Within Kenya Government

NES should remain within the Ministry of Environment and Natural Resources.

7. Title of NES

NES should consider changing its name from that of a "secretariat" to an entity with greater authority, perhaps to that of a "department."

8. Resolving Laboratory Issue

NES needs access to a laboratory capability to monitor and test water, air, soil, vegetation and other samples as a means to assure environmental sustainability.

Ministerial Recommendations

9. Interministerial Committee

Support and Strengthen the Interministerial Committee on the Environment.

District Recommendations

10. Decentralization

It is recommended that NES become more active and visible in rural areas as a means to strengthen environmental capacities for the District Focus and to reinforce capabilities for improved resource management among existing institutions in the districts and rural areas.

Private Sector Recommendations

11. Environmental Regulation

Steps should be taken to give NES teeth to enforce environmental protection.

12. Environmental Impact Assessments

NES needs formal authority to carry out environmental impact assessments for proposed projects in both the public and private sectors.

NGO Recommendations

13. Non-Government Organizations

NES should establish a line item in its budget for assistance to NGOs and use that line as a means to raise donor funds to engage in joint projects on the environment with NGOs.

Education and Information Recommendations

14. Environmental Education

NES should continue the good work it has initiated in its outreach programs. In particular, with the advent of the new 8 - 4 - 4 school curriculum, NES should reach out to school and education agencies to add an environmental perspective in those places where it is appropriate.

15. Environmental Information Systems

NES needs to undertake a thorough review of its current library and computer data bank with a view to upgrading them into a helpful and practical Environmental Information System. The Evaluation Team recommends that NES approach donors to help with these additions to create a fully operational EIS for NES.

PURPOSE OF EVALUATION

Kenya's concern for the environment stretches back more than two decades. Discussions about how to involve Government with problems of the environment began in the 1960s. The first official action came on 8 December 1971 when the Cabinet reviewed a memorandum from the Minister for Natural Resources and determined that:

... a full-time secretariat should be established to service the working committee on the environment;

... necessary funds should be made available for the secretariat;

... the Minister for Natural Resources, in consultation with appropriate Ministries, take the necessary action to implement the above.

On 25 February 1972, the Ministry of Natural Resources communicated this decision to the Ministry of Finance and requested that funds be made available for staff recruitment and operating expenses. And with this short series of exchanges, the National Environment Secretariat (NES) was born.

The now famous Stockholm Conference on the Environment followed during June of 1972 and NES represented Kenya at the Secretariat's first international meeting. The intervening years have brought many changes to NES as well as new problems and challenges in Kenya's environment. For example, NES was originally housed within the then Ministry of Natural Resources. Early in its career, NES was transferred to the Office of the President (7 February 1974) where it remained for five years. Then in 1979, during a major reorganization within Kenya Government, NES was moved to the newly created Ministry of Environment and Natural Resources where it remains today.

NES staff has grown to respond to the new challenges which it faces. For example, in 1974, NES had a professional staff of 5 people; by 1980, the number had increased to 30 professionals; in 1987, the roster stands at 62.

Given these changes within NES, it seemed appropriate, after 15 years of activity, for NES to take a look at itself, both to reflect on things done during these 15 years as well as to consider new directions and new programs for the future. The Director, A.K. Kiriro, inquired, in October, 1986, whether the International Institute for Environment and Development (IIED) might be able to support an evaluation team. Through the Environment Planning and Management Program, funded by the

United States Agency for International Development, IIED provided the necessary help.

Parallel to the IIED effort, the Directorate of Personnel Management, Office of the President, Government of Kenya joined with the evaluation team to determine whether the present structures of staff and organization were responding to NES' mandate and whether they were able to carry out NES' mission.

The terms of reference for the evaluation team were:

... to review previous NES activities and publications and to assess their effectiveness in creating environmental awareness among the Kenyan public;

... to review the effectiveness of NES programmes on other Government ministries and agencies including the district level with a view of enhancing their cooperation in initiating and executing environmental programmes;

... to review the effectiveness of NES programmes on NGOs and other private agencies including private companies, parastatals, rural institutions such as women's groups and to suggest how NES can increase the effectiveness of its environmental programme;

... to review present NES institutional arrangements as well as to consider alternative institutional structures to make NES more effective;

... to review NES staffing needs and staff development as a means to build NES' capabilities in handling complex environmental issues created by fast growing population and industrialization;

... to review links to international bodies such as UNEP.

The Ministry of Environment and Natural Resources authorized the evaluation. NES, in cooperation with the International Institute for Environment and Development, organized a seven person team including one member from Zimbabwe (team leader), one from the United States, one from the University of Nairobi, one from Kenyatta University, and three from Kenya Government. The names and titles of the team are included as Annex A.

This effort is not the first attempt to review NES programs. In 1979/80, UNESCO provided support for Randall Baker (University of East Anglia, UK) and David Kinyanjui (NES) to consider NES' role in managing environmental issues. But the

Baker-Kinyanjui document made no attempt to evaluate the effectiveness of previous NES performance.

Subsequently, The United States Agency for International Development (US-AID) evaluated individual project elements supported through the Program for Environmental Training and Management in Africa (ETMA). But these reviews were project specific rather than institution based. NES has also received internal staff analyses and memos suggesting changes in organization and structure (see "The Role and Functions of the National Environment Secretariat," 1981; and "District Environmental Assessment Project," 1981).

Yet until the present initiative, there has not been a systematic attempt to: (a) review NES' previous activities, (b) judge which items were being effectively carried out and which not, and (c) make suggestions about future work. This document summarizes the findings of the Evaluation Team.

NES staff worked energetically to prepare background materials for the evaluation and presented a compendium of data and to the Evaluation Team. This documentation included lists of NES project activity, staffing, budget support, publications, organizational structure, and proposed program activity. Some of these materials have been reproduced in the annexes to this report. Special thanks are due to the NES Director and staff for making these materials available.

BACKGROUND OF NES

NES is one of the earliest and largest of Africa's environmental and resource management institutions. Created on the eve of the Stockholm Conference on the Environment; seasoned during times of African drought, declining food production, and increasing resource degradation; expanding when Kenya's population is growing faster than employment opportunities; and maturing during Kenya's initial steps toward industrial and commercial expansion; NES has many experiences to examine for its own strengthening and many lessons to offer other African nations.

When NES was formed, there were few models of environmental agencies in other Third World nations and virtually no models for Africa. The inclination was to go slowly and learn, step by step. Thus, NES was created as a Secretariat, with primary expectations to coordinate and serve as a catalytic agent for existing ministries, parastatals, and private agencies. Its original divisions reflected this mandate with environmental education being the most prominent during its early years.

Its first two major projects, the Project for Environment and Development (funded by UNEP and UNDP in 1977) and the District Environmental Assessment Profiles (funded by US-AID in 1978)

were designed to assemble information, increase awareness, and identify problems that other agencies could tackle. NES also published three or four papers entitled, "State of the Kenya Environment" in its early years, again offering information and suggestions but having no budget or authority to take action. Finally, in its early years, NES served as liaison for Kenya Government to the United Nations Environment Programme (UNEP) with particular responsibility to prepare materials and coordinate Kenya's delegation to UNEP's meeting of the Governing Council. Again, these duties were primarily coordinating in nature and brought little project activity or budget.

NES' early mandate reflected this broadly based coordinating role. Excerpts from its 1981 statement of "Role and Function" included phrases such as:

...promotion of inter-disciplinarity and integration of environmental policies, plans, programs, and projects...

... performing a catalytic and coordinative role in the initiation, formulation, and development of policies related to the environment ...

... developing strategies and methodologies for the achievement and evaluation of accepted environmental policies...

... assessing and evaluating the impact of development activities on the environment...

... providing advice and accurate information on matters related to the natural and man-made environment...

More recently, NES has attempted to tighten its activities through adoption of the following policy objectives (1983):

... to increase the awareness of Kenya on the need to maintain and create a desirable environment;

... to promote the enactment of laws and regulations which will protect the environment or require remedial action to be taken to improve it;

... to promote the enforcement of established laws and regulations to achieve the intended end;

... to increase the knowledge of the environmental consequences of human activities and the possible protective and remedial action necessary to maintain a desirable environment;

... to promote the provision of essential services to human settlements;

... to encourage the conservation of flora and fauna and areas of scenic interest for scientific, recreational, and tourism (economic) purposes.

The focus on "legislation," and "enforcement," and "protective and remedial action" were newer concepts and implied a new sense of need and even urgency to manage Kenya's environment.

To implement its evolving mandate, NES has carried out a number of activities, including:

... coordinating role with UNEP, especially for the Governing Council;

... environmental education, including publication of posters and pamphlets; working with teacher and school groups; helping with radio and TV programs; and sponsoring exhibitions at national and regional agricultural shows;

... Project on Environment and Development which produced approximately 30 papers on aspects of Kenya's environmental problems and needs;

... District Environmental Assessments which have provided profiles of 12 districts and have followed up with environmental seminars in 9 of the districts;

... fast and inexpensive means to monitor soil erosion in two districts to determine rates of loss in different ecological and land use zones;

... population and resource trend projections to demonstrate the interrelationship between growing population and resource scarcity;

... research on climate variability to evaluate the impact of fluctuations in climate on small-scale farmers;

... management of the Interministerial Committee on the Environment (IMCE) which includes upwards of 20 ministries and agencies concerned with the environment;

... Kenya Government liaison with special activities such as the Cairo Conference of Environmental Ministers, UNEP's Subregional Environmental Groups, Intergovernmental Agency for Drought and Desertification, and the United Nations Conference on Desertification

... preparation of environmental sections of the Five Year Plan; and,

... a program in village assessments to determine effective means of resource management for rural areas, including analysis of resource problems and training programs to resolve them.

In carrying out these activities, NES has become aware of a number of constraints. For example, there is no clear policy statement that incorporates Kenya Government's position on environmental issues. There has been no Sessional Paper on the nature of environmental problems or the scale of need to respond to them. Instead there are many documents, policy pronouncements, and Sessional Papers (for example on food, population, livestock, and rural development) that have environmental implications but do not offer precise guidelines on environmental policy or principles of management.

In like manner, Kenya has no systematic environmental law. Although there are bits and pieces of regulations subsumed within legislation such as the Water Act, the Housing Act, the Factories Act, the Health Act, the Agriculture Act, or the Chiefs' Act, there is no enabling legislation that gives NES teeth to act upon findings or problems which it may identify. Annex J lists some of the more noteworthy of these environmentally-related acts.

Because there is no explicit environmental legislation, there has been no attempt to establish environmental standards, for example, in air quality. Given the absence of standards, there is no way in which NES can monitor or enforce environmental hazards or cite examples of noncompliance with the accepted norms of environmental practices.

As a result, NES has constituted itself into 12 divisions to respond to a variety of different environmental needs (see diagram on page 15). Given this diversity of organization, NES has been unable to develop critical skills or in-depth capacities to monitor, regulate, or enforce any actions or to enhance the environment in any binding or regulatory way. Instead, its achievements have been limited to awareness building and sensitizing with occasional forays into campaigns of persuasion to correct a resource management problem.

-- An example based on NES duties articulated in the current Five Year Plan (1984-88) will illustrate these points. The Plan notes that NES is responsible for assessing the potential adverse environmental impact of all public and private development projects in Kenya (page 65). To carry out this duty, NES has an Environmental Impact Assessment (EIA) Unit with five members of staff. Yet there is not in place any procedure requiring environmental examinations or environ-

mental impact statements for development projects, construction efforts, water programs, irrigation activities, industrial installations, or highway development. In the absence of authority, the EIA unit is unable to act with any teeth, only with requests.

Given the lack of sharp focus for NES, it has been difficult to mount a major staff development and training program. There have been several proposals discussed and even sponsorship of a few individual training activities. Yet these efforts have not taken hold of NES' basic needs for skill development and are not linked directly to the major responsibilities with which NES has been charged.

Concomitantly, NES has not had sufficient program budget to take meaningful actions. Although expansion of staff positions has progressed well, related funds to carry out program have not. At the moment, NES has 62 professional staff and 40 support staff yet only three vehicles. As another example, NES has already (September, 1987) exhausted its travel and imprest (per diem) budget for the entire fiscal year, even though the year is only two months old. Given these shortages of funds, it is difficult to foresee ways in which NES can carry out its field data collection and enforcement responsibilities.

In spite of these constraints, NES has achieved several successes. During the course of the evaluation, the team talked with approximately 30 representatives of ministries, NGOs, higher education, schools, private industry, and special commissions. The response was almost unanimous that NES had done well in a number of areas.

For example, the District Environmental Assessment Profiles (DEAP) received wide praise. One lecturer at a teacher training college had used the profiles as part of her training program. She had encouraged her students to develop teaching units, based on the district data. In one case, the student had taken the profile home (Kilifi District) to try it out with people in his location. Not only did the people find it helpful but the student went on to carry out a formal project, based on the profile. He is now using it in his own classroom. In another case a regional environmental committee has been formed because of the profiles. In still another instance, methods of waste disposal were changed because of the profile. And in still another case, a ban on livestock grazing on hilltops near Nairobi was issued by a local assistant chief.

DEAP reinforces the recently introduced District Focus in development planning and implementation. Given the data now becoming available through DEAP, planners have access to

information and analysis not previously accessible. District Development Committees (DDCs) have a better grasp of resource management problems in their districts. Technical ministries can see the problems they face in a larger and cross-sectoral panorama. That some of the follow-up which DEAP intended has not taken place is a factor of unclear program mandates and insufficient budget support.

NES has helped to bring together and resolve tensions in widely disparate areas such as the Wildlife Department and Masai Chiefs (Kajiado), local water users in Thika and a commercial tannery, water users in several locations and siting of chemical plants, and among users of Lake Victoria's massive waters and watershed. But most of this conflict resolution has resulted from tact and persuasion rather than from any formally authorized powers.

NES has done well to stimulate Non-Governmental Organizations (NGOs) to have better awareness of environmental issues and through informal relationships with groups such as the Committee on the Human Environment (CHEK) and Kenyan Non-governmental Organizations (KENGO) to produce effective programs and publications. NES has reached schools with many programs. It has mobilized many national and local meetings for events such as World Environment Day. NES has been the backbone of Kenya's participation in the UNEP Governing Council meeting as well as other regional and international meetings.

NES has been active in identifying funds for a number of activities involving NES staff, university units, other ministries, NGOs, and private Kenyan organizations. For example, some of the larger programs and proposals which NES has successfully prepared include:

- ... Project on Environment and Development;
- ... District Environmental Profiles;
- ... Soil Erosion Monitoring in Kiambu and Murang'a;
- ... Population and Resource Trends Projections;
- ... Climatic Variability and Social Impacts;
- ... Village Resource Management Assessments;
- ... Training in Water Quality Management, Environmental Education, Desertification Control, and Pollution Control.

In addition, NES is actively seeking funds to support:

- ... Monitoring Village Resource Trends;
- ... Training of Rural Resource Managers;

- ... Preparation of a National Conservation Strategy;
- ... Implementation of Procedures for Environmental Impact Assessment;
- ... Establishment of an Environmental Information System for Kenya;
- ... Proposal for an Environmental Research and Monitoring Centre.

INSTITUTIONAL ARRANGEMENTS

Organizationally, NES is headed by a Director who is supported by a Deputy Director. At the next level are four divisions (see the organizational chart on page 12): Administrative and Support Services, Planning and Assessment, Human Settlements, and Environmental Protection. The two technical units (Human Settlements and Environmental Protection) should be headed by Assistant Directors in Job Group "M" but these posts have been vacant for at least a year.

The chart notes the sections within each division, including:

Human Settlements

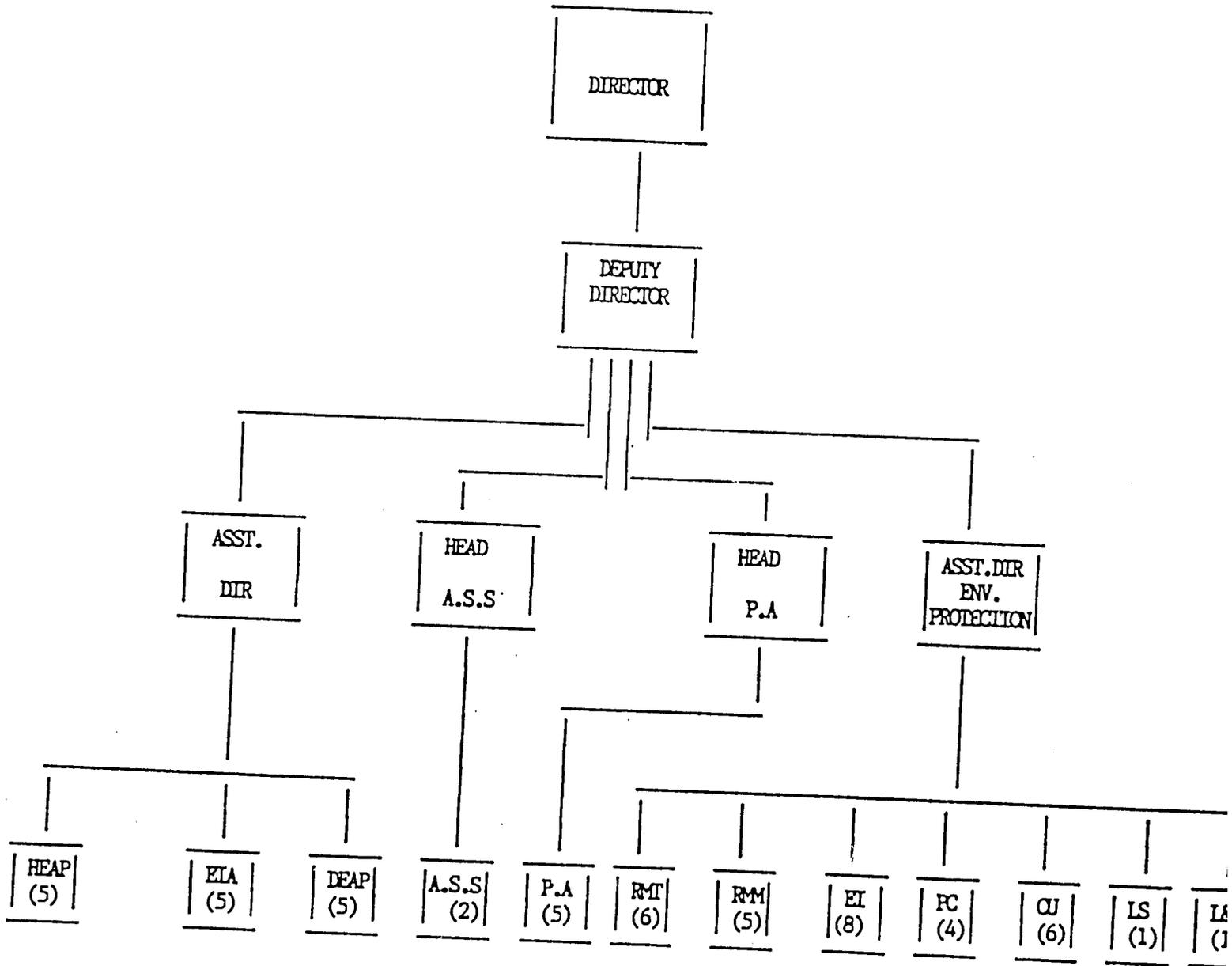
- Human Environment Assessment Program (HEAP)
- Environmental Impact Assessment (EIA)
- District Environmental Assessment Project (DEAP)

Environmental Protection

- Resource Management: Terrestrial (RMT)
- Resource Management: Marine (RMM)
- Education and Information (E & I)
- Pollution Control (PC)
- Chemical Usage and Toxins (CU)
- Laboratory Services (LS)
- Liaison and Special Duties (L & S)

All ten section heads are classified in Job Group "L." Given that the two posts of Assistant Director are vacant, each section head reports directly to the Director or, in his absence, Deputy Director. This situation can easily lead to a break in communication as there is no adequate control and direction of these different and sometimes overlapping activities. It suggests that the posts of Assistant Director should be filled and the overlapping duties clarified.

NES ORGANISATION CHART



A.S.S- Administration and Support Services; P.A.- Planning and Assessment; HEAP- Human Environment Assessment Programme
EIA- Environment Impact Assessment and Development Activities; DEAP- District Environmental and Assessment Project;
RMT- Resource Management (Terrestrial); RMM- Resource Management (Marine); EI- Education and Information;
PC- Pollution Control and Environmental Health; CU- Chemical Usage and Toxins; LS- Laboratory Services
L&S- Liaison and Special Duties

Note: i) A few of the newly recruited officers are not included in the numbers shown above
ii) The two Assistant Director posts shown exist in the NES establishment. They have not been filled however.
iii) Only senior staff are represented above.

The two administrative divisions in NES, Administrative and Support Services and Planning and Assessment, are properly structured and can only be strengthened in the future if the service so demands.

The Evaluation Team noted a proliferation of different job designation titles utilized in NES. There were a total of twenty three independent titles in the technical fields. This does not include the multiplicity of titles utilized for the Administrative and Support Services as well as the Planning and Assessment officers.

The twenty three job titles are:

- Director
- Deputy Director
- Assistant Director
- Chemist
- Education Officer
- Human Settlement Officer
- Agricultural Officer
- Game Officer
- Environment Protection Officer
- Biologist
- Ecologist
- Physical Planning Officer
- Assistant Engineer
- Building Surveyor
- Physicist
- Inspector of Factories
- Forester
- Graphic Artist
- Public Health Officer
- Research Officer
- Information Officer
- Ecological Assistant
- Physical Planning Assistant

It is difficult if not impossible to control career development and progression with such a multiplicity of titles. The idea of a Scheme of Service for NES was mentioned several times and discussed by the Evaluation Team. It is clear that NES, in cooperation with the Directorate of Personnel Management, should explore ways to develop unified career guidelines for its staff.

Further, DPM members of the Evaluation Team noted that they observed problems in staff deployment that could not be solved within the context of the present evaluation. Rather, these issues could best be sorted out through separate discussions with NES leadership, the Ministry of Environment and Natural Resources, and the Ministry of Finance so that the establishment problems could be solved once and for all. This exercise would best be done separately and be finalized as quickly as possible.

Another concern is the structural fit of NES within Kenya Government. In its earliest stage, NES was part of the then Ministry of Natural Resources. It later moved to the Office of the President and then in 1979 to the newly created Ministry of Environment and Natural Resources. Several of those interviewed suggested that NES would function more effectively if it were housed in either the Ministry of Planning and National Development which would bring it into closer contact with the Resource Survey and Remote Sensing Department (formelrly KREMU) and Central Bureau of Statistics (CBS) or, alternatively, to return NES to the Office of the President which would provide greater clout and bring it into closer contact with groups such as the Permanent Presidential Commission on Soil Conservation and Afforestation.

These are important considerations as the way in which NES is structured and its place in the government determine its effectiveness in monitoring, regulating, enforcing, and enhancing the environment. Recommendation 6 determines, after careful deliberation, that NES should stay within the Ministry of Environment and Natural Resources. However, government officials should look carefully at this fit and review this recommendation in order to assure that NES operates from the strongest possible position to manage the environment.

At least two additional concerns relate to organizational fit and links to other parts of the Government. One is the issue of a laboratory for NES. At present NES has no laboratory to test water, air, soil, or product samples. Instead, NES officers in the pollution control units must ask other labs such as those of the Government Chemist, the Ministry of Water Development, the National Bureau of Standards, the University of Nairobi, or Kenyatta University to help out. In some cases, such assistance is available. In other cases, help has not been forthcoming and NES has had to wait. Given the instability of some of these samples, a wait of two or three weeks may render the sample invalid.

The Evaluation Team did not have time or resources to visit each of the existing government labs to determine whether current facilities are over or under utilized and whether NES requires a new laboratory facility. Recommendation 8 suggests a process to assess the current state of lab utilization in Nairobi and whether NES' longer term operations will justify creation of a laboratory. In the meantime, NES should be working actively, in association with exiting labs, to attain maximum cooperation and support. Further, NES staff should use, to the fullest extent possible, portable and field kit equipment for testing water, soil, air, and vegetation samples.

The second structural issue revolves around the NES library. At the present time, the library and the computer data system are not connected nor is the library able to keep up with the tasks of organizing, cataloging, and retrieving information.

While the library and computer systems have been helpful to date, they have not begun to reach potentials nor are they now organized in ways that will allow such utilization to take place in the near future. Recommendation 15 deals with ways NES could move toward an environmental information system that would be a significant boost for NES, for other ministries, and for the nation.

IMPACT ON MINISTRIES

The impact of NES on other ministries is felt primarily through the Inter-Ministerial Committee on the Environment (IMCE). A full membership list of the IMCE is attached as Annex I. Because most environmental activities are initiated by Government Ministries and Departments, the role of the IMCE in managing environmental activities is important. Further, because ministries traditionally operate in a vertical flow of information within a ministry rather than a horizontal flow between ministries, the committee is additionally important. Finally, because virtually all environmental problems cut across traditional sectoral lines of individual ministries, coordination and management among ministries is vital. Thus, NES' role in directing the IMCE is probably the single most active force within Kenya Government to manage ministerial environmental affairs.

The IMCE serves as a national forum through which local and national environmental policy is managed. It also acts as an advisory body to ministries and departments concerning appropriate environmental courses of action in a given situation where the intended development may be in conflict with the environment. In fact, it is through the intricate art of negotiating with other ministries and through using legislative authority contained within these ministries, for example in water quality standards, that NES has been able to achieve the modicum of environmental enforcement that has been accomplished. It is pertinent to note that a minority of those questioned by the Evaluation Team felt that this level of inter-ministerial coordination and use of existing environmental legislation was working well enough and should be the mode of operation for NES' environmental regulation and enforcement for the future.

The IMCE also identifies areas of conflict in resource use and formulates programmes of action and strategies to resolve a given environmental crisis. Usually the IMCE identifies those ministries and departments to take the lead role and designates the type of coordinative action that should take place. Further, the IMCE receives reports from investigations and inquiries on environmental matters, thereby acting as a watch dog committee on the environment to the extent possible within the existing legislation.

The IMCE also establishes task forces and sub-committees of relevant ministries and departments to carry out studies and investigations of specific environmental problems and recommends appropriate remedial measures. For example, there are currently task forces studying problems of a water weed that is fouling Lake Naivasha and of siltation problems in Lake Elementaita. In some cases these special task forces will direct ministries or departments to initiate remedial action against polluters, as was the case, for example, with the Chemelil Sugar Company and the Pan African Paper Mill. Polluters have included private industries, other ministries, parastatals, and municipal councils. Examples of some of these cases over the years:

- ... tanneries,
- ... cattle dips,
- ... sugar mills,
- ... paper mills, and
- ... coffee factories.

In summarizing the impact of NES on other ministries, it becomes clear that its mandate for catalytic and coordinating functions has been working reasonably well. Though the IMCE is an overly large and sometimes cumbersome group, though it is lacking in direct scientific expertise, though the flow of information and day-to-day management of the committee received some criticism from members, though the committee is sometimes plagued with inter-ministerial competition and rivalry, and though the response time on complicated environmental issues has sometimes been long, the point remains that the committee has functioned and has, as in the examples cited, been effective in resolving point-specific problems.

However, the fact which interviewees mentioned over and over remains: NES functions only indirectly in matters of environmental enforcement and regulation. In the absence of a clear and direct mandate and legislative authority, NES has been working with only partial effectiveness. It has not achieved a much greater influence that is potentially within its grasp and which would enhance the quality of the Kenyan environment, especially its long term capability to produce for generations to come.

IMPACT ON DISTRICTS AND RURAL AREAS

Impacts are difficult to measure when trying to isolate cause and effect relationships in rural Kenya. NES has at least four programs recently or currently underway designed to improve the environment of rural Kenya. Although NES has no field staff, it has been able to develop a modest level of visibility in the districts.

1. District Environmental Assessment Profiles

By far the largest program are the district profiles. Their goal is to provide a sound environmental data base to prepare district development plans and to identify pressure points where preventive or corrective action should be taken. To date, 12 profiles have been produced, in the following schedule:

PRODUCTION SCHEDULE: DEAP

<u>District</u>	<u>Date Published</u>
Kajiado	1980
Nyeri	1980
Kisii	1981
Kitui	1981
Murang'a	1982
Nakuru	1984
Kilifi	1984
Kwale	1985
Lamu	1985
Mombasa	1985
Meru	1985
Lower Tana River	1985

Bungoma has been published in draft form, in preparation for the district seminar; Narok is close to publication.

Initially, the reports were produced in a cooperative relationship with Clark University, with support from US-AID's ETMA project. For the first two or three, Clark produced about one third of the report, NES about two thirds. By 1983, NES was producing virtually all of each report while the AID funds continued. AID support concluded in 1985 and the rate of production has slowed considerably although there is still a team in place and reports are being produced at the rate of roughly one per year. However, limitations of travel, imprest, and publication funds severely hamper the work of the DEAP team.

Typically, a report takes 6 to 9 months to produce though the team usually works on two or even three simultaneously. The core DEAP team of 5 people draws on technical expertise from other NES divisions and, on occasion, from other ministries or departments. For example, when working at the Coast, NES collaborated with the Kenya Marine Fisheries Research Institute; when working in Nyeri and Murang'a, a member of staff from Kenya Science Teachers College joined the DEAP team.

In the early stages, the reports tended to be descriptive, largely compiling information, as was the case with Nyeri or Kisii. These documents tended to bring together information on the physical, social, and cultural environments that was already available though not necessarily in the hands of the district planning and extension officers. As the reports matured, as evaluations and review teams made recommendations, and as the DEAP team became more experienced, the reports assumed a more analytical tone.

The volume, for example, on Kwale concludes with identification of several resource management problems including deforestation, threats to endangered species, need for management of national reserves, inadequate health services, lack of water, declining agricultural productivity, weak institutions for marketing, endangered marine resources, and need for environmental education. The report circulated in the district in draft form and then was presented at a district seminar (17 - 19 June 1985). Sixty six district officials and residents attended and developed a series of practical recommendations, for example, noting that, the Agricultural Finance Corporation (AFC) should increase its visibility and credit access, group ranches needed more attention to basic infrastructure, the Kenya Grain Growers Cooperative Union should open a branch in Kwale, the Wildlife Conservation and Management Department should speed up completion of its game fence, the Wildlife Department should expedite payments for compensation, etc.

Further, there has been modest follow-up to the profiles, for example in Mombasa where a waste disposal site was relocated, in Kajiado where a joint wildlife and livestock sharing of open range was implemented, in Coast Region where an environmental action committee was established, and in Mombasa where a special study group on the menace of crows was formed.

Case Example I

NES and KSTC: Effective Partners in Environmental Education

Margaret Muthoka has taught at Kenya Science Teachers College for the last ten years. Among her first assignments was construction of a course in environmental education for prospective science teachers. She took a year off and turned to NES, both for advice and for materials. An early version of NES' "State of the Kenyan Environment," papers from the Project for Environment and Development, and UNEP publications available in the NES library provided what she needed.

In 1981 she updated the course and, again, turned to NES for help. When, in 1982 NES needed assistance in organizing field teams for DEAP, they asked KSTC for help; teachers joined in. Later, when the profiles were published, the KSTC used DEAP materials in a unit entitled "Environment and Development." Several DEAP profiles are on reserve in the KSTC library and form the core sources for the unit. Subsequently, after KSTC students have completed their training and become teachers, they use much of the DEAP data in their own secondary school classrooms.

In this way, NES information from the profiles is made available far beyond the initial audience of district planners and extension officers. Ms. Muthoka urged that more attention be paid to preparing formal school materials from the DEAP profiles.

Based on conversations with NES staff, ministry staff, and school personnel, it appears that the goals of preparing the profiles and holding the seminars have generally been achieved. Awareness, data compendia, and problem identification have mostly been accomplished.

However, there are considerably greater potentials that could be achieved through the process of constructing and distributing the district profiles including preparation of district environmental plans of action, stimulating local activities related directly to improved resource management, increased capacity at the district level to carry out environmental impact assessments of proposed development projects, and direct work with school groups at several different age levels to prepare materials for environmental education that are specific to the district for use in classrooms. These and other suggestions have emerged from the evaluation discussions and are contained in the recommendations which conclude this report.

Overall, the district profiles have done a good job of identifying issues, making information available, and creating an awareness at the district level of environmental need. They have done less well, because of lack of rural-based staff and limited field budgets, in stimulating systematic follow-up action or in having a sustained impact on the day-to-day activities of extension officers, project design efforts, and daily practices of farmers.

2. Resource and Population Trend Projections

A second program NES has mounted to work in the districts has been trend projections. Initially started as an attempt to provide better data to the DEAP team, the trend projections have taken on a life of their own. At present, though activity is limited due to lack of funds, trend projections are used in training courses, at agricultural shows, and for briefing policy makers. Their evolution is of some interest.

In 1981, as the district profiles were gaining momentum, a small computer-based data exercise was launched, with help from US-AID, to project the impact on district level resources of population growth. Two sample districts were taken, one in the high potential areas (Nyeri) and the second at the Coast (Kilifi). Data were assembled from the district profile and trends developed, first in population, and second in a variety of resource themes including water, arable land, woodfuel, deforestation, soil loss, school and health needs, and livestock potentials. The result was a small interactive computer program that demonstrates, for example, the price of charcoal in Kilifi in the year 2,000 if present population growth (8 children per family) continues as compared with having 6 or 4 or 2 children. The program has been used

effectively at regional and local agricultural shows, at district seminars, in schools, and with district officials.

A second use of the trend projections has been publication of a pilot pamphlet for schools, noting the relationship between population growth and resource availability. The booklet was prepared by a member of the Education Division and includes cartoon sketches and clear diagrams as well as a few study questions at the end. The booklet is currently being field tested and may become a model for subsequent school materials in other districts.

Finally, the trend projections help the DEAP team as it prepares new profiles. Having a computer program that fits the Coast, a second for high potential areas, and a third for the Western part of Kenya allows NES to enter new population and resource data for a particular district and to develop charts and graphs, showing the longer term trends, with relatively little investment of staff time or energy. These projections have been used in the newer profiles.

It is too early to judge the effectiveness of the projections. Without question, the computer model is an attraction at agricultural shows, mostly from school-age students who want to know what life will be like in their district when they become adults. However, there are no firm assessments linking changes in resource use or population growth to the NES projections nor is there any likelihood that such linkages can be established. Rather, the projections are another example of NES gaining visibility and increasing environmental awareness through its outreach programs.

3. Soil Monitoring

Another NES district effort focussed on soil erosion. As NES compiled the district profiles it became obvious that Kenya did not have good data on soil loss. Whereas a number of site specific studies had been carried out over the years, there has not been a systematic effort to relate land use practice to different levels of soil loss nor have there been efforts to enable farmers to measure soil loss on their own shambas as a means to understand the relationship between cropping styles, mulching, composting, cutoff drains, terraces, etc. and subsequent loss of soil.

NES, with support from US-AID, established a pilot program in Kiambu and Murang'a Districts, with the stated purpose to develop low cost and fast soil loss assessment procedures. The technique used a piece of plastic pipe about 100 cm long and 10 cm in diameter with an opening cut out of the top to catch the soil. Cost per trap was about Kshs 400. The experiment installed 30 traps in a representative sample of fields and hillslopes and then provided weekly monitoring of

amounts of soil trapped to determine rates of loss under different soil, land use, vegetation, slope, and rainfall conditions. The findings are contained in a separate series of reports and generally confirm earlier hypotheses that erosion is more severe among food crops than commercial crops, on land with few inputs than among high inputs, and on land where little attention has been paid to cultivation styles.

Case Example II

IMPROVED SOIL PRACTICES FROM MONITORING: An Example of Changed Smallholder Cultivation Practices

For several years, John Kamau had grown tomatoes on his steeply sloped shamba of 3 ha of high potential land near Kikuyu, in Kiambu. His close proximity to Nairobi -- about 20 km -- gave him good access to the lucrative urban vegetable market. He felt content that his future was secure.

In 1981 a NES team visited his shamba and asked permission to place a soil erosion monitoring trap in one of his cultivated fields. He was pleased to help. The first week there was only light rain and his trap collected very little soil -- something like an annual rate equivalent to two or three tons per ha per year. This is not an unusual rate of loss.

The second week, it rained quite a bit. Kamau's trap overflowed with Kiambu's rich soil. When told that at that rate he would be losing over 50 tons of topsoil per ha per year, he became alarmed. The next day Kamau and his farm helpers were on the slopes, recutting the furrows for the tomato plants and building terraces every few furrows to arrest soil loss.

Erosion that had been underway for several years had made no impact on Kamau because he couldn't see it happening. A brief NES measuring device changed both his attitude and his behavior. Now his future is more secure, as long as he maintains the furrows and bench terraces.

NES feels positive about the basic soil testing methodology although there has been considerable debate among the academic and technical community as to the accuracy of such an expensive methodology. However, NES has not had the field

staff or budget support to continue with the experiments and, at the moment, the program is in abeyance.

4. Village Assessments

NES' final district activity is a recently introduced attempt to understand the nature of effective resource management at the sublocation or village level. A team of 7 researchers from NES, with assistance from US-AID, spent the month of July, 1987 in a sublocation (three villages with a total of 350 households) in Machakos, about 75 km east of Nairobi. The physical setting of the sublocation is harsh with marginal rainfall, steeply sloped terrain, rocky soils, and scarce water sources. The NES research team was anxious to learn how the people of the villages were able to cope with their environment and in particular what management systems, technologies, and leadership patterns allowed them to succeed.

The detailed findings are reported elsewhere. A brief summary suggests that the study team determined that the villagers understand well the relationship between sound resource management and sustained productivity of the land; that the people are prepared to invest considerable time and energy in labor-intensive resource conservation work such as bench terracing, cut off drains, gabions, etc.; that the key to the effective resource management in the sublocations are the village associations and institutions that have enabled leaders to mobilize the community in effective ways; and that the longer term well-being of the villages in terms of resource use, population growth, income generation, education, and health are dependent on ways in which the present generation manages resources in this fragile environment.

However, the study also determined that some aspects of resource management are not so well controlled, especially in areas of water access and water use. A resource access conflict has arisen over sand in the river and stream beds in and near the villages and the local leadership has been unable to control the export of sand, thereby destroying the capacity of the streams to slow down and store water. The lesson from the water conflict suggests that even villages that are well managed occasionally need help from an outside agency, perhaps in a mediating or regulatory role, to seek solutions between parties in conflict over resources.

NES has funds available through the Ford Foundation to expand the village assessments to three additional sites and plans to use the data collected to begin training programs for sublocation and village leaders in improved techniques of resource management. The program is too new to have any measurable impact although it is clear that changes in resource use are already underway in the sublocation where the research has been carried out.

In summarizing the impact of NES in the all-important area of the District Focus, it is clear that NES has made a sound beginning, especially when one considers that the programs that have enabled NES to work in the rural areas have generally been financed from resources which NES has raised on its own. The district profiles are visible and are gaining attention; the trend projections and soil monitoring have potential to influence behavior at several important levels; the village assessments seem to be unlocking significant understandings at multiple levels with implications for direct action, for training, for school curricular materials, and as a way to monitor, over a long time period, the effectiveness of resource use and land management practices.

Yet there are still several problems with NES's district efforts. First, there has not been a clear linkage established with several parallel efforts underway in different parts of Kenya Government. For example, the Institute of African Studies at the University of Nairobi has produced several socio-cultural district profiles. Although the mandates are somewhat different, the two exercises have potential for considerable collaboration. Yet such has not been the case. As a second example, The Resource Surveys and Remote Sensing Department (formerly the Kenya Rangeland Ecological Monitoring Unit [KREMU]) in the Ministry of National Planning and Development is working on district profiles, noting ecological change, derived from remotely sensed imagery. Seemingly there has been no coordination among NES and the other two entities.

Second, NES has not been able to produce district profiles from its own resources at rates sufficient to meet the need. For example, US-AID funding stopped in 1985. Since then drafts have been produced for two districts (Bungoma and Narok) but funds have not been available to mount follow-up seminars nor have any other follow-up initiatives been undertaken. While NES has been seeking additional support from other donors, the profiles themselves have slowed. However, the DEAP team is intact, its production continues, and its current plan to prepare an "urban" environmental assessment for Nairobi is getting underway, primarily because the team can assess Nairobi without need for additional travel and imprest support.

NES IMPACT ON THE PRIVATE SECTOR

The impact of NES on the private (for profit) sector has been problem specific rather than a systematic monitoring and regulation. Generally, NES has reacted when a problem has been brought to its attention rather than carried out any comprehensive or regularized review of environmental problems.

Cases come to NES in a variety of ways. The most common is through the IMCE, as noted above in the section on NES Impact on Ministries. In other instances letters may come directly from private citizens (the case of a government facility in Mombasa polluting a nearby stream), from newspaper stories (the case of a tannery contaminating water), through special study teams (a review of fish kills in Lake Victoria), through direct observations by NES officers or other members of the IMCE (declining water levels in Lake Elementaita), or from specific reports of district or extension officers.

In most cases the problems are referred to the IMCE which is listed in Annex I. NES, as the executive agent for IMCE, then takes initiative to gather data, coordinate action, and if necessary, assign enforcement duties to the appropriate ministry. A case example will illustrate this point.

Case Example III

LEATHER INDUSTRIES OF KENYA: Protection and Regulation by Moral Suasion

Recently, Leather Industries of Kenya, with backing from the International Finance Corporation, proposed a tannery in Thika. Given earlier difficulties which had arisen in Thika with Bulleys Tanneries, including noxious fumes from sulphur dioxide and health problems arising from chromium being dumped in the Thika River, the people of Thika were apprehensive. Several raised voices of concern.

The Interministerial Committee on the Environment stepped in, with NES and the Ministry of Water Development as lead agencies. Site visits and discussions with the company, backing from IFC, and close cooperation from the Thika Municipal Council resulted in a pollution control plan that met everyone's needs. Because loans were available to finance the necessary pollution control equipment, the implementation of the plan was possible. Because NES and others from the IMCE had created a positive setting within which the discussions had taken place, there was incentive to install the equipment. And because the previous experience with Bulleys Tanneries had been difficult, there was a climate of opinion seeking to avoid future problems.

Thus a combination of circumstances enabled the IMCE to help the Leather Industries of Kenya as well as the people of Thika resolve what might have become an awkward situation. Further, the solution came in ways that made all parties happy about the outcome.

Given earlier problems associated with Bulleys Tanneries in which the management refused to cooperate with NES, the case example about LIK is refreshing. However, the case example suggests that the process was time consuming, involved many different agencies, and was possible mostly because a unique combination of circumstances had created a feeling of good will. Needless to say, such climates are not always possible to create, especially if the problem is caused by an older facility that is operating on a marginal financial base and the investment in pollution control equipment may put the factory out of business.

In virtually every case in dealing with the private sector, NES has had to rely on other ministries such as the Ministry of Water Development in Thika. In other examples, the work is carried out with the Ministry of Health, or the Ministry of Agriculture, or other members of the IMCE. While, on one hand, such interministerial cooperation is commendable, it also can lead to problems. For example, in many situations an investor or contractor seeks clear guidelines as to whether a particular proposed project is in compliance with environmental standards or not. If clearance requires approval from two (or more) ministries, the procedures not only consume more time but potentially set up a situation in which an investor may receive conflicting information. Such problems discourage investor interest and slow down development.

Retarded development is not the goal in bringing environmental protection to the private sector. Rather, the point of NES' work is to find ways to: (1) anticipate problems before they arise, (2) install necessary procedures and equipment at the beginning, (3) avoid costly remedial expenses after a problem has gotten out of control, and (4) preserve the productivity of the nation's resource base for future generations. During the course of discussions with members of the IMCE, the Evaluation Team felt that the current sets of environmental impact assessment procedures were not working as effectively as they might. Given the increasing rate of economic development in Kenya, it seems important that this shortcoming be corrected.

At the same time, the Evaluation Team found a generally positive view that industry would like to help the environment. The case example of LIK is one instance; interviews with officials at the Kenya Association of Manufacturers is another. Thus it seems as if the time is right in dealing with the private sector to establish clear guidelines as a means to take advantage of the potential positive climate. But in the absence of good will, there is also need to have clear legal authority to act, should need arise. Recommendations Eleven and Twelve deal with this need.

NES has also been unable to establish standards for environmental quality. Thus, in the absence of standards, even if a problem in pollution is identified, there is no legal basis to argue that a person or corporation is in violation because there is no legal mark against which to measure the offender.

It was the almost unanimous feeling of those interviewed that the time has come for Kenya to take a new look at its capacity and need to monitor and regulate environmental usage. While obstructive regulation is not desired and while undue bureaucratic hurdles of excessive licenses, permits, inspections, and approvals are not desired, the Evaluation Team did agree that considerably more capacity was required to control the quality of Kenya's environment and to assure long term sustainability, especially in water, air, and soil.

NES IMPACT ON NGOs

In recent years, NGOs have assumed an increasingly prominent role in resources management and development in Kenya. Given this occurrence, it is important for NES, in order to realize its policy objectives of increasing environmental awareness, to expand its relationships with NGOs. There are several reasons why.

NGOs can be an effective force in disseminating information about the environment, especially in rural areas. They can be equally active in joining forces with NES to carry out research activities, both to increase knowledge of environmental consequences of development as well as to help build a more comprehensive data base of environmental information. Given these potentials, NGOs need to be involved more formally with NES activities including both indigenous and international NGOs.

In reviewing NES programs and activities, the Evaluation Team noted that there are no formally sponsored activities between NES and NGOs. Although a number of informal links exist (e.g. help on World Environment Day or joint efforts for tree planting ceremonies and programs) with groups such as the Environmental Liaison Centre (ELC) or KENGO (Kenya Non-Governmental Organizations), these have not led to any formal collaboration. Such linkages could have particular impact, especially for programs operating in rural areas and at local levels.

The Evaluation Team is aware that NES recognizes the existence of NGOs. Based on information in the "Kenya Report on the National State of the Environment," prepared by NES, a number of Kenyan NGOs are identified including KENGO, Men of Trees, the Mazingira Institute, Boy Scouts, Girl Guides, Kenya Freedom From Hunger Council, and women's groups such as the Green Belt Movement, National Council of Women of Kenya, and Maendeleo ya Wanawake. NES also recognizes religious institutions such as the National Council of Churches of Kenya (NCCCK) and the Kenya Catholic Secretariat. At the international level, NES has noted the work of the ELC and The International Council for Research on Agroforestry (ICRAF). There are, however, many other NGOs operating in the country which are concerned with the environment. Since NES does not now maintain formal relations with these organizations, the groups have tended to formulate their own objectives based on general national policy goals rather than through direct collaboration with NES. NES would be well served both to inform and be informed by these organizations.

One of the clear constraints to NES in making its presence felt among NGOs is lack of earmarked funds to support NGO environmental work. While the Evaluation Team recognizes that Government is not likely to fund a large portion of the programme of NGOs, it is important that NES offer seed money to enable it to work with and promote NGOs' involvement in this field. Further, the presence of a small budget line item for liaison with NGOs would enable NES to raise donor support for collaborative projects.

The Team has also noted that there is no joint NGO-NES strategy to improve documentation and dissemination on the environment. This lack is unfortunate as NGOs have developed a good deal of environmental literature, yet there has been no effort to coordinate the dissemination of these publications. To maximize the benefits of information and materials which NGOs have produced, NES could be playing a more active coordinating role, including the possibility of an NGO unit within the existing structure of NES or perhaps creation of an NGO coordinating committee, to be chaired by NES.

Liaison among the numerous NGOs and NES is important for Kenya. NGOs bring many resources, both financial and human, to Kenya. These resources can be utilized to undertake small and relatively inexpensive projects in the rural areas which can go a long way toward enhancing the environment and at the same time promoting development. The NGOs also have the flexibility to respond to emergencies and disasters which occasionally occur in ways and with speed that government bodies sometimes cannot do.

On the whole, NGOs play an important advocacy role for environmental issues and they have good success in increasing awareness and disseminating information. Some can also call

on international networks of information to be of assistance to Kenya. Therefore, NES needs to be in the forefront of utilizing resources and opportunities offered by NGOs. This can be achieved by working more closely together to promote a sustainable environment for the overall development of Kenya.

NES IMPACT ON THE SCHOOLS AND EDUCATIONAL INSTITUTIONS

Over the last 15 years, environmental education has been one of NES' most active units. Information and outreach have been felt at all levels of education.

At the primary school level, NES materials have been used at the Kenya Institute of Education (KIE) in developing curricula for the newly installed 8-4-4 system of education. For instance, the curriculum for geography, history, and civics (GHC) incorporates a number of environmental concepts and practices, beginning at Standard IV with the district focus and ending in Standard VIII with Kenya and the world. Classes in between cover various units in increasing geographical scope and focus on topics such as natural resources and economic issues. The GHC course uses an integrated method of teaching and learning; NES publications have helped to set it.

At the secondary school level, many subjects including science and art, have incorporated environmental concepts and practices into their syllabi. The KIE has also developed a Social Education Ethics Syllabus for a course entitled "Population and Environment" which covers topics such as population and the ecosystem, the family and natural resources, etc. In these subjects and others, materials from NES have made significant contributions to the curriculum.

NES would like to be more active in primary and secondary school programs but lack of funds has prevented this work. For example, in 1984, NES sponsored a training course for secondary school teachers to demonstrate newer approaches to environmental education. Participants in the course were generally pleased with the NES' approach. But no additional course for teachers has been held as there has been not budget to support it.

In the area of higher education, there are several graduate and teacher training colleges (e.g. Kenya Science Teachers College, Kagumo, Siriba) which offer training for the diploma in education and which require courses in environmental education. The curriculum for environmental education includes concepts of environmental management and practices so that the graduates of these institutions can incorporate principles of environmental education into their secondary school teaching. For specific examples of environmental education which NES has stimulated, see Case Example I which appears on page 22.

Kenyatta University (KU) is one of four national universities in Kenya. During the early 1980's, an Environmental Education Programme in the Faculty of Education was created to provide specialized training for tutors in the diploma colleges. In just a short period of time, this programme has grown into a Centre for Environmental Education (CEE) which is now a full-fledged teaching department at KU.

In the last five years, the CEE has trained tutors for the diploma colleges (M.Ed.) in environmental education. In addition, the Centre has expanded its course offerings to include a required introductory unit on environmental education for all B.Ed. students during their first year. The course introduces students to basic concepts, philosophy, awareness, and potential solutions for environmental problems. This course was first taught to freshmen in the 1986/87 academic year. In addition to the M.Ed. programme, the Centre will soon implement a two year M.A./M.Ed. degree (general) programme in environmental education.

NES staff and publications have figured prominently in these developments at KU. There has been a tradition of close cooperation between the CEE and NES; some NES staff have been invited to teach at KU, on a visiting basis; several NES publications including the district profiles and pamphlets such as "Environmental Activities for Schools and Colleges in Kenya" have been widely used; many of the NES environmental posters have been circulated to schools through the CEE at Kenyatta University.

At Moi University in Eldoret, the School of Environmental Studies offers training in forestry, wildlife, technology, information science, and others. The formal aims of the School of Environmental Studies are "to impart effective environmental education, to inculcate the philosophy of environmental health and management, and to help develop, rehabilitate, and conserve the total living environment." Although NES has no formal links at the present time with Moi University, a number of discussions have been held and possibilities exist for NES staff to give occasional lectures at Moi and for students from Moi to visit NES periodically to learn of ways in which their environmental knowledge can be applied in their professional careers.

Moi University is also expanding in the area of environmental education. Initially, Moi was founded primarily to specialize in science and technology. But during the 1986/87 academic year, the Government established a Faculty of Education which is a replica of the faculty at Kenyatta University. With its new programs in education, Moi will be able to build links between Environmental Studies and the schools. Environmental training programmes are anticipated to develop in other institutions of higher education as well.

In addition to programs with formal educational institutions, NES has an active outreach effort. NES reaches many people during the agricultural shows of Kenya, including both the national show in Nairobi as well as some of the regional shows. Through their stands and publications, they disseminate information on topics such as trends in population and resources, effective methods of using fuelwood, merits of planting trees, and dangers of toxic wastes. NES has also conducted seminars on environmental awareness for teachers, sponsored radio and TV programs, visited many schools to show slides and lecture on topics of the environment, loans films to school and NGO groups, and has played an active role in helping teachers with better information on Kenya's environment. Some of these outreach services include:

- ... posters, pamphlets, newsletters;
- ... publications and reports including the State of Kenya's Environment, District Environmental Assessments, training materials;
- ... direct help to students, especially at KSTC and Kenyatta University;
- ... the radio program, "Our Environment;"
- ... seminars and training programs;
- ... management of the National Environmental Information Network (INFOTERRA), in coordination with UNEP, and providing responses to requests for Kenyan environmental information from 67 local sources.

NES IMPACT ON UNITED NATIONS AND INTERNATIONAL ORGANIZATIONS

NES was formed by Kenya Government in the early 1970s when many United Nations and other international organizations were intensifying their interest and participation in environmental activities. Of particular note for NES are the United Nations Environment Programme (UNEP), the United Nations Sahelian Office (UNSO), the United Nations Development Programme (UNDP), and the United Nations Education, Scientific, and Cultural Organization (UNESCO). All of these have worked with NES in one way or another. Of greatest interest is UNEP which maintains its world headquarters in Nairobi.

Some of the areas where NES has cooperated with UNEP include preparations and arrangements for the bi-annual Governing Council sessions where NES not only coordinates the Kenya Government delegation but plays important roles for UNEP, assisting with the agenda, preparing motions, and easing thorny discussions.

Kenya is the depository for conventions and protocols for the East African Regional Seas Treaty. Kenya is also party to several conventions in the field of environment. NES has helped UNEP by showing UNEP's guests what actions are underway in dealing with environmental problems and what impact these activities have had on various sections of the Kenyan economy and social structure.

UNEP, in turn, has financially supported NES staff to participate in international conferences. UNEP feels that NES could benefit even more at the district and village levels if UNEP's participation were sought when rural and decentralized workshops were being held, especially in the process of developing district and village profiles.

UNEP would like to fund multi-faceted projects generated by NES to form a basic set of case studies. Projects reflecting environment and development would be preferred, especially if done in the context of follow-up to the concept of the Project on Environment and Development (PED) which UNEP funded in the amount of \$300,000 in 1977. UNEP's contribution was perceived at the time of inception as a forerunner of funding district profiles. UNEP is presently assessing its projects in Kenya, including those with NES such as the evaluation of Lake Basin studies.

NES has also worked with UNSO, UNDP, and UNESCO. The Kenya Government submitted a project on the "Strengthening of the Environmental Control and Coordination Mechanisms for Desertification Control" to UNSO Desertification Control Planning and Programming Mission in March, 1979. NES was identified as the Kenyan Government implementing agency, UNSO as the financing organization, UNDP as the supervising agency, and UNESCO as the executing agency. IPAL, under UNESCO, now funded by the Federal Republic of Germany and operating out of Marsabit is an offshoot of this development.

NES has played key roles in other UN activities such as the UNESCO-sponsored Tbilisi conference on environmental education and the Cairo African Ministerial Conference on the Environment. In still another area, UNESCO's MAB (Man and the Biosphere) Programme has worked closely with NES in preparing plans for the Kenyan National Conservation Strategy and identification and designation of Kenya's Biosphere Reserve Program.

From the foregoing, it is clear that NES' intimate association with the UN family of agencies has been fruitful and has helped all parties involved. But a great and still unfilled potential lies ahead. In particular, NES could prepare UN funded case studies and local plans of action coming out of the district profiles. NES could lend strength to the

credibility of various conventions to which Kenya is party by encouraging their signing by Kenya Government. Lake Basin Studies and NES' involvement with IGADD would be greatly enhanced by expanded interaction with UNEP, UNSO, UNDP, and UNESCO.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

NES has made a significant beginning and has achieved a number of meaningful impacts in several sectors of Kenya's environment. Its first decade and one half have been a time of probing, growth, and initial accomplishment. The entire evaluation team, and especially the two members from beyond Kenya, judged that NES is well in the vanguard of African resource management and environmental institutions and has taken some pioneering steps in building linkages between goals of environmental sustainability and development production.

Of particular accomplishment have been:

- ... production of district profiles;
- ... sponsorship of follow-up district seminars, all of which incorporate local leadership directly into the seminar format;
- ... publication of books, posters, reports, and school materials in environmental education;
- ... dissemination of this information through schools, radio, television, public lectures, and agricultural shows;
- ... sponsorship of public events such as World Environment Day and National Tree Planting Day;
- ... taking initiative and asserting leadership through the Interministerial Committee on the Environment, often spearheading such agenda items as pollution control;
- ... pressuring factories to comply with environmental responsibility;
- ... maintaining good relations with UNEP and offering support during times such as the Governing Council meetings;
- ... preparation of materials and background papers for international meetings such as the Cairo African Minister's Conference on the Environment or planning for IGADD;
- ... establishing links with rural communities such as the Katheka village assessment;

... soliciting funds from donor agencies in order to carry out work that would not have been possible on the limited funds available from its normal Treasury vote;

... formulating the process to carry out a National Conservation Strategy;

... managing dozens of small initiatives such as trend projections, soil monitoring, lake basin investigations, and anti-desertification programs.

NES has performed less well in areas where its mandate has been unclear, where it has not had the physical or financial means to achieve its stated objectives, or where it has encountered the myth that other sectors/ministries are in fact doing the job. Several areas stand out as not achieving the potential which is available:

... devising an integrated and articulated national environmental policy;

... promoting the enactment of laws and regulations for environmental protection;

... developing a means of support to foster NGOs that wish to learn more about environmental issues and to carry on environmental activities;

... utilizing Kenyan groups and individuals with scientific expertise on environmental matters, including government, university, and non-governmental agencies;

... developing a more comprehensive environmental information system;

... working more actively to incorporate UNEP directly into some of NES' district and rural activities;

... developing a capacity to carry out environmental impact assessments;

... setting of procedures for environmental standards, monitoring, and enforcement.

In brief, NES has won visibility and respect in the eyes of virtually all interviewed. It has not yet achieved influence or leverage in dealing with problems of Kenya's environment. On the basis of these findings, the Evaluation Team makes fifteen recommendations.

General Recommendations

1. Environmental Policy.

Set in motion a process to prepare a Sessional Paper on environmental policy.

While many feel that Kenya has come a long way in environmental concerns and awareness, there is not now in place any formal or explicit environmental policy. Whereas cabinet has debated energy or food policy and approved national policies in these areas, there has been no comparable process initiated for the environment. Given the critical issues that are looming, such a national discussion could be extremely worthwhile. Normal procedures require that the responsible Ministry take formal steps to embark on such a policy mission. It is therefore recommended that the Ministry of Environment and Natural Resources take the necessary actions and efforts to launch such an effort. The effort should be linked to the proposed National Conservation Strategy with particular attention to links to legislation (see Recommendation Two, below).

2. Environmental Law.

Review existing environmental law and begin the task of preparing new legislation that integrates existing law and fills gaps so that the nation will have systematic and comprehensive environmental legislation and therefore a clear set of guidelines to manage the environment.

Kenya has upwards of a dozen pieces of major legislation that pertain to the environment though none provides authority, responsibility, or a mandate for NES to enforce anything. Within these and other laws, there are many loopholes. For example, no ministry is directly responsible for enforcing drainage specifications for new highway construction beyond two metres from the right of way; no ministry is charged with legal authority to carry out environmental impact assessments of new development activities other than indirect applications and interpretations derived from the Public Health Act, no ministry has responsibility for monitoring or enforcing air quality; no ministry has direct or explicit authority to regulate sand removal from stream beds even though the result is to degrade water sources for villagers in semi-arid environments; no ministry has the technical staff to monitor run-off of agricultural chemical fertilizers and pesticides into Lake Victoria or Lake Naivasha; no ministry controls access to irrigation water sources as they may affect water levels in some of the nation's lakes. More loopholes could be cited.

NES has taken steps to review environmental legislation and regulations, with backing from UNEP. A seminar is now contemplated to initiate this effort. It is hoped that this first step will be followed up and, in cooperation with the Attorney General's Chambers, the Law Reform Commission, Parliamentary committees, the Office of the President, and other appropriate bodies, eventually lead to more effective environmental legislation. It was also noted that NES hopes to establish an Environmental Law Unit which would have responsibility to facilitate NES' mandate to promote enforcement of environmental laws. Recasting of environmental legislation is a high priority for the nation.

3. Training and Staff Development

A scheme of service should be considered for NES staff as well as a vigorous training program to enable NES officers to acquire the necessary technical skills to do their jobs.

NES has no scheme of service for members of staff. Further, many job classifications in NES are not regular Kenya Government classifications (e.g. Environmental Protection Officer) and therefore many NES officers have little chance for promotion. DPM should work with the Ministry of Environment and Natural Resources and NES, independently of this evaluation, to sort out ways in which needs of NES as well as NES officers can most effectively be met. It is noted that NES and DPM have already taken steps to begin work on this problem.

In addition, NES needs help in technical training. While the office is well staffed with university degree holders and several Masters degrees (see Annex H), there has not yet been sufficient in-service training of officers to bring skills up to the necessary technical capacities to do the job.

NES and the Ministry should examine the present NES training projection, as submitted earlier this year, and confirm that it is still valid, given the recommendations in this document, and then set out a means whereby much of the training can be achieved.

4. Budget

Given additional duties recommended in this report, NES, in conjunction with the Ministry of Environment and Natural Resources, should review its present budget for both recurrent and development expenditures and make appropriate requests to support the recommended additional work.

NES has not had adequate budget to carry out the work in its assigned mandate. Funds for equipment, travel, imprest, materials, and communication are particularly lacking. One

way in which NES has been able to do as much as it has is through donor supported projects. While such projects are vital to the work of NES and should be continued, there is equal need for Kenya Government to reassess funds which it is investing in environmental protection and provide the necessary means for NES to carry out its work.

Institutional Recommendations

5. Structure of NES

NES should consider restructuring its internal organization in order to reflect more accurately its functions. It seems that the basic functions are (1) environmental coordination/management/catalytic activities and (2) environmental monitoring/regulation/enforcement. Two divisions reflecting these duties may be a more effective means to manage NES.

At present there are four divisions (Administration and Support Services; Planning and Assessment; Human Settlements; and Environmental Protection). According to the organizational chart (see page 15), the two technical units (Human Settlements and Environmental Protection) should be headed by Assistant Directors, in Job Group "M." Yet one of these divisions has only three sections while the other has seven. NES should work out a more balanced arrangement that reflects the emerging duties as recommended in this report. One example might be:

- a. Planning and Assessment
- b. Administration and Support Services
- c. Environmental Management
 - ... resource management: terrestrial
 - ... resource management: marine
 - ... environmental education
 - ... DEAP and decentralization (including NGOs)
- d. Environmental Protection
 - ... pollution control
 - ... laboratory services
 - ... environmental impact assessment
 - ... chemical usage

To manage this proposed structure would require the filling of the two vacant posts of Assistant Directors, each to head up one technical division. Concerning the two remaining divisions (Administration and Planning), these are properly structured and can only be strengthened in the future if the service so demands.

6. Organizational Fit Within Kenya Government

NES should remain within the Ministry of Environment and Natural Resources.

The Evaluation Team noted with concern the views expressed continuously by members of the IMCE and by NES staff that one reason why NES lacks teeth is a factor of its position within Kenya Government. Several pointed out, for example, that NES might have more clout if it were returned to the Office of the President, or if it became an arm of the Ministry of Planning and National Development, or if it formed some affiliation with the Permanent Presidential Commission on Soil Conservation and Afforestation.

These suggestions were well taken and carefully considered by the Evaluation Team. However, the Team feels that while the location of NES may be reviewed by Government, that as long as there is a Ministry of Environment and Natural Resources, NES should be housed there. The need for clout is not questioned. However, power of enforcement can come just as easily through legislation as through placement in the Government. Therefore, the Team recommends not only that NES continue in MENR but that environmental policy and environmental legislation be enacted as quickly as possible in order to provide the necessary authority that all agreed was sorely lacking.

7. Title of NES

NES should consider changing its name from that of a "secretariat" to an entity with greater authority, perhaps to that of a "department."

All agreed that NES had served well as a secretariat but that the time had come to consider upgrading its status. The Evaluation Team fully supports the recommendation. Whether the term "department" is precisely the best title remains to be seen though one title that seemed appropriate was "Department for Environmental Management and Protection."

8. Resolving Laboratory Issue

NES needs access to a laboratory capability to monitor and test water, air, soil, vegetation and other samples as a means to assure environmental sustainability.

The Evaluation Team agrees that if NES is to work effectively to monitor environmental conditions that some type of laboratory capability will be needed. Whether there is now suf-

efficient laboratory space and equipment available in Nairobi to meet this need or whether a new laboratory is required is not clear. Before any decision is made, the Evaluation Team recommends that a survey be undertaken to determine current levels of laboratory utilization and whether working agreements or shared usage with present space will provide this capability for NES. Alternatively, the survey may determine that present capacities are already utilized or that shared agreements will not be satisfactory in which case NES should move to a formal procedure to obtain the necessary facilities. It was noted that the latter option is favored by NES and a proposal for donor support to provide such a facility has been prepared.

Ministerial Recommendations

9. Interministerial Committee

Support and Strengthen the Interministerial Committee on the Environment.

The IMCE has made a good beginning and should be continued. NES has worked effectively as chair and coordinator of the committee and should continue in this role. A few members of the Committee noted that NES could be more consistent in providing documentation, meeting notices, minutes, and details of follow-up steps taken. The Evaluation Team therefore urges that NES find ways to improve documentation for IMCE while continuing its good role of coordination. Further, the IMCE should be institutionalized and meet regularly in order to take a lead in both advisory and action programs in a systematic and consistent manner.

District Recommendations

10. Decentralization

It is recommended that NES become more active and visible in rural areas as a means to strengthen environmental capacities for the District Focus and to reinforce capabilities for improved resource management among existing institutions in the districts and rural areas.

Kenya has made a significant beginning in decentralizing development planning and implementation. NES needs to develop an institutional capacity to support this new focus. While at present it is probably unrealistic to recommend that NES post an environmental officer to each of the nation's 41 districts, there may be alternative ways in which greater rural visibility can be achieved. Several models were recommended and are presented here for discussion. The Evaluation Team urges that the Ministry of Environment and Natural Resources establish a

temporary Task Force on the Rural Environment whose first mission will be to review these and related means whereby NES can function more effectively in rural areas. The possible plans include:

- a. to form a Memorandum of Understanding, within the Ministry of Environment and Natural Resources, with the Forestry Department, so that NES can be represented by District and Divisional Foresters. The problem with this recommendation is that the foresters are already overburdened and would be unable to devote major time to work that would be explicitly environmental;
- b. to form a Memorandum of Understanding, outside of the Ministry of Environment and Natural Resources, perhaps with Water, Agriculture, or Health, for NES to be represented by some officers who are already based in rural areas. The problem here again is that these officers are already overworked and would have little additional time to pursue the work of NES;
- c. to post one NES representative to each of the Provincial Monitoring and Evaluation Committees which already exist in the Provincial Headquarters and which carry out monitoring of development programs. The problem with this option is that the Monitoring Committees look after many different types of activity, not just environmental, and the NES officer might easily find his/her time consumed with Committee activities that have little to do with NES responsibilities;
- d. to establish perhaps three regional NES offices, unrelated to present district or provincial boundaries. As an arbitrary suggestion, there might be one in Mombasa to look after environmental issues at the Coast, another in Kisumu to monitor activities in the Lake Basin, and perhaps a third somewhere in the north -- maybe Isiolo -- to look after matters of the environment in the regions approximately from the Equator and north. The advantage would be at least the beginnings of an environmental presence to help with monitoring and environmental impact assessments as well as follow-up with district profile work. The disadvantage is that the regional offices would be stretched thinly over a huge territory and would have some difficulty managing any single task thoroughly.
- e. to experiment in perhaps 3 or 4 districts with a District Environmental Officer, with particular attention to roles he/she could play in (i) follow-up on DEAP profiles; (ii) assistance with environmental impact assessments; and (iii) district level work in dissemination of environmental information. This experiment could determine whether investment in DEOs for every district would be cost effective;

f. to establish mobile teams that could be assigned to a particular district for perhaps two to three months. When work in, for example, Narok was active, the team could take up temporary quarters there to work with the DDC, to help formulate an environmental plan of action, to assist with implementation of follow-up activities, etc. The advantage of this option is that precedents already exist, on a smaller scale, of placing DEAP teams in a district for temporary duty. The disadvantage is that such assignments would not provide long term continuity for the districts and would create potential difficult living arrangements for NES officers, especially those with families.

The rationale for a rural presence for NES is to enable officers to be more effective in carrying out some or all of these follow-up activities to the district profiles and help to strengthen the District Focus for development, including:

- ... district plans of action on resource management;
- ... assistance to DDCs on specific environmental problems such as sand scooping, water access, tree removal, factory pollution, water supplies, etc;
- ... serve as a disinterested party to resolve resource access conflict between, for example, livestock and wildlife, forests and farmland, agriculture and livestock, mineral extraction and water supplies, etc;
- ... prepare case studies on rural resource management, especially on situations such as Katheka where a particular community has lessons to teach to other villages;
- ... translate current DEAP profiles into materials that can be used directly by schools and teachers;
- ... organize training programs for leaders and institutions in rural areas on themes of village resource management;
- ... continual monitoring of the state of the rural environment, with particular responsibility to carry out environmental impact assessments for new projects and to be alert to new problems that may threaten the long term sustainability of the nation's resource base.

Private Sector Recommendations

11. Environmental Regulation

Steps should be taken to give NES teeth to enforce environmental protection.

Of all the comments and responses from people interviewed, the most persistent was mention of critical need to provide a mechanism for NES to have formal and official powers of environmental regulation. There are at least three steps.

First, NES, in association with other agencies and the IMCE, should draw up standards for environmental quality. Precedents exist in many nations; UNEP has expertise and resources available to help; Kenya has the institutional means to do this, for example, through cooperation with units such as the Government Chemist, the Board of Weights and Measures, the National Bureau of Standards, and similar bodies.

Second, NES must look to ways in which these standards can be monitored. Initially staff need not cover the entire nation nor is there need to review every district every week. However, without a means to monitor, there is no reason to set standards. A committee should be established, perhaps as an adjunct to the above committee on setting environmental standards, to consider the staffing needs to carry out monitoring.

Third, NES must have the legislative backing to enforce the standards and to bring pressure to bear on those who are not in compliance. Recommendation Two (above) calls for the legislation required to give NES this authority. This recommendation calls for providing the means to enforce the legislation. Initially it would require a law department or at least one or two officers familiar with prosecution. It would also require some form of laboratory facility to provide the formal evidence of non-compliance.

12. Environmental Impact Assessment (EAI)
NES needs formal authority to carry out environmental impact assessments for proposed projects in both the public and private sectors.

The current Five Year Plan (1984-88) contains provision for NES to carry out EIAs on virtually all development activities (p. 65). Yet NES has no legal authority to do this nor is there any binding means whereby NES can require changes in a proposed project should there be potential hazard to the environment. While such procedures are not intended to stop development, it is clear that problems anticipated before they begin will not only save money in the long run but will reduce need for enforcement of environmental legislation called for in Recommendation Two. For this reason, the Evaluation Team urges that the authority now vested with NES informally in the Five Year Plan be granted in formal terms along with the staff to be able to carry out the work. It was noted that NES is already taking steps toward improved capa-

bility to conduct impact assessments through discussions with UNDP and FAO.

NGO Recommendations

13. Non-Government Organizations

NES should establish a line item in its budget for assistance to NGOs and use that line as a means to raise donor funds to engage in joint projects on the environment with NGOs.

NES has enjoyed informal relationships with NGOs for several years. A variety of services and information have been made available and NES has certainly been a friend of groups such as CHEK, KENGO, or ELC as they have sought advice and Government assistance. Yet these relationships have been informal and any projects carried out with NGOs have been done on an ad hoc basis.

NES has come of age and it is time for NES to develop more formal linkages with Kenya's growing NGO community. At a minimum, NES can create a budget capability with a token item of perhaps KE 10 to serve as a repository for new funds to be raised on behalf of NGOs.

Potential collaboration is of interest, especially as NES works out relationships for environmental work in the districts and villages. NGOs are well suited to help NES in these endeavors; structures to allow this facilitation to happen should be created. It would also be helpful for NES to make a formal assignment to one division or one officer to serve as liaison with NGOs.

NES should also consider reaching out to NGOs for collaboration in rural-based projects such as the Katheka village assessment. NGOs have unique interest in and access to rural areas and could, with a boost from NES, make significant contributions to improved village resource management. NES might also consider offering, jointly with NGOs, training for village leaders in techniques of improved resource management.

Education and Information Recommendations

14. Environmental Education

NES should continue the good work it has initiated in its outreach programs. In particular, with the advent of the new 8 - 4 - 4 school curriculum, NES should reach out to school and education agencies to add an environmental perspective in those places where it is appropriate.

15. Environmental Information Systems

NES needs to undertake a thorough review of its current library and computer data bank with a view to upgrading them into a helpful and practical Environmental Information System. The Evaluation Team recommends that NES approach donors to help with these additions to create a fully operational EIS for NES.

NES has a modest resource data system. Its three computers are underutilized due to lack of adequately trained manpower in the field of computer science. The library has a sound core collection yet its books are not as accessible as they might be either to NES staff or to outside users.

If the environmental legislation, decentralization, and monitoring-regulation are to become effective, they will require an accessible data base from which to work. Donor groups frequently support these concepts, especially when a solid start has been made, as in the case of NES.

This recommendation does not necessarily require additional recurrent funds. Instead it urges NES to form a committee to prepare a proposal for consideration by UNEP and/or other donors. The Kenya Government contribution to this proposal would be the environmental information staff who are already in place at NES and who could be much more effective in their work if tools were placed in their hands. NES could pioneer African environmental information systems and play an extremely positive role for other nations through developing a data base that is uniquely suited to Africa's present situation.

LIST OF ANNEXES

- Annex A Evaluation Team
- Annex B Terms of Reference for Evaluation Team
- Annex C Individuals Interviewed
- Annex D Questions Asked of Interviewees
- Annex E NES Mandate
- Annex F NES Staffing and Budgets in Recent Years
- Annex G NES Publications
- Annex H NES Staff Roster
- Annex I Mandate and Composition of Interministerial Committee on the Environment
- Annex J Existing Legislation in Kenya with Environmental Implications

NATIONAL ENVIRONMENT SECRETARIAT

NES EVALUATION

ANNEX A

EVALUATION TEAM

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General Manager, Agricultural and Rural Development Authority
Chairman, Zimbabwe Development Bank
Chairman, ENDA-Zimbabwe
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University of Nairobi, Nairobi

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National Environment Secretariat, Nairobi

Dr. Richard Ford
Professor of History and International
Development, Clark University, USA
Resource Advisor, National Environment Secretariat

Wycliffe K. Mutero (NES Staff Representative)
Education Officer
National Environment Secretariat, Nairobi

NATIONAL ENVIRONMENT SECRETARIAT
NES EVALUATION

ANNEX B

TERMS OF REFERENCE

The purpose of the NES evaluation is:

1. to review previous NES activities and publications and to assess their effectiveness in creating environmental awareness among the Kenyan public;
2. to review the effectiveness of NES programme on other Government ministries and agencies including district level with a view of enhancing their cooperation in initiating and executing environmental programmes;
3. to review effectiveness of NES programme on NGOs and other private agencies including private companies, parastatals, rural institutions such as women's groups and to suggest how NES can increase the effectiveness of its environmental programme;
4. to review present NES institutional arrangements as well as to consider alternative institutional structures in order to make NES more effective;
5. to review NES staffing needs and staff development as a means to build NES capabilities in handling complex environmental issues created by fast growing population and industrialization;
6. to review links to international bodies such as UNEP;

NATIONAL ENVIRONMENT SECRETARIAT

NES EVALUATION

ANNEX C

INDIVIDUALS INTERVIEWED

From NES

Mr. A.K. Kiriro, Director
Mr. R.V. Mugo, Deputy Director
Mr. C.M. Kamau, Head, Planning and Assessment
Mr. J.M. Kihanya, Head, Administrative and Support Services
Mr. G. Mariuki, Head, Human Environment Assessment Program
Mrs. G. Wanyoni, Head, DEAP (District Environment Assessment Program)
Mr. G. Ondenge, Head, Resource Management, Terrestrial
Mr. D.N. Kinyanjui, Head, Resource Management, Marine
Mr. B.O. K'omudno, Head, Education and Information
Mr. E.N. Muniwoki, Pollution Control and Environmental Health
Mr. J.K. Gitonga, Head, Laboratory Services
Mrs. C.N. Kabutha, Environmental Protection Officer (Planning)
Mrs. V.M. Nyagah, Environmental Education Officer

From Ministry of Environment and NATural Resources Headquarters

Mr. J.K. Gichangi, Deputy Secretary

From Other Ministries and Government Agencies

Mr. P.M. Chabeda, Wildlife Conservation and Management Department,
Ministry of Tourism and Wildlife
Mr. C.R. Nyaga, Permanent Presidential Commission on Soil
Conservation and Afforestation
Mr. J.N. Mwangi, Kenya Bureau of Standards
Mr. N. Ndiangui, Herbarium, National Museums of Kenya
Mr. P.D. Muna, Meteorological Department, Ministry of Transport and
Communications
Mr. S. Mwaura, Ministry of Education
Mrs. L.I. Shitakha, Ministry of Planning and National Development
Mrs. B. Mwenesi, Attorney General's Chambers
Mr. C.N. Muiga, Ministry of Water Development

From Educational Institutions

Professor Richard Odingo, Department of Geography, University of
Nairobi
Mrs. M.G. Muthoka, Kenya Science Teachers College

UN Agencies

Mr. D. Kaniaru, Chef de Cabinet, United Nations Environment
Programme

Non-Governmental Organizations

Mr. Achoka Awori

Private Sector

Mr. S.M. Ita, Kenya Association of Manufacturers
Miss M. Waithaka, Kenya Association of Manufacturers

NATIONAL ENVIRONMENT SECRETARIAT
NES EVALUATION

ANNEX D

QUESTIONS ASKED OF INTERVIEWEES

The team is particularly interested in knowing:

1. What is your present position (including name of organization) and how long have you been in that position? If less than 12 months, what was your previous position?
2. In what ways do you work with environmental activities/resource management issues?
3. Have you had any direct associations with NES?
4. Can you describe these activities?
5. What is your assessment of the effectiveness of these activities? What about the long term impact of these activities?
6. What kinds of environmental activities/resource management work do you think NES should be performing in the next 5 to 10 years?
7. Are there activities which NES is currently doing that you think they should stop? Which ones and why?
8. Other comments?

NATIONAL ENVIRONMENT SECRETARIAT

NES EVALUATION

ANNEX E

NES MANDATE

In order to perform its assigned role, the Secretariat is guided by the following policy objectives:

1. to increase the awareness of Kenya on the need to maintain and create a desirable environment;
2. to promote the enactment of laws and regulations which will protect the environment or require remedial action to be taken to improve it;
3. to promote the enforcement of established laws and regulations to achieve the intended end;
4. to increase the knowledge of the environmental consequences of human activities and the possible protective and remedial action necessary to maintain a desirable environment;
5. to promote the provision of essential services to human settlements;
6. to encourage the conservation of flora and fauna and areas of scenic interest for scientific, recreation, and tourism (economic) purposes.

NATIONAL ENVIRONMENT SECRETARIAT
NES EVALUATION

ANNEX F

NES STAFFING AND BUDGETS IN RECENT YEARS

Enclosures include:

1. Budget Allocations (figures)
2. NES Budget Allocation: Recurrent (chart)
3. NES Budget Allocation: Development (chart)
4. Total MENR Budget Allocation (1982/83) and (1984/85)
5. Total MENR Budget Allocation (1985/86) and (1986/87)
6. Growth of Senior NES Staff, 1974-1987
7. NES Organisation Chart

BUDGET ALLOCATIONS

RECURRENT ESTIMATES (Kenya Poun

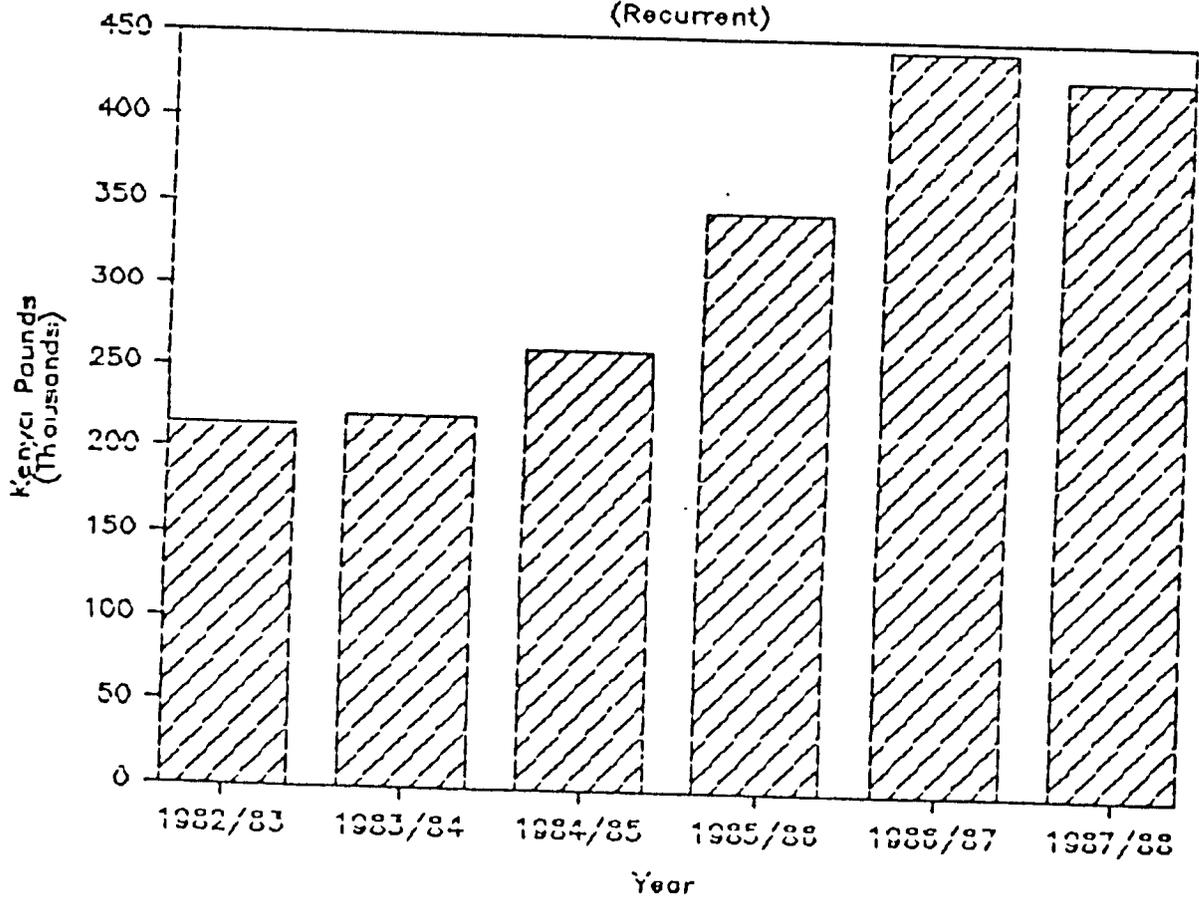
YEAR	GROSS EXPENDITURE	APPROPRIATIO IN AID
1982/83	213,750	-----
1983/84	220,300	-----
1984/85	264,700	-----
1985/86	348,666	-----
1986/87	444,700	-----
1987/88	428,700	-----

DEVELOPMENT ESTIMATES (Ken

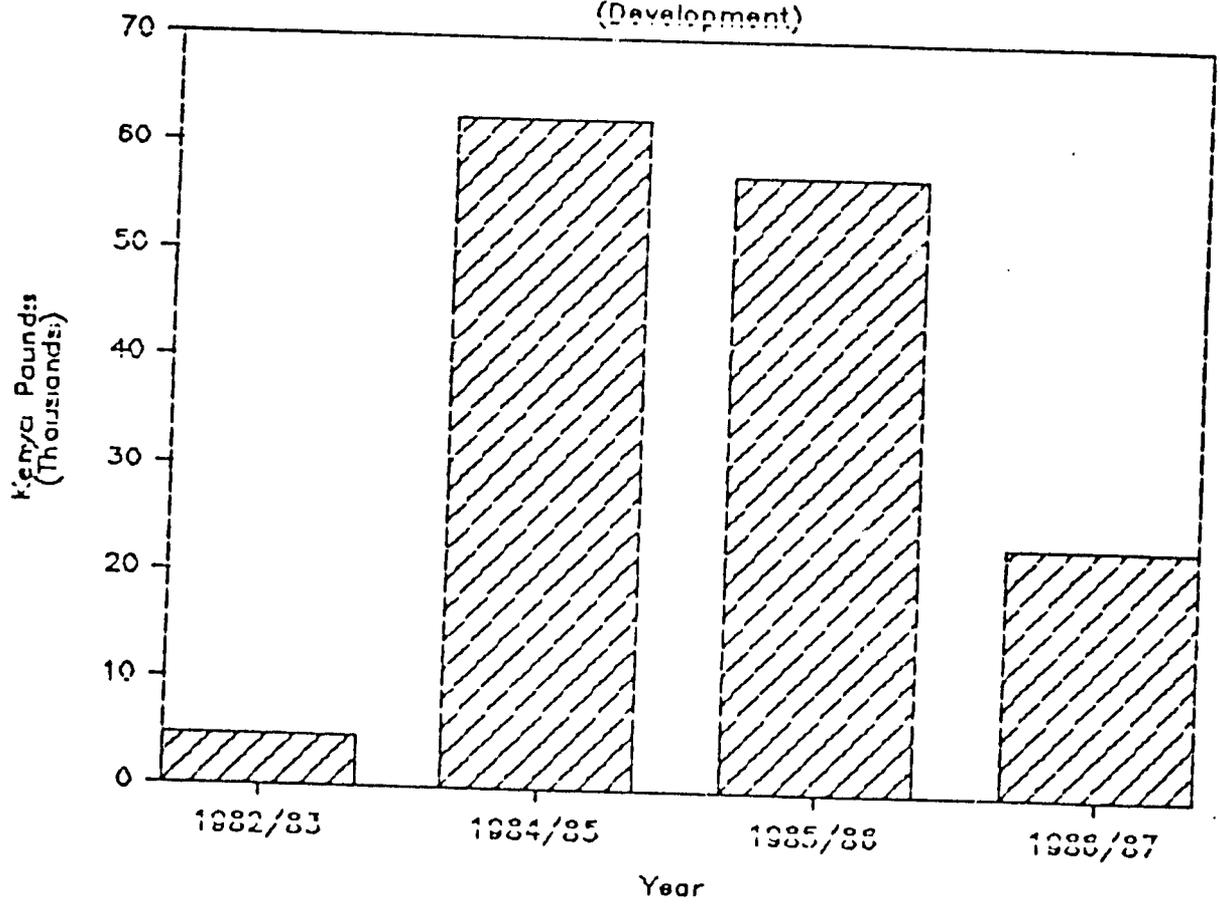
1982/83	5,010	-----
1984/85	62,512	37,527
1985/86	57,450	38,250
1986/87	23,285	-----

5/8

NES BUDGET ALLOCATION (Recurrent)

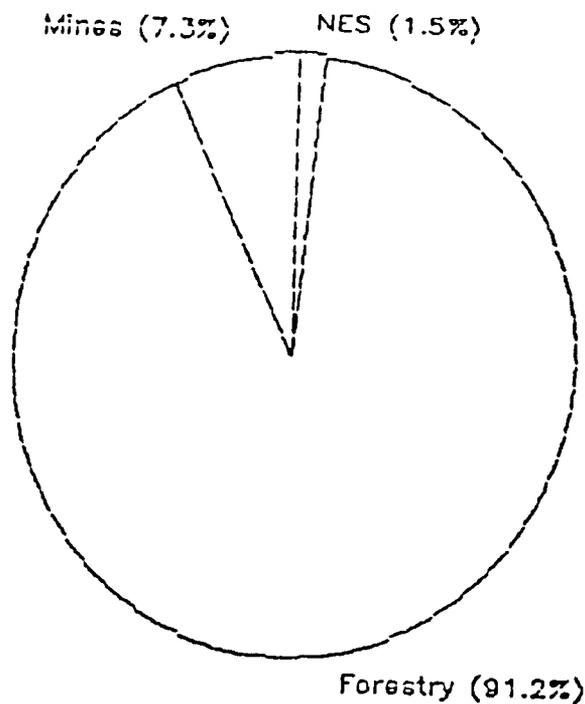


NES BUDGET ALLOCATION (Development)

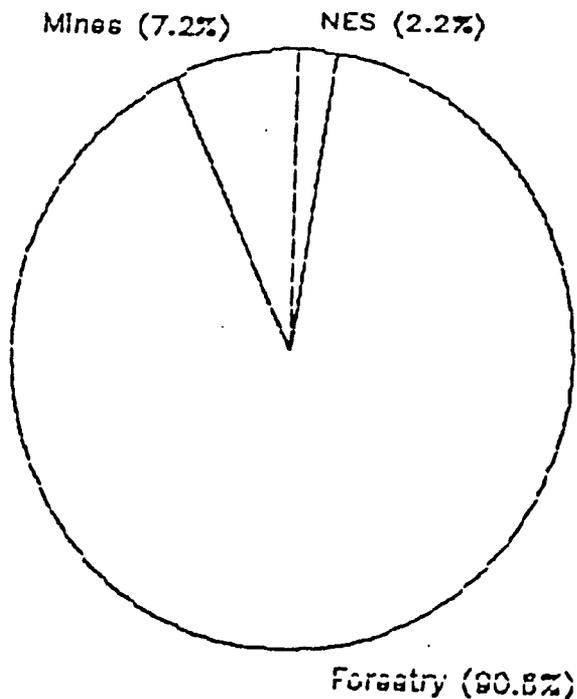


Total MENR Budget Allocation (1982/83)

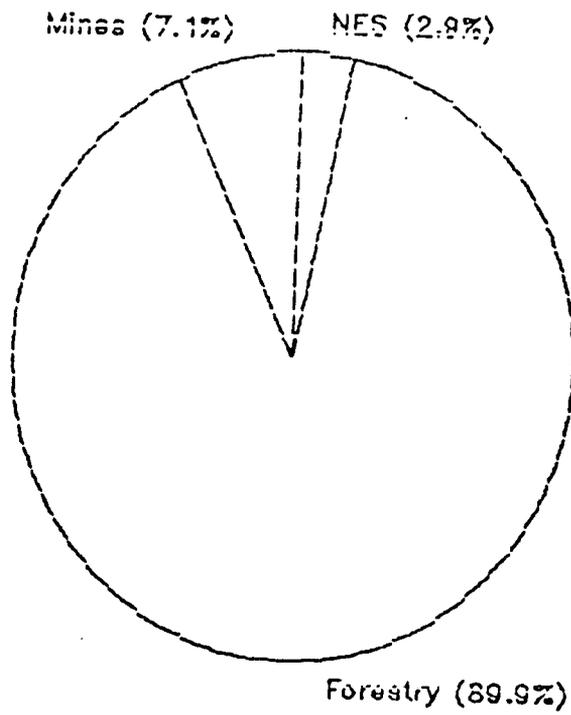
NES Staff=100;Forestry=18,018;Mines=265



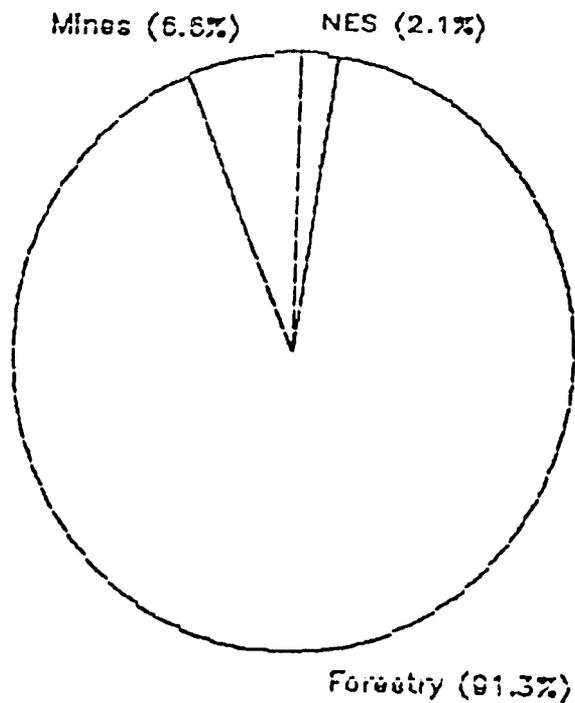
Total MENR Budget Allocation (1984/85)



Total MENR Budget Allocation (1985/86)

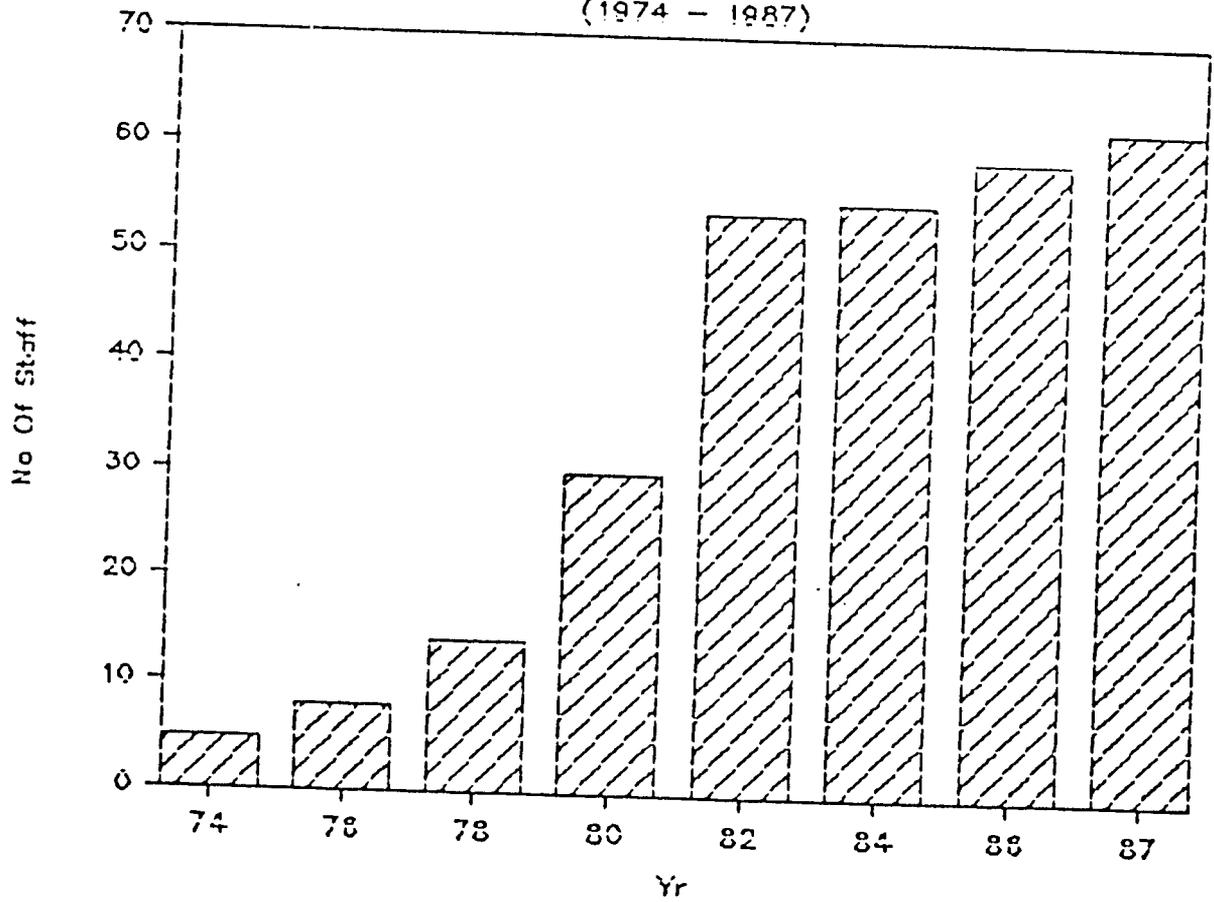


Total MENR Budget Allocation (1986/87)

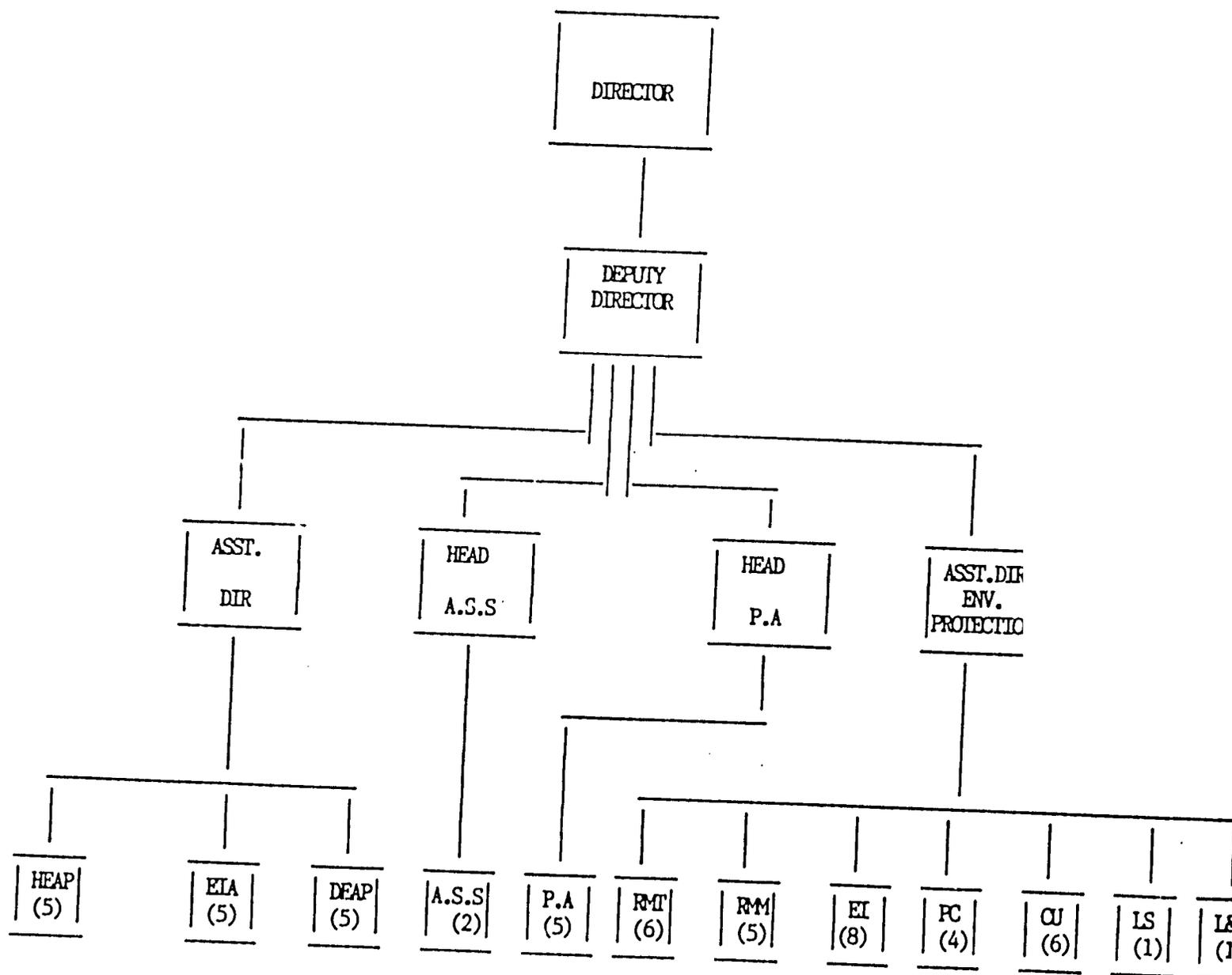


Growth Of Senior NES Staff

(1974 - 1987)



NES ORGANISATION CHART



A.S.S.- Administration and Support Services; P.A.- Planning and Assessment; HEAP- Human Environment Assessment Programme
ELA- Environment Impact Assessment and Development Activities; DEAP- District Environmental and Assessment Project;
RMT- Resource Management (Terrestrial); RMM- Resource Management (Marine); EI- Education and Information;
PC- Pollution Control and Environmental Health; CU- Chemical Usage and Toxins; LS- Laboratory Services
L&S- Liaison and Special Duties

- Note: i) A few of the newly recruited officers are not included in the numbers shown above
ii) The two Assistant Director posts shown exist in the NES establishment. They have not been filled however.
iii) Only senior staff are represented above.

NATIONAL ENVIRONMENT SECRETARIAT
NES EVALUATION

ANNEX G
NES PUBLICATIONS

PUBLICATIONS

1. DISTRICT ENVIRONMENTAL ASSESSMENT REPORTS
 - Kajiado (1980)
 - Kisii
 - Nyeri
 - Kitui (December 1981)
 - Muranga (November 1982)
 - Kilifi (December 1984)
 - Nakuru (March 1984)
 - Mombasa (August 1985)
 - Lower Tana River (1985)
 - Kwale (1985)
 - Lamu (July 1985)
 - Bungoma (1986)
 - Kirinyaga (nearly ready)
 - Meru (1985)
2. Kenya's National Report to the United Nations Conference on Human Settlements (1976)
3. Education and Environment (1977)
4. Environment Management Report (1977)
5. Report of the National Seminar on Desertification, Nairobi (1977)
6. Environmental Management Report July 1978
7. A Report on Innovative Policies and Strategies for Human Settlements in Kenya. March 1979
8. Report of the Workshop on the Determination of Environmental Training and Retraining Needs in Relation to Environment and Development Goals and Priorities in Kenya. October 1980
9. UNESCO East/Central African Environment Management Workshop
10. Plant Communities Workshop
11. Kenya's Fight Against Soil Erosion
12. Report on the Institutional Framework for Environmental Management And Resource Use in Kenya (1980)
13. Role and Contribution of Construction Industry in Human Settlement Programmes and National Economic and Social Development and Provision of Infrastructure in Slums, Squatter Areas and in Rural Settlement 1981.

14. Report of the GOK/UNEP/UNDP Project on Environment and Development Vol. 1,2 & 3 - Draft January 1981
15. The Role and Functions of the National Environment Secretariat - September 1981
16. Report on the Institutional Framework for Environmental Management in Resource Use in Kenya. D.N. Kinyanjui & P.R. Baker; 1981
17. District Environmental Assessment Project. October 1981
18. Our Environment (1982)
19. Land Degradation Monitoring Programme; The First Pilot Study, Kiambu District. September 1982.
20. Planning for Human Settlements in Disaster - Prone Areas and Transportation for Urban and Rural Areas With Emphasis on Groups With Limited Resources. 1982
21. Our Environment Vol.1 No.1 (Newsletter) December 1983.
22. Land For Human Settlements (1983)
23. God, Environment and Man (1984)
24. A systematic and Comprehensive Approach to Training for Human Settlements and a Systematic and Comprehensive Approach to Information for Human Settlements . 1984
25. Planning and Management of Human Settlements With Emphasis on Small and Intermediate Towns and Local Growth Points 1985
26. Population and Environment - Kilifi District 1985
27. Monitoring Soil Erosion In Kiambu and Murang'a Districts, Kenya 1985
28. Measurement and Prediction of Soil Erosion in Kiambu and Murang'a Districts of Kenya (1985)
29. Endangered Resources for Development (1985)
30. Climatic Variability and Agricultural Production In Central and Eastern Kenya (1985)
31. The State of the Environment (1987)
32. Report of the Kenya Delegation to the 14th Governing Council Session of UNEP (June 1987)

33. Environmental Activities for Schools and Colleges in Kenya (1987)

Note: Some of the publications above were done in collaboration with other ministries and organisations.

NATIONAL ENVIRONMENT SECRETARIAT

NES EVALUATION

ANNEX H

NES STAFF ROSTER

NES ESTABLISHMENT

DESIGNATION	JOB GROUP	APPROVED POSTS	FILLED POSTS
Director	P	1	1
Deputy Director	N	1	1
Assistant Director	M	2	-
Senior Housing Economist	L	1	1
Senior Ecologist	M	4	3
Principal Economist	N	-	1
Senior Economist/Statistician	M	2	-
Senior Human Settlement Officer	L	1	-
Senior Environment Education Officer	L	3	2
Senior Environment Protection Officer	L	-	1
Senior Chemist/Physicist	M	1	1
Senior Assistant Secretary	M	1	1
Assistant Engineer/Engineer	K/L	1	1
Environment Protection Officer I	K	1	1
Ecologist I	K	7	6
Senior Public Relations Officer	L	2	-
Senior Public Health Officer	K	1	-
Senior Information Officer	K	1	-
Senior Executive Officer	K	1	-
Environment Education Officer I	K	1	-
Senior Graphic Artist	K	2	-
Senior Inspector of Factories	K	1	-
Senior Forester	K	1	-
Senior Statistical Officer	K	1	-
Housing Economist II	K	1	-
Housing Planner (Building Surveyor) I	K	1	-
Agricultural Officer II/I	K	1	-
Assistant Secretary Cadet III/II/I	K/L	4	1
Research Officer III/II	H/J/K/L	1	1
Environmental Education Officer II	H/J	20	20
Environment Protection Officer II	J	6	3
Public Health Officer I	J	-	1
Ecologist II	J	-	1
Physical Planning Officer II	K	3	1
Statistical Officer II	K	2	2
Economist/Statistician/Planning Officer II/I	J	1	-
Planning Assistant	K/L	6	4
Environmental Education Officer III	H	2	-
Environment Protection Officer III	H	2	-
Physicist/Chemist II/I	H	-	1
Ecologist III	K/L	1	2
Information Officer II	H	-	2
Producer II	H	1	1
Personal Secretary II	H	1	-
	H	1	1

Executive Officer II	H	1	1
Executive Assistant	G	2	2
Accounts Assistant	G	2	-
Senior Library Assistant	G	1	-
Supplies Assistant	G	-	1
Shorthand Typist II/I	F/G	8	8
Library Assistant II/I	E/F	2	2
Higher Clerical Officer	D	-	3
Clerical Officer	D/E	7	5
Copy Typist III/II/I	D/E	5	5
Driver III/II/I	C/D/E	7	5
Subordinate Staff	A/B/C	7	7

CURRENT NES SENIOR STAFF (No = 62)

NAME	QUALIFICATIONS
Mr. A.K. Kiriro	Director
Mr. R.V. Mugo	Deputy Director
Mr. C.M. Kamau	MA Economics/BA Economics
Mr. J.K. Gitonga	BSc M.S.C.
Mr. B.N. Munywoki	BSc. Biology, MSc Management & Dev., D.S.C.
Mr. D.N. Kinyanjui	B.A. Biology, M.E.S. Ecology
Mr. Maina Karaba	BSc. Ecology
Dr. J. N. Waiyaki	PHD Entomology
Mr. Moses Wanga	BSc. Agriculture, M.A. Planning
Mr. Gathungu Kariuki	B.A. Lands Economics, MA Planning
Mr. B.O. Komudho	M.Ed Science, BSc. Education
Mrs. G.N. Wanyonyi	BA MA Education
Mr. J.M. Kihanya	School Certificate "O" Level Pl teachers cert.
Mr. E.E. Ondenge	BSc Agriculture, Msc Soil Science
Mr. F.N. Kihumba	BSc Chemistry
Mrs. C.N. Kabutha	BA. MSc Demography
Mr. D.N. Mathu	BSc. Chemical Engineering
Mr. H.R. Muturi	MSc. Engineering, Geology & Geophysics
Mr. P.M. Mungai	BSc. Chemistry, Zoology
Mr. S.K. Mugeru	BSc.
Miss A.N. Kihiu	B.A. Degree
Mr. B.K. Mwangi	MSc. Chemical Engineering
Mrs. E. Oduor-Noah	BA. MA Regional Planning
Mr. S.S. Siah	BA Economics, B.phil, Economics
Miss E.A. Ojoo	BSc. Chemistry
Mr. J.G. Anyango	BA Economics
Miss S. Maghanga	BA Economics, Geography, MES
Mr. W.M. Njoroge	BSc. Chemistry
Mr. Owino Magana	BSc. physics
Miss E. Kisang	M.S.E.H. BSc Microbiology
Mrs. M.N. Karanja	BA Education
Mrs. V.M. Nyagah	BSc Biology, MA Education
Mr. S.K. Mbarire	B.Ed. Science
Mrs. J.C. Onyango	BA
Mrs. M.M. Gatahi	BSc. Biochemistry & Chemistry
Mr. L.M. Kirui	BSc Chemistry, MSc in Env/pollution control
Mr. V.K. Njuki	BA
Mr. W.K. Mutero	BSc. Maths, Physics
Miss M. Wainaina	MA Planning, BA Social work
Mr. W.N. Munuhe	BSc. Chemistry & Maths
Mrs. V.D. Sambuli	BSc. Maths & Statistics
Miss C.M. Gitau	BSc. Botany & Zoology
Mrs. C.W. Kiragu	BA. Design

Mrs. S. Suleiman	BSc. Botany & Zoology
Miss A.A. Odipo	M.S.C. Public Health
Miss C.N. Mwangi	BA Government & Sociology, MES
Miss K.I. Matia	Bachelor of General Studies
Mr. P.M. Ndonye	BSc. Botany & Zoology
Mr. S. Munene	BSc. Chemistry & Maths
Mr. E.W. Ngunga	BA Design
Mrs. I. Asamba	BSc. Botany & Zoology
Miss F.W. Kariuki	BSc. Botany & Zoology
Mrs. J. Sheikh	MSc. Geography
Mr. J. M. Muinde	MA Env/Studies, BA Geography & Geoscience
Mr. J. M. Mwandishi	BSc. Biology
Mr. S.M. Katua	BSc. Botany, Zoology, Chemistry,
Mr. C.S. Mwandawiro	MSc. Zoology
Mr. L.K. Kollikho	BSc. Botany & Zoology
Mr. A.O. Amwoyo	BA Planning
Mr. Ojiambo	BA Economics
Mr. P.L. M'mayi	B.Sc Biology
Mr. N.O. Manyolo	B.Sc Biology
Miss A.M. Nyamu	B.A, B.J.C., M.A. Prev. Soc.
	B-ED (Bot, Zoology) M-SC Hydro Biology.

NATIONAL ENVIRONMENT SECRETARIAT

NES EVALUATION

ANNEX I

MANDATE AND COMPOSITION OF
INTERMINISTERIAL COMMITTEE ON THE ENVIRONMENT

The Interministerial Committee on the Environment (IMCE) was formed to provide a national forum in which important environmental matters are deliberated and appropriate recommendations and policy ideas formulated to be taken up by relevant institutions. Further, the Committee was charged with the role of making preparations for Kenya's participation in UNEP's Governing Councils and following up on decisions of the Governing Council which are relevant to Kenya and to recommend ways and means of implementing them within a national framework.

Membership of the IMCE consists of the Director, Deputy Director, Assistant Director and Department Heads of NES. The Director of NES is Chair of IMCE.

The following ministries and government agencies are represented:

Kenya Institute of Education

Wildlife Conservation and Management, Ministry of Wildlife and Tourism

Chief Conservator of Forests, Ministry of Environment and Natural Resources

Commissioner of Mines and Geology, Ministry of Environment and Natural Resources

Resources Surveys and Remote Sensing (formerly Kenya Rangeland Ecological Monitoring Unit), Ministry of Planning and National Development

Kenya Science Teachers College

Meteorological Department, Ministry of Transport and Communications

Meteorological Department, University of Nairobi

Government Chemist, Office of the President

Centre for Environmental Education, Kenyatta University
Ministry of Planning and National Development
Permanent Presidential Commission on Soil Conservation and
Afforestation
Ministry of Health
Appropriate Technology Centre, Kenyatta University
Director of Fisheries
National Museums of Kenya
Kenya Bureau of Standards
Director of Education, Ministry of Education
Ministry of Commerce and Industry
Development Coordination and Cabinet Affairs
National Council for Science and Technology
Attorney General's Chambers
Ministry of Agriculture
Chief Inspector of Factories, Ministry of Labour
Ministry of Energy and Regional Development
Ministry of Water Development
Ministry of Environment and Natural Resources
Nairobi City Commission
Permanent Representative, Kenya Mission to UNEP
Kenya Medical Research Institute

NATIONAL ENVIRONMENT SECRETARIAT

NES EVALUATION

ANNEX J

EXISTING LEGISLATION IN KENYA WITH ENVIRONMENTAL IMPLICATIONS

Under the Laws of Kenya, there is no single piece of environmental legislation. Rather, there are several different Acts of Parliament that touch on environmental issues such as conservation of natural resources, pollution control, and environmental standards. The more notable of these acts, with the Chapter in the Laws of Kenya, are:

- The Water Act - Chapter 372
- The Agriculture Act - Ch 318
- The Forests Act - Ch 385
- The Land Planning Act - Ch 303
- The Fish Industry Act - Ch 378
- The Plant Protection Act - Ch 324
- The Local Government Act - Ch 265
- The Town Planning Act - Ch 134
- The Lakes and Rivers Act - Ch 409
- The Government Fisheries Protection Act - Ch 379
- The Kerio Valley Development Authority Act - Ch 441
- The Lake Basin Development Authority Act - Ch 442
- The Tana and Athi Rivers Development Authority Act - Ch 443
- The Wildlife Conservation and Management Act - Ch 376
- The Grass Fires Act - Ch 327
- The Public Health Act - Ch 242
- The Factories Act - Ch 514
- The Food, Drugs, and Chemicals Substances Act - Ch 254
- The Pharmacy and Poisons Act - Ch 244

The Use of Poisonous Substances Act - Ch 247
The Cattle Cleansing Act - Ch 319
The Fertilizers and Animal Foodstuffs Act - Ch 345
The Agricultural Produce (Export) Act - Ch 319
The Pests Control Products Act No 4 of 1982 - Ch 246
The Radiation Act - Ch 245
The Traffic Act - Ch 403
The Penal Code - Ch 63
The Merchant Shipping Act - Ch 389
The Kenya Bureau of Standards Act - Ch 496

NATIONAL ENVIRONMENT SECRETARIAT

To: NES Evaluation Team

From: NES Evaluation Coordinator

Re: Recommended Procedures and Schedule for NES Evaluation

Date: 9 September 87

The International Institute for Environment and Development has been asked by the National Environment Secretariat, Ministry of Environment and Natural Resources, to carry out an evaluation of NES activities, on the occasion of its tenth year anniversary.

The Team consists of:

Dr. Liberty Mhlanga (Team Leader)
General Manager
Agricultural and Rural Development Auth
Harare

Mr. J.W. Wachira
Directorate of Personnel Management
Office of the President
Nairobi

Dr. Korir Koech
Director
Environmental Education Centre
Kenyatta University College
Nairobi

Dr. Kabiru Kinyanjui
Institute of Development Studies
University of Nairobi
Nairobi

Mr. David Kinyanjui
Senior Ecologist
National Environment Secretariat
Nairobi

Dr. Richard Ford
Professor of History and International
Development
Clark University
USA

NES has prepared a background document for the evaluation team noting levels of staffing, annual budgets, special projects, and proposed activities. It summarizes much of what NES has carried out over the last ten years.

NES has also assembled a collection of posters and publications in Room 1510 (Ford's office) of the Kenyatta International Conference Centre. These materials are available to be reviewed or examined over the course of the week-long evaluation.

We plan to meet at 10:00 AM on Monday morning, 14 September in the office of the NES Director, 13th Floor, Kenyatta International Conference Centre. The meeting will provide an informal opportunity to discuss the nature of the evaluation and ways in which we can work effectively to learn as much as possible about NES. To facilitate this discussion, the following items are enclosed:

1. NES Background Summary
2. Terms of Reference for Evaluation Team
3. Proposed Outline for Evaluation Report

We plan to work from 9:00 AM to 5:00 PM from Monday (14th) through Friday, (18th). Please save the evening of the 18th for a small social gathering.

TERMS OF REFERENCE
EVALUATION
NATIONAL ENVIRONMENT SECRETARIAT

14 - 18 September 1987

The terms of reference for the evaluation are:

1. to review previous NES activities and publications and to assess their effectiveness in creating environmental awareness among the Kenyan public;
2. to review the effectiveness of NES programme on other Government ministries and agencies including district level with a view of enhancing their cooperation in initiating and executing environmental programmes;
3. to review effectiveness of NES programme on NGOs and other private agencies including private companies, parastatals, rural institutions such as women's groups and to suggest how NES can increase the effectiveness of its environmental programme;
4. to review present NES institutional arrangements as well as to consider alternative institutional structures in order to make NES more effective;
5. to review NES staffing needs and staff development as a means to build NES capabilities in handling complex environmental issues created by fast growing population and industrialization;
6. to review links to international bodies such as UNEP;

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EVALUATION REPORT OUTLINE

NATIONAL ENVIRONMENT SECRETARIAT (September, 1987)

The following outline sets out a preliminary table of contents which is recommended as the format for the final report. It includes:

1. Executive Summary (2 to 3 pp)
2. Purpose of Evaluation (2 pp)
3. Background of NES (5 - 7 pp)
4. Formal goals/mandate for NES (2 pp)
5. NES impact on Ministries (3 - 5 pp)
 - ...policy
 - ...planning
 - ...monitoring, regulation, enforcement
6. NES impact on districts and rural areas (3 - 5 pp)
 - ...planning
 - ...data collection and trend analysis
 - ...problem identification
 - ...training
7. NES impact on private sector (3 - 5 pp)
 - ...planning
 - ...data collection and trend analysis
 - ...problem identification
 - ...training
8. NES impact on NGOs (3 - 5 pp)
 - ...jointly sponsored activities
 - ...training and support services
 - ...documentation
9. NES liaison with UN groups (3 - 5 pp)
10. NES impact on outreach and environmental education, including links to schools (3 - 5 pp)
11. NES institutional arrangements and legislative authority (3 pp)
12. NES internal organization and fit in Kenya government (3 pp)
13. NES staff development (3 pp)
14. NES publications (3 pp)
15. Overall findings and recommendations (8 to 10 pp)

NES EVALUATION

(BACKGROUND INFORMATION)

September, 1987

Prepared as background document for evaluation of the National Environment Secretariat, Ministry of Environment and Natural Resources, Government of Kenya. The evaluation was supported by the International Institute for Environment and Development with funding from the United States Agency for International Development.

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II.	BUDGET ALLOCATIONS	v
III.	BRIEF SUMMARIES OF IMPLEMENTED AND PROPOSED PROJECTS	
1.	IMPLEMENTED PROJECTS	
i.	District Environmental Assessment.	1
ii.	GOK/UNEP/UNDP Project on Environment and Development	2
iii.	Soil Monitoring	4
iv.	Population and Resource Trends	6
v.	Climate and Society	8
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2.	PROPOSED PROJECTS	
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ii.	Preparation of the National Conservation Strategy	13
iii.	Identification of Wetlands	15
iv.	National Plan of Action to Combat Desertification	18
v.	Environmental Information Centre	20
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(i)

INTRODUCTION

The National Environment Secretariat (N.E.S.) is a Kenya Government Department charged with a co-ordinative and catalytic role in the protection and enhancement of Kenya's environment.

The NES was established within the Office of the President through the Office of the President's Administrative Circular of 7th February, 1974. Later in 1979 it was moved to the newly created Ministry of Environment and Natural Resources.

In order to be able to perform its assigned role, the Secretariat is guided by the following policy objectives:-

- i) To increase the awareness of Kenya on the need to maintain and create a desirable environment.
- ii) To promote the enactment of laws and regulations which will protect the environment or require remedial action to be taken to improve it.
- iii) To promote the enforcement of established laws and regulations to achieve the intended end.
- iv) To increase the knowledge of the environmental consequences of human activities and the possible protective and remedial action necessary to maintain a desirable environment.
- v) To promote the provision of essential services to human settlements.
- vi) To encourage the conservation of flora and fauna and areas of scenic interest for scientific, recreation and tourism (economic) purposes.

In way of enhancing its performance, NES has been structured into 12 Sections as listed below:

- a) Administration and Support Services
- b) Planning and Assessment
- c) Environment Impact Assessment and Development Activities

(ii)

- d) Resource Management (Terrestrial)
- e) Resource Management (Marine)
- f) Human Environment Assessment
- g) Pollution Control, Preventive and Promotive Health
- h) Environmental Education and Information
- i) Chemical Usage
- j) Laboratory Services
- k) District Environment and Assessment
- l) Liaison and Special Duties

It should be mentioned that since environmental issues do not respect professional boundaries, a great deal of interaction occurs between the above-mentioned divisions. Work is normally done in multi-disciplinary teams in order to ensure that the full spectrum of professional inputs is brought to bear in the resolution of environmental issues.

Further NES has established various linkages with several International, Governmental and Non-Governmental Organizations dealing with the environment. One such important linkage has been that of the Inter-Ministerial Committee on Environment in which about 20 ministries are represented. The interministerial committee has continued to provide a National Forum for discussing and formulating policy ideas on the environment. It has also helped greatly in the co-ordination of important Government environmental activities. At the same time the Inter-Ministerial Committee has carried out follow-up work within a national framework on decisions made by UNEP's Governing Council Sessions. So far NES has carried out various environmental projects and has made several proposals for future ones. It has also over the years continued to participate actively in various environmental activities. Chief among these have been UNEP's Governing Council Sessions, the World Environment Day and the National Tree Planting Day. One cannot also forget that NES has continued to inculcate awareness and consciousness to the Kenyan population in as far as environmental matters are concerned. This has been done through among others the giving of Environmental Lectures to Schools, Teachers Colleges, Radio Broadcasts and Television Press Conferences.

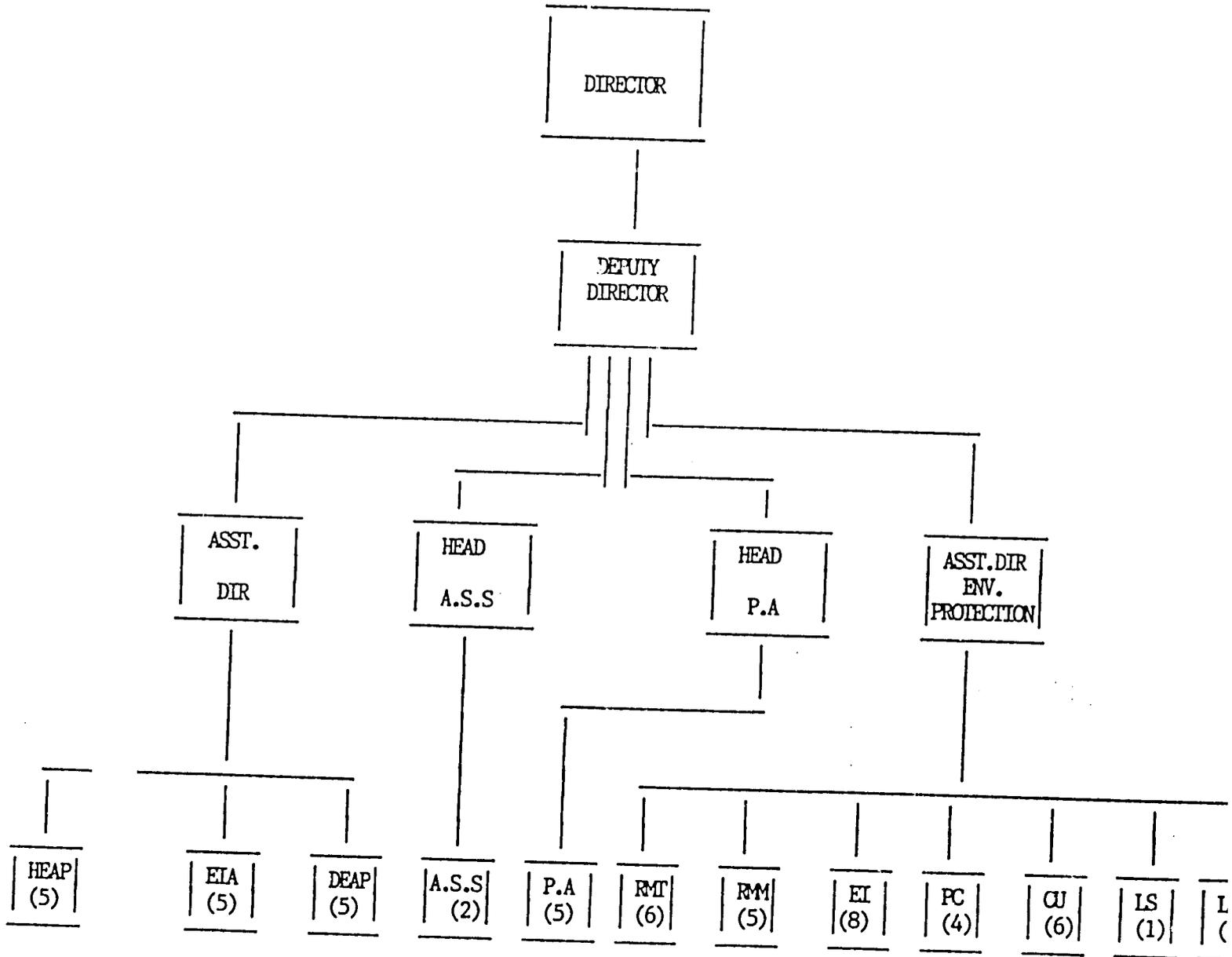
As NES looks into the future it is aware of the constraints which will need to be addressed. Among these we have the absence at NES of a harmonised and consolidated environmental legal system. Currently, over a dozen acts related to the environment are spread over various Ministries.

(iii)

This for instance means that NES does not have the legal powers to enforce the protection and improvement of the environment. Instead it has to persuade other agencies to take the necessary action. Unless the proposed NEEMA (National Environmental Enhancement and Management Act) giving powers of environmental protection and enhancement is enacted, NES will have to continue to use persuasion as reason to get the enforcement agencies and culprits to take necessary action. The effectiveness of this method is of course weak since persuasion can be easily ignored.

Another constraint is that of lack of facilities for carrying out laboratory tests and field research. Unless basic facilities are provided the Secretariat will not be able to accomplish some of its most important work. Yet another constraint is that of lack of recognition of research officers, environmental protection officers, and environment education officers as professionals in their own right. This for example means that in the recent upgrading of posts within the civil service officers in the field of environment were left out yet these officers have been charged with the extremely important task of protecting and enhancing Kenya's environment

NES ORGANISATION CHART



A.S.S.- Administration and Support Services; P.A.- Planning and Assessment; HEAP- Human Environment Assessment Programme
EIA- Environment Impact Assessment and Development Activities; DEAP- District Environmental and Assessment Project;
RMT- Resource Management (Terrestrial); RMM- Resource Management (Marine); EI- Education and Information;
PC- Pollution Control and Environmental Health; CU- Chemical Usage and Toxins; LS- Laboratory Services
L&S- Liaison and Special Duties

- Note: i) A few of the newly recruited officers are not included in the numbers shown above
ii) The two Assistant Director posts shown exist in the NES establishment. They have not been filled however.
iii) Only senior staff are represented above.

BUDGET ALLOCATIONS

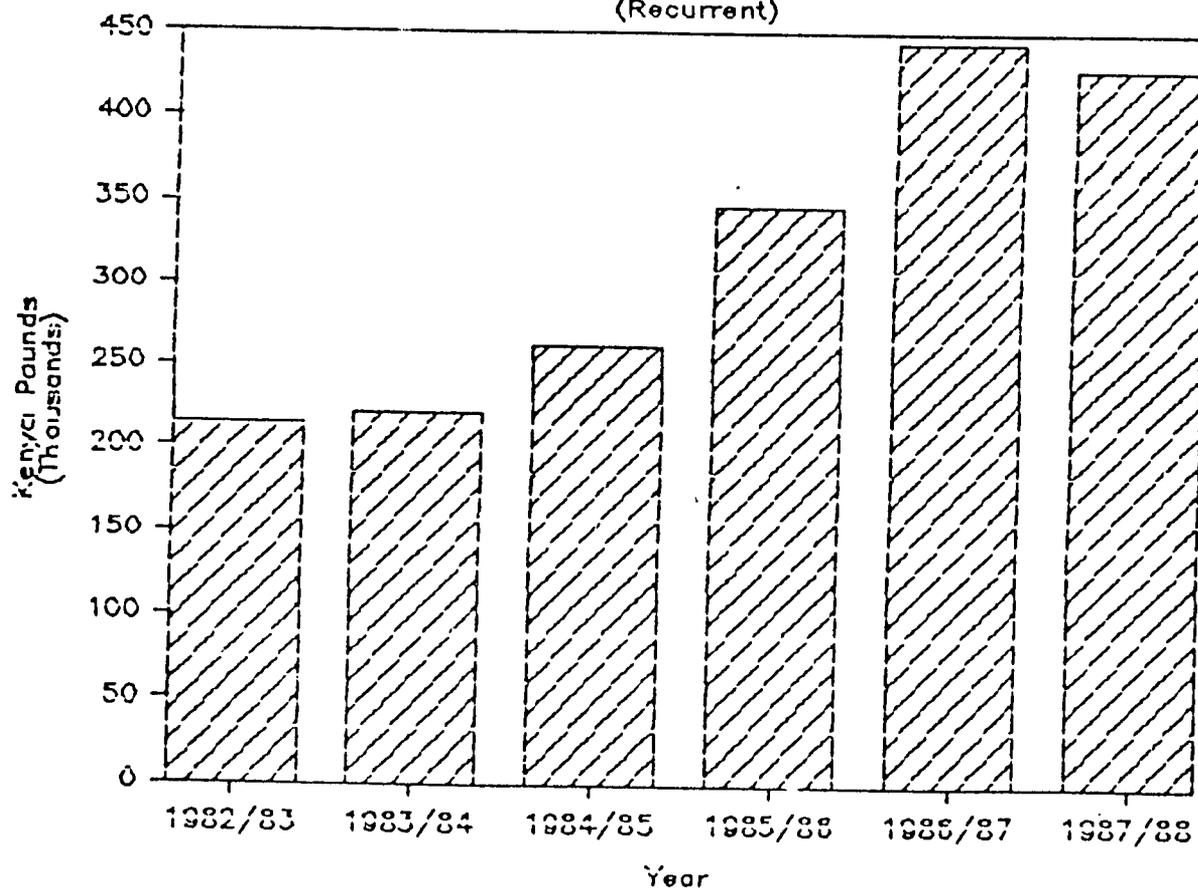
RECURRENT ESTIMATES (Kenya Pounds)

YEAR	GROSS EXPENDITURE	APPROPRIATIONS IN AID	NET EXPENDITURE
1982/83	213,750	-----	213,750
1983/84	220,300	-----	220,300
1984/85	264,700	-----	264,400
1985/86	348,666	-----	348,666
1986/87	444,700	-----	444,700
1987/88	428,700	-----	428,700

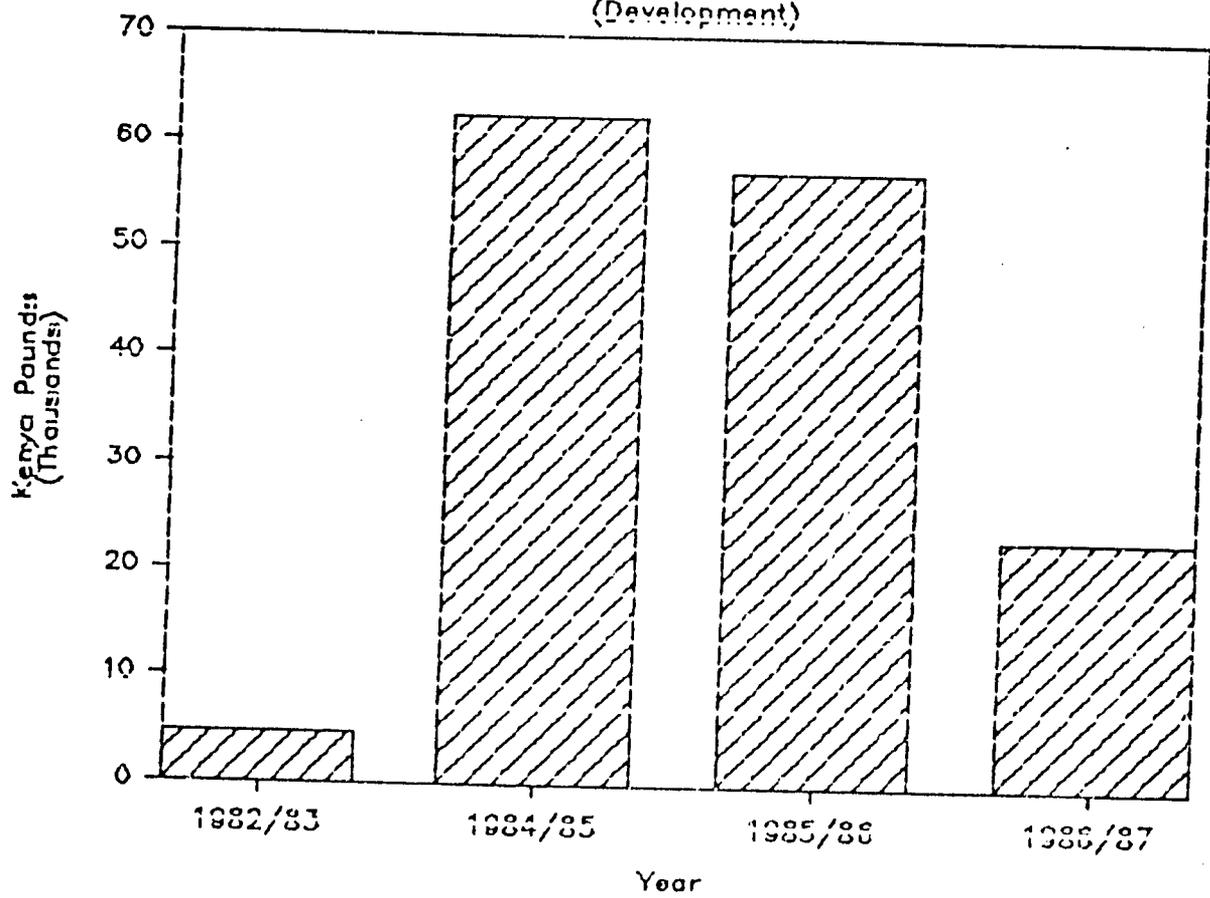
DEVELOPMENT ESTIMATES (Kenya Pounds)

1982/83	5,010	-----	5,010
1984/85	62,512	37,527	24,985
1985/86	57,450	38,250	19,200
1986/87	23,285	-----	23,285

NES BUDGET ALLOCATION (Recurrent)

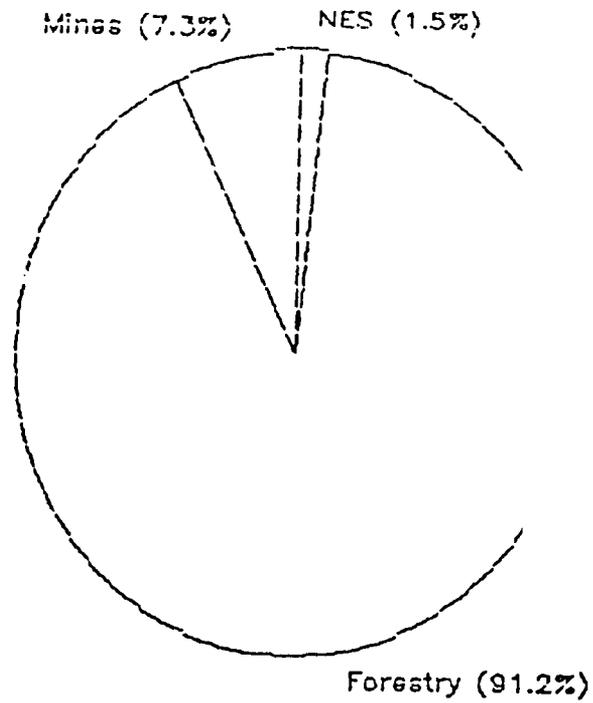


NES BUDGET ALLOCATION (Development)

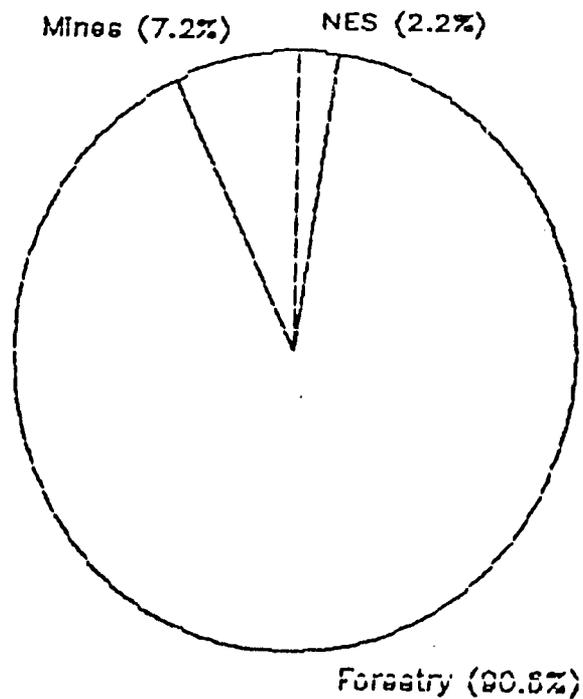


Total MENR Budget Allocation (1982/83)

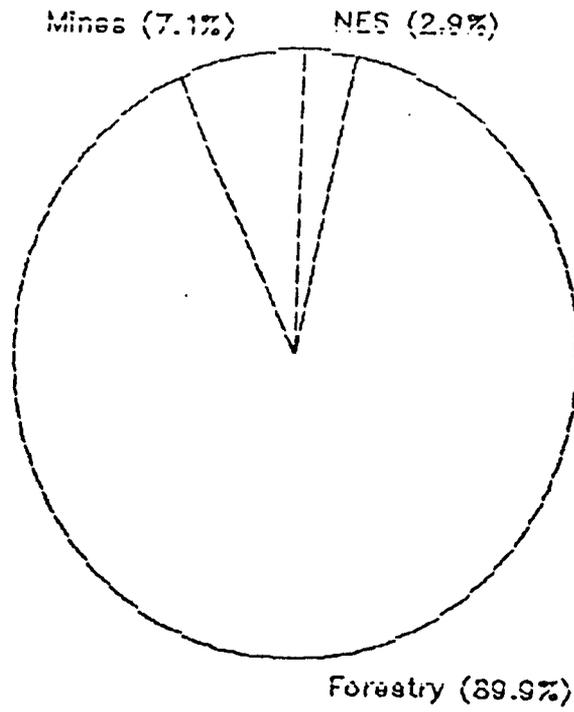
NES Staff=100;Forestry=18,018;Mines=265



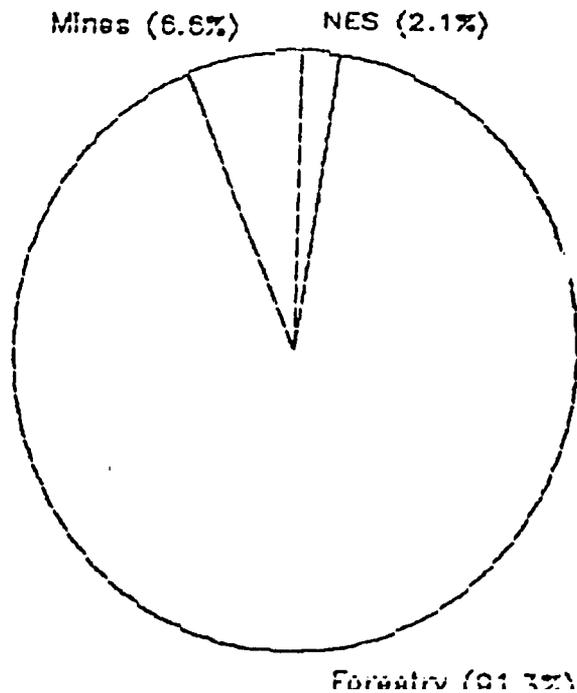
Total MENR Budget Allocation (1984/85)



Total MENR Budget Allocation (1985/86)



Total MENR Budget Allocation (1986/87)



DISTRICT ENVIRONMENTAL ASSESSMENT PROJECT
(1977 to Present)

The District Environmental Assessment Project (DEAP) collects environmental information for all Districts. The environmental information is later made available to the District Development Committee for development planning and environmental protection purposes. The project endeavours to ensure that the environmental component is taken care of at the planning and implementation stages of District projects. This is especially important now that the Government has made the districts the focal planning units.

From 1979 to September 1985, the DEAP was being assisted by a grant from USAID through the Environment Training and Management in Africa (ETMA) programme. By the end of September 1985 when ETMA's contract ended, 12 districts namely Nyeri, Murang'a, Kajiado, Kisii, Lamu, Kilifi, Kwale, Mombasa, Lower Tana, Kitui, Nakuru and Meru had been assessed. Since then two more districts (Narok and Bungoma) have been done. There are therefore still some 27 districts to be done. The National Environment Secretariat (NES) would like to assess as many as possible of the remaining districts so that environmental information is available for most of the districts and can be used in the preparation of future Development Plans. The Kenya Government has many other critical projects like the DEAP to finance and cannot therefore afford to finance DEAP at the planned rate. Since this is a priority project for the Ministry of Environment and Natural Resources there is a need for external finance to help in its implementation.

The major objective of the DEAP project is to maintain and enhance the environment by incorporating environmental components during the planning stages of all projects and any development activities in the country.

GOK/UNEP/UNDP PROJECT ON ENVIRONMENT AND
DEVELOPMENT (1977 - 1980)

The GOK/UNEP/UNDP Project on Environment and Development was a joint venture between the Kenya Government, UNEP and UNDP with UNEP as the supporting agency for the Project, the UNDP as the co-operating agency. The National Environment Secretariat was the executing agency of the project on behalf of the Government of Kenya.

The project was the first attempt by UNEP to undertake a comprehensive study of the environment -development relationship in a national planning context. The results of the project and the methodology for its execution have been examined with a view to initiating similar or related projects elsewhere.

The immediate objectives of the Project were:-

- (i) To analyse the scope of environmental problems in Kenya and to propose a methodology for incorporating environmental considerations into development planning and decision-making.
- (ii) To assist the Government of Kenya in identifying and promoting environmentally sound development strategies within the framework of national development planning and to lay out practical medium-term solutions.
- (iii) To propose policies, actions and institutional arrangements necessary for the formulation and implementation of this kind of development planning.

The project also sought to meet the following long-term objectives:

- (i) To increase the knowledge within developing countries and international organizations in general of the interrelationships between environment and development.
- (ii) To ensure that environmental considerations are taken into account at all levels of development planning and decision-making.

Initially the project started with the commissioning of a number of background papers on a consultancy basis. These together with a number of background papers written by the staff of the National Environment Secretariat formed the basis of the discussions held at a Seminar held in August, 1978, in Nyeri. This Seminar identified areas requiring in-depth studies which were subsequently carried out in 1979 and 1980.

Two mid-projects review seminars were held in July 1979 and November 1979 at Westwood Park and Naivasha respectively for the purpose of carrying out mid-project reviews and to discuss the then accomplished work.

The research work in this project was augmented by field visits to a number of provincial capitals during which extensive discussions were held with provincial field officers from the various ministries through the good offices of the Provincial Commissioners.

The findings of these studies have been compiled into the present draft report of the project.

SOIL MONITORING (KIAMBU AND MURANG'A)

(1982 - 1984)

The population of Kenya is expected to increase from fifteen million in 1979 to about thirty one million in the year 2000 if the present rate of population growth of about 4% does not change, Kenya's food production must therefore increase at the same rate to maintain the same food supply/population ratio we have today. At the same time that increased food production is needed thousands of hectares of land are being subjected to major soil erosion losses. In most parts of Kenya soil erosion is a pressing agricultural problem presenting a major threat to all facets of land productivity. If left unchecked, it threatens the basic elements of life by decreasing the ability of Kenya land resources to produce the food supply that Kenyans expect and by deteriorating the quality of water and air. The economic and social costs of soil erosion are enormous and widespread. With the continuation of the present land management, the costs may be expected to be compounded progressively. Lower agricultural productivity resulting from soil misuse will lead to scarcity of low cost food. Scarcity of low cost food will lead in turn to further misuse of already cultivated land and exploitation of other lands that are even more vulnerable to erosion. This combination of events leads to the conclusion that losses in soil productivity due to erosion are such that we will not maintain the current levels of agricultural production unless we make a commitment to basic research on the most cost-effective methods of controlling erosion.

Quantitative documents of the impact of land degradation through erosion, particularly its effect on soil productivity, is almost non-existent in Kenya. Judgement of the severity of erosion has remained subjective and mostly dependent on how visible the problem is. Nevertheless, it is evident that erosion detrimentally affects the productivity of soils, both at the source and at the destination of the sediment. Where it is most severe, erosion has resulted in total loss of soil as a resource as well as of valuable associated vegetation.

The quantitative data necessary for predicting existing and potential erosion, and detecting critical management

alternatives are rare in Kenya. While the state of current knowledge allows approximate estimates of required improvements in land use for the reduction of loss of valuable soil, absence of necessary base-line data has curtailed the development of conservation practices applicable in Kenyan conditions. This absence of data has also prevented objective evaluation of the applicability of conservation experiences and models developed elsewhere. It is of serious concern that certain of these models are used indiscriminately without scientific evidence required to test their applicability. The same data restrictions are responsible for the lack of an adequate basis on which to modify these models and make them applicable to Kenyan conditions. Such data is also required to determine the rehabilitation requirements of eroded land in order to support alternative food crops or other desired vegetation. In view of this the objectives of the Soil Monitoring Project were to assess soil loss in Kiambu and Murang'a Districts in Central Province of Kenya and to develop a simple method for evaluating erosion in Kenya. The Project was carried out between 1982 and 1984.

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POPULATION AND RESOURCE TRENDS PROJECT

(1982 - 1984)

This Project was carried out between 1982 and 1984. It involved the development of a set of computer models designed to make projections of population and resource changes in Kenya and its Districts and Provinces over the next twenty or so years. In keeping with the overall philosophy of the project, the focus of the effort was not limited merely to the development of the models, but rather on the development of institutions and their capabilities, in this case Kenya's National Environment Secretariat (NES).

NES is charged with aiding in the development of plans and projects related to the interaction between the environment, natural resources and human settlements and the activities of the Kenya Government and private sector. While this is a very broad charge, the NES is limited by not having the budget and authority to actually put projects into operation. Instead, it must rely on influencing other agencies and Ministries. For example, if it finds soil erosion to be a critical problem in a particular District, it cannot fund projects to remedy the problem directly, but must convince the Ministry of Agriculture or some other agency to do the actual work. This means that NES must rely heavily on its ability to persuade and its success in persuasion in turn depends to a large extent on its reputation and visibility among the Governmental agencies.

A final, but perhaps most important consideration, was the feeling of those involved in the project that it could only succeed if the NES was in a position to carry it on as a part of its own operations at the conclusion of the Environmental Training and Management in Africa Program (ETMA) effort. This consideration was central to the way the resource projection models were developed. The idea was not to have Western academics bring in state of the art simulation models, but rather to give NES the ability to develop and use their own resource models to help them in their daily activities. The modelling project had three goals. These were:-

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a) Development of a model or models to deal with one or more of the most serious problems facing Kenya in order to help enhance NES reputation as a source of accurate and timely information of use to other agencies. Population growth and its impact on availability of resources was the problem chosen and a flexible model to forecast population growth at the National, Province and District level under a variety of assumptions was constructed.

b) Development of a model or models to aid in NES's educational program. For this purpose a simulation model was developed to help show the effects of individual life style choices on future availability of resources and the quality of life of the next generation. The model is used as a part of NES's exhibit at Agricultural Shows and thus reaches a wide audience of policy-makers and the general population.

c) Development of a model or models to help the NES staff with their planning activities. In this area, a prototype resource projection model for Districts was developed to help the District Environmental Assessment Project members with their work in making environmental assessments of the various Districts of Kenya.

CLIMATIC VARIABILITY AND SOCIAL IMPACTS
MONITORING AND ASSESSMENT OF COPING
STRATEGIES (1985 - 86)

This was a one year project that evaluated the impact of climatic variability on small holder agriculturalists. It was carried out in 1986. The project evaluated the usefulness of a range of methods in a six district area of central/eastern Kenya. District-level vulnerability to drought was assessed through analysis of long term trends in resources and social-economic conditions. A small farm survey in each district documented coping strategies employed during the 1984 drought. The aim of this was to include the strategies in a systematic drought monitoring and response system. A national symposium reviewed the projects findings and those of related efforts in Kenya.

The project had the following objectives.

- (1) To evaluate vulnerability to climatic variability at several scales: regional, district and local. Production and socio-economic systems are vulnerable (or sensitive) to climatic fluctuations in varying degrees. The nature and determinates of their vulnerability was explored at the regional, district and local levels.
- (2) To evaluate the usefulness of a sophisticated agroclimatic model in providing information on the variability of agricultural production caused by climatic variables. An operational agroclimatic monitoring system should rely on fairly simple algorithms, but its design should benefit from the comparison with more sophisticated models.
- (3) To evaluate alternative strategies to monitor food security at the district to location level.
- (4) To document experiences and lessons learned in the 1984 drought. Drought-related projects, changes in household food entitlement and household coping strategies in response to drought were evaluated using the 1984 drought as a case study.

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KATHEKA VILLAGE STUDY (1986 to Present)

Fieldwork for the Katheka Village study was done in July 1987. Preliminary findings were presented during a debriefing session in NES. The final report will be compiled in due course. The project had the following as its background:

Knowledge of effective food production and resource management at the village level is not new to Kenya. In pre-colonial days, most villages had skilled leaders and farm managers who understood relationships between cultivation and soil erosion, soil management and water retention, tree and vegetation cover and soil productivity, intercropping and soil productivity, and food storage and protection against potential drought. The colonial era changed the authority which local leaders could assert over these and other agricultural relationships in the villages and among pastoral groups throughout Kenya. Although the post-colonial era has seen a number of successful innovations in Kenyan food production such as new hybrid maize, authority to manage resources so as to maximize resource utilization has not fully returned to local leaders and institutions. Despite Kenya having made significant steps towards decentralization in development, the knowledge and skills of local management are still in an imperfect state.

The objectives of the project were as stated below:

- i) To strengthen the capacity of NES to carry out field investigations of effective resource management and to write up the findings in popularized pamphlets and training materials;
- ii) To enable NES to work with the growing body of organisations in Kenya to conduct training programs in effective village-level resource management;
- iii) To assist NES in developing a documentation collection on effective resource management that will be accessible to NES staff as well as the staff members of other Kenyan organizations.

iv) To open discussions within the Eastern/South African region among national resource management institutions to find more effective ways to exchange information and experience on sound resource management practices throughout the region.

PROPOSED PROJECT

RESOURCE MANAGEMENT STUD

A PROPOSAL BY THE NATIONAL ENVIRONMENT SECRETARIAT AND
PROGRAM FOR INTERNATIONAL DEVELOPMENT , CLARK UNIVERSITY
(USA)

Desired starting date: 1st July 1987

Duration: 5 yrs

Funds requested : \$ 170,000

INTRODUCTION AND SUMMARY

One need not over-emphasize the problems of declining food production, resource degradation and deforestation that have been afflicting much of Africa in recent years. Sources such as Lester Brown's *Reversing Africa's Decline* or Lloyd Timberlake's *Africa in Crisis* speak directly on the issues of Africa's impending dilemma. In Kenya the problem of declining resource productivity is compounded by scarcity of arable land and rising population, as pointed out in Richard Ford's recent case study of Kenya, published by the World Resources Institute (in press). Briefly summarised, Ford's analysis confirms Kenya's annual population growth of almost 4%, a current per capita availability of arable land at .62 ha. in 1979 and a projection that arable land per capita will shrink to .4 ha by 1986; and per capita food production dropping 15 index points from 1964-1966 and decreasing by 38% from a base established in 1950-1952. Food pressure is especially acute when considered by type of producer. The following table notes that while cash crops have remained fairly constant or increased in production in recent years, small-holder yields in food production are decreasing.

PRODUCTION OF SELECTED CROPS, BY PERCENTAGE OF SMALL-HOLDER PARTICIPATION

Crop	Production ('000 tons)				% increase in decade	% Small-holders in production
	1969-71	1978	1979	1980		
Maize	2060	2169	1800	1900	(-8)	86
Pulses	267	274	234	240	(-10)	69 (beans)
Coffee	57	84	75	91	60	27
Tea	38	93	99	90	137	12

Source: FAO Year Books: Statistical Abstracts.

To feed its rapidly increasing population, Kenya depends on the small scale farmers who produce 60% of the country's food (World Bank, 1986). The grave concern with which the country views the declining productivity in this sector is therefore understandable. In an effort to reduce a possible catastrophe, the concern has been translated into concrete measures aimed at halting the decline and strengthening the sector. The District Focus Policy which has represented a major shift from national (macro) to local (micro) planning is such one measure. With the new policy, planning begins at the village level and the successes, innovations, aspirations and problems of each area form a springboard for future development programmes. Like any other new policy, the District Focus Policy will have a few hurdles to clear before it realises its objectives. Not much data exists at local levels, yet this is desperately required for meaningful planning.

The Cairo Plan of Action strategy does in many areas concur with the District Focus Policy. It is keenly interested in village level developments. (Under the Cairo Plan Kenya has already submitted 3 villages for funding. These are North Horr, Sacho and Kajiado District). To realize the objectives of the above strategy, localise studies should be supported. Meaningful planning must be based on accurate and up-to-date information and for this, there is no substitute. This study has been proposed with that in mind and hopes to contribute, in part towards the creation of a data bank that will form a reference point in development activities. The study will document data on a diverse of variables with a view to establishing a case for intervention and replicability.

PROPOSED PROJECT

PREPARATION OF THE NATIONAL CONSERVATION
STRATEGY FOR KENYA - A NES/IUCN PROJECT

PROJECT COST: KSH 5,287,512

Kenya needs a National Conservation Strategy (NCS) because:

- 12 out of 20 ministries, and 5 development authorities, have direct conservation responsibilities. Yet there are overlaps and gaps in coverage. Few of the organisations operate practical conservation guidelines; neither do they set targets for achieving conservation.

- Resource supplies are threatened by continuing environmental problems; Sessional Paper No. 1 of 1986 highlights this fact, and calls for long term planning to make the best use of natural resources. The above organisations need a forum to discuss how to support this important initiative.

- Many reports and recommendations have been made on environmental issues. But they have not been followed up, as the exercises did not adequately involve those organisations, government and non-government, with effective control over natural resources. Such involvement is essential for the integration of conservation into a sustainable development process.

The NCS would provide a FORUM for bringing together a wide range of conservation and development organisations; and a FRAMEWORK for analysing the way in which resources are used, and for proposing priority solutions. It would be prepared in two phases:

- Phase I: Demonstration, Awareness and Background Studies (15 months)
- Phase II: Consultative procedure to prepare NCS and Action Plan (9 months)

The principal approach for preparing a NCS would be:

- To begin by demonstrating the value of an integrated approach to conservation and development, and by initiating dialogue between sectors - (making case studies of conservation successes and failures in Kenya; seminars at various levels; preparing publicity materials)
- In Phase I, to analyse past recommendations on integrated conservation and development; to study key issues not yet covered; and hence to produce an overview on the issues an NCS should be tackling - (key issues: Analysis of Environmental Institutions and Laws; Biological Diversity; Environmental Implications of Sessional Paper No. 1)
- In Phase II, to involve representatives of those bodies which should be responsible for NCS implementation, in preparing the NCS - (NES taking the lead in bringing together a wide-ranging group, based on the existing Interministerial Committee on the Environment)
- To strengthen the operational capabilities of NES - (initially through the process of preparing the NCS)
- To develop effective incorporation of the NCS in both the 1989-93 Development Plan and the development planning mechanism - (with special emphasis on developing the use of tools such as Environment Impact Assessment (EIA) consensus, having given exposure to a range of ideas. The aim is to have the NCS prepared by those with the resources and powers to implement it, so that they are committed to its implementation. In this way, the NCS should be viewed as far more than an "environmental profiling" exercise.

PROPOSED PROJECT

WETLANDS

- TITLE : Identification of Wetlands and assessing their status as a habitat for wild fowl in conformity with requirement of Ramsa convention
- PROGRAMME AREA : Protected area management.
- DURATION : 3 yrs 1986/87 to 1989/90
- OBJECTIVES :
- a) To identify and assess the present status of wetlands ecosystems in Kenya.
 - b) To determine the role of various wetland ecosystem in relation to fauna and flora conservation, pollution control, disease and breeding habitats especially for fish and water fowl.
 - c) To map out the aerial extent of all wetlands in Kenya and recommend a programme of action for their long term management.
 - d) To create awareness of the importance of wetland ecosystems and the role they play in biomass productivity

PROJECT COST

INFORMATION AND JUSTIFICATION :

The objectives of the Ramsar Convention was "To stem the progressive encroachment on and loss of wetlands now and in future, recognizing the fundamental ecological functions of wetlands and their economic, cultural, scientific and recreational value".

In the early 1970's, the IUCN (International Union for Conservation of Nature and Natural Resources) created a catchword "Wetlands are never wasteland". In Kenya, the extent of wetlands is enormous and these represent areas of great economical and ecological importance dominated mainly by papyrus. These are areas of marsh or water - natural or artificial, permanent or temporary, the water can be saline, brackish or fresh and either static or flowing. In Kenya we have natural wetlands and agricultural wetlands. Natural wetlands include semi-saline valley swamps e.g. Laboi Swamp, Fresh Water Swamps e.g. Lorian Swamp, Deltaic Swamps e.g. Kala-Nzoia Deltas, Littoral Zones of Lakes e.g. Lake Victoria, Lake Jipe, Lake Naivasha, flood plains of Lower Tana River, Mangrove Swamps e.g. Lamu - Pate Area.

Agricultural wetlands include all Irrigation Schemes e.g. Mwea Tabere. In recent years some wetlands are emerging due to silting up of lakes e.g. former L. Olbosat (Nyahururu) and L. Baringo which is now receding. Each wetland is different in terms of soils or rock underneath which controls the chemical content of the water, light penetration and amount of oxygen. Generally however, all wetlands are water logged with low light penetration to the lower canopy. This has led to the area having flora and fauna well adapted to these conditions; in fact the uniqueness of wetlands is so much so that disturbances tend to lead to endangering or even extinction of some species e.g. the white-backed Heron; a swamp fauna, is now seldom recorded by naturalists.

People's attention needs to be drawn to the actual and potential values of wetlands to men; wetlands are among the most biologically productive ecosystems with some producing as much as eight times as much biomass as a cultivated field, this can be attributed to the fact that water is not a limiting factor and it is constantly eroding and dissolving nutrients thus plants grow throughout the year. The exceptionally high biological productivity of estuaries is recognized as an essential factor in the early life of commercially harvested fish. The wetland as a tourist attraction should not be overlooked as it serves as home for the rare wild fowl e.g. Gonolek, Cormorants, King-fisher, Sacred Ibis, Coots, etc. and the now rare Sitatunga found only in Saiwa Swamp. Economically the provision of high quality water for domestic and industrial use is as important as food production. The wetlands have an ability to hold copious volumes of water therefore serving to regulate the hydrological regime of aquatic species, this water could also be used domestically and in industries. The high productivity in wetlands enables them to support a wide variety of wildlife especially fish and water birds; this is a good source of revenue.

The ability of wetlands to act as nursery and breeding ground is a well-known function as is the ability to act as silt traps thus helping to hold back soil and prevent it from washing away with heavy rains. Wetlands are threatened mainly by pollution - we should note

that they are able to remove inorganic nutrients contained in influent water that would cause eutrophication, and also filter out some toxins but their ability to filter out pollutants is only to a certain level; they are also threatened by changes in water regimes, modification of tidal and water power; over-exploitation of flora and fauna and drainage. The drainage of any wetland will destroy it as a wildlife habitat. A case example is Yala Swamp. One of the rare wild fowl, the Papyrus Gonolek is found here only and is being threatened by the drainage of the swamp to reclaim land to feed the ever growing and increasing human population. Human activities around these ecosystems threaten them, presently the knowledge on wetland ecosystem is far from adequate and they form easy victims for exploitation.

PROPOSED PROJECT

PREPARATION OF THE NATIONAL PLAN OF ACTION TO
COMBAT DESERTIFICATION

PROGRAMME AREA : Desertification Control

DURATION : One year, 1986/87. However, the National Plan of Action to Combat Desertification is expected to identify and catalyse specific anti-desertification projects which form the fabric and are the continuum of desertification control work.

STATUS : The United Nations Conference on Desertification (UNCOD) took place here in Nairobi in 1977 and set up policy guidelines and strategies for combating desertification. Governments were urged to formulate national plans of action to combat desertification, in response, since the UNCOD guidelines are not specific and action-oriented. In recognition of the need to formulate the plan of action, UNSO has expressed its willingness to provide US\$ 50,000, through UNDP, to assist Kenya to prepare the Plan of Action for which this Project Proposal has been drafted.

JUSTIFICATION:

About two thirds of Kenya, constituting sub-humid, semi-arid and arid areas of Kenya, is threatened with desertification which is a process whereby the soil loses its fertility or erodes away and the land becomes barren of plants and incapable of supporting livestock. Drought and desertification can be regarded as two sides of the same coin since one of the expressions of desertification is drought and drought conversely may accelerate desertification and aggravate its effect.

However, desertification, a self accelerating process which feeds on itself, is more or less a permanent and unexpected sum total of mismanagement of land resources - soil, vegetation, water - which is difficult and costly to reverse and therefore not susceptible to quick solutions, whereas drought is temporary, cyclical, is to be expected in almost all climates and is the result of lack of available water in the environment.

Although drought is spoken of as being an engine of desertification, drought can be addressed as an emergency issue but

desertification must be tackled from the long term perspective since it is broader and a much more complicated problem whose rehabilitation costs rise exponentially as it advances. Almost invariably, some of the measures designed to combat desertification will tackle drought issues but not all. Likewise, not all measures designed to tackle the problem of drought are relevant to desertification. Therefore, although drought must be viewed as being subordinate to desertification, strategies to cope with drought whenever it occurs must be formulated in addition to a National Plan of Action to combat Desertification

The objectives of the National Plan of Action to combat Desertification are as stated below:-

1. To assess the current status and trend of desertification and to evaluate measures so far taken to combat it.
2. To identify and formulate anti-desertification projects and to explore means of funding them and also to strengthen the existing ones.
3. To design an appropriate mechanism for assessing and monitoring desertification control activities and also desertification process itself to determine whether it is advancing or subsiding.
4. To integrate elements of desertification control with the National Development Plan.
5. To bring together specialists working in the area of desertification control, decision-makers, politicians and the like to discuss and give prominence to serious and insidious process of desertification threatening the lives of nearly 2 million people in Kenya.

E/I division and hence that of N.E.S. The information centre will meet specific requirements and will not be considered as an end in itself. Its location will be easily accessible and will also be in a fairly natural habitat for greater environmental education impact.

The information centre will have the following objectives

- (1) Set up a full fledged environmental library
- (2) Compile a computerised environmental data base
- (3) Through communication experts disseminate environmental information to governmental institutions, non governmental institutions, the private sector and the general public.
- (4) Assist policy makers in making correct and timely decisions on environment by providing accurate and upto date information.
- (5) Offer environmental training courses to selected groups.
- (6) Work closely with National and International bodies like UNEP, ICRAF, LBDA, CBS, KREMU, Universities with a view to maintaining an accurate and robust information centre.
- (7) Mount a comprehensive environmental exhibition during every world environment week for various target groups within the Kenyan public.
- (8) Use the environmental data base to provide solutions to existing environmental problems in Kenya
- (9) Provide raw data during the writing of the state of the environment report and other useful reports.
- (10) Build simulation models based on the environmental data base and hence forecast future environmental trends.

PROPOSED PROJECT

DISTRICT ENVIRONMENT ASSESSMENT PROJECT:
PHASE II

The District Environment Assessment Project as mentioned earlier is a national programme that collects, collates, analyses and compiles environmental data on district basis. The prime objective is to make available such data to the District Development Committees for incorporation into the development projects right at the planning stage. The relevance of this Project has been amplified by the District Focus Policy (The District is now the primary planning unit).

Below is a summary of proposed DEAP activities for the next 3 years.

TYPE OF ACTIVITY	NUMBER OF ACTIVITIES		
	1987/88	1988/89	1989/90
Field Work	4	3	4
Draft Reports	4	3	5
Workshops*	3	4	3
Editing*	3	4	3
Printing*	2	4	4
Follow-up	10	12	12
Cost of Activities	Kf47,592	Kf60,855	Kf55,647.2

* Activities with asterics are the most expensive. 1988/89 has more Workshops, editing and printing, hence the greater financial implications.

PROPOSED PROJECT

ENVIRONMENTAL RESEARCH AND MONITORING CENTRE
(ERMC)

Subject Area : Establishment of Research Facilities in the field of Environment

Geographical Scope : Nairobi

Implementation : National Environment Secretariat

Duration of the Project : 4 years - Starting 1987/88
- Ending 1990/91

Project Cost : US\$ 1.2 million

BACKGROUND OF THE PROJECT

The National Environment Secretariat (NES) was established in 1974 to co-ordinate all environmental matters in Kenya. However NES's co-ordinative role has generally been hampered by lack of reliable scientific data. Often we rely on scientific findings from other already established institutions and due to long delays, NES experiences problems in discharging its duties effectively. For example, samples taken for analysis to the institutions take too long and hence action is delayed. NES also has no direct accessibility to the facilities of these institutions.

In order for NES therefore to give proper advice to other institutions as mandated, we need to have adequate information. It is therefore necessary for NES to have its own facilities to carry out scientific research on such matters as air pollution, noise pollution and land contamination, e.g. toxic chemicals, sanitation and waste disposal which are presently not being adequately carried out in Kenya. Such laboratory facilities would be used for environmental education and information. The facilities will thus include a lecture/film theatre, a studio and dark room. These facilities will go a long way in accomplishing one of the major objectives of the Secretariat of disseminating environmental education to the general public

and policy-makers so that environmental concerns are included in our Development Plans and Projects.

In the last few years, there has been very rapid increases in the manpower establishment of the Secretariat. The manpower which is qualified in different scientific subjects need the laboratory services in order to be able to carry out their duties adequately. In absence of the laboratory facilities, the Secretariat's work has been greatly hampered especially in areas where environmental problems emerging from our development efforts call for immediate action.

PROPOSED PROJECT

STATE OF RIVER NZOIA

PROJECT COST: 46,000 Kenya Pounds

Kenya has only five permanent rivers. These are Nzoia, Yala, Mara, the main course of Tana and the main course of Galana (Athi). All other rivers and their tributaries are seasonal. Therefore, problems of water shortage, conservation and protection are some of the major environmental problems Kenya faces.

This Project Proposal singles out the River Nzoia and its surrounding environment. River Nzoia flows from Kapenguria near Cherengani Hills to Lake Victoria in the Simba Channel near Bunyala. Its major tributaries draw their waters from the Cherengani Hills (the Norgamet, Sosioni and Kipkaren); Mt. Elgon (such as Ewaso Rongat, Kimilili, Kuywa and Khalaba); and from the Nandi Escarpment (e.g. the River Lusumu and Litras). This river flows through eight Districts - West Pokot, Trans Nzoia, Uasin Gishu, Bungoma, Nandi, Kakamega, Busia and Siaya. It passes through important industrial and agricultural towns such as Kitale, Eldoret, Webuye, Bungoma and Mumias. The waters of River Nzoia are therefore of paramount importance to the growth of both the industrial and agricultural towns, as well as to the community around. The River Nzoia basin is also endowed with human resources, the population being large and rapidly expanding. Reliable roads and sources of electricity from the Owen Falls in Uganda and potential at Webuye and Teremi Falls, further serve to make the Basin a very important study area.

Therefore, the 'State of River Nzoia' Project concerns itself with the resources in the basin, how they are utilized, the environmental problems caused and how they can be effectively mitigated for the benefit of the people around and the economy at large. Of chief concern are the water resources; the forestry problems to be looked at include various forms of pollution e.g. water and air, deforestation and squatter problems around the forest areas. These problems emanate from the various industrial and agricultural activities around the river basin such as the Pan African Paper Mills, the Nzoia Sugar Factory and the East African Heavy Chemicals Limited.

The Project has the following objectives:- .nf a) To evaluate the impact of Panafrican Paper Mills on the surrounding environment and River Nzoia in particular, with a view to laying down standards and guidelines for sound environmental management and ecological development in the river basin.

b) To study other industries in the basin and their impact on the environment with the aim of issuing them with guidelines for sound environmental management.

c) To identify and assess the various forms and sources of pollution in the basin and to ensure that the expected quality control standards of air, water and other parameters are observed.

d) To evaluate the current state of resources used in the basin with a view to proposing proper management measures and rational use of these resources for the fulfilment of increasing human and industrial needs.

e) To study the impact of human encroachment onto the water catchment areas so as to give advice on protection and conservation of these areas.

f) To study the impact of Agricultural activities in the basin on the surrounding ecology, in order to come up with remedial and conservation measures as the need arises.

PROPOSED PROJECT

TRAINING ON TECHNIQUES/METHODOLOGIES OF
ENVIRONMENT IMPACT ASSESSMENT

DURATION OF PROJECT: 5 YRS

FUNDS REQUESTED (for the first 3 yrs): 176,627.1 Kenya Pound

BACKGROUND

Kenya is not richly endowed with natural resources and although agriculture is the mainstay of the economy, less than 20% is high potential agricultural land. In view of this, coupled with the implications of a high rate of population growth, rational utilization and management of natural resources is central to the country's sustainable development.

To ensure that the natural resources are not overloaded by development activities, the Kenya Government has set up a number of institutions to respond to all these challenges. The National Environment Secretariat of the Ministry of Environment and Natural Resources is such one institution. It was established in 1974 and charged with a host of responsibilities chief among which were to: assess and evaluate the impact of development activities and to monitor and assess the current state and foreseeable trends in the quantity and quality of the resource base. By effectively discharging this mandate, harmful effects of development activities will be forestalled. The secretariat is currently disadvantaged in that it lacks the capability and skills required in discharging this mandate. If implemented, the project will fill a major gap by improving the level of efficiency of the secretariat.

- Objectives of the project

To train a core of professionals on the methodologies and techniques of environmental impact assessment. The trained personnel should provide the Secretariat with the capability necessary for systematic assessment of environmental impacts of development projects. With assistance from FAO/UNDP, the secretariat will be able to train about 4 officers every year, for a period of 5 years, giving a total of 20 trained officers by the end of the project period.

N.E.S TRAINING PROJECTIONS

ITEM	DESIGNATION/POST/CADRE	TOTAL NO IN POST	WHERE TO TRAIN		DURAT- IGN	SOURCE OF FINANCE	NO TO BE TRAINED PER YEAR				TOTAL NO TO TRAIN		
			INSTITUTION	COUNTRY			1985/86	1986/87	1987/88	1988/89			
1	Housing Planner	1		Canada	2 yrs			1				1	Environment Planning (Masters)
2	Physical Planner	1	B.I.C	Netherlands	5 months			1				1	Housing Planning (Short Course)
3	Physical Planner	1	Univ. of Nairobi	Kenya	2 yrs			1				1	Urban Regional Planning (Masters)
4	Research Officer	1	U.K. Canada USA		3 yrs				1			1	Computer Science (B.Sc.)
5	Research Officer	16			2 yrs			1				1	Environmental Studies (Masters)
6	Education Officer	3	Univ. of Nairobi	Kenya	2 yrs				1			1	Environmental Studies (Masters)
7	Senior Environment Education Officer	2			1 year				1			1	Environmental Education Management
8	Geologist	1			1 1/2 yr				1			1	Environmental Science/ Management (Masters)
9	Agriculturalist	1			3 yrs						1	1	Environmental Science (Geomorpho- logy) Ph.D
10	Senior Ecologist	3	Clark Univ.	USA	3 yrs			1				1	Environment & Development Ph.D

ITEM	DESIGNATION/POST/CADRE	TOTAL NO IN POST	WHERE TO TRAIN INSTITUTION	COUNTRY	DURAT-ION	SOURCE OF FINANCE	NO TO BE TRAINED PER YEAR	TOTAL NO TO TRAIN	TITLE OF COURSE PROGRAMME
11	Economist/Statistician	3	Univ. of Bradford	UK	3 months		1	1	Environment Impact Assessment (Short Course)
12	Economist/Statistician		Univ. of Nairobi	Kenya	2 yrs		1	1	Environmental Studies (Masters)
13	Economist/Statistician	1	Univ. of York	Canada	2 yrs		1		Environmental Studies (Masters)
14	Education Officer	1	Kenyatta Univ. College	Kenya	2 yrs		1	1	Curriculum Development (MED)
15	Education Officer	3		UK	1 yr		1		Environmental Science
16	Research Officer			Kenya	1 yr			1	Environmental Science
17	Research Officer	3		Australia	1 yr		1		Development Communication
18	Environmental Protection Officer			USA	2 yrs			1	Environmental Science (Msc)
19	Environmental Protection Officer				2 yrs			1	Planning Management (Masters)
20	Research Officer/ Education	16	Univ. of Nairobi	Kenya	1 yr		1	1	Journalism Diploma

ITEM	DESIGNATION/POST/CADRE	TOTAL NO IN POST	WHERE TO TRAIN INSTITUTE/COUNTRY	DURATION	SOURCE OF FINANCE	NO TO BE TRAINED PER YEAR	TOTAL NO TO TRAIN	TITLE OF COURSE PROGRAMME
121	Library Assistant II	1		12 yrs	Leeds U.K.	1		Librarianship B.A.
122	Chemist	2		12 yrs		1		Solid Waste Management and Recycling Technologies (Masters)
123	Chemist	2	Netherlands	12 yrs		1		Pollution Control-Air, Water, Noise (Masters)
124	Research Officer	16	Univ. of Nairobi Kenya	12 yrs		1		Solid Waste Management and Technologies (Masters)
125	Research Officer	16	Rochester Univ. USA	12 yrs		1		Pest Control and Pesticides Management (Masters)
126	Chemist	2		12 yrs		1		Environmental Health
127	Chemist	2		12 yrs		1		Pollution Control - Air, Water, Noise
128	Research Officer			12 yrs		1		Environmental Health
129	Environmental Protection Officer	1		12 yrs		1		Pollution Control (Masters)
130	Research Officer			12 yrs		1		Pollution Studies (Masters)

IT- EM	DESIGNATION/POST/CADRE	TOTAL NO IN POST	WHERE TO TRAIN INSTITUTION COUNTRY	DURAT- ION	SOURCE OF FINANCE	NO TO BE TRAINED PER YEAR	TOTAL NO TO TRAIN	TITLE OF COURSE PROGRAMME
31	Research Officer	16	Univ. of Kenya Nairobi	2 yrs		1		Parasitology (Masters)
32	Clerical Officer	6	Survey of Kenya Kenya	1 yr		1		Cartography Diploma Certificate
33	Clerical Officer	6	Kenya Polytechnic	1 yr		1		Statistics (Diploma)

PUBLICATIONS

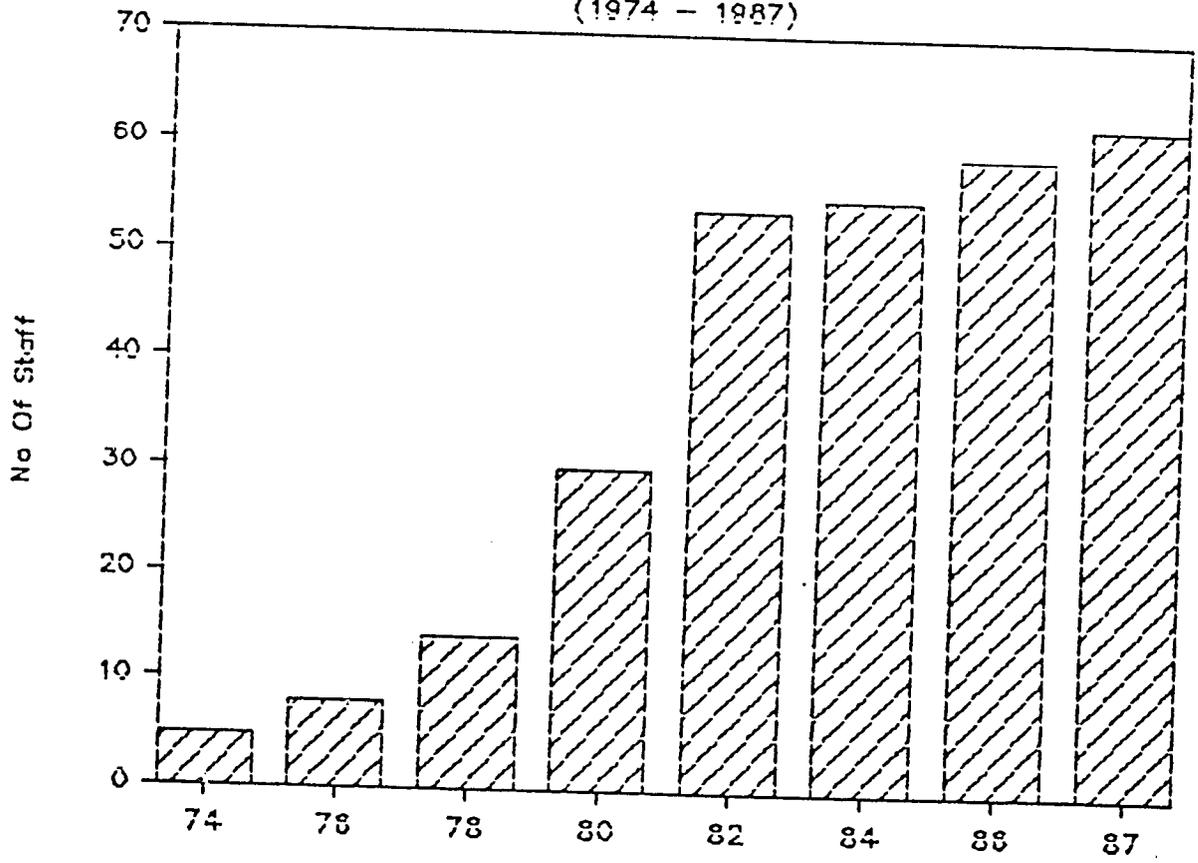
1. DISTRICT ENVIRONMENTAL ASSESSMENT REPORTS
 - Kajiado (1980)
 - Kisii
 - Nyeri
 - Kitui (December 1981)
 - Muranga (November 1982)
 - Kilifi (December 1984)
 - Nakuru (March 1984)
 - Mombasa (August 1985)
 - Lower Tana River (1985)
 - Kwale (1985)
 - Lamu (July 1985)
 - Bungoma (1986)
 - Kirinyaga (nearly ready)
 - Meru (1985)
2. Kenya's National Report to the United Nations Conference on Human Settlements (1976)
3. Education and Environment (1977)
4. Environment Management Report (1977)
5. Report of the National Seminar on Desertification, Nairobi (1977)
6. Environmental Management Report July 1978
7. A Report on Innovative Policies and Strategies for Human Settlements in Kenya. March 1979
8. Report of the Workshop on the Determination of Environmental Training and Retraining Needs in Relation to Environment and Development Goals and Priorities in Kenya. October 1980
9. UNESCO East/Central African Environment Management Workshop
10. Plant Communities Workshop
11. Kenya's Fight Against Soil Erosion
12. Report on the Institutional Framework for Environmental Management And Resource Use in Kenya (1980)
13. Role and Contribution of Construction Industry in Human Settlement Programmes and National Economic and Social Development and Provision of Infrastructure in Slums, Squatter Areas and in Rural Settlement 1981.

14. Report of the GOK/UNEP/UNDP Project on Environment and Development Vol. 1,2 & 3 - Draft January 1981
15. The Role and Functions of the National Environment Secretariat - September 1981
16. Report on the Institutional Framework for Environmental Management in Resource Use in Kenya. D.N. Kinyanjui & P.R. Baker; 1981
17. District Environmental Assessment Project. October 1981
18. Our Environment (1982)
19. Land Degradation Monitoring Programme; The First Pilot Study, Kiambu District. September 1982.
20. Planning for Human Settlements in Disaster - Prone Areas and Transportation for Urban and Rural Areas With Emphasis on Groups With Limited Resources. 1982
21. Our Environment Vol.1 No.1 (Newsletter) December 1983.
22. Land For Human Settlements (1983)
23. God, Environment and Man (1984)
24. A systematic and Comprehensive Approach to Training for Human Settlements and a Systematic and Comprehensive Approach to Information for Human Settlements . 1984
25. Planning and Management of Human Settlements With Emphasis on Small and Intermediate Towns and Local Growth Points 1985
26. Population and Environment - Kilifi District 1985
27. Monitoring Soil Erosion In Kiambu and Murang'a Districts, Kenya 1985
28. Measurement and Prediction of Soil Erosion in Kiambu and Murang'a Districts of Kenya (1985)
29. Endangered Resources for Development (1985)
30. Climatic Variability and Agricultural Production In Central and Eastern Kenya (1985)
31. The State of the Environment (1987)
32. Report of the Kenya Delegation to the 14th Governing Council Session of UNEP (June 1987)

33. Environmental Activities for Schools and Colleges in Kenya (198

Note: Some of the publications above were done in collaboration with other ministries and organisations.

Growth Of Senior NES Staff (1974 - 1987)



Executive Officer II	H	1	1
Executive Assistant	G	2	2
Accounts Assistant	G	2	-
Senior Library Assistant	G	1	-
Supplies Assistant	G	-	1
Shorthand Typist II/I	F/G	8	8
Library Assistant II/I	E/F	2	2
Higher Clerical Officer	D	-	3
Clerical Officer	D/E	7	5
Copy Typist III/II/I	D/E	5	5
Driver III/II/I	C/D/E	7	5
Subordinate Staff	A/B/C	7	7

1/1

CURRENT NES SENIOR STAFF (No = 62)

NAME	QUALIFICATIONS
Mr. A.K. Kiriro	Director
Mr. R.V. Mugo	Deputy Director
Mr. C.M. Kamau	MA Economics/BA Economics
Mr. J.K. Gitonga	BSc M.S.C.
Mr. B.N. Munywoki	BSc. Biology, MSc Management & Dev., D.S.C.
Mr. D.N. Kinyanjui	B.A. Biology, M.E.S. Ecology
Mr. Maina Karaba	BSc. Ecology
Dr. J. N. Waiyaki	PHD Entomology
Mr. Moses Wanga	BSc. Agriculture, M.A. Planning
Mr. Gathungu Kariuki	B.A. Lands Economics, MA Planning
Mr. B.O. Komudho	M.Ed Science, BSc. Education
Mrs. G.N. Wanyonyi	BA MA Education
Mr. J.M. Kihanya	School Certificate "O" Level PI teachers cert.
Mr. E.E. Ondenge	BSc Agriculture, Msc Soil Science
Mr. F.N. Kihumba	BSc Chemistry
Mrs. C.N. Kabutha	BA. MSc Demography
Mr. D.N. Mathu	BSc. Chemical Engineering
Mr. H.R. Muturi	MSc. Engineering, Geology & Geophysics
Mr. P.M. Mungai	BSc. Chemistry, Zoology
Mr. S.K. Mugeru	BSc.
Miss A.N. Kihiu	B.A. Degree
Mr. B.K. Mwangi	MSc. Chemical Engineering
Mrs. E. Oduor-Noah	BA. MA Regional Planning
Mr. S.S. Siah	BA Economics, B.phil, Economics
Miss E.A. Ojoo	BSc. Chemistry
Mr. J.G. Anyango	BA Economics
Miss S. Maghanga	BA Economics, Geography, MES
Mr. W.M. Njoroge	BSc. Chemistry
Mr. Owino Magana	BSc. physics
Miss E. Kisang	M.S.E.H. BSc Microbiology
Mrs. M.N. Karanja	BA Education
Mrs. V.M. Nyagah	BSc Biology, MA Education
Mr. S.K. Mbarire	B.Ed. Science
Mrs. J.C. Onyango	BA
Mrs. M.M. Gatahi	BSc. Biochemistry & Chemistry
Mr. L.M. Kirui	BSc Chemistry, MSc in Env/pollution control
Mr. V.K. Njuki	BA
Mr. W.K. Mutero	BSc. Maths, Physics
Miss M. Wainaina	MA Planning, BA Social work
Mr. W.N. Munuhe	BSc. Chemistry & Maths
Mrs. V.D. Sambuli	BSc. Maths & Statistics
Miss C.M. Gitau	BSc. Botany & Zoology
Mrs. C.W. Kiragu	BA. Design

Mrs. S. Suleiman	BSc. Botany & Zoology
Miss A.A. Odipo	M.S.C. Public Health
Miss C.N. Mwangi	BA Government & Sociology, MES
Miss K.I. Matia	Bachelor of General Studies
Mr. P.M. Ndonge	BSc. Botany & Zoology
Mr. S. Munene	BSc. Chemistry & Maths
Mr. E.W. Ngunga	BA Design
Mrs. I. Asamba	BSc. Botany & Zoology
Miss F.W. Kariuki	BSc. Botany & Zoology
Mrs. J. Sheikh	MSc. Geography
Mr. J. M. Muinde	MA Env/Studies, BA Geography & Geoscience
Mr. J. M. Mwandishi	BSc. Biology
Mr. S.M. Katua	BSc. Botany, Zoology, Chemistry, MSc. Zoology
Mr. C.S. Mwandawiro	BSc. Botany & Zoology
Mr. L.K. Kollikho	BA Planning
Mr. A.O. Amwoyo	BA Economics
Mr. Ojiambo	B.Sc Biology
Mr. P.L. M'mayi	B.Sc Biology
Mr. N.O. Manyolo	B.A, B.J.C., M.A. Prev. Soc.