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ENVIRONMENTAL INFORMATION NETWORKING IN UGANDA

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Introduction

1. Environment information plays centre stage in environmental planning and sustainable resource use in Uganda.
2. The Government of Uganda (GOU) as a commitment to this principle approved a National Environment Management Policy in November 1994 which outlined the policy objectives regarding the management of environmental information. Among the strategies highlighted in the policy are:
 - (i) giving the National Environment Management Authority the mandate and means necessary to coordinate and standardise environment information;
 - (ii) strengthening specialised information unit within sectoral institutions through training and logistical support and formally link them to the National Environment Information network to be operated by the information centre; and
 - (iii) documenting, evaluating, storing, disseminating and utilising indigenous knowledge and practices with regard to environment and natural resources management.

This was further strengthened by the passing, by parliament, of the National Environment Statute 1995 that put in place an institutional framework which established NEMA.

The National Environment Management Authority (NEMA)

3. NEMA is the principal agency responsible for the management of the environment in Uganda and coordinates, monitors and supervises all activities in the field of environment.

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NEMA secretariat

4. The day to day activities of the authority are carried out by the Secretariat technical staff with their support staff. The secretariat is headed by the Executive Director and a Deputy. These two staff members are the Chief Executives of NEMA and are responsible for the day to day operations of the Authority. Under the Executive Director, there are four divisions each headed by a Director. These are:

- Policy, Planning and Legal Division;
- Information and Monitoring Division;
- Education Awareness and Training Division; and
- Administration and Finance Division.

5. The role of the Policy, Planning and Legal Division is to ensure that environmental concerns are integrated into the planning process, policy and law at relevant levels of activities that affect the environment.

6. The role of the Division of Information and Monitoring is to ensure adequate surveillance and control of the environment and those areas of interest to it, collect and analyse data and disseminate information on the state of the environment, evaluate their overall impact on the system, inform the concerned parties and institute control measures.

7. The Education, Awareness and Training Division focuses on promoting the development of adequate environmental knowledge, skills and awareness to ensure sustainable utilisation of the country's environment and natural resources. Finally, logistical support to the Authority is provided by the Administration and Finance Division.

Linkages with line ministries

8. While NEMA is responsible for monitoring, planning and coordination of environmental matters, implementation is the responsibility of the relevant line ministries. Environment liaison units have been established in each line ministry and charged with the responsibility of integrating environmental concerns into the sectoral plans, and implementing environmental activities within the mandate of the Ministry such as reviewing Environment Impact Statements (EISs). The heads of the liaison units report to the Director for the Policy, Planning and Legal Division.

Linkages with the districts

9. The development of strong links between the resource users and the Authority is very crucial for effective implementation of the National Environment Action Plan. NEMA therefore has focused programs aimed at:

- building local government environmental planning capacity supported by an information base, to enable them to sustainably manage their own environment and natural resources; and
- assisting local government to develop their own environmental action plans, policies and bye- laws;

Environmental information strategy and capacity building

10. The NEAP process identified the following as the major issues pertaining to environment information in Uganda:

- inadequate institutional mechanism for the dissemination of information between the data source and potential users;
- limitation with regard to availability, quality, coherence, standardisation and accessibility; and

- lack of a legal framework on access to information, particularly with respect to confidential or proprietary information.

11. A strategy to overcome the constraints was recommended and adopted. This focuses on:

- a) providing clear legislation and guidelines on environmental information specifying what environmental information is freely available to users and what may be regarded as classified or proprietary;
- b) creating a centre for information on the environment in NEMA with the mandate and means necessary to coordinate Environment information management in Uganda;
- c) strengthening specialised information units within sectoral institutions which generate key datasets for environmental management; and
- d) periodically publishing a National State of the Environment Report to guide decision-making.

Policy and legislative framework for environmental information

12. An Environment Policy was passed by Cabinet in 1994 and it recognised the fact that sustainable management of environmental resources and the need to continuously anticipate new and emerging challenges require availability of timely, up-to-date and accurate information. The policy objective is therefore to collect, analyse, store and disseminate on a continuous basis reliable information relating to environmental management issues.

13. The Policy was further elaborated into the National Environment Statute 1995 which granted every Ugandan the right to a healthy environment and access to information regarding the state of his or her environment. The statute also obliges NEMA to prepare and disseminate a National State of the Environment Report every two years and the districts to prepare district state of environment reports every year. Both the National Environment Policy 1994 and the Statute 1995 are further reinforced by Article 39 of the constitution of Uganda. Provision of a legal framework for information access also meant that an institutional mechanism had to be put in place to fulfil the legal obligations.

Institutional framework for environmental information management

14. In August 1990 the National Environment Information Centre (NEIC) was created through a cabinet decision with a mandate of providing environmental information support to the decision making process in the country. Initially the focus was on the establishment of a geographic information system dedicated to value adding secondary information to produce tailored products that would provide some answers to current environmental questions. The initiative was funded and supported by UNEP. The Geographic Information Systems (GIS) unit has evolved and become the core of NEIC as it exists today. NEIC played a key role in the formulation of the NEAP in 1992 by providing information support to the process. The Centre prepared the first ever National State of the Environment report in 1994 which was one of the major outputs of the NEAP process. The State of the Environment Report 1994, together with the policy, influenced the passing of the Statute in 1995. When NEMA was created in 1995 it was found prudent to build on the capacity already developed within NEIC. NEIC was therefore incorporated into NEMA and became the information unit of the Authority under the Division of Information and Monitoring.

15. The transition process was preceded by a review that reflected on the experience of NEIC since its inception in 1990 and the new role it was to assume as a hub for coordinating environment information dissemination as mandated by the law. The review led to a redefinition of the role of the information centre and defined the major elements that were considered crucial for the successful development of a program to integrate environment information systems into the action planning process in Uganda.

16. The major elements identified were :

- development of horizontal information network;
- development of a vertical information network;
- strategy for integrating environmental information into the action planning process; and
- development of an EIS training program for the vertical and horizontal networks.

17. NEMA is focusing on the above issues to establish a functional Environment Information System in Uganda and has earmarked US \$2 million for the program through the World Bank funded Environmental Management Capacity Building Project (EMCBP). The following sections outline the initiatives so far in place and some of the problems so far encountered.

Development of the horizontal network

18. During the evaluation process, an assessment of the magnitude of resources invested in environmental information management within 21 different institutions was made. In varying degrees, it was found that all the institutions consulted managed environmentally related information as an integrated activity to fulfil their mandate. Some of the institutions have established documentation centres supported with some digital capability. Field data collection techniques are well established in most of the institutions while others were also not aware of data holdings in other sister institutions that led to duplication of efforts in many areas. It was on this premise that NEIC convened the first National Workshop on environment information networking in March 1996. Representatives from 21 institutions attended the workshop that discussed a range of issues focussing on streamlining and improving information exchange on environment in Uganda. The forum endorsed the establishment of an environmental information network (EIN) with a clear institutional framework. It was agreed that the network would have the following characteristics:

- the EIN would operate as a network of members with open lines of communication between all;
- NEIC would become a secretariat to coordinate the activities of the network;
- membership would be open to all, although initial emphasis was to ensure involvement of large data producing government agencies; and
- the network would provide a forum for communication on a range of technical institutional and policy issues relating to the availability, dissemination and use of environmental information.

19. The EIN Secretariat is not envisaged as a repository of data i.e. network members who are data producers remain in total control of their own data. As a first step in operationalising the EIN, Working Groups were set up to tackle issues which were considered key for smooth running of the EIN and come up with recommendations which would form the basis of follow up action.

Identification of core datasets

20. An expert working group was established to review the issues identified during the NEAP process as areas of major concern and come up with priority datasets that would support an action plan to address those issues. The review also focused on the management of such datasets including; compilation, verification, dissemination, updating etc. The findings of the working group was that some of these datasets were vital in a particular sector while some were baseline information required for almost all environmental management needs.

21. The review identified six key Departments as being the most common source of core datasets. These were:

- Surveys and mapping department (Topographic data);
- Forestry Department (Vegetation data);
- Statistics Department (Socio-economic data);
- Agriculture Department (Farming System);

- NARO (Soil data); and
- Meteorology (Climate data).

22. It was therefore realised that for the EIN to function optimally with reliable data which is timely and up to date, there was a need to strengthen the capacity of the above six institutions to manage the information. An investment program was consequently drawn up focusing on training, equipment and data capture. Funding is currently being provided through the World Bank funded EMCBP to six of the above institutions namely; Surveys and Mapping Department, NARO, Agriculture Department, Meteorology, Forestry Department and Makerere University Institute of Environment and Natural Resources (MUIENR).

Development of a meta-database

23. An identified constraint in the use of existing environmental information was the lack of awareness of its existence and availability. The tendency was therefore for each sector to initiate data collection whenever a need for specific data arose. A meta-database of environmental information developed in NEMA is intended to overcome this type of problem. The meta-database is a directory of what information exists, where, in what form etc. Currently it consists of entries from 20 institutions and projects.

Guidelines for environmental data dissemination

24. Although most institutions acknowledge that data dissemination is an important role for them, there is very little in the way of documented policies and procedures in place and some institutions were releasing data only on cost recovery basis. It was therefore felt that a set of generally acceptable guidelines would be of practical use to individual institutions, and would stimulate a cohesive approach among institutions. The guidelines, among others, would consider the issues of confidentiality, pricing and responsibilities of both producers and users. A consultant was engaged to review the legislative requirement and draft guidelines addressing the issue mentioned above. Draft guidelines were produced in January 1997 and are now being tested.

Implementation of the EIN

25. The information strategy currently being implemented by NEMA is focussing on the EIN as already described, with both horizontal and vertical network. The first phase of capacity building program covering the five institutions listed in this section has been on-going for the past year. This phase is initially emphasising the development of digital information management capacity in those institutions in order to enhance information exchange. A pilot area has been selected for each of the institutions to come up with a digital data layer for the data they hold;

- Surveys and Mapping.....Topographic layer
- NARO (Kawanda) Soil layer
- Forestry Department.....Vegetation layer
- Makerere University Institute of Environment and Natural Resources..... Biodiversity layer
- MeteorologyClimate (rainfall, temperature)
- Agriculture.....Farming systems

26. The mapping scale for the pilot area will be 1:250,000. Once this is done properly, the exercise will be extended to cover the whole country. NEMA is providing equipment and also funding the rehabilitation of the Geodetic network.

27. In the network (EIN) two servers have been procured for installation at the National Environment Information Centre, one running under UNIX Solaris and the other under Windows NT. The two servers will communicate using the Samba software package. A hub will be put in place where all the network computers and the servers will be connected. The UNIX system is to be dedicated to run Arcstorm for archiving all the

spatial datasets. The six institutions will be hooked up on the system to allow for flexibility in downloading of data from any one of the six institutions.

28. The information unit (NEIC) has remained the primary focus for the compilation and dissemination of State of Environment Reports (SOER). So far three editions have been published SOER 94, SOER 96 and SOER 98.

29. The SOER documents the dynamics in environmental quality in the country based on identified indicators. They are key documents in focusing environmental programs and monitoring the implementation of the NEAP. The SOER, besides capturing the sectoral developments, also incorporates specific issues at the district. This is done through a review of the district-level DSOER. The DSOER are also key documents in the District Environment Action Planning process.

The District Environmental Action Planning process

30. District Environment Action Plans (DEAPs) in Uganda are viewed as a necessity and an integral part of the District Planning process. They provide a basis for concrete programs and interventions aimed at promoting better management of the district resources. The action plans constitute a synthesis of people's perception of environmental issues and also determine major problems faced by the people, their causes as well as action required to address them. The plan does not only look at the issues on a sectoral basis but also search out the intersectoral linkages. DEAPs in essence precedes the district development plans (DDP) and once finalised they are integrated into the DDP to ensure that district resources are effectively allocated to address the priority environmental problems identified through the consultative process. The following methodology has been developed by NEMA for the DEAP and is being tested in six focus districts.

Methodology

31. A two-step approach is taken:

(a) Grassroots Consultations

The first step involves a survey of environmental issues conducted at grass roots, district wide whereby every village in the district is consulted and requested to identify and prioritise its most pressing environmental problems and define their causes. The survey is conducted by a team of facilitators recruited among sub-county extension staff. The survey is done using a questionnaire. The results of the environmental survey are entered into a computerised database and analysed through GIS techniques to derive spatial information on environmental issues and priorities. The analysis results in the production of a number of thematic maps showing the geographical distribution of the various issues identified and the order of their priorities. The maps became a key environmental planning and monitoring tool for the district and the results of the grassroots consultations form the basis for compiling the District State of Environment Report and formulation of a district environment policy. The District State of Environment Reports, besides capturing the key issues raised in the village consultations, also focus on-going environmental programs in the district. A separate survey of environmental programs in the district is conducted and the results incorporated into the database of environmental issues. These two layers of information are analysed through GIS to derive spatial information on the discrepancies between the problems identified in the district and the levels or type of intervention implemented to address these problems. New maps are produced, showing for example the significance of poor health and sanitation in relation to the number of boreholes sunk in each parish.

(b) Preparation of a District State of Environment Report (DSOER)

The DSOER is a key planning tool at the district. It identifies, describes and measures all significant environmental problems in the district which were identified through the survey of environmental problems conducted at grassroots level. It also identifies, describes and analyses gaps in the levels or types of intervention to address the problems. Hence the DSOER builds on the results of the surveys and

it provides the basis for the formulation of environmental actions to address the environmental problems identified.

The DSOER also constitutes an important environmental monitoring tool. It is used to monitor the effectiveness of the DEAP in addressing the environmental problems identified at the grassroots level. It is mostly indicators-based, and it feeds directly into the national environmental monitoring system, in that the information generated at district level is aggregated and synthesised into a national SOER.

The DSOER is prepared mainly through consultations with district sectoral staff. All relevant sectoral departments are requested to assist in the analysis of the environmental problems identified through the grassroots consultations, the identification of the causes and effects of these problems as well as the identification of indicators to monitor change in these causes and effects. Current responses to the environmental problems are analysed and indicators developed to measure their effectiveness in addressing these problems.

Major constraints encountered

32. The following is a summary of the constraints encountered:

- (1) The capacity to integrate environmental information into the decision making process both at national and district level is still lacking. Although NEMA has gone a long way to establishing environment information management capacity at both levels, some decisions are being made without due regard to the available information. This practice has been reviewed by NEMA and some tools to assist in the process of incorporating the information in decision making have been developed, these include the Guidelines for Environmental Auditing and Accounting Manual and sectoral Environment Impact Assessment guidelines which are being developed.
- (2) Lack of quantitative and reliable or complete data on some major aspects of the environment e.g. soils.
- (3) Incompatible data formats arising from the methods of collection, analysis and storage. This is particularly significant where these processes are not documented.
- (4) In most cases a point of contact for key data sets in certain institutions are individuals, other than organisational units, which creates a problem of continuity.
- (5) Unclear data release policies which are further encumbered by bureaucracy.
- (6) Inadequate skills to manage data and lack of knowledge of what information is where.
- (7) Inadequate funding to support development and operation of information units.