



**AFRICA
ENVIRONMENT INFORMATION NETWORK**

FRAMEWORK FOR CAPACITY BUILDING IN
INTEGRATED ENVIRONMENTAL ASSESSMENTS AND REPORTING
IN AFRICA

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Preface

This document is the outcome of an effort by UNEP, under the political leadership of the Regional Office for Africa, technical guidance and supervision of the Division for Early Warning and Assessment, and collaboration with GRID-Arendal, to prepare a coordinated programme to develop a comprehensive environmental information network in response to needs expressed by African Ministers.

The context for the Africa Environment Information Network (AEIN), as proposed in this document, is the effective *management of environmental assets for sustainable development* — that is, to provide reliable assessments of and information on environmental conditions to guide policy formulation and decision making, and to create an informed citizenry who feel empowered to act intelligently at their own levels in managing environmental resources for the benefit and well-being of themselves and society as a whole. This represents a fundamental shift from previous environmental information initiatives which in a large part tended to focus on monitoring.

Against this backdrop AEIN has been firmly anchored on the highest African environmental policy platform, African Ministerial Conference on Environment (AMCEN). It also sets the stage for providing inputs into the sustainable development policy framework as articulated by African leaders under the New Partnership for Africa's Development (NEPAD).

AEIN is also aligned with UNEP's own mandate to *inform and enable* "nations and peoples to improve their quality of life without compromising that of future generations." It provides a foundation for responding to environmental management and sustainable development issues ranging from the local to the global levels. It focuses on, and will be implemented at the *country level*, using a *sub-regional approach* to generate information to support *regional initiatives*, which information would in turn feed into *global processes*.

The basic concepts which are elaborated in this document have been extensively discussed through consultations with many stakeholders, and have been endorsed by AMCEN. AEIN has been conceived as an *integrated framework programme*. It builds strongly on UNEP-DEWA's earlier efforts under the Environmental and Natural Resource Information Network (ENRIN), and incorporates best practices and lessons learnt from several other initiatives over the past decade of environmental information systems development in Africa.

Emphasis has been put on a strong *country ownership*, and considerable effort has been made not to present AEIN as "another project". It is *African-led*, under the auspices of African Ministers, and will be supported by a cadre of African environmental information experts under the banner of EIS-AFRICA, a pan-African NGO committed to enhancing the availability and access to environmental information, as well as African organisations at the sub-regional and regional levels. It implements *capacity building* not as an end in itself, but rather as a function of a function of specific objectives — as part of the process of generating

products and services. *Partnerships for the collaborative management of information* is central to the Network structure, the basic principle being that *data should be collected and quality-assured once, and then made available for multiple use*.

As a UNEP-supported activity the focus is very much on *capacity building for integrated environmental assessments and reporting*. However, best practices have dictated the adoption of a *framework approach* which includes two other critical *platforms* — effective and efficient *data exchange mechanisms*, and *information and communication technologies*. The AEIN development team strongly believes that all the three platforms need to be comprehensively addressed, although with different emphasis within the proposal, in order to ensure the effective development, management, application and integration of environmental information in policy formulation and decision making processes. The proposal devotes considerable space to the importance of the framework approach, outlining the set-up and functioning of such a framework without diminishing the core function of integrated assessments and reporting. A set of specific activities are proposed to implement the strategy.

The AEIN development team recognises that the full implementation of the *framework* is beyond the scope of any single project, and particularly under the banner of AEIN. Most of the issues involved in the framework are not core to UNEP's mandate and functions. However, all three *platforms* together constitute critical success factors for AEIN. It is therefore imperative for UNEP to be proactive in seeking and building and/or strengthening the necessary partnerships envisaged. UNEP should use its mandate and “convening authority” to seek UN-wide support and involvement, assuring a seamless coordination of efforts while at the same time leveraging additional resources from other donors, for the development of a comprehensive data foundation to support sustainable development in Africa.

Information is an integrating factor in the various sustainable development policy initiatives. We strongly believe that harmonised, validated and shared information resources will serve as a bridge, and tie together different initiatives addressing environmental issues as a cross-cutting theme in poverty reduction and sustained socio-economic development in Africa.

The AEIN Team
September 2002

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AFRICA ENVIRONMENT INFORMATION NETWORK

FRAMEWORK FOR CAPACITY BUILDING IN INTEGRATED ENVIRONMENTAL ASSESSMENTS AND REPORTING IN AFRICA

SUMMARY

What is AEIN?

The Africa Environment Information Network (AEIN) is a multi-stakeholder capacity building process that aims to harness and enhance access to information and knowledge to support the management of Africa's environmental resources as assets for sustainable development. The goal is to strengthen the capacity of African countries to use good quality *information on environmental assets* to make informed investment choices at sub-national and national levels, and manage these assets on a sustainable basis.

Policy-level Demand

AEIN responds to political aspirations as well as technical needs identified by the African Ministerial Conference on Environment (AMCEN). It is a direct outcome of the Africa Environment Outlook (AEO) preparation process which had been mandated by AMCEN. In this respect AEIN is designed, first and foremost, to build capacity for integrated environmental assessments and reporting at the country level. As an outcome of this capacity building activity, AEIN will provide data and information support to the AEO process. It will also provide regular support to the implementation of AMCEN's decisions and programme of work.

AEIN also responds to expressions of needs from African experts, policy makers, environmental managers and researchers. It will enhance capacities at the national level for using modern information management tools to better characterise environmental resources and understand complex processes, as well as linkages among environment and development issues. It will promote access to, and harmonization of data in the Africa region, and provide a basis for tracking environmental changes for early warning using quantitative indicators and focusing on national needs and priorities. AEIN will therefore provide inputs into the Global Environment Outlook (GEO) process. It will also enhance the region's capacity in International Environmental Governance (IEG).

Information Support for Sustainable Development

In the context of the information-driven economy of today, the enhanced capacities in resource information management and communication technologies will also help to better leverage the *value* of Africa's environmental assets. This would be particularly relevant in the context of international negotiations with respect to the global environmental conventions, as well as trade.

AEIN is designed to provide a broad a framework for the effective harnessing of information and knowledge on environmental resources, and how people are affected by changes in the environment. This knowledge will be channelled into decision-making processes, particularly within the framework of national socio-economic development priorities, as well as the implementation of the New Partnership for Africa's Development (NEPAD).

AEIN will provide targeted information products and services to support initiatives and decision-making processes in respect of poverty eradication, as well as other sustainable development goals outlined in the United Nations Millennium Declaration and the Johannesburg Declaration on Sustainable Development. AEIN will contribute to the harmonisation and facilitation of access to development-oriented information resources that are widely shared at all levels of society. This will empower citizens to act responsibly at their respective levels of decision-making, and thereby promoting transparency and engendering good environmental governance.

Implementation and Expected Outputs

AEIN is conceived as an integrated framework programme that will be implemented through partnerships. It is founded on best practices and lessons learnt over the past decade developing environmental information systems.

The AEIN implementation strategy focuses on three key platforms, which define project activity areas:

- a) Capacity building for harnessing professional skills and methodologies for *analysing data* and *generating policy-oriented and targeted environmental information*, and for *integrating such information into sustainable development decision making*;
- b) Supporting and catalysing *networking* and the development of the *infrastructure and support mechanisms* for a comprehensive and harmonised *national sustainable development data foundation*. The AEIN focus in this regard will be on *core datasets for integrated environmental assessments and reporting*; and
- c) Using information and communication technologies (ICT) to *manage data and information*, and to *facilitate access to information*, and also to *communicate* this information to decision makers at various levels of society, as well as the wider public.

Expected outputs include the following:

Networking framework and data infrastructure

- ◆ Strengthened national and sub-regional frameworks for information management
- ◆ Shared national (environmental) data stores and information repositories
- ◆ Enhanced (online) access to data and information
- ◆ Enhanced communication network infrastructure

❑ **Training**

- ◆ Proficiency of key personnel in the use of information management and communication technologies
- ◆ Improved skills in integrated assessments (IEA) and state of environment (SOE) reporting using GEO IEA tools
- ◆ Improved skills in environmental policy analysis and Early Warning

❑ **Institutional capacity building**

- ◆ Institutional strengthening in multi-sectoral data and information management
- ◆ Strengthening of existing regional networks of training centres
- ◆ Provision of ICT resources and implementation of resource information management and dissemination tools
- ◆ Implementation of internet-based processes and mechanisms
- ◆ Development of tools for, and applications on early warning at national and sub-regional levels

❑ **Information products and services, including**

- ◆ Environmental policy briefs to enhance effective environmental governance
- ◆ National and sub- regional SOE reports
- ◆ AEO Reports produced regularly for the AMCEN sessions to guide policy decisions
- ◆ Early Warning bulletins at sub-regional levels
- ◆ Indicator-based environment and development reports
- ◆ Metadata bulletins and information catalogues
- ◆ Executive seminars to engage decision-makers and policy formulators
- ◆ Support for reporting to international conventions and processes
- ◆ Inputs for regional and global assessments
- ◆ Web-based information “kiosks”

Phasing

It is assumed that some elements of the proposed programme components may already be in place in several countries. Implementation of AEIN will be divided into 3 phases, which are not necessarily sequential, but rather to allow the differences in stages of development of countries to be dealt with in a pragmatic and an efficient manner. Country selection for the various phases will be on the basis of objective and transparent criteria, involving various stakeholders and partners.

Phase 1 will focus on the preparation of comprehensive *country-specific implementation strategies, taking cognisance of particular national circumstances within harmonised sub-regional frameworks*. At the same time pilot activities will be implemented to in

selected countries to test ideas with respect to *networking, product types, information services*, adaptation of *tools and methodologies developed through Global programs like GEO*. Efforts will be made to identify and gain access to data resources on African countries that are held elsewhere. A set of *prototype products like AEO, SOE reports, etc.* will also be developed. A comprehensive “roll out” plan will be prepared after this phase.

Phase 2 will address *specific priority national needs* with respect to *information management, products development, and infrastructure development*, on the basis of needs identified from the assessments and “best practice” from Phase 1. Development of *information products and services* will be on the basis of existing data resources. Relevant *skills development* activities will be implemented.

Emphasis in **Phase 3** will be placed on *filling identified gaps in data resources* to strengthen the data foundation in the long-term, on the basis of *demands for new data* or need to *improve the quality of existing data*, while continuing with relevant *institutional capacity strengthening* activities.

Budget

The estimated financial outlay for an initial (Phase 1) period of 2 years of establishment and start-up activities is estimated to be approximately US\$3,891,730. This budget includes costs for the production of national SOEs for 12 countries, 5 sub-regional reports, and AEO for 2004.



AFRICA ENVIRONMENT OUTLOOK

AFRICA ENVIRONMENT INFORMATION NETWORK

FRAMEWORK FOR CAPACITY BUILDING IN INTEGRATED ENVIRONMENTAL ASSESSMENTS AND REPORTING IN AFRICA

1. BACKGROUND AND RATIONALE

1.1 Introduction

The Africa Environment Information Network (AEIN) is a multi-stakeholder and partnership capacity building process that aims to harness and enhance access to information and knowledge to support the management of Africa's environmental resources as assets for sustainable development. The goal is to strengthen the capacity of African countries to use good quality information on environmental assets to make informed investment choices at sub-national and national levels, especially within the context of the New Partnership for Africa's Development (NEPAD), and for monitoring progress towards development goals.

AEIN responds to political aspirations as well as technical needs to strengthen institutional capacities in the collation and harmonization of environmental data, filling information gaps, and providing linkages and strategic alignments to relevant regional and global initiatives. These are needs that have been identified by African policy makers and environmental experts through on-going integrated environmental assessment and reporting processes at national and sub-regional levels (State of Environment, SoE), regional (African Environment Outlook, AEO), and global (Global Environment Outlook, Millennium Ecosystem Assessment, etc.). It also responds to expressions of interest from over two hundred resource information experts, policy makers, environmental managers, and researchers meeting at the 5th AFRICAGIS Conference and Exhibition (AFRICAGIS '01) held in Nairobi in November 2001. In response to this need the Norwegian Ministry of Foreign Affairs committed funds for designing a comprehensive, 5-year work programme for the network, and has indicated a commitment to supporting the implementation of the programme. Ireland Aid has also committed approx US\$600,000 over a 3-year period (2002-2004) towards the AEIN and related activities.

The overarching long-term development objective of AEIN is to strengthen national capacities in information management, interpretation and dissemination, in respect of integrated environmental assessments and reporting processes at the sub-regional and regional levels. AEIN will also provide a common framework for coordinating and harmonising various information management initiatives in Africa that are aimed at improving the management and access to environment-related information into a coherent and integrated programme that would support sustainable development.

1.2 An AMCEN Initiative

African Ministers of Environment have taken a leadership role towards harnessing the knowledge and understanding of the region's environmental resources for the formulation of appropriate socio-economic policies necessary to achieve and sustain development in Africa. At the 8th Session of the African Ministers Conference on Environment (AMCEN), the Ministers decided that an Africa Environment Outlook (AEO) Report should be prepared to provide a comprehensive scientific assessment of the environment, policies, and environmental management programmes.

The process of producing national and sub-regional inputs for the AEO highlighted serious gaps in existing information, as well as inadequacies in capacities to sustain a process of this nature. There is a need for a strong information foundation to support the assessment of different scenarios, and to suggest options for environmentally sustainable development. As a result of the gaps and weaknesses identified with respect to existing data and information the Ministers called on African governments to commission initiatives to establish specific needs in this regard and the magnitude of investments required. They also urged the international community to assist African countries in their efforts to gain access to new technologies, particularly information and communication technologies, and to create conditions for the development of indigenous technologies that are important for enhancing economic development.

AEIN is thus a direct outcome of the AEO process, a response to political and technical needs expressed by African Ministers of Environment, who endorsed the AEO process at the 9th Session of AMCEN (1-5 July, 2002) as “a monitoring and reporting tool for sustainable environmental management, as well as to provide a framework for national and sub-regional integrated environmental assessment and reporting.” The Ministers also called for the establishment of “the Africa Environment Information Network to promote access to, and harmonisation of data in the Africa region, and act as a basis for tracking environmental changes using quantitative indicators focusing on national needs.”¹ AEIN will thus directly support the AEO production process, and will provide regular support to the implementation of AMCEN's programmes.

1.3 Information for Environmentally Sustainable Development

AEIN is also designed to provide information support for the implementation of the New Partnership for Africa's Development (NEPAD), the new sustainable development agenda for Africa. NEPAD is a high-level pledge by African leaders to place the continent on a path of sustainable growth and development. It is an agenda based on national and regional priorities, and serves as a long-term vision of an African-owned and African-led development programme.

A healthy environment is seen as the basis for sustainable development, which requires an understanding of, among other things, the development aspirations of society; the characteristics of the *environment* within which "development" will take place, the conflicts that could arise, as well as the means for resolving them; and acceptable trade-offs. Interventions must be holistic and cross-sectoral, as well as eclectic and multi-disciplinary. Interactions, relationships and complementarities among various possible options must be taken into consideration.

¹ Kampala Declaration, 9th Session of the African Ministerial Conference on Environment, Kampala 1-5 July, 2002

Decision-making in this context requires that a range of solutions must be carefully analysed, and various alternatives in policies, actions and practices must be examined before arriving at the choice option. This would help in framing policies which would not only maintain a quality environment but also enrich the lives of a broad cross-section of the people. Consideration must also be given to constantly changing geo-political as well as economic situations, as well as “best practices” in environmental management. These considerations necessitate continued monitoring to check on the appropriateness of chosen strategies. Assessments of the effectiveness of interventions provide information for the identification of new issues. Appropriate feedback mechanisms enable information from this assessment to be used in planning further actions that may be necessary, or to make adjustments to strategies or a reconsideration of policy.

Sustainable development decision-making therefore has considerable implications for information that is policy-relevant, timely, and reliable based on sound scientific principles. There is need for information at each stage of the process — on the economic, human and environmental dimensions, as well as the technological means to bring about the desired improvements. It is therefore crucial that, if AEIN is to succeed as a network that provides information to support sustainable development decision making, its products and services directly input into NEPAD’s implementation.

Furthermore, in the context of the information-driven economy of today, the contribution of the environment to the success of sustainable development initiatives in Africa will also be linked to the extent to which the importance and economic *value of information* on Africa’s environmental assets are leveraged in the context of international negotiations and trade. In the “new economy” of today value is not necessarily derived from the resources *per se*, but more importantly from the strategic use of information about such assets. Therefore, environmental and natural resources need to be carefully characterised and quantified in such a manner as to optimise their value as information-driven assets. AEIN will build capacity at the national level to use information and communication technologies to meet this challenge, on the basis of national priorities. It is designed with the overall goal to strengthen the capacity of African countries to use good quality information on national environmental assets to assist in making sound investment choices, within the framework of NEPAD, and for monitoring progress towards sustainable development goals.

1.4 Poverty Reduction and Environmental Management

There are close links between poverty and environmental degradation. In Africa, perhaps more than any other region of the world, a healthy, productive and economically viable environmental resource base, are prerequisites for the successful combating of poverty, raising social well-being, and facilitating sustained economic development. The success of initiatives to reduce widespread poverty is thus intricately linked to the sound management of Africa’s environmental assets.

In most African countries over 80 per cent of the population is rural-based and literally live off the land and the natural environment. The majority of people who suffer abject poverty are also the ones who are directly affected by degraded lands and eroded soils, dried up or contaminated water sources, disappearing wildlife species and depleting stocks, and they have become increasingly vulnerable to environmental hazards such as floods, prolonged drought and attacks by crop pests. Therefore improved and rational

utilisation of the “goods and services” provided by the environment, of which the poor perceive themselves as having a share, will have practical consequences on alleviating poverty in the sense that it will directly benefit them economically. However, the reverse is also true, that people whose basic needs remain unmet, and whose survival may be in doubt, will not perceive any stake in conserving environmental resources in which they have no share, and will not have any motivation to consider the impacts of their actions, which could subsequently undermine the health of the environment.

Central to the achievement of sustainable livelihoods for people who live off the land is the need for greater awareness and appreciation of the vast wealth of living natural resources – the “living wealth of Africa” – that must be maintained through responsible stewardship. A framework for the effective harnessing of information and knowledge on the environment and how people are affected by it, and for channelling this knowledge into decision-making processes, is therefore *a sine qua non*. People who rely on natural resources for their livelihood must have adequate say in the way environmental assets are used. They must have access to information and decision-making that expands opportunities for them to invest in environmental improvements that can enhance their livelihoods. Without this their ability to discuss issues of governance as they relate to the use of environmental assets and poverty reduction will be seriously curtailed.

Development is a process of empowerment and self-reliance. The provision of relevant information at all levels will be critical in this process, including targeted information for education and awareness creation. AEIN aims to meet this need by facilitating access to development-oriented information that is widely shared at all levels of society, thus empowering citizens to act responsibly at their respective levels of decision-making, promoting transparency and engendering good environmental governance.

1.5 Environmental Conventions

Several African countries have acceded to many of the global environmental conventions, each of which imposes its own reporting obligations on countries, and requires information which tends to be wide-ranging. For instance, Chapter 40 of Agenda 21 deals entirely with information, and so are the Framework Convention on Climate Change (Article 5: Research and Systematic Observation, and Article 12: Communication of Information related to Implementation), the Convention on Biological Diversity (Article 7: Identification and Monitoring (Section d), Article 17: Exchange of Information, and Article 18: Technical and Scientific Cooperation), and the Convention to Combat Desertification (Article 16: Information Collection, Analysis and Exchange, and Article 19: Capacity building, Education and Public Awareness).

Information management is thus central to meeting the obligations of contracting parties and a proper response to the conventions requires information exchange, integration and assimilation within each country. However, many countries lack the capacity to implement fully the complex provisions of this growing body of international law. Indeed, the need to build capacity to respond to the demands for information in implementing the various conventions has been reinforced by each of the multilateral environmental agreements.

AEIN aims to strengthen national capacities to respond to this need, and also seeks to streamline the reporting obligations and integrate them into comprehensive national

assessments and reporting programmes that avoid duplication and wastage of scarce national resources.

1.6 UNEP's Mandate

The global mandate of the United Nations Environment Programme (UNEP) is “to *provide leadership and encourage partnership* in caring for the environment by inspiring, *informing* and *enabling nations* and peoples to improve their quality of life without compromising that of future generations.” Access to environmental information is central to this mandate, and is indeed an issue that has become part of the international environmental agenda during the last decade, most notably at the United Nations Conference on Environment and Development (UNCED) in 1992. Issues in this respect are outlined Chapter 40 (Information for Decision-making) of Agenda 21 and the Rio Declaration on Environment and Development.

In recent years the Governing Council (GC) of UNEP has passed a number of decisions either directly or indirectly related to the goal of improving access to environmental information. Principle 10 of the Rio Declaration embodies the fundamental principles of access to information as a prerequisite to informed participation in decision-making and good environmental governance. The Aarhus Convention, adopted in June 1998, is the first multilateral environmental agreement that embodied these principles. UNEP is mandated to promote the Aarhus principles globally, particularly in Africa given that one of UNEP's focal areas is support to Africa.

The UNEP Division of Early Warning and Assessment (UNEP/DEWA) is at the forefront of UNEP's information activities, with a mission “to analyse the state of the global environment, assess global and regional environmental trends and provide early warning information on environmental threats.” Environmental data collection, analysis, and reporting at multiple scales (from local to global) are core to the functions of UNEP/DEWA. Capacity building in this regard has therefore been an integral part of UNEP/DEWA's activities over the years. The call by the 2002 Global Ministerial Environmental Forum (GMEF) in Cartagena, Colombia, on UNEP to increase its efforts to help reinforce national institutions responsible for the environment, in collaboration with other multilateral agencies, further emphasises this role. The meeting called for the development of “an inter-governmental strategic plan for technology support and capacity building to developing countries.”

Two key components of country-level capacity delivery were identified by the GMEF meeting in Cartagena:

- a) Strengthening of the national institutions responsible for the environment and the implementation of multilateral environmental agreements which will promote the achievement of the objectives of the environmental component of sustainable development; and
- b) Enhancing national-level coordination of the environmental component of sustainable development to ensure that efforts for environmental improvement at all levels and the implementation of multilateral environmental agreements converge in order for countries to achieve their national priorities and objectives.

In this context, AEIN constitutes an integral part of UNEP's capacity building for integrated environmental assessment (IEA) and reporting in Africa. AEIN provides a vehicle for UNEP to respond to the request for assistance by African governments "in their efforts to gain access to new technologies, particularly information and communication technologies and to create conditions for the development of indigenous technologies that are important for enhancing economic development."² AEIN reinforces on ongoing UNEP/DEWA capacity building activities aimed at strengthening the AEO/GEO Collaborating Centres (CC) network, GEO-compatible IEAs at the sub-regional or national levels, and state of the environment (SoE) reporting in general.

The design of AEIN takes into consideration the fact that environmental data is collected, analysed and reported by various organisations working on many levels, from local to global. It is therefore envisaged that some aspects of AEIN will be implemented through partnerships with other organisations and various donors who are also responding to interests and needs emerging from African countries for assistance in sustainable development information management. UNEP's role in the context of AEIN, and with respect to such partnerships, will be to use its unique position and mandate to lead, make specific contributions and, working with other agencies and donors, to mobilise financial, technological and technical resources from the international community to ensure that identified needs are met.

2. INFORMATION MANAGEMENT INITIATIVES IN AFRICA

2.1 Initiatives

Africa has been the subject for several information management projects since the early years of the resource satellite programmes in the 1970's. For most part in these early years, the projects were pilot activities, and information processing and analysis remained the preserve of the foreign expert. Invariably, the countries involved inherited the products from these experimental or pilot activities, but the information generated remained largely unused, except for the very narrowly defined objectives. Capacity building efforts were also limited to problem-specific training activities. For the most part the various efforts often resulted in technological enclaves that became disconnected from day to day decision-making processes, even within the project host institutions. The information generated hardly got channelled into national decision making processes, perhaps due to the fact that the focus of most information management activities in many countries have been on operational needs such as data collection, database construction and making data useable for various applications. The net result has been that the widespread application and the full potential benefits of resource information technologies and the information generated by them have never really been realised in most African countries.

There have been several other initiatives aimed at improving information availability and its use in decision making processes in Africa. A few of these have been very successful, but most of them have remained project-focused, and have not addressed long-term information needs. Against this background the Program on Environment Information Systems in Sub-Saharan Africa (EIS Program), launched in 1990 under the leadership of

² African Ministerial Statement to the World Summit on Sustainable Development, adopted at the African Preparatory Conference for the World Summit on Sustainable Development, held in Nairobi from 15 to 18 October 2001.

the World Bank with support of a broad coalition of stakeholders, could be said to have been the first major broad-based effort to undertake capacity building in the context of environmental information management at a scale sufficient to have a long-lasting impact. The aim of the Program was to assist sub-Saharan African countries to create operational EIS which would meet priority demands for information on the environment, natural resources and sustainable development. The Program provided a framework for assisting African countries in assessing their needs with respect to the management of information on the environment, natural resources and sustainable development.

While the development of National Environmental Action Plans provided the primary context for EIS implementation and use of environmental information with donor funding in many countries, the Program also spun off new opportunities for many more stakeholders to be involved in capacity building efforts in Africa. Initiatives of direct relevance to AEIN include the Environment and Natural Resources Information Networks programme, which was launched by UNEP to catalyse and assist in national-scale capacity building in environmental information management and reporting. The initiative was the result of various processes involving UNEP's staff, counterparts and outside experts world-wide, in the context of UNEP's mandate to undertake assessments of issues of international significance. The Sahara and Sahel Observatory (OSS), in collaboration with the United Nations Institute for Training and Research (UNITAR), also launched the Environmental Information System on the Internet (SISEI) initiative as a national-level capacity building programme, based on emerging information and communication technologies, for the integrated management of data and information to implement multilateral environmental treaties — desertification, biodiversity, climate change, wetlands. Other sub-regional initiatives were also initiated, the most relevant being the Regional Environmental Information Management Programme (REIMP), launched in Central Africa with the support of the World Bank and the European Union, with a focus on biodiversity conservation in the Congo Basin.

Another major initiative was the Biodiversity Data Management Project initiated by UNEP and the World Conservation Monitoring Centre (WCMC), and funded by the Global Environment Facility. The objective was to facilitate the building of national capacity for biodiversity data management and exchange, as required by the Convention on Biological Diversity, and to help countries produce the necessary information for biodiversity strategies and action plans.

2.2 Networking

The earliest formalised environmental information exchange mechanism was the Infoterra network established in 1974. The main purpose of the network was to disseminate information and catalyse the exchange of environmental data and information. The Infoterra network structure was designed around a system of national focal points, usually located in the principal environmental authority of each country. Even at this early stage it was recognised that a broad-based information service could not be provided by a single institutional provider, irrespective of how comprehensive and authoritative the data and information resources of that provider may be.

Also, early experiences with environmental information showed that some of the greatest challenges related to organisational issues, rather than the technical or technological aspects of producing the information. The underlying difficulty arises from the fact that “source information” needed for the production of information to support environmental

policy and management practices is multi-disciplinary in nature, comes in different formats, and needs to be “adjusted” to fit each other to generate new information. This is true even when confined to a single sector such as forestry or agriculture, because additional information may be required on a diverse and variable set of topics. It is inevitable, therefore, that the underlying datasets will be scattered amongst many organisations and sources, making the task of integration especially time-consuming. Furthermore, if some organisations are unable or unwilling to provide access to their data, there may be no option but to reproduce secondary copies at great expense. Even worse, decisions may be made in the absence of important data because the latter have not been accessible.

This recognition led to the adoption of a multi-stakeholder or “network” approach in dealing with this challenge. This approach promoted a shift from tactically based information systems, aimed at delivering products for individual project initiatives, to strategic systems which promoted the building of capacity within a number of organisations and a broader institutional network. The approach not only encouraged more focused data management practices within organisations, but also encouraged data to be shared amongst organisations for the development of the integrated products and services needed to address complex and far-reaching environmental issues. It enabled various organisations and individuals, who would otherwise not be involved in the process of producing the “source information”, to state their interest and “negotiate” a stake in the process, and thus influence the *status quo* within a framework of collective information production. The assumption was that well-produced information which was generated by respected, wide-ranging groups had a greater potential to support decision-making processes.

Collaboration also enabled substantial efficiencies to be made, including a speedier transfer of technology to several agencies in a systematic, cost-effective manner. It ensured compatibility of systems, techniques, procedures and outputs across a broad front of agencies with different mandates and needs.

2.3 Capacity Building

Many modest but significant achievements of these initiatives are found across sub-Saharan Africa. Awareness has been created in most countries about the need for various stakeholders to work together within and among countries, and share information resources. Fully functional training units/activities have been established in various countries, as well as at the sub-regional level, to meet the acute and perennial need for trained personnel. Several resource information centres have also emerged. Perhaps the most visible achievement has been the creation of a cadre of environmental information managers, trainers, and other professionals, as well as institutions and private-sector entities in sub-Saharan Africa, which produce, use environmental information for a variety of purposes, or provide services in support of applications. This represents a considerable human capital in environmental information management.

The growth of the AFRICAGIS conference series is a strong testimony to this. AFRICAGIS was launched in 1993 by the OSS, in partnership with other organisations, particularly UNITAR and the United Nations Development Programme, as part of capacity building efforts for governments as well as the private sector in Africa to be better equipped to use geo-information technology and techniques in development efforts. The series of conferences and exhibitions have become the premiere geo-information

event, and an essential element of the geo-information development landscape, in Africa. The bi-annual event creates a platform for resource information professionals from Africa and abroad to meet and to learn from the application of geo-information technology, and to be updated on the latest products and technological developments. It also provides an opportunity for interaction among practitioners to share information and knowledge to advance the development and application of geo-information technologies to meet African needs.

2.4 Lessons and Challenges

While many of the challenges of EIS have been met, several others remain. A number of country case studies have indicated that there has not been much success with respect to the development of applications integrated with policy formulation and implementation processes. The studies show that the EIS community has not as yet been able to create real, policy-oriented demands for its products, and thus garner sustained support for reinforcing the underlying foundation and developing a “market” for information, because of the disproportionate emphasis on the technical aspects of EIS development. Products generated often represent essentially the technician’s view of how things are, or have been, and rarely how things should or could be, in the context of various stated policy concerns of governments in Africa.

The value of information derives from its impact on decision-making. Thus the ultimate justification for investing in EIS is improved environmental management, improved environmental conditions, and ultimately sustainable development. Experience to date underlies the urgent need to find appropriate pathways for engaging decision-makers on policy, and sometimes even political, concerns. Policy makers need information related to the policy objectives that they are concerned with. On the basis of the lessons learnt AEIN will respond to these needs with targeted information that emphasise benefits, suggesting what gains could be made by amending or completely changing policy. The Network will be proactive in exploring ways to support the implementation of government policy, and find better ways to communicate and dialogue with policy makers.

Perhaps the most important lesson, in the context of AEIN, would be that there is a paramount need to integrate information and environmental management initiatives and programmes so that the products and services remain aligned with changing national needs and priority concerns, and that there is no duplication of effort. The long-term sustainability of environmental information management initiatives requires that it be mainstreamed in the country’s economic fabric, and integrated with institutions responsible for economic and development planning. In addition, private sector capacity development to support related activities needs to be encouraged.

3. OBJECTIVES

AEIN is conceived as an integrated framework programme to strengthen institutional capacities in managing and using information related to sustainable development. There are two sets of objectives. The first set addresses specific capacity building needs in Africa for the effective implementation of national, sub-regional, regional and global assessment and reporting processes:

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- a) Strengthen capacity at the national level for managing and using information on environmental assets in such a manner as to emphasise opportunities for sustainable economic exploitation;
 - b) Strengthen capacity for regular integrated environmental assessments and the production of national SOE reports, thematic sub-regional environmental reports, and provide inputs for production of the AEO and Global Environment Outlook (GEO) report series; and
 - c) Strengthen the information base and infrastructure to enhance country negotiation status with respect to its assets within the context of multi-lateral environmental conventions, and reporting on the various conventions that African countries have acceded to;
 - d) Facilitate access to environmental information to enhance public participation and transparency in environmental governance.

The second set of objectives deals with broader issues relating to the development and exchange of the essential data and information for sustainable development activities:

- e) Support the development and maintenance of a comprehensive and harmonised national data foundation and related infrastructure for sustainable development; and
- f) Provide substantive information to assist the implementation of decisions and medium-term programmes of AMCEN, NEPAD, the Millennium Development Goals, as well as the Johannesburg Declaration on Sustainable Development.

Fully implemented AEIN will enable environmental and development planning institutions in Africa to participate in a fully operational network for information exchange. AEIN will cultivate partnerships with the many ongoing initiatives in information management in Africa, building upon and complementing these initiatives, finding ways for creating synergy, and extending the benefits of the various initiatives to African countries. It will work with various partners to establish a coordination framework which enhances accessibility to information.

4. PROGRAMME COMPONENTS

4.1 AEIN Principles

The design of AEIN is based on the following principles:

- Information should to enrich policy debate within the broader issues of environment and sustainable development, emphasising the *gains and benefits* that would accrue from improved environmental conditions.
- Information needs to be timely, and available in forms which genuinely support decision-making.

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- ❑ AEIN will function at multiple scales — local, sub-national, national, sub-regional, and regional — in order to be responsive to the needs of users at their respective levels decision-making.
 - ❑ AEIN will be a decentralised network built upon the existing and on-going initiatives, and will involve all key partners who produce key data and information relating to the environment.
 - ❑ Data should be collected and quality-assured once, and then made available for use in multiple information products.
 - ❑ Open access to information relating to the environment will be ensured.
 - ❑ The development of in-country capacity, both in the public and private sectors, for training, institution building and technical support is a pre-requisite for ensuring the long-term sustainability of the initiative.

To fulfil these ideals it is necessary to develop an infrastructure and support mechanism capable of collating and storing relevant data, harnessing professional skills to analyse and generate information, and then using this information to influence decision makers at various levels of society in favour of sustainable exploitation of environmental assets for development. Ultimately, the last of these will be the only true measure of success.

4.2 Platforms

In pursuant of these principles AEIN will comprise three key platforms (Figure 1):

- i) *An integrated environmental assessment and reporting platform;*
- ii) *A data development and exchange platform;* and
- iii) *An information and communications technology (ICT) platform.*

AFRICA ENVIRONMENT OUTLOOK

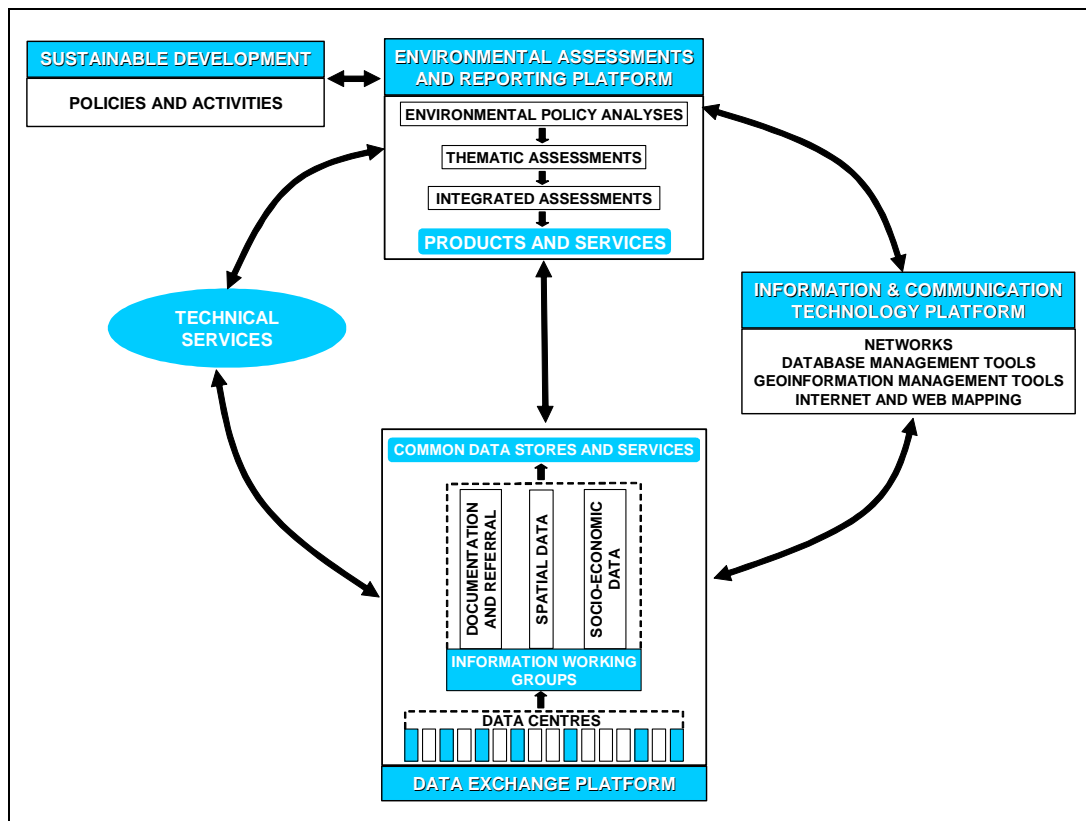


Figure 1. AEIN Programme components.

All these three “platforms” need to be comprehensively addressed in order to ensure the effective development, management, application and integration of environmental information in policy formulation and decision making processes. The first platform focuses on UNEP’s mandate, and is indeed the core objective of national-level capacity building within AEIN. *A key assumption in the implementation of this platform, however, is that basic data on various aspects of the environment exists, and AEIN therefore does not concern itself with data gathering.*

Without the existence of a wide range of validated country-level datasets the envisaged outcomes, with regard to the integrated assessment and reporting objectives of AEIN, will not be achieved. Also, given the level of ICT infrastructure development and deployment in Africa, it is crucial that some basic information management and communication infrastructure needs at the national level are addressed, particularly at the level of AEIN partner institutions. However, the full development of the data exchange and the ICT platforms are outside UNEP’s mandate, and are far beyond the scope of the resources that could effectively be mobilised under the banner of AEIN, especially since the issues involved are not core to UNEP’s mandates and functions. Notwithstanding this these platforms constitute critical success factors for AEIN, and UNEP will work closely with various partners whose programmes would complement AEIN to mobilise additional resources for addressing problems that are beyond environmental information *per se*.

4.2.1 Integrated Assessments and Reporting Platform

The core objective of AEIN is to build national-level capacity for integrating environmental information into decision-making and policy formulation, through the

development of targeted information products and services to support effective environmental governance and management decision making processes. The integrated environmental assessment and reporting platform addresses capacity building for harnessing professional skills and methodologies for *analysing data* and generating *policy-oriented and targeted environmental information*, and for *integrating such information into sustainable development decision making*.

The development of adequate and appropriate value indicators of environmental assets, and mechanisms to effectively communicate these to policy makers, as well as their integration into economic development policies will be of prime importance. Emphasis in capacity building activities will be placed on indicator-based assessments and reporting on environmental assets and conditions. Tools and methodologies that have been developed within the AEO/GEO framework will serve as the basis for capacity building. The framework deals with four basic management questions:

- What is happening to the environment?
- Why it is happening?
- What is being done about it (i.e. policy responses)?
- What are the possible future development trajectories associated with alternative policy decisions?

Capacity building will focus on providing the analytical skills and techniques essential for answering these questions, through quantitative and qualitative analysis of environmental trends and underlying driving forces, the evaluation of policies related to the environment, and the assessment of policy options in the context of integrated future scenarios.

The use of the AEO/GEO approaches will also assist in streamlining, and strengthening national capacities for, reporting on the environmental obligations of countries, including reporting on multi-lateral environmental agreements, state of environment at the sub-national and national levels, contributing to regional and global environmental reporting processes, Millennium Ecosystem Assessment, etc., and supporting reporting on progress made in achieving the environmental sustainability goal of the United Nations Millennium Development Declaration, as well as the Johannesburg Declaration on Sustainable Development.

It is expected that the improved knowledge and appreciation of the value of Africa's environmental assets within a broader and enlightened civil society, as a result of these products and services, will empower individuals and groups to act in an environmentally appropriate manner, engender good environmental governance, enhance the negotiation status of individual countries with respect to their respective environmental assets, and ensure the effective leveraging of these assets.

4.2.2 Data Development and Exchange Platform

The base data and information required for a variety of resource management and sustainable development applications in Africa are the same, and there are many on-going and/or proposed initiatives that seek to improve the availability of and accessibility to information in this regard. These efforts are, however, often disjointed although they tend to involve invariably the same national institutions, if not the same experts, at the country level. Thus, the absence of a common framework for improving the availability of data

and enhancing information exchange leads to duplication of effort, and where some capacity exists, overloads the limited capacities and lead to serious consequences. For example, the lack of coordination among institutions dealing with disaster management and environmental risk reduction leads to disjointed efforts in the prevention, preparedness, assessment, mitigation and response to the numerous disasters that affect Africa.

AEIN will *contribute to the essential data foundation* needed for country-level sustainable development initiatives, particularly the implementation of national, sub-regional and regional political commitments such as NEPAD, and decisions of AMCEN. AEIN proposes the establishment of a national *Data Development and Exchange Platform* as the basis for this. The Platform is aimed at responding readily to the broad sustainable development and environmental management information needs in Africa. The objective is to establish an institutional and technical framework for harnessing and providing harmonised data and information deriving from different sources.

The Platform would comprise collaborative arrangements and mechanisms, including standards and protocols, as well as information exchange agreements essential for the adoption of a unified approach for the development, harmonisation, sharing and application of multi-source data at national level and sub-regional levels. The AEIN focus in this regard will be on *core datasets for integrated environmental assessments and reporting*, while supporting and catalysing *networking* and the development of the *infrastructure and support mechanisms* for a comprehensive and harmonised *national sustainable development data foundation*.

The Platform will serve as a framework for partnership, providing a forum for collaboration by all stakeholders, including funding sources. It will be implemented collectively through the initiatives, projects and programmes of various partners, and other windows of opportunities, in such a manner as to ensure that there is synergy among all the various activities. It will serve as the basis for harmonising data and information management initiatives into coherent and integrated programmes, and building long-term national integrated information “infrastructures” oriented to country needs for comprehensive development information.

The outcome of the Data Exchange Platform would be an institutional networking framework, a supportive information exchange policy dealing with various issues data sharing, incorporating the Aarhus Principles on access to information, and a set of harmonised core data that is accessible through internet-based mechanisms. Ultimately the framework will reduce to the barest minimum the transactional cost of using data from different sources, and promote the widespread use of common data stores and information repositories.

4.2.3 ICT Platform

AEIN will be application-driven and technology-dependent. Given the level of ICT infrastructure development in Africa, therefore, it is essential that AEIN addresses basic ICT needs of Network partners at the national as well as the sub-regional levels. The information and communications technology (ICT) platform deals with issues in this regard, with a focus on *environmental data and information management, facilitating access to environmental information*, and also *communicating environmental information* to decision makers at various levels of society, as well as the wider public.

The ICT Platform will therefore provide the means for maximising the communication and use of existing and new environmental information by making it available to a wider audience. The notion of “transactional exchanges” will be core to the operations of the Network. It is anticipated that a fully operational (physical) network would be implemented within five years to enhance communication, as well facilitate online access to data and information. The fully operational activities of the Network will involve high-volume data and information exchanges, analytical processes, information packaging, and a great deal of basic communication. Extensive use of the internet as a network “backbone” at all levels is envisaged.

AEIN will collaborate with and build upon existing and on-going initiatives, including the African Information Society Initiative (AISI), the ICT component of NEPAD, and other programmes, including private-sector-led initiatives, which aim to bridge the digital divide. AEIN will adopt the most appropriate current as well as emerging technologies for the purpose of enhancing and facilitating access to, and the sharing of information resources.

5. TECHNICAL DESCRIPTION

5.1 Capacity Building for Assessment and Reporting

5.1.1 Application areas

Sustainable development depends on the judicious exploitation of environmental assets. Sectoral approaches to economic development, implemented independently, tend to undermine the effectiveness of development policies. This is because considerations regarding the environment, which provides the resources that are exploited under the various sectoral policies, are rarely integrated into these policies. The integration of the environment into sectoral policies as well as macro-economic policies will ensure the sustainable use and management of environmental assets as a base for economic development.

The need to look at environmental resources as assets for sustainable development processes requires a shift in the way environmental concerns are treated. As assets, there is a need to characterise, assess, and quantify environmental resources and their conditions in economic terms, thus highlighting their value as “goods and services”. There is also the need for appropriate indicators that would assist in assessing trends in the status of environmental assets at the local, district, and national levels, and to forecast and project trends in their exploitation. The indicators should also indicate vulnerability, particularly of people to changes in environmental conditions, provide early-warning of risks and impacts on the environment as well as investments, and assist in assessing conditions in relation to specific development and investment goals and targets. Given the strong linkages between the physical environment and living condition of the majority of the poor, the indicators need to relate to and reflect poverty reduction policies and strategies.

Key application areas of AEIN will include providing support to environmental policy analyses, assessments of environmental “goods and services” in the context of sustainable development, indicator-based assessments and reporting, and assessments and

characterisation of poverty and environment linkages. Essential functions of the environmental agencies and ministries for the collection, formatting, processing, analysis, and report generation will be enhanced and aligned with the approaches that have been developed for SoE, AEO and GEO, as well as strategic environmental assessments, early warning, resource exploitation and management reports.

Capacity building activities in this regard will concentrate on policy analysis, data collation, aggregation, integration, and analysis in respect of selected indicators, thematic and integrated assessments, and reporting. AEIN will adopt a multi-scale approach involving local/city, district/provincial, national, sub-regional, regional levels. Emphasis will be placed on establishing mechanisms to support activities and transactions at the national and sub-regional levels. Sub-national activities will be supported through the building of synergy with on-going initiatives.

Capacity building will also seek to align and reinforce country-level assessments to global processes, such as the Millennium Ecosystem Assessment, and enhance the region's capacity in International Environmental Governance (IEG). Such a harmonised environmental assessment and reporting framework will also streamline future activities, as well as assist countries in reporting on the various international environmental conventions and treaties which they have acceded to, and integrate these into comprehensive national programmes that avoid duplication and wastage of scarce national resources.

5.1.2 Products and services

AEIN will generate a wide variety of generic as well as targeted information products and provide services information aimed at the various levels of decision-making (strategic, mid-level, and operational), in user-friendly formats. Generic information products and services, generated within consistent, harmonised and systematic assessment and reporting frameworks, are indicated in the table below.

Decision-Making Level	Useful Information Types	EIN Products and Services
Policy-makers: Strategic (Vision and the long-term policy objectives for sustainable development.)	<ul style="list-style-type: none"> ◆ Forward-looking projections ◆ Policy options ◆ What-if analyses ◆ Indicator-based trends ◆ Scenarios ◆ Status of implementation of policy objectives ◆ Strategic environmental overviews/assessments 	<ul style="list-style-type: none"> ◆ Policy Briefs ◆ Vital (summary) graphics ◆ Specific decision-support applications ◆ Thematic extracts ◆ Executive seminars
Planning and implementing agencies: Tactical/Managerial (Implementation of policy objectives, ensuring that available resources are used efficiently and effectively to achieve the set objectives.)	<ul style="list-style-type: none"> ◆ Policy analysis/implications ◆ Comparative assessments ◆ Medium-term forecasts ◆ Special reports ◆ Situation analyses ◆ Status reports or updates 	<ul style="list-style-type: none"> ◆ Indicator-based environment and development reports at all levels down to the city level ◆ Issue-specific, indicator-based thematic reports ◆ Thematic extracts ◆ Vital (summary) graphics ◆ Case studies ◆ <i>InfoKiosks</i>

<p>First-line “actors”: Operational Control (Use available facilities and resources to ensure that specific activities are carried out towards the attainment of policy objectives.)</p>	<ul style="list-style-type: none"> ◆ Primary data ◆ Thematic aggregations ◆ situation reports ◆ Operational information and procedures ◆ Basic facts ◆ Other “transactional-level” information 	<ul style="list-style-type: none"> ◆ Indicator-based assessment reports (SoE, AEO, etc.) ◆ Environmental Data Reports or Compendia ◆ Metadata bulletin and information catalogues ◆ Datasets and databases ◆ <i>InfoKiosks</i>
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The above matrix indicates how requirements for information in the decision-making process differ according to the level at which the decision maker operates. The various actors require different degrees of detail of information (content), analysis and interpretation (context and relevance), and time frame. In recognition of this the initial phase of programme implementation will be devoted to identifying useful products and formats for the various levels of decision-makers. Also needs assessments will be undertaken to identify appropriate pathways for communication and strategies to engage senior-level decision-makers and policy formulators. Executive Seminars and senior-level workshops will be the main instrument for engaging decision-makers in this process. Such sessions would be critical because decision makers would be the ultimate users of the information generated by AEIN. It would thus be essential that they gain some understanding of issues, possibilities and limitations.

Specific information products will then be developed to support the various levels of decision making. Identified needs will be continuously reviewed in order to adapt products to new and emerging policy instruments. Appropriate graphic material, including simple maps and charts will be used to enhance the quality of information.

5.1.3 Electronic Publishing

Most of the information produced using computers have been output as a “hardcopy” on paper. Current trends in information has, however, minimised the need to adopt this *de facto* standard output. More and more documents are distributed in electronic formats which makes it possible to get information to users in the format and “environment” in which it was originally produced. There are several advantages for this. There is a cost saving, products are easier to disseminate, and there is a greater possibility to add value to the original information since the electronic version lends itself to easy analysis, manipulation and repackaging, using current ICT tools and techniques.

The production and distribution of policy guidelines, briefs, reports, data, documentation, records and inventories in electronic format will be encouraged and promoted. More and more policy makers are having access to personal computers, and providing discussion papers, analyses, tables, charts, and simple maps in electronic format will encourage their re-use and integration into policy documentation.

It is not being suggested in any way that all the information produced by AEIN would be in electronic-format versions. Rather the suggestion is that the technology for doing this is now available and its use in a programme of this nature should be actively promoted. The potential to reach many potential users with relevant environmental information through the internet is enormous. How journalists, for example, could easily use this information cannot be imagined.

5.1.4 Public information outlets

One of the cornerstones of public participation in environmental governance is easy access to user-friendly, accurate, relevant and timely environmental information that empower citizens to act responsibly at their respective levels, and promote transparency, good governance and environmental justice. Participation in decision-making encourages stakeholders to ‘buy in’ to outcomes and to involve themselves in the implementation of interventions. Since good decision-making depends on the availability of sound scientific information, the need for participation applies equally to the development of information as it does to the decision-making itself.

Ways must be found for all stakeholders to develop solutions co-operatively, as opposed to those purely in their own interests. Without participation (and therefore transparency) in the development and use of information, stakeholders may lack confidence in the decisions made. However, for this to happen there is need to break down the barriers that inhibit access to information on environmental matters, and ensuring that information is widely available in user friendly manner, and also that the user community would put the information to work. These barriers range from lack of political will to inadequate institutional capacities to re-package and disseminate information. In addition, the public should be able to engage in a dialogue with decision makers and experts within the same space, as partners.

Language can also be a serious barrier to information dissemination. Therefore, re-packaging of technical information into easily understood language and translation into local languages needs to be considered. African journalists, for instance, are often not well-informed on current and emerging environmental issues with the result that communication and outreach to a broader audience is severely inhibited. The net effect is that informed dialogue and debate on critical issues among stakeholders is difficult to generate. There is also a need for better dissemination mechanisms — both electronic and non-electronic.

Since data and information are generally available in electronic form from the producers, they should routinely be made available over the internet. The provision of information access points for environmental information at the community level will address this. AEIN will establish virtual information kiosks (*InfoKiosks*) to facilitate access to environmental information by the general public using “tele-centre” outlets (local equivalents of internet cafés).

The primary objective of the *InfoKiosk* will be to have a “point of presence” within the community for the delivery of environmental information specific to the district, and ultimately to the locality, and to provide a facility for a two-way communication between local communities and the respective local authorities. In addition, the *InfoKiosk* would also serve as a channel for disseminating of products from the state of environment reporting processes, and information on AEIN activities in general. It is expected that the kiosks will also serve as outlets for information on sustainable development in the respective districts, and contribute to enhanced planning and information dissemination in the district through the increased interaction between the local authority and the public.

5.2 Shared Data Resources and Services

5.2.1 *Communities and Shared Spaces*

One critical but delicate issue which AEIN will be confronted with across Africa is that of data and information ownership and *control*. Experience from the past decade would suggest that the overall success of AEIN will very much depend on how this issue is comprehensively addressed with a long-term view.

At the heart of the issue is the wariness of most data holding institutions about losing control of what they rightly consider as their intellectual property, resulting from many years of investment in terms of time, money and intellectual effort. In this information age even *public* institutions, increasingly faced with budget cuts, have come to see their data holdings as an important asset, to be guarded from “outsiders” and made available only in exchange for other assets, including money. This perception translates directly into political, organisational or even personal barriers to the flow of information among agencies, and between different segments and levels in society.

Although considerable progress has been made in Africa over the past decade in terms of awareness of the benefits of information sharing, these fears about loss of control still dominate, particularly among the older public data holding institutions, typically the national mapping authorities and the statistical offices. Apart from political exigencies, there are also concerns in some quarters that intellectual property might be diluted, misrepresented, or otherwise used to the detriment or disadvantage of its owner, when shared. Of course, some of these perceptions may be well founded, for instance in the case of owners of scientific information, particularly those whose careers depend on publication, who fear plagiarism or lack of acknowledgement; and owners of technological knowledge who fear infringement of patents, copyright and other forms of know-how. There are also fears, particularly on the part of some governments, that information could also be used for completely unintended purposes with potentially serious destabilising consequences. These are genuine fears that need to be addressed.

The design of AEIN is founded on the premise that current models of *distributed computing*, using the internet as a backbone, provide a unique way to address these fears and get around this barrier to information flow. *Owners* of data and information can maintain varying degrees of control on their “property”, while at the same time granting access rights to various users anywhere in the world, subject to whatever conditions that may be deemed expedient. This can be done without violating institutional mandates, or infringing the *status quo*, and without jeopardising established institutional relationships. Apart from the benefits of shared information resources, the granting of wider access to their information, in fact, could give the respective institution better visibility and importance, without compromising the security of the information.

The concepts of an “*information community*” and a “*shared space*” enable collaborators and network partners to overcome fears and concerns by building **trust** and **confidence** between producers and users of information within a *community that shares the same principles*, and by promoting **transparency** in information usage. The use of common information “*gateway*” services within the community will help to remove suspicion and break down barriers to information flow, thus facilitating access to key environment and sustainable development-related information resources in the country.

The “shared space” could be likened to a meeting room where members of the community (stakeholders) would meet for discussions on various issues, or a physical common "place" where people could go for *authoritative* information, or a common “registry” or library serving several organisations, or the public with such information. In terms of technology, it could be a common “directory” containing *validated, authoritative and secured* information generated by various producers within the community, using harmonised standards and methodologies. The use of the internet would allow the producers to put this registry online, or set up a “portal” and share the information with the rest of the world. Current technology also provides tools to monitor various types and levels of transactions and activities in the shared space, as may be deemed necessary by various members of the community.

The first step in the development of shared data resources and services at the country level would be the establishment of an information community (institutional networking framework) whose members agree to collaborate in developing, harmonising and facilitating access to information, as well as sharing a common pool of authoritative data and information resources. Once established, external partners would be encouraged to engage national partners within that “space” to implement their respective programmes.

A congenial environment should exist. Therefore a set of principles will be developed and agreed upon to govern the relationships among partners collaborating within the community, and to set a platform for dialogue and consensus-building on key issues. The rights and obligations of custodian of datasets will be explicitly defined. Consensus-building among key national as well as international partners at all stages of implementation will be a critical ingredient to ensure that collaborating institutions recognise the benefits of working together to improve the availability of, and access to, good quality data and information to support sustainable development.

5.2.2 Standards

The establishment of processes and mechanisms to share data resources involve the building of partnerships among institutions. Roles of partners must be specified, and partners must demonstrate a high sense of commitment to the process. Data holding institutions must understand that they each have a segment of the environment to "describe" with the data that they collect and hold, and that the advantages in maintaining on-going dialogue with other institutions that could complement their own activities outweigh individual efforts.

The notion of *data custodianship* will be core to the development and operation of the Common Data Exchange Platform. The custodian of data and/or information would be that entity that is mandated, most able and suited to gather, manage and maintain the particular information in a manner that the data/information remains current. The custodian would have the right to set conditions of access to the dataset and recommend proper ways in which it should be used. However, it would accept full responsibility for ensuring that the data meets acceptable quality standards specified by the larger user community, would assure ease of access, and would provide users with as much information as possible to enable them to decide how useful and credible the information is. Also, the custodian would have to recognise that the wider information community may have interest and need for the data/information they hold and, within the framework of agreed principles, would accept responsibility for reducing, to the barest minimum possible, the transaction cost to others in using the data/information.

Network partners will work together, as a community, to develop and adopt common standards and protocols as the basis for collecting, capturing, structuring, harmonising, and storing data in order to facilitate the decentralised management of shared data resources, and to facilitate their integration. Partners will also establish framework agreements for sharing data, development of metadata catalogues, establish appropriate metadata delivery mechanisms, and implement techniques and processes that permit users to physically access *core datasets*.

Operational use of the international standards, International Standards Organisation (ISO) certification components, Open GIS Consortium (OGC) development interface standards, and metadata documentation will be maintained as part of the operational performance.

5.2.3 *Core datasets*

A comprehensive environmental dataset is very wide-ranging. However, it is possible to identify a minimum priority core dataset as *a consistent set of basic data that can be used in the analysis of a variety of environmental assessment and sustainable development issues*. Within AEIN, partners will **define core datasets** that would be sufficiently representative to characterise environmental resources, as well as issues related to their management and exploitation, in Africa. Investments in data development will focus on the core datasets.

Indicator-based environmental assessment and reporting activities would *assume that the requisite core datasets exist in some form and would be accessible* from the Data Development and Exchange Platform component. This assumption is itself based on the notion that a considerable amount of data exists within national institutions as well as abroad, held by public and private international organisations, based outside Africa, which can inform environmental reporting on Africa. AEIN will therefore not concern itself with data gathering, but rather on the collation and harmonisation of existing data. It is expected these activities would further enhance and drive data production (e.g., identifying or highlighting gaps, improving quality, addressing accessibility issues, etc.), and create opportunities for supporting the data production activities and initiatives.

The first major step in building up core datasets would be the identification, documentation and collation of data held by national institutions. Capacity building in this respect will focus on the development of metadatabases and the establishment of a clearinghouse mechanism supporting the searching of and access to relevant data. At the institutional level assistance will be provided for *data rescue and conversion* activities to set up relevant databases, on the basis of standards and protocols established within the Data Development and Exchange Platform. The datasets so generated will feed into the *national core datasets for environmental assessments and reporting*.

5.2.4 *Data repatriation and augmentation*

Large amounts of African cartographic and data resources are held outside the respective countries. AEIN proposes to initiate a process for the identification, documentation, and securing access to such data to boost shared data resources available for applications in Africa. A metadata catalogue will be made available to all countries in Africa, to enable countries to identify datasets which they could use and would wish to manage and maintain in the future. The metadata would also include information on how users could obtain these datasets. As part of the development of comprehensive national data

registries, appropriate agreements will be established with these sources of international data and information, and where possible, to “transfer” key datasets that would support sustainable development initiatives to the respective country.

AEIN will support the inventorying, compilation, and transfer of *national environmental data packages*. The transfer of these datasets and information resources into the custody of African countries, and their integration into the core national data holdings, could be beneficial in a number of ways:

- ❑ In many countries the datasets transferred may provide a head start in developing much needed core datasets;
- ❑ Having significant datasets to manage could stimulate the rapid development of information management capacity within countries receiving data; and
- ❑ The heightened awareness of the existence of the information resources will support increased harnessing of the information within the respective countries, as well as for the benefit of the region as a whole.

A key condition of the data transfer agreement would be that the country would undertake to validate the data, and then share it with the broader user community, if the conditions of transfer permit this. The Web provides an ideal vehicle for publishing searchable metadata records. Furthermore, standards for web mapping service interfaces (developed by the Open GIS Consortium) now make it possible to view spatial data residing on a distant server, in the form of a map, using a web browser. Thus an on-line linkage to the mapped information within the metadata record published through the Web is a possibility.

5.2.5 Data portals

Shared “virtual spaces” for sharing common data resources will be established (Figure 2). To this end national-level partners will develop and implement a **National Environmental Information Portal**, the purpose of which would be to provide structured, comprehensive, coherent, accurate, current and validated/authorised information, and to facilitate access to key data and information resources on the environment and sustainable development. The portal would serve as a common national “gateway” dedicated to the provision of data and information services to support sustainable development activities. All collaborating data custodians would have equal visibility through the portal.

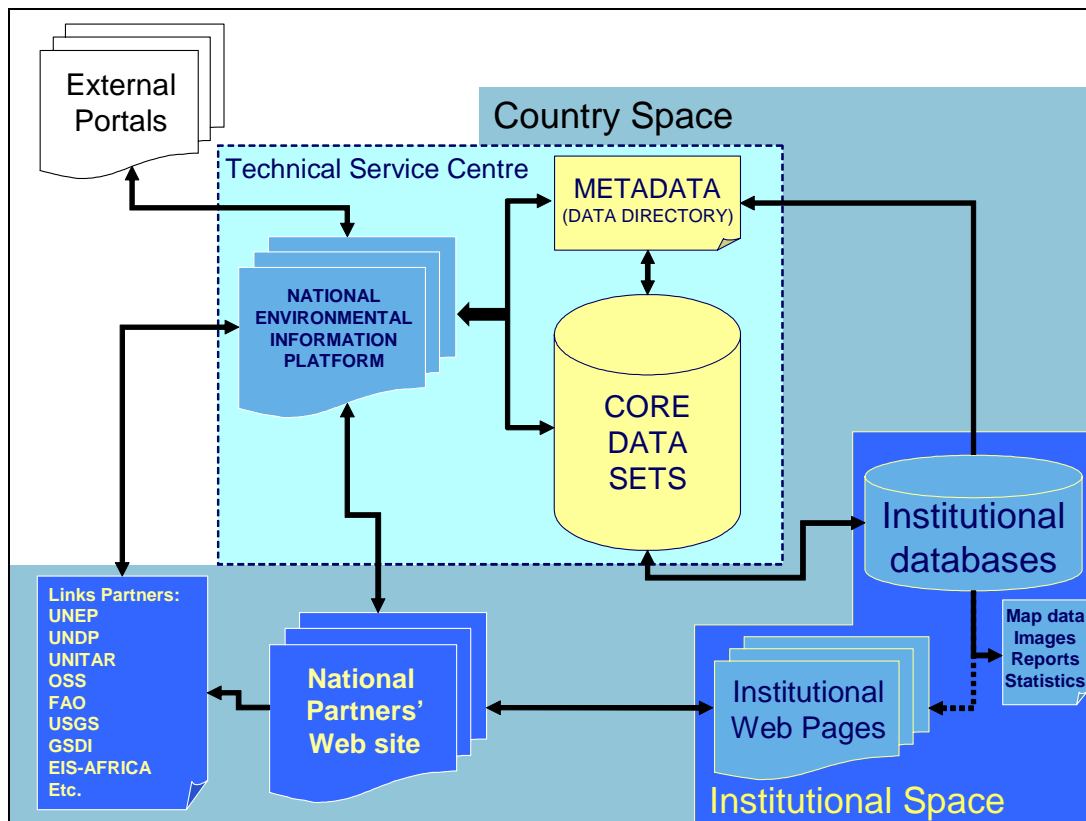


Figure 2. AEIN shared spaces and common data stores.

In addition, each collaborating partner institution would have its own dedicated “space” where they will keep or post their resources, either for public access or for internal institutional use, and establish an internet presence with their own identity. The public “spaces” would contain institutional information, data resources, information products, services, and technical resources, including expertise.

Metadata on all available data resources will be captured, stored and maintained by the respective data custodian. A clearing house mechanism will be implemented to facilitate easy access to metadata that may be held at different locations. Where it is operationally impossible or ineffective to have a distributed metadatabase, the metadata will be stored within one central database and managed by a Technical Service Centre.

5.3 ICT Capacity

Without a substantial take-off of ICT across Africa the implementation of AEIN will not be very effective. A major challenge in this respect arises from the fact that there is no strategic view of information management by most governments, and as a result the functional use of ICT is not fully internalised within most institutions. The use of good quality environmental information at all operational levels on a transactional basis within institutions with responsibility for managing a nation’s environmental assets must become part of the “organisational culture” in order to promote the kind of data and information exchanges envisaged within AEIN. Recourse to the data resources from data repositories of the respective institutions and from the Network must become part of day to day functional operations.

Capacities of partner institutions with respect to basic computerisation, data warehousing, data management and analysis, standards, data accessibility (framework, connectivity, etc.), quality assurance/management and security, use of the internet (web-based mechanisms), etc., will be addressed. The proficiency of key personnel from participating national institutions in the use of information technology (IT) resources for their own internal functions, and to communicate within the Network, will be improved. Skills to carry out integrated assessments, early warning, and state of environment reporting will also be improved. Personnel will also be trained in organisation development and project management techniques.

The capacities of relevant national institutions to generate and manage multi-sectoral environmental data and information will be strengthened through the provision of the requisite IT resources, as well as the implementation of resource information management and dissemination tools (database development and management, documentation and bibliographic systems geographic information systems, remote sensing, clearing houses, etc.) and internet-based processes and mechanisms (web sites, data portals, etc.).

Partnerships will be established with local IT firms and/or service providers for the development and implementation of *InfoKiosks*.

5.4 Technical Services

Information is most valuable if it is available when it is needed, and that its use would make a difference in a choice situation. This will be the guiding principle in the information management activities within AEIN. In order to enhance the overall efficiency of delivery within AEIN, essential activities that are not core business functions of individual partner institutions will be out-sourced. This approach will permit AEIN resources to be focused on key programme outputs and outcomes, while reinforcing and using existing capacities and available resources and expertise in the respective countries. Both public and private-sector expertise will be tapped, for instance, for data conversion and updating operations; data packaging, cataloguing and warehousing; production of final documents, e.g., large format maps, document design and production; etc.

Vendor and institutional partnerships will be created to ensure operational capabilities and support.

6. IMPLEMENTATION

6.1 Programme Activities

Proposed programme activities fall into 4 main areas:

a) ***Development of country-specific implementation strategies:-***

- Characterisation of the environment and sustainable information “landscape” and institutional framework (by country teams);
- Alignment of national priorities within AEIN; and
- Identification of capacity needs and data gaps

-
- b) ***Strengthening capacity building for integrated assessments and reporting*** using methodologies and tools developed through the GEO process:-
- Capacity building for environmental policy analyses;
 - Development of indicators that integrate environmental issues into the main national and sectoral policy frameworks;
 - Strengthening national capacities for strategic environmental assessments;
 - Collation, harmonisation and integration of core datasets;
 - Data analysis, modelling and scenario development;
 - Development of information products (sub-national, national, sub-regional reports) as well as communication services.
- c) ***Supporting the development of a common platform for the exchange of data and information:-***
- Facilitation of institutional networking and coordination;
 - Establishment or strengthening of environmental information exchange mechanisms, including standards, exchange protocols and policies, etc.;
 - Strengthening the roles of focal point institutions;
 - Compilation and distribution of metadata catalogues and information directories;
 - Identification, inventory and transfer of country datasets held abroad (national data packages).
- d) ***Strengthening ICT infrastructure:-***
- Strengthening of basic data and information management capacity of institutions, including spatial data management;
 - Enhancing computer infrastructure within key institutions (computer hardware and software, local-area-networking capacities, etc.);
 - Enhancing telecommunication facilities within key institutions, including reliable internet connectivity and web-based mechanisms, etc.

Details of these activity areas are indicated in the annexes.

6.2 Phases

One basic assumption regarding the phasing of AEIN implementation is that some elements of the programme may already be in place in several countries. On this basis implementation of AEIN will be divided into 3 phases which are not necessarily sequential, but rather to allow the differences in stages of development of countries to be dealt with in a pragmatic and an efficient manner. Country selection for the various phases will be done by the International Steering Committee, on the basis of objective and transparent criteria, involving various stakeholders. Pre-requisites for selection would be an official request by the interested country (a letter of interest), and a submission of a national implementation strategy confirming to guidelines that would be issued by the International Steering Committee.

Phase 1: Exploratory and Prototyping

Teams of national experts will prepare comprehensive needs assessments, which will serve as the basis for preparing national implementation strategies. These would include status reports and inventories of national environmental information management practices and institutional capacities, data gaps, etc. At the same time pilot activities will be implemented to test ideas with respect to networking, development of the common data repositories, product types, information services, and appropriate tools and methodologies.

A set of prototype products will be developed and used to engage decision makers in discussions (through the Executive Seminars and workshops) at the sub-regional level to "test" their response to such products, and fine-tune the products more to suit their needs, or to develop new product concepts, policy-relevant applications, and services. A comprehensive "roll out" plan for the respective sub-regions will be prepared after this phase.

Phase 2: Operational – Institutional Capacity Building

Phase 2 will address specific priority institutional strengthening needs with respect to environmental policy analysis, information management and products development (packaging), and infrastructure (IT resources, communication network, etc.) development, on the basis of needs identified from the assessments and "best practice" from the prototyping activities of Phase 1. Development of information products will be on the basis of existing data resources. Relevant skills development activities will be implemented.

The programme will be reviewed at the end of Phase 2, and the implementation plan adjusted accordingly on the basis of feedback and lessons learnt.

AFRICA ENVIRONMENT OUTLOOK

Phase 3: Operational – Filling Data Gaps

Emphasis in Phase 3 will be placed on filling identified gaps in existing data resources to strengthen the data foundation in the long-term, on the basis of demands for new data or need to improve the quality of existing data, while continuing with relevant institutional capacity strengthening activities.

7. ORGANISATION AND INSTITUTIONAL FRAMEWORK

7.1 Network Structure

AEIN is a multi-tier network, envisaged as a collaborative network of networks implemented through partnerships among new and on-going initiatives. At the level of individual countries the network will comprise a community of producers and users of a broad range of development-related information at the national as well as the sub-national (district and local authority) level, including NGOs, universities, and research institutions. Existing thematic networks, or professional groupings, would maintain their unique identities within the community, but be affiliated.

National networks will be nested together at the sub-regional level to facilitate coordination and harmonisation of activities and information. However, individual network members can undertake transactions without referring to the focal point at the sub-regional level (Figure 3).

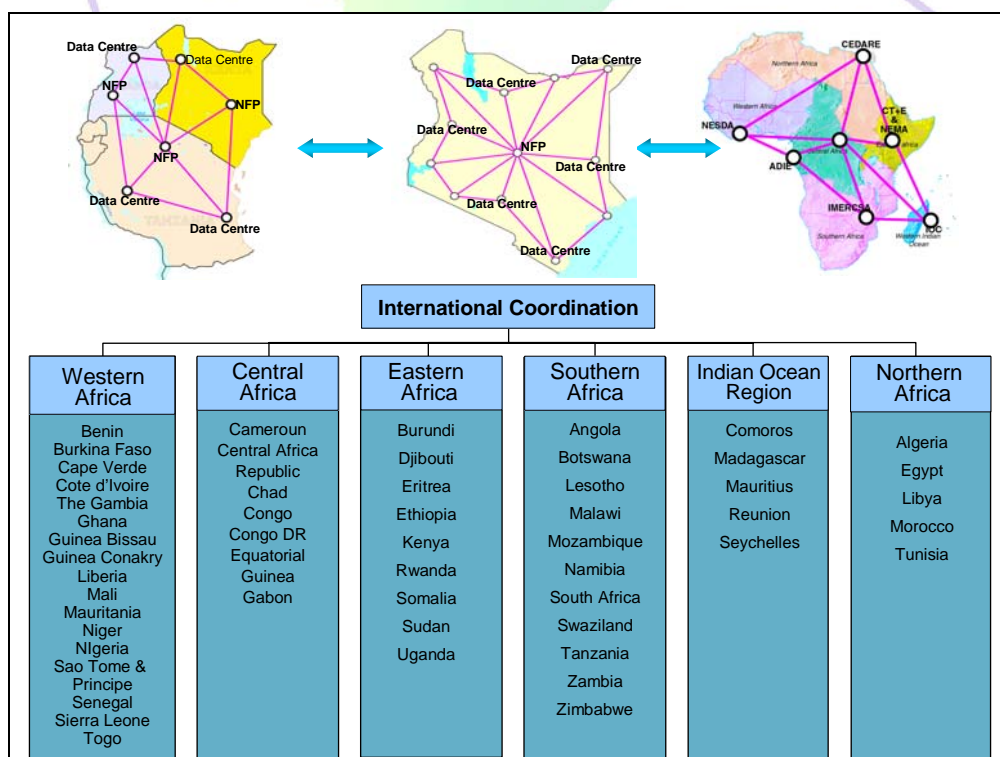


Figure 3. Network structure.

7.2 Sub-regional coordination

Given the role of UNEP'S African Collaborating Centres (CCs) in the preparation of the AEO and GEO reports, these centres will also be responsible for coordination at the sub-

regional levels. This will enhance effective harmonisation and ensure that the activities of the Network meet the AEO/GEO, as well as the state of environment reporting requirements of the sub-regions and their partners at national level.

The CCs will provide implementation support for network development at the sub-regional level, promoting vertical and horizontal networking, including inter-governmental institutions, NGOs, and international organisations operating in the sub-region and involved in information management, as well as sustainable development programmes. They will elicit support, mobilise expertise and facilitate short-term consultancies in the respective sub-regions to provide technical assistance for countries to clearly articulate their information management needs and strategies, and support implementation efforts, plan and organise workshops and training activities related to common sub-regional issues.

Specifically, the CCs will be responsible for preparing procedures for data harmonization and standardization, as well as guidelines for information sharing/exchange at the sub-regional, preparing sub-regional reports, and co-ordination with other information projects in the sub-region. They will assess and document policy responses and best practices in their respective sub-regions.

7.3 International Steering Committee

AEIN is intended to support policy formulation and decision-making with respect to the management of the environment in the context of sustainable development. It should therefore be implemented as a coherent Africa-wide programme with high-level political support and leadership. To this end an International Steering Committee will oversee the activities of the Network at the regional level. The role of the Committee will be to provide policy guidance, monitoring of progress, and provide liaison with donors.

The Committee will consist of 7-9 members drawn from African organisations as well as AEIN partners and donors. Members will include representatives from the following institutions:

- AMCEN/UNEP-Regional Office for Africa (ROA)
- NEPAD Secretariat
- African Development Bank
- EIS-AFRICA
- UNECA
- UNEP-DEWA
- UNDP
- UNITAR/OSS
- USAID
- Donor representatives – Norway, US, etc.

This committee will report to, and provide feedback from AMCEN, through the UNEP-ROA.

7.4 Coordination and Management

The establishment of an efficient and multi-user data development and exchange platform is a multi-stakeholder process requires collaboration among various on-going initiatives. UNEP will directly facilitate the development and implementation of AEIN, to the extent that it focuses on environmental assessments and reporting. With respect to the broader framework, involving the development of a comprehensive data infrastructure and ICT platform, UNEP will be proactive in seeking and building and/or strengthening partnerships with other initiatives and donors as may be appropriate.

UNEP will set up a Project Coordination Unit, and designate a Programme Coordinator. The Coordinator will be responsible for implementation and operational aspects of AEIN at the regional level. This will involve overall coordination of programme activities within the framework of guidelines established by the Steering Committee and the appropriate operational procedures of UNEP, day to day management (planning, monitoring, reporting) and technical supervision, coordination with other information initiatives in Africa, as well as liaison with donors. He will also provide technical back-stopping for programme activities in the field.

The overall coordination and management structure for AEIN is depicted in Figure 4.

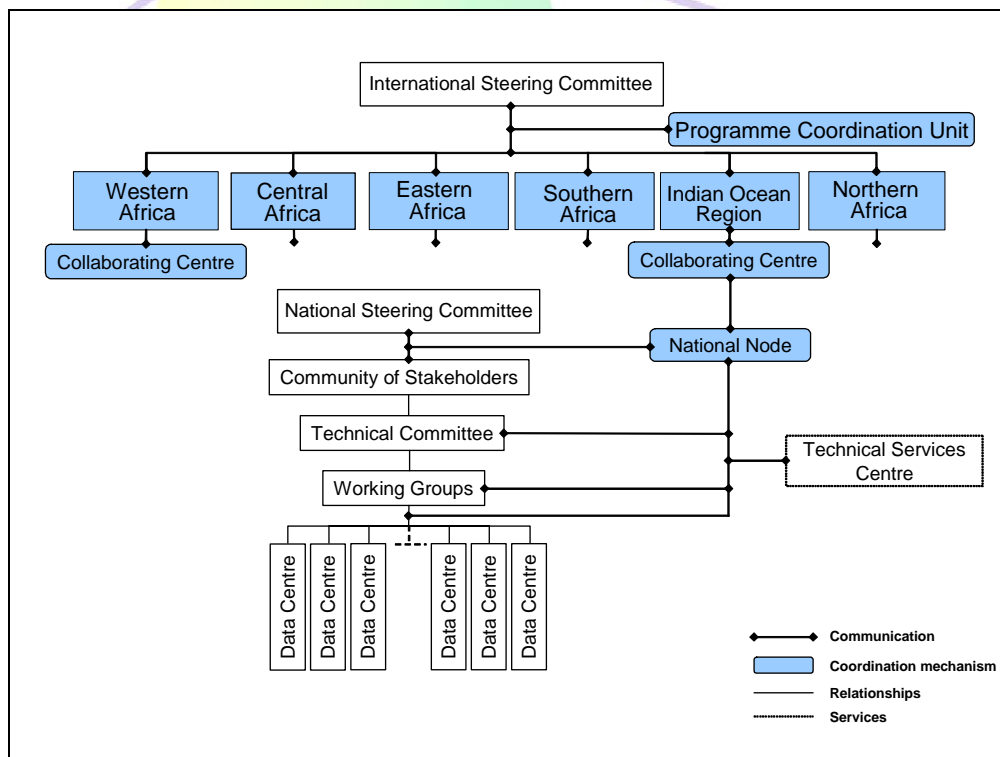


Figure 4. AEIN coordination and management

7.5 Partnerships

AEIN is very much a partnership as it is a multi-tier network, with a strong national focus, and aims to complement existing and on-going initiatives. It is therefore expected that several on-going initiatives will contribute to and benefit from AEIN partnership, which will build upon these initiatives, finding ways of creating synergy, and thus extending the benefits of the various initiatives to African countries.

Several on-going initiatives will contribute to and benefit from the AEIN partnership. Known initiatives whose objectives are directly aligned with AEIN include national implementations of the Global Spatial Data Infrastructure (SDI) initiative, existing networks supporting the SoE, AEO, and GEO, UNEP.Net, the Geographic Information for Sustainable Development initiatives, and the international partnership to strengthen environmental management capacity as a contribution to poverty reduction in Africa. Collaboration with on-going initiatives such as the REIMP, SISEI, the Regional Integrated Information System (RIIS) involving countries of the Inter-Governmental Authority on Development (IGAD) area, and the Data Exchange Platform for the Horn of Africa (DEPHA). The same holds for the proposed Program for Regional Information Sharing Management on Environment and Sustainable Development (PRISMES) involving countries of the Southern Africa Development Community area, and the proposed United Nations Development Programme (UNDP) project on Strategic Guidelines and Information Tools for Environmental Policy in Sub-Saharan Countries. The collaboration aims at creating synergy with these initiatives.

Other partners will include EIS-AFRICA, African Development Bank (AfDB), the United Nations Economic Commission for Africa (UNECA), other UN agencies, GRID-Arendal, the World Bank, World Resources Institute (WRI), the Federal Geographic Data Committee (FGDC), the United States Geological Survey (USGS), Environmental Systems Research Institute (ESRI), the OGC. It is expected that partners will provide direct as well indirect support for the implementation of AEIN. These will include support for the technical and design training and for planning and operating computer and database networks; standards and protocol training in metadata documentation, quality assurance, and interoperability functions; training in the use of spatial data systems focusing on the development of geo-based environmental databases, performance of spatial analysis and GIS processes for applications, and the methods for environmental assessments and impact analyses; environmental policy analyses; information products development focusing on the translation processes necessary to generate effective products and imagery for complex environmental development issues.

Collaborative agreements will be established with organisations such as the African Development Bank, the World Bank, the Food and Agriculture Organisation (FAO), the UNDP, UNITAR, WCMC, the Global Resource Information Database (GRID) Facilities of UNEP, as well as private sector sources.

7.6 National Implementation

AEIN is a national-level capacity building process. It is therefore expected that countries will take a leadership role in articulating their respective priority issues and needs, and drive the process.

The need for co-ordination and facilitation of information flow across sectors and between national and local offices will be critical for the operational efficiency of AEIN at the national level. It is expected that countries will set up institutional frameworks appropriate to their respective circumstance to effect the implementation of AEIN. However, it is proposed that where there is an existing institutional arrangement at the national level such framework would continue. Using such existing collaborative frameworks will ensure a quick take-off of the initiative with respect to institutional arrangements.

7.6.1 National Steering Committee

In order to ensure that the Programme has a national character and that there is sufficient awareness among policy makers to make its development is truly policy-oriented and demand-driven, national level AEIN implementation will be supervised by a National Steering Committee. The main function of the Committee will be to provide leadership, demonstrate high-level government commitment to the programme, and to ensure that policy-level perspectives are reflected and addressed in the implementation process. It will facilitate the development of linkages and establish co-ordination mechanisms with other on-going environment and sustainable development initiatives in the country. Representation on the Committee should reflect the multi-stakeholder nature of the initiative.

7.6.2 Forum of Stakeholders

The Forum of Stakeholders is a broad-based community of national environment information producers and users, which brings together all stakeholders including government agencies, including statistical offices, natural resource mapping organisations and national information producers, university departments, research institutions, private sector, NGOs, and donors. It constitutes a platform for consensus building on the development of a unified framework for the development of a national data infrastructure. It will promote co-ordination in among related partner initiatives, facilitate vertical and horizontal networking, and promote easy access by users to environmental data and information through workshops, seminars and demonstration sessions.

7.6.3 National Nodes

Countries will designate their own National Nodes for the Network. Ideally, an institution so designated should have a clear mandate, should have a proven national co-ordination capacity, oriented to multi-sectoral and interdisciplinary activities, have basic infrastructure in place, have adequate manpower, and be willing to place facilities from the AEIN initiative at the disposal of the larger community. The functions of the respective Node will focus on co-ordinating Network activities, promoting dialogue among agencies in the form of meetings, seminars, workshops, and other such fora, and providing services to the environmental information community at large. Specifically, this function will involve financial management, logistical arrangements, official contact with donor agencies on behalf of the Network, reporting to government and donors, undertaking external public relations, and serving as the national contact point for the Network with regional and international information networks.

The National Node will designate a National Coordinator for the AEIN programme, who will have full responsibility for managing network activities at the national level, including overall co-ordination, day to day management, supervision of short-term consultants, and for transactions between the country and other partners, including UNEP. Memoranda of understanding will be established between UNEP and the respective countries (directly or through the CCs).

Capacity will be strengthened at the Node for the processing and integration of data from different sectors into coherent “environmental” datasets and policy-relevant information.

7.6.4 Technical Committee

The Technical Committee will function under the auspices of the National Steering Committee. It will be responsible for assisting the National Node in addressing various cross-cutting technical and operational issues relating to AEIN implementation at the national level. Specifically, it will oversee the preparation of the national AEIN implementation strategy, identifying priority needs issues, and elaborating requirements. It will also oversee the development of procedures and protocols for data exchange, and proactive mechanisms for information dissemination and promote information exchange within the Community. It will also assist in defining and reviewing policy-relevant environmental information products.

7.6.5 Working Groups

It is proposed that a number of Working Groups should be established in every country to be responsible for various aspects of AEIN implementation. The groups may have issues or thematic focus, for instance:

- Policy analysis
- Thematic issues
- Spatial data
- Socio-economic data
- Documentation and referral services
- ICT issues

They will be responsible for ensuring the appropriate technical standards adopted by AEIN are implemented by the respective data custodians.

7.6.6 Data Centres

Data Centres will be the custodians of the core datasets identified within AEIN. They will have the responsibility for the efficient management and maintenance of the relevant data. They will maintain the right to update or change datasets as it deems fit, within the framework of the standards and protocols adopted by the Community, and the right to specify how the data should or should not be used, as well as the conditions of access.

In the context of AEIN the functions of a Data Centre will include:

- a) Define and maintain quality standards for the institution's data;
- b) Categorise all holdings within the institution;
- c) Ensure the integrity of all datasets held by the Node;
- d) Publish a data release policy that indicates conditions of access or exchange;
- e) Ensure access, as may be appropriate and subject to published conditions, to datasets held;
- f) Maintain documentation on the various datasets, based on the common meta-database standard, and which indicate the data held by the Node, database structure, and the appropriate uses of the dataset;
- g) Produce and distribute, in digital a format, a data catalogue based on the meta-database;

-
- h) Provide assistance to users of the respective datasets;
 - h) Maintain a record of data released to users for the purpose of informing such users of new versions of the datasets as and when they become available.

A contact person shall be officially designated by each institution. This person should have authority to provide information to users on request.

7.6.7 Technical Services Centres

AEIN activities will be knowledge and skills intensive. It is recognised that there may not always be adequate capacity at national partner institutions, and that the implementation of activities and provision of could be limited by the level of expertise available, both in the Data Centres and in user institutions. Where the capacity for the full range of data management functions (capture, conversion, updating, maintenance, analysis, etc.) does not exist at all, or capacity is limited, and it is impossible to adequately equip each Data Centre with the full range of resources, the services of a Technical Service Centre (TSC) will be engaged.

TSCs will be centres of excellence that are capable of providing centralised/out-sourced technical services (data conversion, updating and aggregation, data cataloguing and metadata maintenance, etc.). Out-sourced services will mainly be data management operations which may not be core to the functions of a Data Centre, and for which the resources required by the Data Centre will be used for limited periods, e.g., map digitising and updating. Where services are used, the final product (e.g., converted data) will revert to the Data Centre for storage, distribution and other user services. Private-sector partnerships will also be developed in this respect.

Where a TSC is contracted to undertake a data conversion process, the respective Data Centre will maintain the responsibility for the collection of the relevant field data, and the right to update or change the dataset as it deems fit. The TSC may not update or change datasets for which it is not the custodian, without explicit agreement with the respective Data Centre, and may not release data to a third party without the explicit authorisation of the custodian.

TSCs will also support the development and packaging of information in meaningful and user-friendly formats, and will provide common “gateway” services to the Community. They will be responsible for the warehousing of shared data resources and, in that respect, the maintenance of the National Environmental Information Portal. They could also undertake more conventional dissemination outlets such as public information centres.

8. SUSTAINABILITY PATH

Past experiences have shown that the sustainability of information management initiatives beyond project cycles remains illusive, and will not happen by itself if not addressed as part of the integral design and implementation of the initiative. Studies undertaken in this respect have underlined the need to move from “projects” to a long-term programme framework, although various aspects of the “programme” would be implemented through successive phases or projects. AEIN seeks to ensure coherence in the outcome of individual partner projects, and ensure that these enable the building of a cohesive and comprehensive information infrastructure which is a prerequisite for ensuring the

sustainable development of and sustained use of environmental information in decision-making.

Studies have also stressed the need to find ways to attract independent funding for initiatives, either through cost-recovery mechanisms by public institutions or through private-sector involvement. Often the ending of project funding by donors has implied the end of the respective initiative, whether the stated development goals have been attained or not. The main reason for this has been that capacity building efforts have tended to concentrate on government institutions, which are often poorly funded and staffed, and are therefore unable to continue to support the initiatives once project funding dries up. AEIN will encourage partnerships with the private sector, and involve the private firms in implementing programme activities wherever practicable and cost-effective, instead of setting up competing structures within public sector institutions, in order to ensure that capacity building is not limited to government institutions.

As part of the capacity building, AEIN will assist national partners to clearly establish their cost structures, develop business models and device appropriate cost-recovery mechanisms, as well as strategies for the institutions to mainstream the costs associated with aspects of AEIN within their purview into their regular budgetary processes over time. This approach would enable the network nodes to gradually become self-sustaining units in pursuit of the overall goal.

The phasing of AEIN implementation would allow the benefits and positive impacts to begin to be seen by the end of the second year of implementation. This would give the initiative greater visibility within the partner institutions themselves, as well as at the level of Government, and would thus provide the necessary impetus for getting Government to provide budgetary allocations to the AEIN activities implemented by national partner institutions.

It is anticipated that AEIN will initially be largely funded by external (donor) support. However, it is expected that African governments would begin to support the programme directly on an incremental basis. However, it is hoped that the initiative would continue to attract support from donors and partners on a long-term basis to ensure that the necessary structures are in place to sustain the initiative when external funding ends. It is anticipated that donor funds would cover the basic direct costs that are associated with the implementation, but this will gradually decrease once the basic capacity has been established and the national institutions and their respective Governments begin to assume a larger role in financing various aspects of the programme.

9. BUDGET

It is anticipated that the development of an effective collaborative network as envisaged under AEIN will cover several years, and will involve contributions in various forms from several sources, many of which would be independent of the current partnership framework. Therefore the cost estimates indicated here are only in respect of those activities which will be implemented within UNEP's direct mandate.

Given the scope of the initiative, and the proposed phased approach, indicative estimates are provided only for an initial (Phase 1) period of 2 years of establishment and start-up

activities, which are essential pre-requisites for the long-term success of the AEIN programme, in 12 countries.

The estimated financial outlay for the portfolio of activities to be implemented during this period is estimated to be approximately US\$3,891,730. This is broken down as follows:

ACTIVITY	TOTAL (US\$)
<u>Management</u>	
Staff costs	350,760
Staff Travel	64,000
Steering Committee meetings and equipment/overheads	40,000
Project management support (international consultants)	30,000
Sub-total (Management)	484,760
<u>Institutional Support</u>	
Institutional Support (National Node)	378,000
Institutional Support for Collaborating Centres	114,000
Technical Assistance to national and sub-regional institutions	240,000
Sub-Total (Institutional Support)	732,000
<u>Start-up Training Workshops and Networking</u>	
Start-up workshop (Nairobi)	25,200
Consultants (National and sub-regional)	73,500
National stakeholder workshops (consensus-building)	72,000
Sub-total (Start-up Training Workshops and Networking)	170,700
<u>Integrated Assessments and Reporting</u>	
Environmental policy surveys (fees, sub-regional experts; 6 teams)	90,000
Training workshops in policy analysis/integrated assessments & reporting	108,930
Indicator development (Consultants)	20,000
Capacity building for environmental policy analysis	70,000
Production of 12 national SOEs	420,000
Production 5 sub-regional SOEs	250,000
Production of Africa Environment Outlook 2 (Year 2)	500,000
Outreach activities	42,000
Sub-total (Integrated Assessments & Reporting)	1,500,930
<u>Common Platform for Environmental Information Exchange</u>	
Networking	137,200
In-country training workshops	159,540
In-country Technical Assistance (Development of common data stores)	108,000
Data repatriation and augmentation	178,600
Sub-total (Common Platform for Environmental Information Exchange)	583,340
<u>ICT Platform</u>	
Computers and accessories	300,000
Internet connectivity (including Technical Assistance)	120,000
Sub-total (ICT Platform)	420,000
GRAND TOTAL FOR PHASE 1 (2 YEARS)	3,891,730

These costs are the estimated direct costs for the 2-year start-up phase (1). The output of this phase will be comprehensive national implementation strategies focusing on specific national priorities, within the overall AEIN Programme Strategy, and concrete prototype products and services for the 12 selected countries, including the production of national SOEs for these countries, 5 sub-regional reports, and AEO for 2004. A budget for a comprehensive “roll out” plan (Phases 2 and 3) will be prepared on the basis of the national implementation strategies, lessons learnt, and other inputs.



AFRICA ENVIRONMENT OUTLOOK



AFRICA ENVIRONMENT OUTLOOK

AEIN IMPLEMENTATION PROGRAMME

COMPONENT I:

DEVELOPMENT OF COUNTRY-SPECIFIC AEIN IMPLEMENTATION STRATEGIES

1. Introduction

AEIN is a long-term capacity building, country-focused initiative. Past experiences have underlined the need to align such initiatives to priority national needs in order to ensure buy-in and ownership by countries. The effectiveness of the Network will depend very much on the extent to which the concepts and principles are internalised within partner institutions around Africa, as well as on their individual capacities.

This component is to permit individual countries to articulate their priority needs and align AEIN to these needs through multi-stakeholder processes.

2. Objective

The objective of this component is to prepare comprehensive national strategies to strengthen integrated environmental assessment and reporting, focusing on specific national priorities, within the framework of AEIN Programme Strategy. The strategies will also outline mechanisms for integrating environmental information into the mainstream of national sustainable development policy formulation, planning and decision making processes.

3. Approach

Teams of experts will be engaged to thoroughly assess the environmental information system capacities and needs in the respective countries, and propose actions necessary for strengthening the existing capacities for managing and improving access to environmental information for decision-making. The assessment would include the following:

- National environmental management and development policy context

Key driving forces for sustainable development policy formulation; current levels of use and impact of environmental data and information in policy formulation, and the extent of integration of environmental information in the overall national development planning process; obstacles and constraints in assessing existing data and information;

- National institutional framework and networking

Mission and mandates of the organisations, details of specific programmes and projects as they relate to the goals of AEIN; institutional expectations of and contribution to AEIN; external partnerships and cooperation with other organisations and/or initiatives in the context of information management; extent

to which data and other commodities are shared with other organisations (e.g. lists of data sources) and the degree to which common standards and policies for information management are employed. Productive partnerships would be highlighted, and weak ones also noted.

Datasets

Type(s) and format(s) of information available, and their effectiveness in communicating key messages to policy-makers; summaries of the datasets for which the various organisations act as custodians (theme, scale, completeness, currency, reliability, and pricing policy/strategy, plus an indication of how they were collected, their intended uses, and the data standards and quality-assurance procedures which have been employed). Particularly important or relevant environmental datasets would be highlighted, as well as urgent data needs.

Expertise

Descriptions of the expertise available within the national network which is of most relevance to information production, for example numbers and education/training-level of data managers, librarians, statisticians, analysts, designers, publishers or communicators. Particularly strong or relevant expertise should be highlighted, as should urgent needs.

Facilities

Descriptions of the main facilities accessible to the Network, including the private sector, to enhance information production, for example field data collection equipment, computer software and hardware, data input and output devices, communication and physical facilities (e.g. dedicated premises, satellite internet connectivity, etc.). Particularly useful or relevant facilities should be highlighted, as should urgent needs.

Management systems

Review of the organisation of projects as they relate to the provision of data and information to users; information management capacities, as well as electronic communication and networking infrastructure and needs in the respective country.

The resulting strategies would provide a comprehensive overview of the environmental information situation in the respective countries, and outline a long-term investment plan for implementing a *national* AEIN programme, including filling critical gaps in capacity, and details of other appropriate interventions in each country. It would also outline ways to complement and supplement existing capacities, and ways to enhance efficiency through closer cooperation among all stakeholders.

Information from the assessment will also be used to update existing country environmental profiles or, where profiles have not been prepared previously, prepare new ones.

4. Activities

4.1 Prepare AEIN implementation guidelines and procedures.

The Programme Coordinator will prepare AEIN implementation guideline and procedures.

4.2 Identify and engage sub-regional experts

CCs will identify experts within the sub-regions.

UNEP will engage the sub-regional consultants, through the CCs, to provide technical assistance to the respective countries in the sub-region.

National Nodes will identify and engage local consultants to prepare the national strategies.

4.3 Start-up workshops

Organise national and sub-regional start-up workshops to explain AEIN Programme concept, and to clarify what is expected of the teams by way of the national implementation strategies.

4.4 Consultants to carry out national assessments

The country teams will work with partner institutions to prepare the national strategies. National Nodes will facilitate the work of the country team.

National workshops will be organised to discuss the overall national situation, and to identify and reach consensus on priority needs and recommended interventions.

4.5 Synthesis and review workshops

Organise sub-regional review workshops to review the national strategies, and to identify priority issues in the sub-region, and to reach consensus on recommended intervention.

5. Implementation

Activities under this component will be implemented in by CCs and national environmental agencies, in collaboration with EIS-AFRICA. A team of experts will be selected from the various sub-regions to assist national teams to prepare their respective national AEIN implementation strategies.

The duration of the activity will be 6 months.

AEIN Implementation Programme

COMPONENT II:

STRENGTHENING CAPACITY FOR INTEGRATED ASSESSMENTS AND REPORTING

1. Background

Sustainable development depends on the judicious exploitation of environmental assets. Sectoral approaches to economic development, implemented independently, tend to undermine the effectiveness of policies. This is because considerations regarding the environment, which provides the resources that are exploited under the various sectoral policies, are rarely integrated into these policies. The integration of the environment into sectoral policies as well as macro-economic policies will ensure the sustainable use and management of environmental assets as a base for economic development.

This component project aims to develop and put in place a coherent framework, procedures and methodologies for assessing environmental conditions on an ongoing basis, and for communicating this information to decision makers at various levels. It will develop clear, understandable, and easy-to-use sets of indicators that will facilitate the effective leveraging of environmental assets by African governments. The goal is to communicate the environment as an asset for sustainable development, and to provide a core set of indicators that will assist in managing such an asset.

2. Objectives

This project aims to develop a framework for characterising environmental assets and communicate their status, and to assist in mainstreaming the environment into the macro-economic policies in African countries. The long-term objective is to provide to decision makers information that will help enhance the effectiveness and efficiency of Government programmes, interventions by the donor community, and private sector actions. It will provide information needed for better resource allocation among different and often competing developmental needs, highlighting environmental issues and how to address them, and assisting in better targeting of various activities and human-use systems placing stress on the environment.

The following specific objectives will be pursued:

- i. Develop and implement a framework for the systematic assessment of the conditions the environment and natural resources, using a set of indicators which convey clear and understandable information about environmental assets, and which track their use, trends, and the progress on environmental policy implementation, as well as promote integration of environmental concerns into sectoral policy making, and promote the integration of the environment into macro-economic policies;
- ii. Enhance the capacity of key institutions in procedures and processes for environmental policy analysis, integration of environmental concerns into

development policies and strategies, and assessment of the performance of sustainable development policy instruments with respect to progress and achievement of environmental goals; and

- iii. Enhance in-country capacity for regular generation and dissemination of a wide range of information products on the state of the environment, and generate inputs for the AEO-2 process .

This component will adapt and use standard methodologies and tools developed by UNEP/DEWA for national SOEs, as well as the AEO/GEO processes.

3. Activities

3.1 Output 1: **Framework for the systematic assessment of environmental and natural resources conditions, using of a set of reliable and easy-to-use indicators which convey clear and understandable information about environmental assets**

- 3.1.1 Establish expert working groups on various national priority sustainable development issues in the area of the environment, agriculture, energy, industry, transportation, health, settlements, and other important sectors, to be responsible for the process of developing indicators
- 3.1.2 Organise a training workshop for selected personnel from the key institutions on indicator development, analytical frameworks (including the AEO/GEO model), data requirements, harmonised methods of data collection/analysis and integration, modelling and the development of scenarios and policy options for action;
- 3.1.3 Develop appropriate methods for integrating datasets to characterise the nature of environmental assets and quantify them, as well as data visualisation approaches that communicate the value of these assets effectively;
- 3.1.4 Collate and analyse existing datasets for the purpose of generating adopted *national environmental indicators*, and establish databases on core datasets for integrated assessments and reporting;
- 3.1.5 Promote the use of the adopted indicators as a basis for reporting on environmental issues and for use in integrated assessments through a set of decision-support applications on environmental resource potentials, utilisation trends and possible conflicts, and the linkages between socio-economic and biophysical conditions, scenarios, hazard and risk prediction, and contingency planning;

3.2 Output 2: **Capacity of key institutions in environmental policy analysis, integration of environmental concerns into development policy and strategy frameworks, and assessment of the performance of sustainable development policy instruments with respect to environmental goals**

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- 3.2.1 Undertake a survey of environmental policies and strategies in a sample of African countries and analyse the performance of the instruments in place for achieving sustainable development, assessing the adequacy and efficiency, or otherwise, of the instruments and tools, on the basis of recommendations in Chapter 5 (Policy Responses, Analysis and Action) of the AEO;
 - 3.2.2 Use outputs from the survey (activity 3.2.1) to develop a sourcebook on environmental policy and prepare guidelines for environmental policy analysis which will assist in policy formulation and building institutional capacity;
 - 3.2.3 Develop systematic and problem-solving frameworks for the integrated analysis of environment and sustainable development policies;
 - 3.2.4 Organise sub-regional and in-country training workshops in environment and development policy analysis, scenario development and assessment of policy options for personnel from key institutions at the national, sub-regional and regional levels.

3.3 Output 3: In-country capacity for regular generation and dissemination of a wide range of information products on the state of the environment

- 3.3.1 Provide training personnel of lead agencies on state of environment reporting methodologies, tools and processes;
- 3.3.2 Design and implement a series of training programmes to improve staff skills in integrated data analysis, environmental indicators, design of databases, information management and use of GIS concepts to facilitate integration spatially-referenced data, and outreach to policy makers and the public;
- 3.3.3 Enhance the capacity of key institutions with respect to information management tools (hardware, appropriate software, etc.);
- 3.3.4 Organise stakeholder consultative meetings and workshops to gain consensus on key environment and development issues in the respective countries and sub-regions, and the kind of products that would be most appropriate and useful, as well as to create awareness of state of environment reporting methodologies, tools and processes;
- 3.3.5 Provide assistance in the establishment of mechanisms for managing the reporting process, including oversight responsibilities, administration, data management and analysis, consultants, editorial management, production management, communication, etc;
- 3.3.6 Provide technical assistance to support the production of national SOEs and related products.

3.4 Output 4: Africa Environmental Outlook 2004

- 3.4.1 Organise first consultative and conceptual planning meeting to agree on the main messages/focus for the document (including agreement on the guidelines and TOR), and agree on the structure of the chapters;
- 3.4.2 Organise appropriate training in integrated environmental assessment and

reporting depending on the theme;

- 3.4.3 Facilitate and coordinate the CC network and partners to carry out assessments at sub-regional level and generate draft inputs for integration into regional perspective of AEO-2;
- 3.4.4 Undertake appropriate forward-looking scenarios and integrate analysis, and produce draft AEO-2 report;
- 3.4.5 Convene a regional consultation to review and recommend improvement to the draft report;
- 3.4.6 Revise, edit, translate into French and publish AEO-2 and produce related products;
- 3.4.7 Organise appropriate launch activities.

4. Implementation

This component will be implemented in partnership with the UNDP (through its Country Offices), the UK Department for International Development, and the World Bank. Other potential partners will be sought.

In-country activities will be implemented by the respective national environmental agencies. A team of consultants will be identified at the sub-regional level to provide assistance for national implementation. It is envisaged that UNEP/GRID-Arendal will provide technical assistance to countries.



AFRICA ENVIRONMENT OUTLOOK

AEIN Implementation Programme

COMPONENT III (A):

DEVELOPMENT OF A COMMON PLATFORM FOR ENVIRONMENTAL INFORMATION EXCHANGE IN AFRICA

1. Background

The environmental information community relies on systems developed and hosted by various custodians of the respective information. Lack of co-operation among custodians and users lead to duplication, and imposes a cost on those who have a need to use such disparate datasets and information with incompatible formats. It is therefore imperative that common principles and standards are adopted so that the many various types of information produced by different custodians can be harmonised, its usefulness enhanced, and transaction costs reduced.

This component of the AEIN Programme aims at developing an effective framework for harmonising and using data generated by various national institutions in policy formulation, planning and sustainable development programs. The primary motivation is to improve data harmonisation and effective access to geo-spatial information within countries, and thereby reducing transaction costs inherent in the use of incompatible datasets and information.

The focus of activities is to encourage producers and users of geo-spatial information to reach consensus on issues such as standards, harmonisation procedures, ownership, accessibility and exchange, and to collaborate within a common information management framework.

2. Objectives

The broad objective of the sub-component is to support the establishment of operational national frameworks for the systematic development, management, and maintenance of compatible and co-operative information systems to support the management of environmental assets and their exploitation for sustainable development processes.

Specific objectives include:

- i) Support the establishment of national frameworks for the exchange and use of geographically referenced information through the development and implementation of appropriate policies;
- ii) Provide assistance for the development, promotion and adoption of standard guidelines and data protocols, standard database architectures, and a consistent framework for geo-referencing statistical data.
- iii) Provide support and technical assistance for the compilation and harmonisation of *shared data resources* and facilitate their effective use in sustainable development processes

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- iv) Improve co-ordination and networking skills of partner institutions.

This component is very fundamental to, and lays the foundation for the kind of transactions involving data exchanges envisaged within AEIN. The framework will enhance the provision of structured, comprehensive, coherent, current, and accurate information about countries deriving from sources most able and/or best equipped to provide such information, and who are willing to maintain, manage, and grant access to such information by various users in order to promote sound management of the environment, sustainable development, planning and decision-making.

3. Activities

The following activities will be implemented:

3.1 Output 1: Framework development

- 3.1.1 Prepare a document outlining a common approach for the development of technical and institutional capacity in Africa for harnessing information for sustainable development, consistent with the AEIN framework;
- 3.1.2 Support the establishment of appropriate national institutional frameworks, including governance and operational structures, on the basis of outputs from activity 3.1.1;
- 3.1.2 Facilitate networking among *core environmental data* producers and users;
- 3.1.3 Support on-going consensus-building activities among stakeholders on crucial technical and institutional issues relating to use and provision of the datasets through seminars, meetings and workshops.

3.2 Output 2: Supportive policy framework

- 3.2.1 Provide assistance for the development of National Spatial Data Infrastructure (NSDI) strategies
- 3.2.2 Provide assistance for the preparation of national geo-spatial data policies covering ownership/custodianship, conditions of access, usage, copyright and cost-recovery issues, and broad guidelines for information sharing/exchange, within the broad framework of any on-going national Information and Communication Technology (ICT) Policy formulation processes;

3.3 Output 3: Data harmonisation

- 3.3.1 Provide support for inventorying, collection, and assessment of existing datasets in both hardcopy and digital format;
- 3.3.2 Develop a common “platform” which provides a regulatory framework as well as a mechanism for spatially referenced digital data exchange within AEIN;
- 3.3.3 Provide assistance for the preparation of procedures for harmonizing AEIN core datasets through the use of a standard digital base maps and digital mapping standards, an official gazetteer, classification schemes for land cover/land use, soil classification scheme, road network classification, etc.;

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- 3.3.4 Provide assistance and facilitate the development and consolidation of core datasets which are consistent with the sets developed in neighbouring countries within the context of AEIN.

3.4 Output 4: Accessibility to key datasets

- 3.4.1 Provide assistance for the development of common meta-database;
- 3.4.2 Establish appropriate metadata delivery mechanisms, including a physical (electronic) network using the internet as a backbone to link up key data producers (national nodes) with users, with tools to facilitate accessibility, e.g., online catalogues, clearinghouse, etc.;
- 3.4.3 Provide assistance for the identification of “expatriate” data resources and document datasets on African countries held by external organisations, and initiate appropriate processes to repatriate such resources. (In reality, this activity can never be regarded as complete and exhaustive, and will need to be ongoing. However, by targeting selected organizations known to hold data on Africa, a significant start may be made on compiling an inventory of such data. This may stimulate the provision of metadata by other institutions.)
- 3.4.3 Implement a data portal that permit users to access and work with geo-spatial data via the internet for different applications.

4. Implementation

UNEP will provide direct support at national level, and catalyse regional *activities that align with key AEIN objectives and deliverables*. It needs to be emphasised that the component will build upon and expand existing and on-going initiatives, and its implementation will involve the co-operation and collaboration among several national and international organisations implementing various initiatives in order to achieve the desired goal.

Major partners in this regard will include REIMP, RIIS, PRISMES, EIS-AFRICA, and GISD. It is recognised these initiatives are driven by different needs and objectives. However, the framework is intended to serve as a platform for partnership and a forum for collaboration by all stakeholders, including funding agencies within respective African countries, to adopt a unified approach for the development, sharing and applying information for sustainable development decision-making. It will provide a basis for building sustainable and long-term national integrated information “infrastructures” oriented to the need for comprehensive development information in the respective countries.

UN partners will include UNITAR/OSS-SISEI, FAO, UNECA-Committee on Development Information (CODI), UNDP, and the UN Geographic Information Working Group (UNGIWG).

EIS-AFRICA will play a lead technical role at the regional level, and it is anticipated that it people as well as organisations with a knowledge of institutions holding African data, in countries outside Africa, as well as those with skill sets and facilities for harmonising data, will be engaged to implement this component.

AEIN Implementation Programme

COMPONENT III (B):

DEVELOPMENT OF AN ENVIRONMENT AND SUSTAINABLE INFORMATION DOCUMENTATION AND REFERRAL SYSTEM

1. Background

Many institutions in Africa hold very valuable collections of reports and other documents on the environment and development. Most of this is in paper format, and as with other kinds of information, they tend to be scattered and not easily accessible, and remain unknown to other potential users. To facilitate access to this wealth of information these need to be properly referenced, and information about them effectively disseminated to support sustainable policy formulation and development planning. In addition, mechanisms need to be put in place to facilitate easy access to such documents.

It is proposed to set up national documentation and referral systems as part of AEIN. The project will provide assistance for developing an effective framework for collecting and harmonising access to documents relevant to the environment and sustainable development programmes available within the respective countries. Once implemented such a system will provide ready access to information about development projects, key reports, and other documents relevant to environment and sustainable development in the respective countries.

2. Objectives

The goal of the project is to facilitate access and use of existing documentation on the environment and sustainable development in policy formulation and planning. The broad objective is to provide support to selected documentation centres for the development of an efficient public documentation and information referral service in each country. The following outcomes are expected:

- a) improved availability and accessibility of information about existing reports and documents to users
- b) a common framework for information documentation and a standardised document referencing system
- c) improved exchange of documentation information among institutions
- d) capacity to create and manage documentation systems within institutions

The specific short-term objectives are:

- i. To enhance the capacity of selected documentation centres to provide documentation and referral services
- ii. To harmonise and compile documentation of environment and sustainable development information sources and facilitate their effective use
- iii. To strengthen links with relevant institutions both within and outside the respective countries

The effort to ensure standardised referencing system among documentation centres will also address the nature of classification systems and use of a common thesaurus.

3. Activities

The major outputs from the establishment of a documentation system would be:

- procedures for harmonisation and standardisation of documentation systems
- inventory of institutions, individuals, projects, and publications on environment and development in paper and electronic formats for general reference
- national centres capable of providing computerised documentation and referral services

The activities to be undertaken will strengthen selected institutions with skills and resources in the area of documentation to serve as focal points within the framework of the AEIN, and increase collaboration and exchange of environment and development information documentation among key institutions in the respect countries and abroad.

3.1 Output: Procedures for harmonisation and standardisation of documentation systems

- 3.1.1 Organise a workshop to build consensus among institutions that use environment information documentation on matters relating to systems of documentation, standardisation of terminology, information exchange;
- 3.1.2 Develop and adopt a common framework for environment and development information documentation;

3.2 Output: Inventory of institutions, individuals, and publications on the environment in paper and electronic formats for general reference

- 3.2.1 Undertake an inventory of reports and documents on natural resources and environment and sustainable development initiatives in each country;
- 3.2.2 Participating institutions compile bibliographic information of their literature holdings, and create bibliographic databases using standard procedures, standard environmental terminology;
- 3.2.3 AEIN National Nodes institution integrates the individual bibliographic databases into a “master” database;
- 3.2.4 AEIN distributes copies of the bibliographic database, and publishes a hardcopy of the database;
- 3.2.5 Publish electronic bibliographic database and sources of information through the national AEIN portal

3.3 Output: National centres capable of providing computerised documentation and referral services

- 3.3.1 Identify appropriate institutional framework;
- 3.3.2 Organise training for personnel of documentation centres;

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- 3.3.3 Procure and install computers, accessories and appropriate document management and bibliographic database management software;
 - 3.3.4 Provide support for the development and provision of targeted information services.

4. Implementation

This component will be implemented directly by national environmental agencies with direct assistance by UNEP-DEWA.



AFRICA ENVIRONMENT OUTLOOK

AEIN Implementation Programme

COMPONENT IV:

STRENGTHENING COMMUNICATION NETWORK INFRASTRUCTURE FOR ENVIRONMENTAL MANAGEMENT

1. Background

Effective networking is an essential aspect of AEIN, and an efficient communication framework will be a critical success factor. This applies both to physical linkages as well as the collaborative mechanisms at the institutional level. Although networking in terms of data exchange between sectoral information systems is still at an early stage in most government departments, there is however, a general understanding and awareness that networking is an essential prerequisite to the free flow and exchange of information.

Communication by electronic means is thus one of the basic needs to be addressed by AEIN, and a number of reasons can be given to justify the strengthening of the physical electronic communication infrastructure within AEIN, including the following:

- Speedy transactional communication among network partners;
- Cheap means transfer or exchange large amounts of data and information;
- Sharing of computing resources within the EIS network, such as expensive peripheral devices;
- Physical access to information stored on computers at other (remote) sites (partner institutions).

The long-term strategy for AEIN is to get information to users in the format in which it was originally produced. There are great cost savings, and greater is the possibility to add value to the original information since the computer-compatible (digital) data lends itself to easy manipulation and analysis using information technology tools and techniques. Today's internet technology provides a cost-effective means to achieve this, providing opportunities to share information resources within information communities, including computing power, software, scarce and expensive hardware, as well as data and information.

2. Objectives

This component is to enhance the capacity of institutions to communicate on transactional basis among themselves, and to exchange and share data and information relevant to sustainable development and promote its use in planning and decision making processes. The principal objective of the project is the establishment and maintenance of physical connectivity among partner institutions within the EIN, as well as cooperative mechanisms to facilitate the exchange of data and information. In particular, the project will develop information exchange guidelines and procedures, set up intranets to promote internal transactional communication within partner institutions, as well as provide them internet access, develop a wide area network (WAN) for national EIN partners and also build capacity to develop and maintain national EIN portals.

The main outcomes will be:

- a) Increased transactional communication about environmental assets, sustainable development and sound environmental governance in the respective countries;
- b) Improved access to environmental and natural resource data and information, and promote their use in planning and decision-making;
- c) Enhanced information exchanges among partner institutions within respective countries, and with external partners.

Specific short-term project objectives are to:

- i. Set up a physical network and an intranet within each of the key partner institutions;
- ii. Provide reliable internet connectivity for designated EIN Focal Points and partner institutions and establish a WAN using the World Wide Web as the “backbone”;
- iii. Establish a national EIN portal;
- iv. Improve proficiency and enhanced productivity of key personnel from partner institutions to use IT resources for their own internal function, and to communicate with others through their respect “spaces” on the EIN portal.

3. Activities

3.1 Output 1: A physical network and an intranet within each of the key partner institutions

- 3.1.1 Procure and install computer equipment and software, and set up a Local Area Network (LAN) at beneficiary institutions;
- 3.1.2 Set up simple LAN application services, including electronic messaging, internal circulars, calendaring, shared resources (public folders, printers, etc.), work flow, etc;
- 3.1.3 Provide guidelines for the establishment of institutional intranets, including layout, interfaces, and content, and provide assistance for the development of content for intranets using standard templates adapted to the functions and core business of individual institutions;
- 3.1.4 Train staff in the effective application of ICT infrastructure to work procedures and the use of LAN services, including development and posting content material, and to manage the intranet.

3.2 Output 2: Reliable internet connectivity for designated AEIN Focal Points and partner institutions and a country-wide network linking partner institutions

- 3.2.1 Select the most appropriate organisation(s) to provide internet connectivity and support services under contract; (If experience exists one partner institution will be selected to provide this service, with considerations given to reliability, bandwidth, user services provided, security, and costs);

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- 3.2.2 Provide support for regular maintenance services and regular updating of new developments and innovations in Internet technologies;
 - 3.2.3 Engage consulting firms under service contracts to integrate institutional LANs into a WAN;
 - 3.2.4 Establish guidelines and procedures for interconnection and interoperability among partner institutions, including access rights, etc., for the WAN.

3.3 Output 3: National environmental information portal (either hosted by an internet service provider, or located at a designated institution from among national network partners)

- 3.3.1 Develop standard portal design guidelines and template for use in respective countries for the establishment of common portals that sufficiently represent all stakeholders in the respective countries, and which would provide online access to structured, comprehensive, coherent, current, and accurate data and information about the country;
- 3.3.2 Select service providers, or designate institution to host the portal in the respective countries;
- 3.3.3 Secure service contracts for service providers, or procure and install hardware and software for host institutions;
- 3.3.4 Develop portals using design guidelines and standard template adapted national needs and issues using task teams or consultants, with content material from partner institutions, including reference catalogues of available information on environmental assets and sustainable development;
- 3.3.5 Provide technical back-stopping to host institutions for portal development and/or maintenance by ISPs.

3.4 Output 4: Improved proficiency and enhanced productivity of key personnel from partner institutions to use IT and Internet resources for their own internal functions, and to communicate with others.

- 3.4.1 Develop an IT strategy setting priorities for the acquisition of hardware, software, management and application of information technology resources within the respective organisations, training and the periodic upgrading of facilities and skills;
- 3.4.2 Develop a training schedule on the basis of the IT strategy, covering general computing, basic training in office productivity suites and applications; data management; spatial data analysis; integrated data analysis, use of indicators, databases, and GIS; productivity tools, such as Personal Information Managers, e-mail, etc.; basic computer system administration and trouble-shooting; and training of selected personnel as trainers;

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- 3.4.3 Prepare information management guidelines to facilitate the use of various types of data and information management resources within the respective institution;
 - 3.4.4 Identify the type of information needed in the day to day and operations of the respective institutions, and develop and maintain core databases and applications to support the various internal functions of the various organisational units;
 - 3.4.5 Develop and maintain up-to-date metadatabases of datasets available within the respective institutions to assist the staff in their day to day information management tasks
 - 3.4.6 Establish and produce a manual of guidelines, procedures and clear lines of responsibility for effective management of IT resources, encompassing both the management and the operation of the IT tools, and dealing with allocation of resources to uses; authorisation of user access to the system; day-to-day operating practices; maintenance of hardware, software, and data; user support; data archiving; and technical support from competent hardware and software vendors;
 - 3.4.6 Organise computer proficiency training for personnel according to priorities identified in the IT strategy, and including electronic networking and use of Internet resources;
 - 3.6.7 Train personnel of Web host institutions in the design, development and maintenance of Web pages, and site management (services, updating, etc.), Web-based data publishing, etc.

4. Implementation

It needs to be emphasised the full range of requirements for the implementation of this component are outside UNEP's mandate, and are far beyond the scope of the resources that could ever be mobilised under the banner of AEIN. There is therefore the need for collaboration and linkages with various on-going initiatives, including the AISI (being implemented by the UNECA), the NEPAD ICT component, World Bank Information for Development Program (infoDev), and other bi-lateral programmes, as well as private-sector- and NGO-led initiatives, which aim to bridge the digital divide in Africa.

On its part UNEP will provide direct support at national level for *activities that align with key AEIN objectives and deliverables*. It is envisaged that UNEP/GRID-Arendal and UNITAR will be major partners in the implementation of this component.