CHAPTER 5

POLICY RESPONSES, ANALYSIS AND ACTION

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INTRODUCTION

This chapter provides a synthesis of the issues covered in the previous chapters of AEO, followed by an analysis of policy responses for the implementation of a sustainable environment and development agenda for Africa. The chapter closes with a key output of the AEO process: 31 recommendations for specific actions by policy makers.

Overview

The wealth of a nation is measured by its total national capital, that is to say, the sum of its human-made capital, natural capital, human skills capital and social capital (Serageldin 1994). This is illustrated in easily memorizable form in Box 5.1. For development to be sustainable, the stock of national capital at any given time in the future must be greater than the current amount.

Africa has increased its total capital over the past 30 years. In spite of the challenges the region has faced from colonial times to the present, its overall stock of total capital—both absolute and per capita—has increased when measured in terms of GDP (UNDP 2000). Table 5.1 shows this trend for selected African countries, for 1975, 1985 and 1998. The individual components of total capital are considered in a little more detail, below:

- In the past three decades, Africa's stock of **human-made capital** (for example, buildings, highways and factories) has increased, as indicated by the proliferation of urban areas in the region.
- **Natural capital** (soils, forests, minerals, oil and gas, fisheries, wildlife) has declined, as evidenced by the degree of environmental degradation already described in this report.
- Levels of investment in education indicate that, in absolute terms, Africa's **human-skills capital** has increased over the past 30 years (UNDP 2000), although this increase is currently threatened by the poor working conditions and inadequate motivation of the region's skilled labour force. This is evidenced by Africa's 'brain drain' problem.
- Africa's **social capital**—the sum of democratic governance systems, social services, institutional capacity and the empowerment of women and other marginalized groups—can also be surmised to have increased. Compared to 30 years ago, African countries are increasingly democratizing, are devolving power from the centre to lower levels, and are empowering communities and civil society organizations to participate meaningfully and effectively in decision making.

However, this apparently positive picture is somewhat deceptive. Four reasons for this are outlined below:

- While absolute and per capita amounts of total capital have increased on a region-wide basis,

Box 5.1 The stock of national capital

TNC = HMC + NC + HSC + SC

Where:

TNC = total national capital
HMC = human-made capital
NC = natural capital
HSC = human-skills capital
SC = social capital

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there are wide disparities between countries, with increases in some and declines in others. For example, over the past 30 years, per capita GDP has tripled in Mauritius, almost doubled in Seychelles and increased to a degree in Tunisia. On the other hand, it has declined in Gabon, Ghana, South Africa and Sierra Leone, and has more or less stagnated in Kenya. In Ghana, Sierra Leone and South Africa, per capita GDP was higher in 1975 than in 1998.

- The rate of growth of Africa's total capital is lower than that of all developing countries combined, which means the increase is not sufficient to bring about significant change.
- The distribution of total capital is not equitable. For example, in 1987–98, the poorest 20 per cent of Sierra Leone's population benefited from a paltry 1.1 per cent of income consumption (that is to say, only 1.1 per cent of the 'national cake'). The picture is little better for the rest of Africa, where the proportion was less than 10 per cent (UNDP 2000).
- Lastly, and perhaps most importantly, the increase in Africa's total capital has been achieved through the transformation of natural capital into other forms of capital. In principle, such transformation is not a reason for concern so long as the total sum of capital is increasing. In Africa, however, there is reason for concern, because the process of transformation has been unsustainable and continues to be so. For example, in many parts of Africa the rates of harvesting from forests, fisheries and wildlife resources exceed their sustainable levels, and utilization of resources has been wasteful.

Overall, while some African countries, such as Seychelles and Mauritius, have significantly improved the quality of life of their people, the majority of African countries are in the low human development index (HDI) category (UNDP 2000). As of the year 2000, Cape Verde Islands, Ghana and Kenya were the only three countries in the western and eastern African sub-regions to have medium HDIs; the rest of the countries were in the low HDI group (UNDP 2000).

The link between environment and development is particularly strong in Africa because national economies are dependent on agriculture and natural resources at the primary production and processing stages. The combined contribution of agriculture and industry (largely natural-resource based) to GDP is significant, especially in those countries with lower HDIs. For example, in Sierra Leone—the country with the lowest HDI in the world—agriculture and industry represent 68 per cent of GDP (UNDP 2000). Yet many African countries, especially those in the eastern and western sub-regions, belong to this category. Sound management of the environment, therefore, has important implications for rural livelihoods, overall economic growth and better quality of life.

The link between environment and development is particularly strong in Africa because national economies are dependent on agriculture and natural resources at the primary production and processing stages.

Although African countries have made some improvements in environmental management, many challenges still remain and should be addressed. For example, the current levels of land degradation; deforestation; loss of biodiversity; overharvesting of natural resources; atmospheric pollution; lack of access to clean and safe water and sanitation services; and poor urban conditions are manifestations of remaining unfavourable conditions. If nothing is done, these factors will combine to undermine Africa's prospects for sustainable development.

Furthermore, the inadequacy of economic opportunities in Africa, the existence of trade barriers and farming subsidies in the developed countries, and the declining state of the region's environment mean that its people are becoming increasingly vulnerable to adverse changes in the environment. Many African countries are not adequately equipped to deal with

Table 5.1 Trends in per capita GDP in selected African countries (in US$)

	1975	1985	1998
Seychelles	3 600	4 957	7 192
Mauritius	1 531	2 151	4 034
Tunisia	1 373	1 771	2 283
South Africa	4 574	4 229	3 918
Gabon	6 480	4 941	4 630
Ghana	411	328	399
Kenya	301	320	334
Sierra Leone	316	279	150
Sub-Saharan Africa	780	1 170	1 520
All developing countries	720	1 520	3 260

Source: UNDP (2000)

Mark Edwards / Still Pictures

Sound environmental management has important implications for rural quality of life and livelihood.

natural disasters, such as floods, droughts and earthquakes, and emerging health problems such as the HIV/AIDS pandemic (discussed in Chapter 3).

Africa's challenge is captured in a statement attributed to H.E. President Olusegun Obasanjo, of the Federal Republic of Nigeria, and reproduced in Box 5.2. In the face of such a challenge, defining paths to sustainable development is a necessity if Africans—especially those in the eastern and western sub-regions where HDIs are low—are to achieve the better quality of life they deserve and are to be able to improve their environment.

Scope of actions and difficulties of assessment

African states have put in place a number of policy responses to address environmental issues. Many new national environmental policies, laws and regulations have been introduced and African countries are parties to a number of multilateral environmental agreements (MEAs). The catalogue of documents relating to environmental management clearly shows that—on paper at least—problems have been addressed extensively (NEMA 2001). However, these remain mere intentions unless implemented. Moreover, even after implementation, there is a need to verify that effects on the environment are positive and adequate (NEMA 2001).

Quantitative assessment of the success or failure of policy initiatives and developments is not an easy task. African states face the same problems as the rest of the global community where analysis of policy responses is concerned. Global experience indicates that assessment of the effects of implementation and of efficiency is made particularly difficult by uneven monitoring, poor and missing data, a lack of indicators and continuous reporting, and paucity of data on the environmental situation before and after implementation (UNEP 1999). Furthermore, there are

Box 5.2 The African challenge

'We are all aware of the problems and challenges facing our continent today. Almost 15 years after the establishment of AMCEN and, indeed, eight years after the Earth Summit in Rio de Janeiro, Brazil, our region is still bedevilled by many problems. We are still contending with land degradation and natural, as well as man-made, disasters. Our forests and forest resources are being indiscriminately exploited and depleted, our coastal and marine resources are being degraded, and we still have enormous problems with water supply and availability, quantitatively and qualitatively. Many of those problems result from the unplanned and unsustainable manner in which the region's natural resources, including its diverse ecosystems, are being exploited.

'These difficulties are further aggravated by broader environmental problems of planet Earth, such as ozone layer depletion and climate change, which continue to threaten the survival of mankind. In addition. Africa has unfortunately been an easy dumping ground for toxic and hazardous wastes and obsolete chemicals and technologies. Add to these the intractable difficulties of crippling debt burden, a population growth rate that is spiraling out of control, pervasive and frequent violent conflicts on the continent … and one gets a picture of an Africa that awesomely challenges each and every one of us to find immediate solutions.'

H.E. Olusegun Obasanjo,
President of the Federal Republic of Nigeria

UNEP (2000)

no suitable mechanisms, methodologies or criteria to determine which policy contributes to which change in the state of environment. Such problems often prevent valid comparisons between the current situation and what would have happened if no policy action had been taken. A more complete and precise analysis will require the development of better mechanisms to monitor and assess the effects of environmental policies on the quality of the environment (UNEP 1999).

It is clear from this overview that there is a need to review and recommend achievable actions at national, sub-regional and regional levels, and to consider their implications for implementation at these levels and for the global environmental agenda. The difficulties outlined above notwithstanding, the remaining sections of this chapter identify appropriate policy responses, analyse their implications and provide recommendations for action.

POLICY RESPONSES AND ANALYSIS

The history of social, economic and environmental development presented in Chapter 1 demonstrates that African countries have risen to the challenge of environmental degradation. They have developed a collective will to address environmental and related issues, and have created institutions to translate that will into concrete results. Some milestones in this process are recapitulated below.

- In 1968, African governments signed the Algiers Convention on the conservation of nature and natural resources.
- Efforts to use and manage natural resources in a sustainable manner doubled after the 1972 United Nations Stockholm Conference on the Human Environment.
- In 1980, under the auspices of the Organization of African Unity (OAU), an extraordinary summit of African heads of state and governments led to the adoption of the *Lagos Plan of Action*—Africa's blueprint for economic development, which helped to highlight the challenges facing the region.
- In 1985, African countries established the AMCEN which, over the past 15 years, has made concrete achievements in providing region-wide leadership, awareness raising and consensus building on global and regional environmental issues, and in enhancing the skills necessary for African governments to manage their environment and participate in global environmental negotiations (UNEP 2000). In spite of these achievements, AMCEN's leaders realize that the environmental challenges facing Africa are immense and are becoming increasingly complex. Meeting these challenges will require more human and financial resources, increased global, regional and sub-regional cooperation and efforts by individual African states, which must be combined with a strong political will, commitment and good governance (UNEP 2000).
- In 2001, African heads of state agreed to transform the OAU into the African Union. They also agreed on the *New African Initiative*, a plan of recovery forming part of the *New Partnership for Africa's Development* (NEPAD). This was a milestone in the quest for a new path to sustainable development (AMCEN 2001).
- During the 55th Session of the United Nations General Assembly (September 2000), African governments endorsed the six fundamental values which should underpin international relations in the 21st century, namely: freedom, the equality of nations, solidarity, tolerance, respect for nature, and shared responsibility (AMCEN 2001).

In addition to the regional and sub-regional initiatives mentioned above, there have also been country level efforts, a summary of which is presented in Annex 1. In their efforts to address environmental degradation, African countries have focused on a range of policy responses. These are examined individually below. Some failures and weaknesses in their implementation are analysed in Annex 2.

Introduction of macroeconomic and social policies

Governments use policies to influence the structure and operation of economies, with the aim of attaining goals and targets for development and economic growth. To do this, they use economic, financial, legal and institutional instruments to encourage or to discourage particular types of economic activities at macroeconomic or sectoral levels (Mogaka and others

2001). For example, macroeconomic policies are used throughout Eastern and Southern Africa to manipulate exchange rates, money supply and interest rates in order to achieve economic growth, to stimulate employment and investment, and to generate foreign exchange. Agricultural policies in the sub-regions, on the other hand, have long made use of combinations of subsidies, taxes and credit arrangements to promote the goals of food security, increased export earnings and rural income generation (Mogaka and others 2001).

African states have endorsed poverty reduction as a priority goal, the foundation of which is sound macroeconomic policies and strategies, ensuring both sustainable broad-based economic growth and macroeconomic stability. They have also become more outward-looking and have put in place trade liberalization policies, structural reforms in agriculture, and monetary policies that aim at maintaining low inflation, a stable exchange rate, lower interest rates and fully convertible currencies. Collectively, these responses are aimed at making Africa a part of the global village. The perceived benefit of greater globalization is the reduction of poverty in Africa.

Food insecurity is a measure of poverty. Table 5.2 shows that many countries have improved their daily per capita calorie intake, although some sub-Saharan countries have done the opposite. The situation is similar for per capita protein and fat supply, further strengthening the argument for greater attention to poverty reduction.

Some macroeconomic policies have had negative effects, exacerbating poverty instead of reducing it. For example, during the 1980s, most of the countries of Eastern and Southern Africa faced economic stagnation, declining growth, and increasing public sector and trade deficits. These worsening economic conditions, and the economic stabilization and structural adjustment measures introduced in the 1990s to overcome them, resulted in considerable contraction of the economy, a decline in rural living standards, and a fall in income and employment (Mogaka and others 2001). As is often the case, increased poverty made people more reliant on natural resources to meet their daily needs or to generate income, and this increased pressure led to overexploitation of resources. In other words, macroeconomic policies exacerbated poverty in the two sub-regions and contributed to further environmental degradation. This was certainly the case in Tanzania,

Table 5.2 Food security and nutrition

Country/region	Daily per capita calorie supply		food production index	Daily per capita protein supply		Daily per capita fat supply	
	1970	*1997*	*(1989–91 = 100)*	*1970*	*% Δ 1970–97*	*1970*	*% Δ 1970–97*
Seychelles	1 930	2 487	143	79	+52.2	72	+112.7
Mauritius	2 355	2 917	109	72	+43.2	87	+72.0
Tunisia	2 255	3 283	122	88	+55.0	93	+45.6
South Africa	2 831	2 990	97	77	+2.9	77	+12.8
Gabon	2 183	2 556	111	73	+18.7	55	+44.4
Ghana	2 242	2 611	144	49	-0.4	32	-20.5
Kenya	2 187	1 976	105	52	-19.0	47	+40.2
Sierra Leone	2 449	2 035	101	44	-11.3	58	-13.6
Sub-Saharan Africa	2 271	2 231		53	-4.1	46	+2.8
All Developing Countries	2 145	2 663		67	+27.5	59	+79.6
World	2 358	2 791		74	+19.7	72	+42.2

Source: UNDP (2000)

Box 5.3: Macroeconomic policy impacts on the forest sector in Tanzania—the case of structural adjustment and the agricultural sector

About 40 per cent of Tanzania's land area is covered by forests and woodlands. Macroeconomic reforms introduced over the past two decades have impacted on these forest and woodland resources. Research on this subject has led to the conclusion that deforestation in Tanzania is not linked to issues of forestry alone; it is intimately related to questions of public policies, and economic and social forces.

The effects of structural adjustment on Tanzania's forests and woodlands have been particularly intense. In the late 1980s and 1990s, a series of economic reforms was introduced in response to a series of economic crises. These reforms aimed at restoring balances in the economy and at creating a basis for sustainable growth by liberalizing key markets from excessive state control. The agricultural sector was a major focus of these reforms. The role of the state in the marketing of outputs and inputs was diminished considerably with the private sector assuming an increased role. At the same time, an increasingly liberalized economic environment was accompanied by a devaluation of the local currency, and a considerable increase in inflation rates. These and other conditions led to a decline in per capita income and a rise in the cost of living, making it increasingly difficult for both urban and rural dwellers to make ends meet. They also had major impacts on the way in which land and other natural resources were used. Examples are given below.

- Devaluation increased the price of imported inputs, agro-chemicals and machinery. As these became more expensive, farmers reduced or abandoned their use, accelerating extensive agriculture which required the clearing of woodland and forest to increase production.
- Removal of price controls and parastatal subsidies created more space for trading in crops, which translated into a greater market demand for crops, and greater production. Since the private sector has failed to assume many of the more extension-based roles of government, many farmers remain uninformed about sustainable farming practices and agricultural expansion has often occurred at the expense of the environment.
- Falling yields, linked to poor extension and farming practices and to relatively higher costs of inputs, have encouraged farmers to expand production through extension, often into forests and woodlands.

Source: Shechambo, 1999

where structural adjustments had a negative impact on the forest sector (see Box 5.3).

In addition to macroeconomic policies, African states have introduced sectoral policies aimed at stimulating output, employment and income and, hence, poverty reduction. However, using economic instruments to stimulate sectors can be accompanied by risks to the environment. There are incidences of this in Africa, including promotion of the energy sector and urban development, with a risk of overexploitation of forest resources; promotion of the agriculture, mining and infrastructure sectors, leading to woodland and forest clearance; and promotion of industrial and manufacturing sectors, which generate wastes and pollutants that undermine environmental quality. Table 5.3 illustrates sectoral economic policy incentives and disincentives for sustainable forest utilization and management in Zambia.

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Industrial sector activity is often accompanied by risks to the environment.

Acknowledgement

Table 5.3 Sectoral economic policy incentives and disincentives for sustainable forest utilization and management in Zambia

Policy	Economic incentives	Economic disincentives	Gaps and omissions
Macro	Incorporation of sustainable development concerns Liberalization of forest prices and markets Empowerment of private sector and communities	Continuing promotion and protection of sectors reliant on forest land and resources	Poor recognition of the role of forests and trees in national income, employment and economic growth
Agriculture	Land and environmental conservation and restoration Promotion of sustainable farming practices	Punitive and restrictive approach to natural resource conservation Main focus on optimizing agricultural production	Lack of consideration of role of trees in agricultural systems Lack of recognition of dangers of agricultural conversion of forest land
Land	Definition of land tenure and ownership Provisions for land management	Punitive and restrictive approach to natural resource conservation Main focus on optimizing agricultural production Unclear rights and tenure over trees and forests Unclear role of traditional authorities in natural resource management Lack of land use policy and guidelines	Little mention of forests or trees, their tenure or management
Water		Focus on increasing water abstraction and use Under-priced water	Lack of consideration of upstream catchments
Energy	Improvement in woodfuel supply, production and marketing		Lack of consideration of role of forests in hydropower
Authority and decision making	Enforcement of controls on forest use and conversion	Failure to empower communities and minimize group's and individual's rights over trees and forests Allocation of land and resources based on goals other than sustainable forestry	Insufficient emphasis on role of forests in livelihoods and development

Source: PFAP (1998)

Economic instruments in support of agricultural policy goals are, arguably, those that have had the most detrimental effect on the environment. Agriculture has long been promoted as a key sector for development and growth in Africa, and for pursuit of national goals of food security, rural income generation and export earnings. The range of economic instruments used in support of the sector is well-documented, and has mostly involved manipulating of fiscal, financial, price and market mechanisms. Examples are: imposition of relatively lower tax rates on agricultural land uses (Barnes and de Jager 1995); subsidies to inputs; government intervention in marketing; preferential credit arrangements; relief on taxes and duties; and high spending on research, extension, development and marketing (Mogaka and others 2001). Use of such mechanisms has led to an artificial inflation of the profitability of agriculture and has often encouraged the spread of farming activities at the expense of the environment (Mogaka and others 2001).

Therefore, when African states introduce macroeconomic and sectoral policies aimed at reducing poverty, they must take care to ensure that none of the planned improvements in economic growth are at the expense of the environment. This is particularly relevant as African governments embark on the modernization of agriculture as a means of reducing poverty and for overall modernization of their economies.

Apart from macroeconomic and sectoral economic policies, social policies can also have significant consequences for environmental management. For example, the underlying cause of much of Africa's widespread poverty is the high rate of population growth, and it is poverty that forces people to overexploit their natural resources and thus degrade their environment. Social policies that tackle the underlying cause of poverty therefore indirectly support environmental improvement. Family planning and other population growth control strategies have been introduced in some African countries and are beginning to yield positive results (UNDP 2000). Better education can also provide a way out of the poverty trap, and there are efforts in African countries to ensure 'free education' for the young to attain the goal of universal literacy.

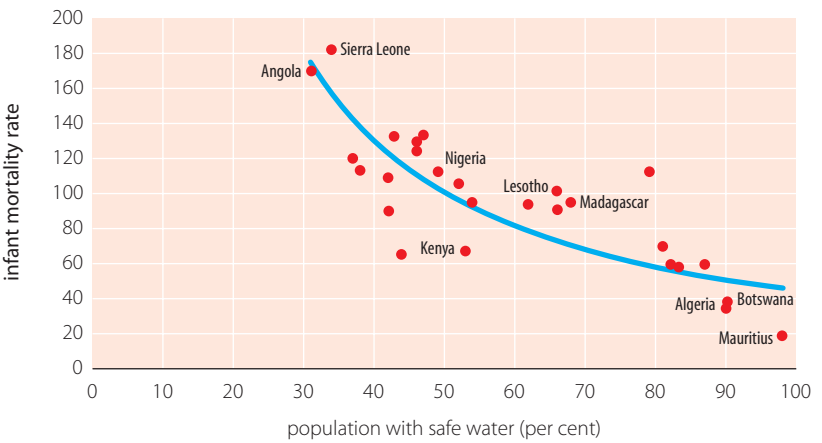
In some countries, the health policies introduced have emphasized preventive rather than curative strategies. Figure 5.1 and Figure 5.2 show the impacts of policy responses that improve accessibility to safe water and sanitation services. In both cases, there is a direct inverse relationship between infant mortality and the increasing percentage of the population that has access to safe water and sanitation. Removing unhealthy environmental conditions can therefore contribute to reducing vulnerability to disease (see Chapter 3).

Use of such mechanisms—subsidies to inputs, perferential credit arrangements, etc.—has led to an artificial inflation of the profitability of agriculture and has often encouraged the spread of farming activities at the expense of the environment.

Ratification of multilateral environmental agreements (MEAs)

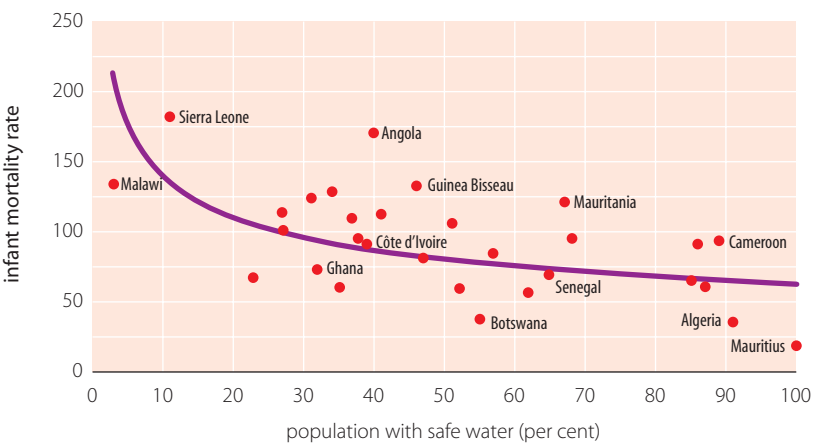
The majority of African states have ratified the MEAs that are of relevance to the region, at both global and regional levels. MEAs are recognized as the primary instruments for state commitment to the pursuit of sustainable development (UNEP/ SIDA 1996). The main MEAs of the past two decades have covered areas of critical importance for the management of environmental

Figure 5.1 Safe water and child health in African countries



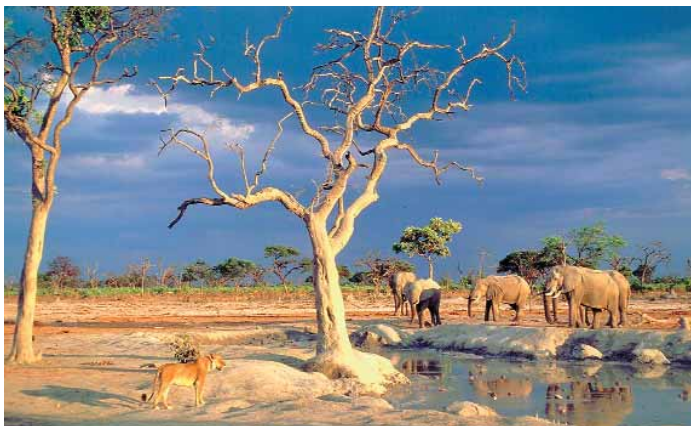
(Source: UNDP Human Development Report 2001)

Figure 5.2 Safe sanitation and child health in African countries



(Source: UNDP Human Development Report 2001)

resources. They include: new and additional resources for environmental programmes; technology transfer; mechanisms for addressing vital matters such as the loss of biological diversity and poverty alleviation; and institutional frameworks for dealing with environment and development concerns (UNEP/SIDA 1996). Although the various global agreements clearly give grounds for hope where management of the environment is concerned, actual achievements have been very limited (UNEP/SIDA 1996). The agreements signify a collective will to address environmental problems, but many African countries have been unable to benefit from the full potential offered by the global MEAs, and have even found themselves unable to effectively implement the necessary provisions of the MEAs they have ratified (UNEP/SIDA 1996). Furthermore, even regional and sub-regional environmental agreements have been difficult to operate, largely due to lack of adequate and sustainable financial and human resources. Examples are the Abidjan and Nairobi conventions. Both of these were developed in the 1980s under the auspices of UNEP's Regional Seas Programme. However, the Nairobi Convention took 11 years to come into force and neither convention succeeded in establishing a fully operational Regional Coordinating Unit (RCU). Under impetus from African governments, UNEP is now taking steps to compensate for these delays and shortcomings and a Joint Secretariat for the conventions has been set up to coordinate and build synergies between ongoing projects and programmes in Central, Western and Eastern Africa. But success has also been achieved, when financial assistance has been made available. An example is the Nile Basin Initiative (NBI). Launched in 1999, the NBI is an initiative on the part of the riparian countries to establish a basin-wide framework to fight poverty and promote economic development in the Nile Basin area. The Nile Basin is home to around 160 million people and, although it has a rich natural endowment of high mountains, tropical forests, woodlands, lakes, savannas, wetlands, arid lands and deserts, it is characterized by poverty, instability and environmental degradation. Furthermore, its population is expected to double in the next 25 years placing, increasing the stress on water and other natural resources. The NBI is based on a shared underlying vision, 'to achieve sustainable socio-economic development through the equitable utilization of, and benefit from, the common Nile Basin water resources.



Multilateral Environment Agreements (MEAs) aim at protecting Africa's unique biodiversity.

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And, finally, there are more than 500 multilateral agreements in existence and, while African countries are not signatories to them all, the sheer number of agreements is too great to be managed by African countries with small economic bases.

... there are more than 500 multilateral agreements in existence and, while African countries are not signatories to them all, the sheer number of agreements is too great to be managed by African countries with small economic bases.

PROMOTION OF REGIONAL AND SUB-REGIONAL COOPERATION

African states are participating actively in various international fora aimed at developing collective responsibility for the environment. This is the case of the MEAs, which the majority of African countries have ratified under impetus from AMCEN and with technical support from UNEP. The decision of African states to establish AMCEN was a key enabling factor for improvement of environmental management in Africa and for successful policy response. AMCEN's efforts have been further strengthened by sub-regional organizations devoted to economic cooperation and environmental management.

Considering the number of regional and sub-regional groupings, Africans appreciate the contributions of these organizations to economic development and environmental management. Unfortunately, many of them lack financial sustainability. It is, therefore, critical that suitable institutional capacity-building and financial mechanisms be developed for these organizations.

Introduction of environmental policies, laws and institutions

Perhaps the greatest effort in policy responses to combat environmental degradation in Africa has been in the area of environmental policy and legal reform. Not long ago, most African countries had limited institutional instruments for environmental management, or had instruments that were outdated or sectoral and, therefore, narrowly focused. The National Environmental Action Plan (NEAP) processes adopted by some African countries have allowed them to formulate relevant environmental policies and to enact new laws. New environmental policies have also provided guidance for the formulation or review of sectoral policies and, subsequently, of laws.

There are a great many policies, laws and regulations in place in most African countries which, at first sight, should provide a sufficient basis for sound environmental management. More could be formulated or drafted if need be, although more policies does not necessarily mean better environmental management. However, the fact that Africa's environment continues to deteriorate in spite of such a substantial body of policies, laws and regulations may be an indicator of a low level of implementation and, particularly, of enforcement. The sectoral approach to environmental management often results in contradictory laws. However, other problems, such as inadequate finances and human resources capacity, hinder effective implementation.

Although African states have improved the policy framework for more effective management of the environment, there is need for more. For example, there is a need to develop policies governing the management of transboundary resources, and a need to ensure that the policies of neighbouring countries are in harmony with one another. Other policy gaps include frameworks for access to genetic resources and the management of indigenous knowledge.

New environmental laws have also facilitated the creation of institutions responsible for coordinating, supervising and monitoring environmental management in African countries. Horizontally, these relate to the various sectoral agencies of government; vertically, they relate to lower levels of government and civil society. African countries are investing heavily in building the institutional capacity for better environmental management. New institutions have been created and, sometimes, old ones rehabilitated. However, many of these countries are experiencing significant shortages of skilled personnel, partly as a result of the 'brain drain'. Some of the poorer countries, such as Uganda, have embarked on Universal Primary Education (NEMA 2001), but such commendable efforts will take time to yield results. There is, therefore, a need to provide training opportunities for those in the relevant institutions to fill the skills gap in the short and medium terms. African countries will also need to address the 'brain drain' issue, by offering their trained personnel meaningful employment opportunities and better working conditions.

While the new national institutions for environmental management represent significant improvements over the previous ones, the viability of some of them is questionable because of heavy reliance on external financing. A number are currently being financed through Official Development Assistance (ODA) from bodies such as the World Bank. Mechanisms are therefore needed to make these institutions financially self-sustaining. Also, by their very nature as national institutions, the new agencies have a limited capacity to address sub-regional and cross-border environmental issues. While sub-regional environment and development organizations such as the Inter-Governmental Authority on Drought and Development (IGAD) exist, they too are, to some extent, limited by their mandates. Africa needs a strong institution that can negotiate, lobby and monitor and, at the same time, encourage harmonization of environmental management approaches. Such an institution, which could possibly be an arm of AMCEN, currently does not exist.

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Decentralization of environmental management

Policy responses relating to environmental governance include the decentralization of management responsibilities from central to lower levels of government. They also include involvement of communities in the planning and management of environmental resources. In theory, and at least in the long term, decentralized environmental management should be seen as the right thing to do. However, in the

short term—since many African governments have inadequate capacity for environmental management at the centre—it is likely that this constraint will be even more pronounced at lower levels of governance. There is, therefore, a need to identify mechanisms for the meaningful decentralization of environmental management responsibilities, including building capacity at the lower levels of administration.

Improving environmental compliance

The history of the management of environmental goods and services indicates that the 'command and control' approach (i.e. regulations and controls introduced and operated by central authorities) has not been very effective unless accompanied by a strong level of compliance enforcement. African countries, in search of alternative approaches for better environmental management, are increasingly beginning to consider economic instruments (incentives and disincentives) as a tool for promoting appropriate behaviour and attitudes towards the environment. However, if economic instruments are to be applied appropriately and effectively, the value of environmental goods and services (among other things) needs to be established, even if not very precisely, through economic evaluation of natural resources. Knowledge of these values would assist political leaders in the making of informed decisions as to the mechanisms needed for environmental protection and for conservation of natural resources. The use of economic instruments also requires that appropriate management institutions be put in place and that attitudes change, something which will very probably take longer to achieve. A practical approach would, therefore, be to use mixes of economic instruments and of the command and control approach, adapted to individual African countries.

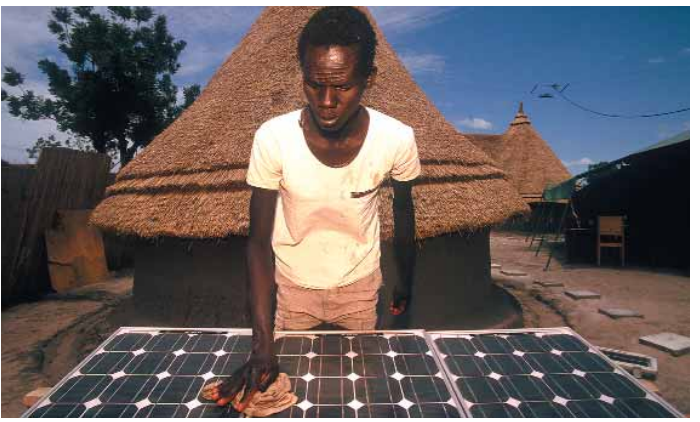
Preparation of strategies and action plans

As part of the NEAP process, African governments have developed strategic action plans to facilitate the implementation of environmental policies. Sectoral and cross-sectoral action plans have also been prepared (for example, National Biodiversity Strategies and Action Plans). African countries have devoted a lot of effort to the preparation of strategies and action plans. Unfortunately, most of the activities specified in plans remain on paper, largely because of low levels of implementation funds. There is a clear need for governments to demonstrate their commitment to the environment through better allocation of budgetary resources. Moreover, there is often a feeling that some strategies and action plans are prepared as a direct response to the need to fulfil global, regional and sub-regional agreements, and not as a result of careful consideration of national priorities or through consensus reached with national stakeholders.

... there is often a feeling that some strategies and action plans are prepared as a direct response to the need to fulfil global, regional and sub-regional agreements, and not as a result of careful consideration of national priorities or through consensus reached with national stakeholders.

Preparation of resource management plans

Regional, sub-regional, national and sub-national management plans have been developed for natural resource conservation and environmental protection as part of the response to combat environmental degradation. Whether for forestry, biodiversity, wetlands or wildlife, governments and NGOs have prepared resource management plans, sometimes with the full support and participation of local communities. However, both their levels of implementation and their impacts have been lower than anticipated. This begs the question as to whether such plans are too ambitious, inappropriate, or have overlooked some critical assumptions. In most cases, implementation of resource management plans is assumed to be the responsibility of government and, given that the resource envelopes available to governments are meagre and uncertain, it is not surprising that implementation of such plans has suffered in the past. There is, therefore, a need to identify innovative ways of relieving African governments of some of the responsibilities of financing the implementation of resource management plans. For example, a national NGO or community-based organization could be given a lease to manage a given resource area (such as a wildlife protected area) on behalf of the government, in a win-win partnership. African states could also pool resources and cooperate in the preparation and implementation of natural resource management plans, especially transboundary ones, where there are mutual benefits to be derived.



Affordable appropriate technology would enhance the quality of life of Africa's rural people.

Hartmut Schwarzbach /Still Pictures

Improving the knowledge base for informed decision making

Although a number of regional, sub-regional and national organizations are involved in various aspects of environmental management, research capacity in this area is relatively weak, especially at sub-regional and national levels. Research organizations lack sustainable sources of funding and there are, in many cases, inadequate incentives for African researchers to engage in more meaningful research, including research into the state of the region's environment, and preparation of various scenarios for sustainable development paths and modelling of vulnerability parameters. If such incentives are not provided, Africa will continue to experience a 'brain drain' and will remain a technological backwater condemned to 're-invent the wheel'. There is also room for the private sector and civil society to participate in enhancing the knowledge base for sound environmental management in African countries.

African states have a wealth of indigenous knowledge, some of which has been used in the past to cope with natural disasters, and which could still be used to address present and future environmental challenges. However, value must first be attached to this heritage, and the issues of its ownership and of protection of the associated intellectual property rights must also be addressed.

On the other hand, some of the technologies that African countries require to promote sustainable development in general, and to reduce poverty and enhance environmental management in particular, are available globally. However, the terms and conditions of access to these technologies do not appear to be favourable to African countries, despite the provisions of Agenda 21.

It was agreed at UNCED (the 1992 'Earth Summit') that, in order to facilitate the implementation of Agenda 21, the developed world would assist African states with appropriate technologies on affordable terms. Only limited success has been achieved in this area so far, because many development partners have reneged on this agreement.

African countries, for their part, should cease to 're-invent the technological wheel', and should invest in the development or adaptation of suitable technologies and techniques. They should also address the subject of indigenous technologies. That is to say, African countries should inventory, document and disseminate information on available indigenous technologies that are appropriate to and, by their very nature, affordable for environmental management.

Better valuation of environmental resources

Africa can provide very diverse and significant environmental goods and services, such as carbon sequestration by its forests and a wide range of other options arising from its rich biodiversity. However, exploitation of the region's wealth has so far served to meet global needs, with the benefits accruing to the global community while Africa's people remain in poverty. This is a clear indication that Africa's environmental goods and services are undervalued and that the people of Africa, especially the rural poor, are bearing disproportionately high opportunity costs in conserving the region's environmental resources. It is, therefore, imperative that African countries begin to price their environmental goods and services appropriately, and to ensure that fair compensation is derived. They also need to add value to environmental goods and services, and to export them in processed and enhanced forms, in order to obtain better returns. Kenya, Mauritius and Seychelles have demonstrated that, with proper pricing and service delivery, the tourism potential of environmental goods and services can contribute to enhanced quality of life, as

African states have a wealth of indigenous knowledge, some of which has been used in the past to cope with natural disasters, and which could still be used to address present and future environmental challenges.

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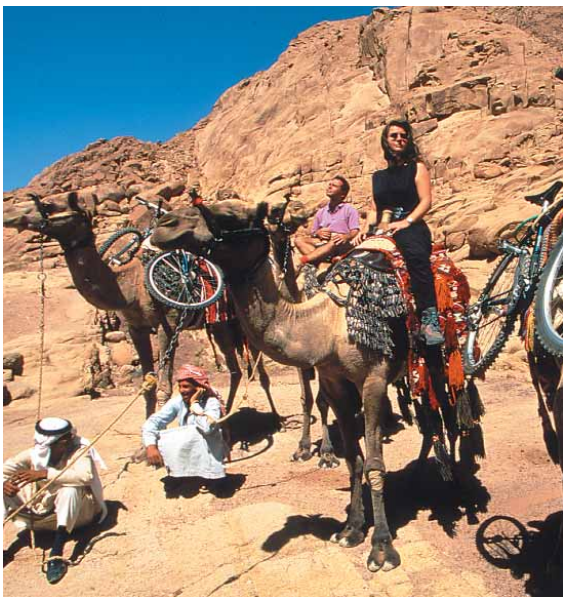


Activities such as ecotourism have the potential to add value to environmental goods and services bringing needed resources to local and national economies.

Nigel Dickinson / Still Pictures

shown by their relatively high HDIs (UNDP 2000). Similarly, Gabon, South Africa and Tunisia have been able to utilize their natural resources to achieve better levels of human development (UNDP 2000). It is fair to say that the global community stands to lose the region's resources if Africa's rural communities do not share equitably in the benefits of biodiversity conservation.

Environmental management tools

Various information systems have been put in place for informed decision making in environmental management. Early warning systems are being used for better management of natural disasters, and tools such as remote sensing and geographical information systems (GIS) are in use. The information generated is managed through physical databases.

Many of the interventions required to arrest environmental degradation in African countries call for relatively elaborate organizational and management systems. Key among these are databases and information management systems, particularly for monitoring. While some such systems are in place, more needs-based systems should be created. African countries need better early warning and detection systems to help them, for example, in managing climate variability or in addressing illegal trafficking of toxic, hazardous and radioactive wastes. Creation of these systems is expensive, a key constraint for many African countries.

Whereas, previously, NGOs had to gain a seat at the policy-making table, today they are necessary participants in all aspects of development programming from the donor and, increasingly, from the national government perspective.

African states have also introduced a number of tools that facilitate better management of the region's environment. These include environmental assessments (EIAs, reviews and audits), regulations, standards and environmental information systems. African countries also now produce regular national state-of-environment reports. Better environmental management information systems have also been set up to facilitate the collection, storage, analysis and dissemination of environmental information, as a key component of regular monitoring. National, sub-regional and regional environment information networks also exist.

Civil society participation in environmental management

The increasing role of NGOs in environmental management became evident during the UNCED (1992). This event was attended by some 8 000 NGOs from more than 160 countries; the Habitat II Conference, in 1996, was attended by representatives of more than 500 local authorities. The role played by NGOs in environmental management and other areas of development work in Africa has changed considerably over the past two decades. NGOs—once perceived by some governments as subversive elements in the development process—have become, in many cases, centre stage performers. Expectations as to what NGOs can and must contribute to development have thus changed dramatically. Whereas, previously, NGOs had to gain a seat at the policy-making table, today they are necessary participants in all aspects of development programming from the donor and, increasingly, from the national government perspective. The question of the capacities of the NGO sector in Africa is sensitive and sometimes controversial, but the consensus seems to be that NGOs are strong at promoting local participation, and that they fill a niche in certain aspects of sectoral work. They are, on the other hand, seen as relatively weak in complex, multi-component projects. Some NGOs are effective at lobbying and advocacy while others, the majority in Africa, are fairly weak in both technical and institutional aspects of project or programme planning and implementation (Brown and McGann 1996). Although the quality and capacity of NGO work in Africa is improving, their capacities need to be strengthened.

Promoting public awareness and participation in environmental management

Broad public participation in decision-making is an important element of Agenda 21 because, combined with greater accountability, it is basic to the concept of sustainable development (UNEP 1999). However, if people are to participate effectively, they must first be aware of the problems. Agenda 21 also recognizes that there is a considerable lack of awareness of the interrelated nature of human activities and the environment, due to inaccurate or insufficient information. Increasing public awareness is, therefore, a prerequisite for action, and is an essential element of any educational effort to stimulate or strengthen attitudes, values and actions which are compatible with sustainable development.

Agenda 21 devotes separate chapters to involving many different groups including women, children and youth, indigenous people, NGOs, local authorities, workers and trade unions, business and industry, scientists, technologists and farmers (UN 1993). The belief is that both individuals and members of these groups are the best source of knowledge about the causes of, and remedies for, many environmental problems (UNEP 1999, NEMA 2001). Public participation enables such knowledge, skills and resources to be mobilized and fully employed, and the effectiveness of government initiatives to be increased (UNEP 1999).

African countries by themselves, and through the support of such organizations as UNEP and AMCEN, have increased public awareness about the environment, and have encouraged participation. There is public participation in the formulation of policies and strategic plans and, in major projects, through the environmental impact assessment process. In Uganda, the right of the public to participate in environmental matters is enshrined in the country's constitution, adopted in 1995 (GoU 1995). Formulation of Uganda's long-term development perspective, Vision 2025, involved extensive consultations. It is, as a result, a product of consensus (MoFPED 1999).

Apart from statutory requirements or government policy directives, public participation in environmental decision making is also being promoted from within civil society. Various projects, both international and from local non-governmental and community-based organizations, have promoted public participation. Public participation is also a strong aspect of decentralized environmental management. In encouraging transparency, accountability and ownership, African countries have welcomed the contribution of public participation in decision making, including in the area of environmental management.

Youth awareness of environmental issues is an important building block for sustainable environmental management at the level of the individual.

Gilles Nicolet /Still Pictures

General governance

Democratic governance is beginning to take root in Africa. There are now far fewer military dictatorships, and the military *coups d'état* common in the 1960s and up to the 1980s are much less frequent. This shift has facilitated a better focus on sustainable development. Through the efforts of AMCEN and sub-regional organizations, and at national level, there is strong political support for better management of Africa's environment. The environment now features prominently in political pronouncements across Africa. In those African countries where efforts have been made

to devolve political power to lower levels of government, this augers well for the principles of decentralized environmental management. However, the capacities of lower levels of government and community-based organizations will have to be built to equip them for their new roles as environmental planners and managers.

Defining a development path

Having been used as a laboratory for a variety of economic and social development paradigms in the past, African governments have had the opportunity to learn important lessons useful for defining appropriate paths for the 21st century. Clearly, the Great Transitions scenario—requiring a development paradigm in which responses to the challenge of sustainability are based on new values, and on more humanistic forms of social and economic organization—is the most appealing (see Chapter 4). For the present, however, this must be seen as utopian, given the present situation of African countries. The challenge, therefore, is to select paths that will lead these countries from their present situations through the other scenarios and, ultimately, to the Great Transitions scenario, to be reached at some pre-determined point in the future. How this should be done and the time it will take will depend on the capacities and capabilities of individual African countries. As described earlier (Chapter 4), both the Fortress World scenario (in which the wealthy protect themselves in enclaves, while environmental stress elsewhere leads to fragmentation, extreme inequality and widespread conflict) and the Market Forces scenario (where market-driven global development leads to converging values and patterns of development) are undesirable, and are unlikely to lead Africa towards sustainable improvements in quality of life in the long run. The Policy Reform scenario (incremental policy adjustments steering conventional development toward environmental and policy reduction goals) is a good start, given the current situations of most African countries, but it, too, must ultimately give way to the Great Transitions scenario as a sustainable development option. The newly established African Union will have a significant role to play in mapping an overall development framework for the region. It will then be up to AMCEN to ensure that the African Union incorporates considerations of environmental sustainability when selecting a broad development framework.

Resource mobilization

Africa needs external support if it is to succeed in reversing the current trend in environmental degradation. As discussed in earlier chapters, the extreme poverty suffered by many Africans is a major factor contributing to the degradation of Africa's environment. For example, the fact that in Sierra Leone the poorest 20 per cent of the population benefits from only 1.1 per cent of income consumption indicates that the majority of its people are deriving livelihoods from subsistence activities largely based on environmental goods and services. Should this trend persist, environmental degradation will continue unabated, and at tremendous cost to the country. Uganda is another example—a conservative estimate puts the annual cost of environmental degradation at 4–12 per cent of the country's GNP (NEMA 2001, Slade and Weitz 1991). If corrective actions are not financed and put in place, the cost of this degradation is likely to increase.

It was agreed at the UNCED (1992), where most African states were represented, that implementing Agenda 21 would require new and additional financial resources. African countries have received external assistance for environmental management, but the resources received have been inadequate, partly because the new and incremental funds being made available to them are less than those agreed at UNCED, and partly because procedural difficulties are hindering access by many African countries to the little funding that is available.

External aid nevertheless represents a significant share of national budgets in Africa—especially in sub-Saharan Africa—and dependence on aid is even more pronounced when it comes to investment in environmental management. Dependence on external aid raises concerns in Africa as to adequacy of funds, sustainability of interventions, and freedom to reflect national priorities rather than priorities perceived by donors. However, in spite of such concerns, incremental funding will still be required if African countries are to continue with implementation of Agenda 21. Moreover, access to funding will have to be easier than at present, and it must be largely in the form of grants rather than loans, however soft.

While it is clear that Africa needs external support in its efforts to reverse environmental degradation, African

Box 5.4 Rationale for and benefits of investing in environmental management

Rationale

- Halting or reversing of environmental degradation so as to guarantee improved productivity of the environment, with a view to accelerating sustainable economic growth and improving human welfare.
- Building and strengthening of human institutions and capital in environmental management, to allow continual response to new demands and challenges.
- Holding open future options for resource conservation and development, by formulating good policies so that irreversible losses are avoided, and positive conservation culture and attitudes are inculcated.

Expected benefits

- Increased earnings at macro and micro levels, due to improved productivity of biotic elements.
- Avoiding losses of future income (for example, by controlling the impact of soil erosion on agricultural productivity).
- Avoiding future costs (for example, replacing lost soil nutrients, extensive curative medical care, etc.).
- A healthy and productive labour force.

Source: adapted from NEMA (2001

governments also need to recognize that environment is a priority area for investment. They could, for example, include environment as a priority area for intervention in national poverty reduction strategies.

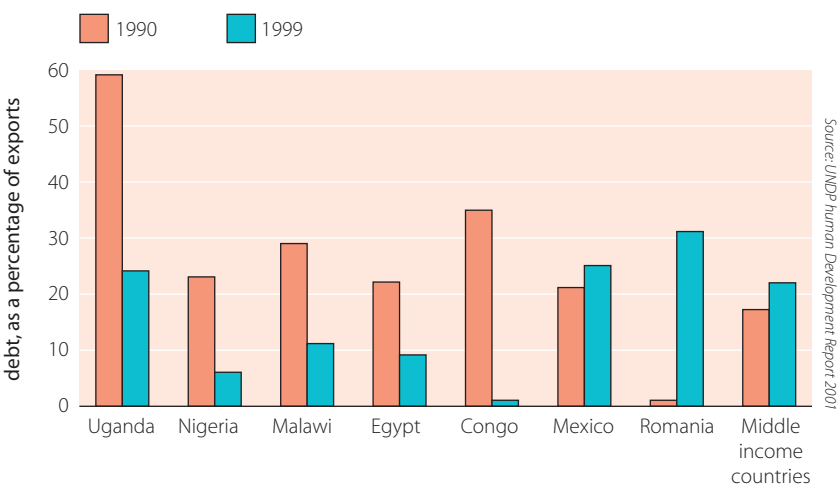
Furthermore, African states often put too much emphasis on accessing external sources of funds, almost to the exclusion of domestic resources. They should—if they are to become more self-reliant—be more proactive in identifying and developing creative mechanisms to generate funds from the region's significant environmental resources. They could improve the generation of non-tax revenues from environmental resources and services by moving towards charging economic rates for them. Valuation of their environmental resources on the basis of total economic value would allow African governments to introduce more appropriate taxes and to develop non-tax sources of revenue, such as user fees. The rationale for, and the benefits of, investing in environmental management are presented in Box 5.4.

The collective will of African states to arrest and to reverse environmental degradation exists, as evidenced by the wide range of responses presented in Annex 1. African states, and regional and sub-regional organizations, also want to do more, as illustrated by recent resolutions (AMCEN 2001). The main limitations are financial—mobilization of additional resources is, therefore, a priority.

THE PROBLEM OF DEBT

African countries are generally poor and heavily indebted, although the level of indebtedness is declining (see Figure 5.3). Nonetheless, however small the debts may be in absolute amounts, when indexed to debt servicing abilities, they are still a constraint. Despite these odds, African countries have been able to leverage additional funds from external sources for investments in environmental management and, by and large, they have enjoyed goodwill from development partners. Key sources of external financial inflows include loans from the multilateral and regional development banks, and grants from bilateral donors and other agencies.

Figure 5.3 Level of indebtedness to African countries



Source: UNDP Human Development Report 2001

PROPOSALS FOR ACTION

A key aim of the AEO process has been to identify 'achievable action items' for recommendation to policy officials, and to AMCEN as Africa's environmental body. Urgent actions necessary to reverse the current trends in environmental degradation in Africa have been derived from the recommendations and analyses presented in the preceding chapters of this report. These actions are detailed below in the form of a 31-point list. They are summarized in a matrix presented in Annex 3. Actions are grouped in the following categories:

- reducing poverty;
- arresting environmental degradation directly; and
- promoting cross-cutting actions.

Implementation of the recommended actions is principally the responsibility of African governments, with technical assistance from AMCEN and sub-regional organizations. In turn, African governments, AMCEN and the sub-regional organizations may enter into partnerships with sub-regional, national and international organizations, to further facilitate implementation.

REDUCING POVERTY

Poverty is a complex multidimensional problem. In Africa, poverty is one of the drivers of environmental degradation, largely because the poor have limited choices and depend heavily on the natural resource base. There is no uniform solution to the problem of poverty. Country-specific programmes to tackle poverty, and sub-regional, regional and international efforts supporting national efforts, are needed. At national level, a specific anti-poverty strategy is, therefore, one of the basic conditions for ensuring sustainable development. Many African countries have prepared and are implementing poverty reduction strategies and plans.

Actions which are directly relevant to the environment, and which are imperative if Africa is to reduce poverty, are as follows:

- **Endorsement and promotion of the principles of sustainable development**

  The African Union in general and, where the environment is concerned, AMCEN in particular, need to persuade the global community to adopt the *New African Initiative*—a recovery plan in the *New Partnership for Africa's Development* (NEPAD)—as the framework for sustainable development in Africa, and to accelerate setting up of the necessary mechanisms of the World Solidarity Fund (WSF). National governments also need to increase efforts towards attaining the poverty reduction goals of the United Nations Millennium Declaration, December 2000. In the Declaration, world leaders agree among other things, to set specific targets to halve the proportion of people who live in extreme poverty, and to reach development goals.

- **Acceleration of industrial development**

  Acceleration of industrial development is necessary to provide employment and to raise the financial resources needed to stimulate economic growth. In this respect, regional cooperation is required in order to raise the industrial productivity and competitiveness of African states to international levels. National efforts should also be devoted to promoting the development of micro-, small- and medium-sized enterprises. The focus should be on agricultural commodities and natural resources, in order to add value to Africa's traditional exports. However, any national industrialization strategy must be environmentally sustainable and must not be a contributor to further environmental degradation.

- **Increase of sustainable agricultural production**

  National governments must increase financing for the agricultural sector. Regional and international support is needed for implementation of the UNCCD. Similarly, regional and international support is needed to persuade the developed countries to remove agricultural subsidies which are currently blocking entry of African agricultural products into their markets, and which are encouraging the dumping of products onto the African market. Regional support is needed to convince the developed countries to apply the precautionary principle to genetically modified organisms (GMOs) which have unknown, but potentially dangerous, consequences for agricultural production in Africa. African

Sustainable agricultural production techniques reduce negative impacts on the environment.

Ron Giling /Still Pictures

governments should also promote sustainable agricultural production techniques to avoid the adverse impacts of the sector on the environment.

- **Promotion of human health, well-being and development**

  African governments must ensure greater access to affordable primary and secondary health care and medical technology. They also need to improve environmental and social conditions, which are responsible for spreading diseases, and to build the capacity of local communities to improve their living conditions. International partnership is required to make both preventive and curative health care available. Regional and sub-regional technical assistance and national efforts are needed to provide access to medicine at affordable prices, while promoting public health and nutrition. National governments need to empower African women in social and economic development, and to strengthen the skills of the region's youth. Regional and sub-regional technical assistance is also required to complement national efforts in promoting human-resource development and capacity building, including universal primary and secondary education.

- **Advocacy for better terms of trade**

  Regional lobbying is needed to support the efforts of African governments in persuading developed countries to open up their markets, and to eliminate subsidies on agriculture, textiles and other export products competing with those of the region.

- **Generation of increased domestic financing for sustainable development**

  Efforts are required at all levels—national, sub-regional, regional and international—to promote foreign direct investment in Africa. The developed countries and the Bretton Woods institutions should cancel Africa's external debt. Efforts should also be intensified to persuade developed countries to adhere to the United Nations target of 0.7 per cent of GNP for ODA, and to ensure that Africa gets its fair share. New partnerships with UNDP, UNEP and the World Bank are needed to increase the resources available, and to improve on operational and project implementation procedures of the Global Environment Facility (GEF).

- **Improvement of infrastructure and sustainable human settlement patterns in Africa**

  Improvements are needed in infrastructure and sustainable human settlement patterns in Africa, in order to reduce congestion and pollution. National governments need to improve access to, and the affordability and reliability of, infrastructural services. African governments need the support of AMCEN in mobilizing external resources for implementation of the Habitat Agenda and the declaration of the 25th United Nations Special Session, to achieve sustainable human settlements in Africa.

- **Improvement of the scientific and technological base in Africa**

  AMCEN needs to identify scientific and technological gaps, particularly relating to environmental management, and should guide African governments in accessing appropriate indigenous and external technologies in order to enhance environmental management and economic development.

ADDRESSING ENVIRONMENTAL DEGRADATION DIRECTLY

The environment is the basis of human health, wealth, well-being and security. The majority of Africans derive livelihoods directly from the natural resources of the environment. Humankind in general has also benefited significantly from Africa's natural resources, and from environmental services, such as carbon sequestration. However, deterioration of the environment in many parts of Africa over the past three decades has left millions of people more vulnerable to adverse environmental change than before. The African countries affected need to halt and, where possible, even reverse the current trend in environmental degradation.

If environmental degradation in Africa is to be halted and reversed, the following actions are imperative for the region.

- **Reduction and halting of activities that lead to land degradation**

  Efforts at national and sub-regional levels should be focused on promoting campaigns of environmental information, education and communication. African governments, for their part, need to ensure that they are in a position to implement the UNCCD in a timely and effective manner and, together with AMCEN, they need to ensure that the UNCCD is acknowledged as a sustainable development convention. National governments (with technical help from AMCEN if necessary) and sub-regional organizations should prepare sound land use policies and plans, where these do not exist. National governments also need to improve systems that address gender considerations, where these, too, are lacking. They also need to put in place mechanisms to protect Africa's cultural and historical heritage.

- **Conservation and sustainable management of Africa's rich biodiversity**

  The current 'ecosystem approach' to biodiversity conservation is too narrow. More comprehensive regional, sub-regional and national efforts are needed to promote both an ecosystems and landscape approach, with an emphasis on sustainable development in a wider context Similarly, African governments—with the technical assistance of AMCEN and sub-regional organizations, where necessary—need to develop and implement national legislation for the protection of the rights of local communities, farmers and breeders, and for the regulation of access to biological resources and biosafety, in line with the OAU Model Law. Sub-regional groupings and national governments must also endeavour to rehabilitate degraded wetland areas. AMCEN's technical assistance will also be required to strengthen the Lusaka Agreement, in order to facilitate implementation of the provisions of the Convention on International Trade in Endangered Species (CITES), and to safeguard the conservation of eastern and southern African wildlife. Where there has been extensive poaching in wildlife protected areas, the relevant sub-regional organizations and national governments should carry out rehabilitation work through species re-introduction and habitat restoration. National governments, with the technical assistance of AMCEN, should document and disseminate indigenous knowledge and practices that are applicable to conservation. Given that Africa's biodiversity is not fully understood, regional groupings and national governments should, with international assistance, make biodiversity inventories and document significant landraces (types of seeds used in traditional agriculture). National governments should promote the establishment of *ex-situ* conservation facilities for rare, vulnerable and endangered species. They should also, through sub-regional, regional and international partnerships, promote the conservation of agricultural biodiversity, the backbone of rural

Land tenure and land use policies and plans need to be addressed to reverse degradation, and to promote equity and food security.

USGS – EROS Data Center

Conservation practices play a important role in protecting Africa's threatened species.

UNEP

livelihoods and the engine of economic growth in many parts of the Africa region. Such efforts should include the promotion of *in-situ* conservation of landraces of important agricultural crops.

- **Reduction of high rates of deforestation in parts of Africa**

  National governments need to devote and access additional financial resources and technology to implement the provisions of the International Panel on Forests (IPF)/International Forest Forum (IFF) of the United Nations Forum on Forests (UNFF). Similarly, African governments need to promote access to affordable energy for sustainable development, especially in rural areas. They should also promote research on and development of clean energy technologies, efficiency of energy supply and usage, and efficient uptake of renewable resources. The West Indian Ocean Island States of Africa need to revitalize the Barbados Programme of Action for the Sustainable Development of Small Island Developing States. AMCEN should, through technical assistance, contribute to strengthening of the operations of the African Timber Organization (ATO), and should support the Yaounde Declaration. National governments should promote collaboration in forest management between forestry authorities and local communities. They should also review the pricing of forest products to reflect their true economic value, in order to provide better earnings, discourage wasteful exploitation and promote more efficient utilization of non-wood forest products. African governments need to rehabilitate degraded forest areas. They also need to attract private sector investment to forestry. AMCEN needs to guide African states in researching and documenting the medicinal values of their forests.

- **Mitigation of the adverse impacts of climate change and other atmospheric conditions**

  AMCEN should be an advocate for finalization of the Kyoto Protocol. African governments need to lobby the global community to operationalize the Climate Change Fund (CCF) for developing countries, as well as the Special Fund for least developed countries. Similar assistance is required to facilitate African countries' access to the adoption of cleaner technologies, in order to reduce industrial emissions. Africa needs combined efforts at regional, sub-regional and national levels to establish climate modelling programmes and early warning of rainfall variations. African governments also need to: ratify the United Nations Motor Vehicle Emissions Agreement; improve enforcement of emission standards and regulations; and promote the use of unleaded gasoline. The latter would be an expensive option for Africa, but it has environmental benefits and, therefore, a positive cost-benefit ratio. AMCEN should facilitate the north-south exchange of experience and knowledge between experts and provide for the transfer of know-how between African countries. IGAD countries, with technical assistance from AMCEN, should support and make operational the Strategy for the Elimination of Hunger in the Horn of Africa, an area experiencing extreme levels of rainfall variation, in terms of both amount and frequency. Through partnerships at international, regional and sub-regional levels, African states need to improve their understanding of the likely social impacts of atmospheric pollution and to quantify them.

- **Improvement of waste management practices**

  Partnerships are required to put in place the funding and capacity required for effective management of

Enforcement of waste management and disposal regulations is necessary to improve urban pollution.

UNEP

non-hazardous wastes. AMCEN should make recommendations to counter the export of obsolete capital goods and equipment to Africa. Through partnerships at international, regional and sub-regional levels, African governments should implement the various conventions governing the generation, storage, transport, and transboundary movement and disposal of hazardous wastes, including radioactive wastes.

- **Promotion of environmentally sound management of chemical products**
  African states need to establish partnerships to support the management of chemical products, in accordance with Chapter 19 of Agenda 21, and the Rotterdam and Stockholm conventions.

- **Improvement of access to and quality of freshwater resources**
  Recognizing the limited financial resources at their disposal, African governments need to promote public-private partnerships in water resource management. They also need to: develop appropriate standards for water quality; promote the use of economic instruments (incentives and disincentives) for water resource management, including the application of the polluter pays principle; and introduce appropriate water pricing policies and mechanisms. International partnerships, such as the Nile Basin Initiative, are required to support regional and sub-regional water resource management bodies. National governments, with the assistance of sub-regional organizations, should inventory important water catchments and develop guidelines for their sustainable utilization. They should also promote integrated water resource management and development as a standard practice. African governments, through sub-regional and international support, should improve general access to freshwater resources. AMCEN should promote the popularization of environmentally-sound, low-cost technologies for water harvesting. African governments should also address water quality issues. In particular, where necessary, they need to establish, and subsequently enforce, national effluent discharge regulations and standards. They should also increase investments in sewerage management, in order to improve freshwater quality.

- **Improvement of living conditions in urban areas**
  African governments need to plan urban development appropriately for sustainable development. Furthermore, they need to formulate appropriate human settlement and waste

Improved water quality and access is possible through effective public-private sector partnerships.

UNEP

management policies, laws and regulations, and to promote private sector participation in improving urban infrastructure and the provision of municipal services. African governments should also fulfil their national obligations under the Habitat Agenda, and should prepare integrated water and waste management strategies and action plans.

Promoting cross-cutting actions

There are a number of cross-cutting actions which, if carried out, would help to halt and even reverse environmental degradation and reduce human vulnerability. Such actions target: improving coping capacities; promoting increased regional and sub-regional cooperation; mobilizing domestic financial resources; enhancing institutional capacity; promoting greater involvement of non-governmental organizations; addressing policy failures; defining sustainable development paths; promoting good governance; enforcing compliance; and setting targets and monitoring performance.

Cross-cutting actions that are strongly recommended are outlined below:

- **Enhancement of the coping capacities of Africa's population, with regard to adverse environmental change and reduction of environmental insecurity**

  African governments need to enhance their capacity to anticipate natural disasters and to be able to cope with the ensuing impacts. They also need to invest in early warning mechanisms and disaster preparedness planning, including the formulation of appropriate policies, laws and regulations. They should take steps to promote healthy living that is respectful of the environment, in order to reduce the incidence of diseases associated with environmental degradation. They should also endorse measurement of vulnerability as an important indicator of the state of the environment and, therefore, establish vulnerability assessments and early warning systems.

- **Promotion of human resources development**

  African governments should assess their human resources needs for improved environmental planning and management. They should then put in place training programmes to fill identified gaps. AMCEN, in partnership with sub-regional and international organizations, should provide technical assistance to complement the efforts of national governments, particularly in the areas of identifying and strengthening the capacity of African centres of excellence in environmental planning and management. It should also promote intra-continental exchanges of expertise, collaboration and networking.

- **The promotion and enhancement of multi-level cooperation**

  African governments should seek partnerships with the international community, in order to support the operations of the newly formed African Union, and the institutions for sub-regional cooperation and economic integration, such as: the Indian Ocean Commission (IOC); Inter-Governmental Authority on Drought and Development (IGAD); East African Community (EAC); Inter-State Commission to Combat Drought in the Sahel (CILSS); Economic Community of Central African States (ECCAS); the Central African Economic and Monetary Union (CEMAC); the Arab Maghreb Union (AMU); Economic Community of West African States (ECOWAS); and Southern Africa Development Community (SADC). AMCEN and sub-regional organizations should facilitate the provision of technical assistance to African governments in formulating programmes of action to support the management of shared water and other transboundary environmental resources.

- **Mobilization of domestic financial resources for environmental management**

  African governments should make far greater efforts to mobilize domestic resources for investment in environmental management. As an initial step, they need to recognize that environment is a priority area for investment when allocating budgetary resources. Attracting private sector investment for environmental management is also important, and AMCEN and sub-regional organizations should facilitate provision of the technical assistance African governments need to develop win-win

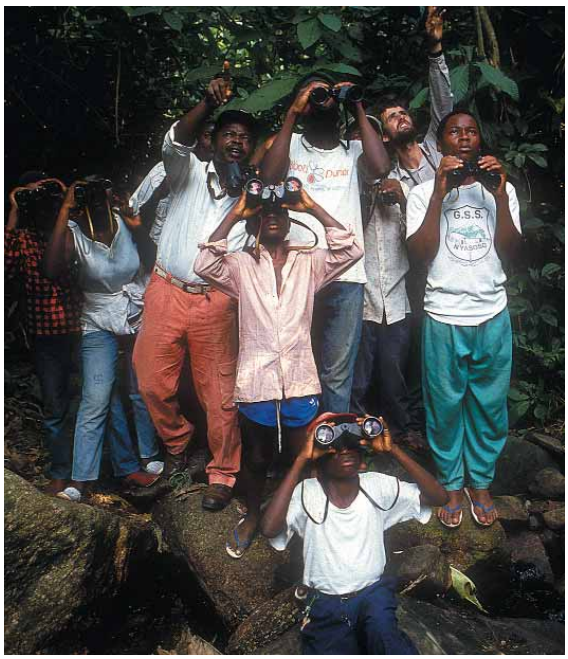
strategies. African governments also need to be able to evaluate their natural resources accurately, if they are to develop revenues from sources other than tax. AMCEN should provide them with the technical assistance and accounting methods they require to make such evaluations.

- **Enhancement of institutional capacity to coordinate, monitor and supervise environmental management in Africa**
  African governments should support AMCEN in defining an appropriate institutional structure which can coordinate, monitor and supervise environmental management on a region-wide basis, and which can provide a stronger voice for Africa in international negotiations and deliberations.

- **Promotion of greater involvement of NGOs in environmental management**
  African governments should encourage stronger national NGO partnerships in environmental management. Likewise, AMCEN should promote the greater involvement of regional and sub-regional NGOs in environmental management.

- **Greening development plans and strategies at all levels**
  AMCEN should provide technical assistance to African governments to build capacity for greening of development plans and strategies at national and sub-national levels. In turn, African governments should make the greening of such plans mandatory, and a precondition for allocation of financial resources to the various sectors of the economy and lower levels of government.

- **Focus on policy failures**
  African governments have introduced various macroeconomic, social, environmental and sectoral policies to promote sustainable development, and have improved environmental management. Some of these policies have, however, not been very effective and, therefore, need to be reviewed to remove contradictions and other underlying causes of failure. African governments, in partnership with sub-regional, regional and international organizations, need to create capacity for policy analysis, where this is necessary, to ensure timely detection of failures in implementation. They also need to demonstrate greater commitment to the implementation of policies that are adopted.



Public awareness of environmental issues builds commitment to better practice.

Mark Edwards/Still Pictures

- **Promotion of greater public awareness**
  African governments and AMCEN, with support from UNEP and other international organizations, have invested significantly in creating greater public awareness of environmental matters and sustainable development. These efforts need to be sustained, particularly at community level. Given the increasing levels of urbanization and industrialization in the region, African governments, in partnership with sub-regional, regional and international organizations, need to increase public awareness of 'brown issues', such as atmospheric pollution.

- **Promotion of environmental education**
  African governments, in partnership with sub-regional, regional and international organizations, need to invest in the formulation and

implementation of formal and informal environmental education strategies, where these do not exist.

- **Improvement of environmental information systems**
  African governments need to improve environmental information systems as a basis for sound decision making. AMCEN, sub-regional and international organizations should, in partnership with African governments, promote the creation of physical databases at sub-regional and regional levels, and should enhance networking and collaboration between African states.

- **Definition of sustainable development paths**
  African countries are at different points along the continuum of development paths which extends from the Fortress World scenario to the Great Transitions scenario discussed in Chapter 4. Where necessary, AMCEN should facilitate the provision of technical assistance to member countries, in order to design feasible and sustainable development paths to lead them from their present positions towards the Great Transitions scenario, within the overall framework of the new African Union and the New Partnership for Africa's Development.

- **Promotion of good governance**
  Although there have been improvements in governance in the Africa region, African governments still need to show real political will and commitment in several areas which, ultimately, aggravate environmental degradation. First, a lack of democratic institutions and the persistence of corruption in some places contribute to inefficient use of resources. AMCEN, and sub-regional and international organizations, should encourage African governments to address the problem of corruption and to develop effective governance regimes that are favourable to sustainable development, where these are not in place. Conflicts and their aftermath also impact on the environment when, for example, refugees and displaced persons, through no fault of their own, increase the burden on already over-stretched resources in a host country. To address such problems, African governments should use conflict-minimization strategies to help to promote peaceful coexistence, and to avoid situations that lead to displacement of people. Resource scarcities have been, and continue to be, major causes of conflict among states. AMCEN and sub-regional groupings should, therefore, assist African countries in effectively managing transboundary resources, so as to avoid conflict.

- **Enforcement of compliance**
  Although there are various laws and regulations governing environmental management in Africa, their enforcement is generally weak. Greater and more effective capacity is needed for the enforcement of existing laws and regulations. AMCEN, in partnership with international and sub-regional organizations, should identify strengths and weaknesses in compliance and enforcement, and recommended areas, to build the capacity of law enforcement agencies and their judiciaries, in order to allow them to better appreciate their roles in environmental management.

- **Setting targets and monitoring performance**
  African governments need to demonstrate to the rest of the world, and to their own people, real improvements and success stories in environmental management. This calls for the measurement of performance over time which, in turn, requires setting targets and monitoring of programmes. AMCEN should persuade African governments to agree on regional targets for environmental management. Furthermore, through partnerships with national, sub-regional and international organizations, AMCEN should monitor progress towards the attainment of the agreed targets for environmental management, at least in the medium term. AMCEN should also seek support for continued production of the AEO as part of the monitoring process. African governments should support the production of sub-regional state-of-environment reports that would subsequently feed into the AEO process, where such reports do not currently exist.

CONCLUSION

Africa's environment has deteriorated steadily, with poverty being the main cause of that degradation, and with the poor being its direct victims. High levels of poverty—in combination with increasing instances of climate variability and natural disasters, internal institutional weaknesses in Africa, and unfair trading practices in developed countries—have made Africans more vulnerable physically, psychologically and economically. The collective African capacity to cope with increasing vulnerability is also generally low.

Given the magnitude of these problems, it may appear as if African governments, and sub-regional and regional organizations, are doing nothing to solve them. This is not so. They have initiated steps to halt or even reverse environmental degradation, although initiatives are now required for more effective implementation of policies and strategies that have been adopted.

It is also significant that Africa has a vision for sustainable development embodied in the newly formed African Union and the New Partnership for Africa's Development. There is great optimism that Africa can catch up with the rest of the world and even surpass it, using the Great Transitions scenario. However, if this is to be achieved, African countries need, amongst other things, to:

- reduce poverty;
- improve the state of the environment;
- improve management systems;
- reduce vulnerability to adverse environmental changes;
- promote regional and sub-regional cooperation;
- mobilize additional financial resources; and
- create an effective institutional structure to holistically manage the environment on a region-wide basis.

African governments must show greater political will and commitment to solving environmental problems, and must be prepared to devote their own financial and human resources to practical environmental action. They must also address the issue of corruption if they are to improve efficiency in utilization of resources, and they must embrace the democratic process for better governance.

African national governments, sub-regional organizations, AMCEN and the international community are encouraged to contribute to implementation of the specific activities proposed in the 31 areas for action identified above. A key responsibility lies with AMCEN, and with sub-regional groupings and national governments, to mobilize adequate technical, human and financial resources for the implementation of these activities. The international community is also urged to support the efforts of the national governments, sub-regional organizations and AMCEN, in the spirit of the New Partnership for Africa's Development.

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ANNEX 1: SUMMARY OF KEY POLICY RESPONSES ACROSS AFRICA BY THEMATIC AREA

Issues	Key policy responses
Environment and development	● Development of national strategies for sustainable development (NSSDs), and in some cases National Conservation Strategies (NCSs). ● Translation of the global Agenda 21 into *National Agenda 21s* and *Local Agenda 21s*. ● Establishment of fully fledged ministries of environment and environmental protection authorities or agencies. ● Improvements in sub-regional and regional coordination of environmental management.
Poverty	● Preparation of poverty reduction strategy papers and poverty eradication action plans. ● Formulation of sustainable livelihood strategies. ● Promotion of south-south and intra-Africa trade. ● Lobbying for greater access to developed country markets and, in general, removal of trade barriers. ● Modernization of agriculture.
Climate variability	● The majority of states are parties to the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention to Combat Desertification (UNCCD). ● Several countries have produced National Action Plans in accordance with UNFCCC. ● Establishment of Early Warning Systems. ● Establishment of food reserve programmes. ● Crop research to identify drought resistant varieties. ● Improving housing design and construction. ● Urban planning to reduce vulnerability of human populations.
Climate change	● Ratification of UNFCCC, and the Kyoto Protocol. ● Undertaking of Activities Implemented Jointly (AIJs) projects through joint ventures with the private sector of developed countries. ● Development of National Communication Strategies to provide detailed inventories of emissions and sinks, and programmes to mitigate the impacts of climate change. ● Exploration of options for further exploitation of alternative sources of energy (e.g. solar, wind, micro-hydro, and biomass), particularly by countries of Northern and Southern Africa.
Air pollution	● Establishment of air quality standards and guidelines. ● Monitoring of ambient air quality. ● Operations of the Air Pollution Impact Network for Africa (ALPINA), a network of scientists, policy makers and NGOs established to provide information on air pollution, methodologies and databases, and to bridge the gap between information and policy making. ● Upgrading public transport systems, imposition of age limits for private and commercial vehicles, and the provision of subsidies for switching to unleaded fuels. ● Preparations of plans for adoption of cleaner technologies to reduce industrial emissions.

Issues	Key policy responses
Land degradation	● Formulation of land use policies and plans, including zoning. ● Land reform (e.g. land redistribution and resettlement). ● Capacity building. ● Development of environmental management programmes (district, national environment action plans). ● Promotion of community-based natural resources management (CBNRM) projects. ● Development of erosion hazard mapping. ● Regional initiatives for the conservation and utilization of soils, e.g. Southern African Regional Commission for the Conservation and Utilization of the Soil (SARCCUS). ● Regional initiatives to combat desertification (SADC, Sub-Regional Action Programme). ● Reducing the rate of growth of the human population. ● Environmental education programmes. ● Promotion of private sector involvement in land management issues. ● Universal primary education. ● Plans for modernization of agriculture. ● Ratification of a large number of international conventions. ● Irrigation.
Habitat loss	● Increase in the number and extent of protected areas. ● Ratification of conventions related to biodiversity, (CBD) in particular, and RAMSAR and CITES. ● Promoting community based natural resource management programmes (CBNRM). ● Development of national environmental action plans and conservation strategies. ● Promotion of sub-regional cooperation in conservation. ● Formulation of natural biodiversity strategy and action plan (NBSAP).
Species loss	● Ratification of conventions related to biodiversity, CBD in particular, but also RAMSAR and CITES. ● Species re-introduction. ● *Ex-situ* plant propagation in nurseries.
Alien invasive species	● Tightening controls on imports and spraying of aircraft (and in some cases disinfecting of passengers too).
Inadequate attention to indigenous knowledge and intellectual property rights	● Gene banking (Southern Africa). ● Reform of policies to assign intellectual property rights to certain countries, communities or individuals. ● Establishment of resource centres across Africa that focus on identification and dissemination of indigenous or traditional knowledge and practices. ● Using indigenous knowledge in the treatment of HIV/AIDS (Tanzania).
Deforestation	● Improving forest harvesting sustainability through removal of subsidies for commercial logging and privatization of state-owned forests. ● Ensuring greater stakeholder participation in forest management through, amongst other things, partnerships between state or private and local communities.

Issues	Key policy responses
	● Use of technologies such as remote sensing and geographic information systems to provide more accurate information. ● Formation of the ATO whose member states collectively control over 80 per cent of Africa's natural forests. ● Development of implementing and indicator programmes through the Dry Zone Africa Process (Southern African States). ● Having some forest area certified by the Forest Stewardship Council (Southern African States). ● Including forests in wildlife protected areas such as national parks to accord them greater conservation status. ● Proposal for a consortium approach to ease access to funding (African Development Bank).
Limited access to water resources	● The United Nations International Drinking Water Supply and Sanitation Decade (1980–90). ● Africa 2000 Initiative of 1994, by the World Health Organization (WHO)'s Africa Regional Office. ● Construction of dams on almost all major rivers in Africa to provide water storage capacities, hydro-electric power, and to supply domestic, industrial and agricultural users. There are more than 1 200 dams in Africa. ● Revision of water policies and pricing mechanisms, as measures to manage demand and encourage more conservative water use. ● Recycling of wastewater as irrigation water, and upgrading of reticulation networks. ● Increasing favour for integrated water resource management (IWRM) in several countries. ● Public-private partnerships in water resource management and water supply programmes. ● Establishment of international agreements and protocols, either as proactive measures or in response to escalating conflict over shared water courses (e.g. The Nile Basin Initiative, the Regional Programme for the Sustainable Development of the Nubian Sandstone Aquifer, and the SADC Protocol on Shared Water Courses).
Poor water quality	● Development of wetlands policies and/or conservation strategies (e.g. Ghana, South Africa and Uganda). ● Establishment and enforcement of effluent water standards. ● Rehabilitation of existing wastewater treatment facilities as measures to control water quality. ● Incorporation of the *polluter pays principle* in many policies and legislation. ● Schemes for improving drainage, purification and decontamination of freshwater systems, and public awareness campaigns.
Coastal erosion	● Declaration of marine protected areas (MPAs). ● Integrated environmental management, particularly integrated coastal zone management (ICZM). ● Promulgation of laws and regulations requiring environmental impact studies to be carried out before development proceeds in the coastal zone or hinterland. ● Sub-regional and regional agreements. ● Ratification of several international conventions aimed at enhancing conservation of natural resources. ● Support for capacity building and access to financial resources.

Issues	Key policy responses
Marine and coastal pollution	● Ratification of international agreements such as the Convention for the Prevention of Pollution from Ships (MARPOL), the Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi Convention), and the Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (Abidjan Convention). ● Participation in UNEP's Regional Seas Programme. ● Public health legislation. ● Clearing of coastal areas.
Overharvesting	● Various management measures including minimum net size limits, bag limits, use of appropriate fishing gear, and closed seasons. ● International agreements between African countries, and between African and European or other international fisheries (the United Nations Law of the Sea).
Sea level rise	● Construction of groynes, sea walls and other physical barriers. ● Signing of the Convention for Cooperation in Protection and Development of the Marine and Coastal Environment of the West and Central African Region (Abidjan Convention).
Poor urban conditions	● Increased production of low-cost housing stocks, and introducing housing subsidies for low-income groups. ● Creation of the United Nations Commission for Human Settlements (Habitat) and Local Agenda 21. ● Revision or formation of constitutions and national legislation to promote the right to adequate shelter. ● Revision of policies to recognize women's rights to own property. ● Land reform. ● Formulation of environmental policies. ● Development of integrated water policies and waste management strategies. ● Privatization of municipal services in an effort to improve coverage and maintenance. ● Development of effluent standards and tighter controls on waste management. ● Housing programmes, subsidies for low income families, poverty alleviation programmes, and decentralization strategies. ● Attainment of international best practices and awards (Angola and Sudan).
Vulnerability	● Establishment of ministries (departments) responsible for disaster preparedness, prevention and management. ● Formulation of policies and action plans for disaster prevention and management. ● Formulation and implementation of poverty reduction strategies. ● Establishment of early warning systems. ● Land use planning.
Future outlook	● Preparation of long-term perspectives, strategic framework for national development (National Vision 2025). ● Preparation of poverty reduction strategies, based on national Vision 2025s. ● In some cases (e.g. Uganda), preparation of development plans for lower levels government in conformity with the national poverty eradication action plans.

ANNEX 2: SELECTED EXAMPLES OF FAILURES, WEAKNESSES AND GAPS IN ENVIRONMENTAL MANAGEMENT BY THEMATIC AREAS

AREA	FAILURES, WEAKNESSES AND BARRIERS FOR IMPLEMENTATION
A. Protection of the environment	
A1. Atmosphere	● Weak early warning system and low capacity for prediction of climate variability ● In some African states, inadequate integration of transport systems with urban and regional settlement strategies, due to absence of land and land use policies
A2. Toxic chemicals	● Lack of risk assessment and of dissemination of information ● Labelling of chemicals not sufficiently understood by the majority of Africans ● Inadequate industry response to risk reduction programmes ● Inadequate national coordinating mechanism for liaison between all parties involved in chemical safety activities ● Weak national enforcement programmes for prevention of illegal international traffic in toxic and dangerous products
A3. Hazardous wastes	● Inadequate industry response to treat, recycle, re-use and dispose of wastes at source ● Inadequate information network and alert systems to assist with detection of illegal traffic in hazardous wastes
A4. Solid wastes and sewerage related issues	● Commitments to achieving certain benchmarks by year 2000 have not been met. African states agreed that, by 2000, they would: • ensure sufficient national capacity for waste management • promote sufficient financial and technological capacities at national and local levels • establish waste treatment and disposal quality criteria, and • ensure that 75 per cent of solid waste generated in urban areas is collected, recycled or disposed of in an environmentally safe manner
A5. Radioactive wastes	● No significant activity in this area in most African states
B. Natural resources	
B1. Land resources	● Absence of planning and management systems ● Little community involvement in information gathering
B2. Combating deforestation	● Inadequate information base on status of resources and rates of deforestation ● Inadequate valuation of forest resources
B3. Combating desertification and drought	● Low capacity for drought preparedness and drought relief schemes ● Absence of comprehensive anti-desertification programmes integrated into national development plans and national environmental planning ● Inadequate popular participation and environmental education focussing on desertification control and management of effects of drought
B4. Sustainable development for mountainous areas	● Lack of database or information systems to facilitate integrated management and environmental assessment of mountain ecosystems
B5. Sustainable agriculture and rural development	● Africa's agriculture still remains low-input/low-yield, and is therefore unsustainable ● Limited opportunities for non-farm employment ● Limited incentives to promote land conservation ● Inadequate attention given to indigenous knowledge in agriculture ● Both plant and animal genetic resources are poorly inventoried or documented

Area	Failures, weaknesses and barriers for implementation
B6. Conservation and biodiversity	● Biodiversity resources poorly inventoried
B7. Environmentally-sound management of biotechnology	● The potential contribution of biotechnology to sustainable development in Africa is unknown or at best under-estimated
B8. Water bodies, shoreline and aquatic resources	● Fisheries research focused largely on a few selected species, neglecting the remaining water bodies ● Absence of land use zones for shoreline areas ● Inadequate resource inventory and management planing
B9. Protection of quality and supply of freshwater	● African states agreed that, by 2000: • all urban residents would have access to at least 40 litres per capita per day of safe water, and • 75 per cent of the urban population would be provided with on-site or community facilities for sanitation

ANNEX 3: PROPOSED ACTION AREAS, ACTIVITIES AND RESPONSIBILITIES

Category	Specific Actions	Responsibilities			
		International	AMCEN	Sub-regional	National
A. Reducing poverty					
A1. Sustainable development	Adopt New African Initiative (NAI) as framework for sustainable development in Africa.	●			
	Promote attainment of the poverty reduction goals of the Millennium Declaration.	●	●		●
	Accelerate setup of necessary mechanisms of the World Solidarity Fund (WSF).	●			
A2. Accelerated industrial development	Assist with industrial productivity and competitiveness of African industries.	●	●		
	Promote development of micro, small- and medium-size enterprises with focus on agro industry.	●	●		●
	Promote use of environmentally benign industrial technologies and techniques.			●	●
A3. Increasing agricultural production	Increase national financing for the agricultural sector.				●
	Support implementation of the United Nations Convention to Combat Desertification (UNCCD).	●	●		
	Urge developed countries to remove agricultural subsidies and apply the precautionary principle to genetically modified organisms.	●	●		
	Promote sustainable agricultural production techniques.				●
A 4. Promote human development	Ensure greater access to affordable primary and secondary health care and medical technology.				●
	Improve environmental and social conditions that are responsible for spread of diseases and build the capacity of local communities.				●
	Assist Africa in making both preventive and curative health care available.	●			
	Take all necessary measures to provide access to medicine at affordable prices and promote public health and nutrition.		●	●	●
	Empower women in social and economic development.				●
	Promote human resources development and capacity building, including universal primary and secondary education.	●	●	●	●
	Strengthen skills of youth.				●

Category	Specific Actions	Responsibilities: International	AMCEN	Sub-regional	National
A5. Trade and market access	Open markets and eliminate subsidies on agriculture, textiles and other export products of interest to Africa.	●	●		
A6. Increased financing for sustainable development	Promote foreign direct investment in Africa.	●	●	●	●
	Cancel debt of African states.	●			
	Adhere to the United Nations target of 0.7 per cent of GNP for official development assistance (ODA).	●			
	Increase the resources of, and improve upon operational procedures and project implementation of, the Global Environment Facility (GEF).	●			
A7. Improving infrastructure and sustainable human settlement	Improve access to, and the affordability and reliability of, infrastructure services.				●
	Mobilize resources for the implementation of Habitat Agenda and the declaration of the 25th United Nations Special Session to achieve sustainable human settlements in Africa.	●			
A8. Promoting science and technology	Assist African countries in their efforts to gain access to new technologies, particularly information and communication technologies and create conditions for the development of indigenous technologies to enhance economic development.	●			
B. Improving the state of environment					
B1 Reducing land degradation	Promote campaigns of environmental information, education and communication.			●	●
	Ensure timely and effective implementation of UNCCD and acknowledge it as a sustainable development convention.	●			
	Encourage the production of land and land use policies and plans.		●	●	●
	Improve land tenure and land ownership systems that also address gender considerations.				●
	Protect cultural and historical heritage.				●
B2. Conserving biodiversity	Promote landscape approaches to biodiversity conservation.		●	●	●
	Develop and implement national legislation for the protection of the rights of local communities, farmers and breeders, and for the regulation of access to biological resources and biosafety, in line with OAU Model Law.		●	●	●
	Rehabilitate degraded wetland areas.			●	●

Category	Specific Actions	Responsibilities			
		International	AMCEN	Sub-regional	National
B2. Conserving biodiversity (continued)	Strengthen the Lusaka Agreement.	●	●		
	Rehabilitate degraded conservation areas through species re-introduction and habitat restoration.			●	●
	Document and disseminate indigenous knowledge and practices applicable to conservation.		●		●
	Improve upon biodiversity inventory, and document landraces.	●		●	●
	Promote *ex-situ* conservation facilities for rare, vulnerable and endangered species.				●
	Promote the conservation of agricultural biodiversity.	●	●	●	●
B3 Reducing deforestation	Procure financial resources and technology transfer to Africa for implementing the provisions of the International Panel on Forests (IPF)/International Forest Forum (IFF) of the United Nations Forum on Forests (UNFF).	●			
	Promote access to affordable energy, especially in rural areas for sustainable development.	●			●
	Promote research on and development of clean energy technologies, efficiency of energy supply and usage, and efficient uptake of renewables.	●			
	Revitalize the Barbados Programme of Action for the Sustainable Development of Small Island Developing States.	●			
	Strengthen the African Timber Organization.	●	●		
	Support the Yaounde Declaration.	●	●		
	Promote collaborative forest management between forestry authorities and surrounding communities.				●
	Support rehabilitation of degraded forests.	●			●
	Revise the pricing of forest products to reflect true economic values.				●
	Support documentation of the medicinal value of forests.	●	●	●	●
	Encourage private sector participation in forest establishment and management.	●			●
	Promote the greater utilization of non-wood forest products.				●

Category	Specific Actions	Responsibilities: International	AMCEN	Sub-regional	National
B4. Protecting coastal and marine environment	Harmonize, coordinate and ensure compliance of regional and international laws and agreements related to seas.	●	●	●	●
	Revitalize the Nairobi and Abidjan agreements.	●	●		
	Promote the establishment and sound management of marine protected areas in the freshwater lakes of Africa.	●		●	●
	Improve on fishery stock inventory and monitoring.	●	●	●	●
	Support formulation of marine resources management plans, especially integrated coastal zone management plans (ICZMPs).			●	●
	Promote aquaculture.				●
B5. Mitigating the adverse impacts of climate change and other atmospheric conditions	Finalize agreement on the Kyoto Protocol.	●	●		
	Operationalize the Climate Change Fund (CCF) for developing countries as well as the Special Fund for least developed countries.	●			
	Facilitate access to and adoption of cleaner technologies to reduce industrial emissions.	●			
	Establish climate modeling programmes and early warning of rainfall variations.		●	●	●
	Ratify the United Nations Motor Vehicle Emissions Agreement.				●
	Facilitate north-south exchanges of experience and knowledge between experts and provide for transfer of know-how between the various areas of Africa.	●	●		
	Improve enforcement of emission standards and regulations.				●
	Support operationalization of the Strategy for the Elimination of Hunger in the Horn of Africa.	●			
	Promote the use of unleaded gasoline.				●
	Study the social impacts of atmospheric pollution.	●	●	●	●
B6. Waste management	Put in place the required funding and capacity for effective management of non-hazardous waste.	●			
	Implement regional and international conventions on the generation, storage, transport, and transboundary movement and disposal of hazardous waste, including radioactive waste.	●	●	●	●
	Take steps to counter the exports of obsolete capital goods and equipment to Africa.	●	●		

Category	Specific Actions	Responsibilities			
		International	AMCEN	Sub-regional	National
B7. Environmentally sound management of chemical products	Assist and support African states with the management of chemical products, in accordance with Chapter 19 of Agenda 21 and the Rotterdam and Stockholm conventions.	●			
B8. Improving access to freshwater resources	Promote public-private partnerships in water resource management.				●
	Support regional and sub-regional water resource management bodies such as the Nile Basin Initiative.	●			
	Inventory watersheds and develop guidelines for sustainable utilization.			●	●
	Develop standards for water quality.				●
	Improve access to freshwater resources.	●		●	●
	Promote integrated water resource management and development.			●	●
	Promote the use of economic instruments for water resource management.				●
	Popularize environmentally sound low-cost technologies for water harvesting.	●	●		●
B9. Improving urban areas	Provide support for urban development planning.	●			●
	Promote construction of environmentally sound low-cost houses to overcome congestion in poorer segments of urban areas.				●
	Support African countries to fulfil national obligations under *Habitat Agenda*.	●			
	Assist African countries to prepare integrated water and waste management strategies.	●			
	Formulate human settlement policies, laws and regulations.				●
	Formulate solid waste management policies, laws and regulations.				●
	Promote private sector participation in improving urban infrastructure and provision of municipal services.				●

Category	Specific Actions	Responsibilities			
		International	AMCEN	Sub-regional	National
C. Promoting cross-cutting actions					
C1. Reducing the vulnerability of Africans	Reach agreement on the need for an effective governance regime for sustainable development.		●		
	Access resources and support for mechanisms to prevent, manage and resolve conflicts and satisfy the needs of refugees and internally displaced persons and their host countries.	●			
	Use conflict-resolution mechanisms to discourage situations leading to internal displacement of peoples.				●
	Encourage the full participation and consideration of the views of all major groups in matters concerning sustainable development and environmental management.			●	
	Prepare disaster preparedness, prevention and management plans.				●
	Show greater political commitment to addressing environmental degradation.				●
	Address the problem of corruption to increase resource-use efficiency.				●
C2. Enhancement of regional and sub-regional cooperation	Provide support to the newly created African Union.	●			
	Agree on a programme of action to support regional shared water initiatives, and other transboundary environmental resources.		●	●	
	Support institutions of sub-regional cooperation and economic integration such as IOC, EAC, ECOWAS, SADC.	●			
	Reach agreement on the need for an effective governance regime for sustainable development.		●		
C3. Mobilizing financial resources	Provide new and additional financial resources to African states for environmental management and reduction of the vulnerability of Africans to adverse environmental changes.	●	●	●	
	Increase efforts in mobilizing domestic resources through taxes, fines and resource user fees.				●
	Ensure environment has higher profile in the budget allocation process, including disbursement of Poverty Action Funds.				●
	Develop and promote win-win strategies for encouraging private sector investment in environmental management.				●

Category	Specific Actions	Responsibilities			
		International	AMCEN	Sub-regional	National
C3. Mobilizing financial resources (continued)	Develop capacity for natural resource accounting and valuation to facilitate proper pricing of environmental goods and services.		●	●	
C4 Improving institutional capacity	Improve the institutional capacity to monitor, coordinate and supervise environmental management holistically and on a continent-wide basis.	●	●		
C5. Enhancing the participation of civil society	Build capacity of national NGOs to become effective partners in environmental management.				●
	Promote the establishment and operations of regional and sub-regional NGO fora.		●	●	
C6. Emphasizing sustainable development	Build capacity for greening development plans at national and sub-national levels.	●	●		
	Make greening of accounts mandatory and a precondition for allocation of financial resources.				●

ACRONYMS AND ABBREVIATIONS

ACOPS	Advisory Committee on the Protection of the Sea
ADB	African Development Bank
ADMADE	Administrative Management Design for Game Areas (Zambia)
AEC	African Economic Community
AEO	Africa Environment Outlook
AIDS	acquired immunodeficiency syndrome
AMCEN	African Ministerial Conference on the Environment
AMU	Arab Maghreb Union
APINA	Air Pollution Impact Network for Africa
ArabMAB	Arab Man and Biosphere (network)
ARI	acute respiratory infection
ASCN	African Sustainable Cities Network
ATO	African Timber Organization
AU	African Union
CAIP	Cairo Air Improvement Project
CAMRE	Council of Arab Ministers Responsible for the Environment
CARPE	Central Africa Regional Programme for the Environment
CBD	Convention on Biological Diversity
CBNRM	Community-Based Natural Resource Management
CCF	Climate Change Fund
CEDARE	Centre for Environment and Development for the Arab Region and Europe
CEFDHAC	Conference on Ecosystems of Dense Humid Forests in Central Africa
CEMAC	Economic and Monetary Community of Central Africa
CESP	Country Environmental Strategy Papers
CFC	chlorofluorocarbon
CILSS	Inter-State Committee to Combat Drought in the Sahel
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CO	carbon monoxide
CO_2	carbon dioxide
COMESA	Common Market for Eastern and Southern Africa
DEAW	Division of Environment Assessment and Early Warning
DRBC	Drill Rehabilitation and Breeding Centre (Nigeria)
DRC	Democratic Republic of Congo
EAC	East African Community
EAEC	East Africa Economic Community
ECCAS	Economic Community of Central African States
ECOFAC	Ecosystèmes Forestiers d'Afrique Centrale
ECOMOG	Monitoring Group (ECOWAS)
ECOWAS	Economic Community of West African States
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ENSO	El Niño Southern Oscillation
EU	European Union
EWS	Early warning systems
FAO	Food and Agriculture Organization of the United Nations
GDP	gross domestic product
GEF	Global Environment Facility
GEO	Global Environment Outlook
GHG	greenhouse gas
GIS	Geographic Information Systems
GM	genetically modified
GMO	genetically modified organism
GNP	gross national product
GOOS	Global Ocean Observing System
GoU	Government of Uganda
GPA	Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities
HDI	Human Development Index
HIV	human immunodeficiency virus
HYCOS	Hydrological Cycle Observing Systems
IADD	Inter-governmental Authority on Drought and Development
ICCON	International Consortium for Cooperation on the Nile
ICZM	Integrated Coastal Zone Management
IFF	International Forest Forum
IGADD	Inter-Governmental Authority on Drought and Development
IGAD	Inter-governmental Authority on Development
IIED	International Institute for Environment and Development
IMF	International Monetary Fund
IOC	Indian Ocean Commission, Mauritius
IOC	Intergovernmental Oceanographic Commission of UNESCO
IPCC	Intergovernmental Panel on Climate Change
IPF	International Panel on Forests
IT	information technology

ITCZ	Inter-Tropical Convergence Zone
ITTO	International Tropical Timber Organization
IUCN	World Conservation Union
IWRM	Integrated Water Resource Management
KICK	Kisumu Innovation Centre-Kenya
KWS	Kenya Wildlife Service
LCBC	Lake Chad Basin Commission
LIFE	Living in a Finite Environment (Namibia)
LVEMP	Lake Victoria Environment Management Programme
MAP	Mediterranean Action Plan
MAP	Millennium Africa Recover Plan
MAP	Millennium Partnership for the African Recovery Programme
MARPOL	Convention on the Prevention of Pollution from Ships
MBIFCT	Mgahinga Bwindi Impenetrable Forest Conservation Trust
MEA	Multilateral Environmental Agreement
MoFPED	Ministry of Finance Planning and Economic Development
MPA	Marine Protected Area
NBI	Nile Basin Initiative
NBO	Nile Basin Organization
NBSAP	National Biodiversity Strategy and Action Plan
NCC	National Climate Committee (Mauritius)
NCS	National Conservation Strategy
NEAP	National Environment Action Plan
NEMA	National Environment Management Authority
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
NPCAD	National Plan of Action to Combat Desertification
NPP	Net Primary Productivity
NSA	Nubian Sandstone Aquifer
NTFPA	National Tropical Forestry Action Plans
OAU	Organization of African Unity
ODA	Official Development Assistance
ODS	ozone-depleting substance
OECD	Organization for Economic Cooperation and Development
PACSICOM	Pan-African Conference on Sustainable Integrated Coastal Management
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PERGSA	Protection of the Environment of the Red Sea and the Gulf of Aden (Organization for)
POM	polycyclic organic matter
POP	persistent organic pollutant
PTA	Preferential Trade Area
SADC	Southern Africa Development Community
SAP	Structural Adjustment Programme
SARCCUS	Southern African Regional Commission for the Conservation and Utilization of the Soil
SARDC	Southern African Research and Documentation Centre
SIDA	Swedish International Development Agency
SWIMS	Shoal World Integrated Satellite Monitoring System
TLA	Tree Lovers Association (Cairo, Egypt)
UN	United Nations
UNGA	United Nations General Assembly
UNCBD	United Nations Convention on Biological Diversity
UNCCD	UN Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa
UNCED	United Nations Conference on Environment and Development
UNCHS	United Nations Commission for Human Settlements (Habitat)
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNECA	UN Economic Commission for Africa
UNECE	UN Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	UN Framework Convention on Climate Change
UNFF	United Nations Forest Forum
USAID	US Agency for International Development
WB	World Bank
WCED	World Commission on Environment and Development
WCS	World Conservation Strategy
WFP	World Food Programme
WHO	World Health Organization
WMO	World Meteorological Organization
WSF	World Solidarity Fund
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization
WWF	World Wildlife Fund

CONTRIBUTORS

Those listed below have contributed to AEO in a variety of ways, as authors, reviewers, participants in AEO consultations and survey respondents.

Abdel Farid Abdel-Kader
Centre for Environment and Development for the Arab Region & Europe (CEDARE), Egypt

Ahmed Abdel-Rehim
Centre for Environment and Development for the Arab Region & Europe (CEDARE), Egypt

Hamid Abdoolakhan
Programme Régional Environnement COI, Mauritius

Sherif Abdou
Centre for Environment and Development for the Arab Region & Europe (CEDARE), Egypt

Mohamed A. Abdrabo
Institute of Graduate Studies and Research, Alexandria University, Egypt

Wilna Accouche
Ministère de l'environnement et du Transport, Seychelles

Maha Akrouk
Centre for Environment and Development for the Arab Region & Europe (CEDARE), Egypt

Emmanuel K. Alieu
Ministry of Agriculture, Forestry & Marine Resources, Sierra Leone

Hossam Allam
Centre for Environment and Development for the Arab Region & Europe (CEDARE), Egypt

Gaston Andoka
Ministère de l'Environnement, Congo
Coordonnateur National ADIE- PRGIE Congo

Emile Amougou
Ministère de l'Environnement et des Forêts, Cameroon

Willy Andre
Ministère de l'environnement et du Transport, Seychelles

Linda Arendse
CSIR-Environmentek, South Africa

Franck Attere
WWF CARPO, Gabon

Rajen Awotar
Council for Development Environmental Studies & Conservation (MAUDESCO), Mauritius

Bola Ayeni
Department of Geography, University of Ibadan, Nigeria

Salim Bachou
Consulting Economist, Uganda

Marcel Baglo
Agence Béninoise pour l'Environnement, Benin

Anna Ballance
UNEP/GRID-Arendal, Norway

Abou Bamba
Network for Environment and Sustainable Development in Africa (NESDA), Côte d'Ivoire

Patricia Baquero
Ministry of Land Use and Habitat, Seychelles

Louis Guyto Barbe
Division de l'Environnement, Seychelles

H. Beekhee
Economist, Mauritius

John F. Benson
Centre for Research in Environmental Appraisal and Management, School of Architecture, Planning and Landscape, University of Newcastle, UK

Sitotaw Berhanu
Environment Protection Authority, Ethiopia

Wilfrid Bertile
Indian Ocean Commission, Mauritius

Didier Biau
Direction Régionale de l'Environnement, Réunion

Henriette Bikie
Global Forest Watch, Cameroon

Edelmiro Castano Bizantino
Association pour le Développement de l'Information Environnementale (ADIE), Programme Régional de Gestion de l'Information Environnementale (PRGIE), Central Africa, Equatorial Guinea

Innocent Bizimana
Ministry of Agriculture, Livestock, Environment and Rural Development, Rwanda

Foday Bojang
Organisation of African Unity (OAU), Ethiopia

Q. Chakela
Consultant, Lesotho

Geofrey Chavula
Department of Environment Affairs and Tourism, Malawi

Thomas Chiramba
Southern African Development Community (SADC), Water Sector Coordinating Unit, Lesotho

Hennie Coetzee
FOSA Expert Advisory Group, South Africa

Judie Combrink
Dept. of Environmental Affairs and Tourism, South Africa

Athanase Compaoré
Global Water Partnership, Burkina Faso

Berhe Debalkew
Intergovernmental Authority on Development (IGAD), Djibouti

Charl De Villiers
Consultant, South Africa

Anne-France Didier
Direction Régionale de l'Environnement, Réunion

Amadou Moctar Dieye
Centre de Suivi Ecologique, Sénégal

Koulthoum Djamadar
Direction Générale du Plan, Comoros

Bougonou Djeri-Alassani
Togo

G. Domingue
Ministry of Land Use and Habitat, Seychelles

Clement Dorm-Adzobu
Water Resources Commission, Ghana

Charles-Elie Doumambila
Association pour le Développement de l'Information Environnementale (ADIE), Programme Régional de Gestion de l'Information Environnementale (PRGIE), Central Africa, Gabon

Tewolde Berhan Gebre Egziabher
Environment Protection Authority (EPA), Ethiopia

Mohammed El-Anbaawy
Faculty of Science, Department of Geology, Cairo University, Egypt

Khaled El-Askari
Water Management Research Institute, Egypt

Aly El-Beltagy
National Institute for Marine and Oceanography, Egypt

Jean Christophe Elembo
Association pour le Développement de l'Information Environnementale (ADIE), Programme Régional de Gestion de l'Information Environnementale (PRGIE), Central Africa, Democratic Republic of Congo

Dr Hisham Elkadi
School of Architecture, Planning and Landscape, University of Newcastle, UK

Dina El-Naggar
Egyptian Environmental Affairs Agency, Ministry of Environment, Egypt

Mahmed Eltawil
Tawil Consultants, Architects, Planners and Environmental Engineers, Egypt

Rachid Firadi
Ministère de l'Amenagement du Territoire, de l'Urbanisme, de l'Habitat et de l'Environnement, Morocco

Peter G. H. Frost
University of Zimbabwe, Zimbabwe

Richard Fuggle
University of Cape Town, South Africa

Prudence Galega
Network for Environment and Sustainable Development in Africa (NESDA) Chapter, Cameroon

Troy Govender
External Specialist Advisor to UNEP, Children, Youth & Sport Programmes, South Africa

Betty Gowa
National Environment Management Authority (NEMA), Uganda

Jacob Gyamfi-Aidoo
EIS-Africa, South Africa

Craig Haskins
Cape Metropolitan Council Administration, City of Cape Town, South Africa

Ahmed Hegazy
Botany Department, Faculty of Science, Cairo University, Egypt

Hamadi Idaroussi
Ministère de la Production et de l'Environnement, Comoros

S. K. Imbamba
Consultant, Kenya

Phoebe Ayugi Josiah
Health Environment and Population Consultancy, Kenya

Godfrey Kamukala
Consultant, Tanzania

Yemi Katerere
IUCN Regional Office for Southern Africa, Zimbabwe

Eric Kemp-Benedict
Stockholm Environment Institute (SEI), USA

Bowdin King
ICLEI, Zimbabwe

Consolata Kiragu
National Environment Secretariat, Kenya

Evans Kituyi
African Centre for Technology Studies (ACTS), Kenya

Etienne Kayengeyenge
Ministère de l'Aménagement du Territoire et de l'Environnement, Burundi

Michael Koech
Kenya Ambassador to UNEP, Kenya

Tiékoura Koné
WWF International, Western Africa Regional Programme Office, Côte d'Ivoire

Koffi Kouakou
Timbuktu Ventures, South Africa

Andries Kruger
South African Weather Service, South Africa

Tendai Kureya
SAFAIDS, Zimbabwe

Elton Laisi
CEDRISA, Malawi

Christian Leger
Direction Régionale de l'Environnement, Réunion

Francis Coeur de Lion
GIS Centre, Seychelles

Festus Luboyera
Deptartment of Environmental Affairs and Tourism, South Africa

Clever Mafuta
SARDC-IMERCSA, Zimbabwe

Jean Roger Mamiah
Association pour le Développement de l'Information Environnementale (ADIE), Programme Régional de Gestion de l'Information Environnementale (PRGIE), Central Africa, Cameroon

Pierre Mangala
Ministère de l'Environnement, République Centrafricaine Coordonnateur National ADIE-PRGIE Centrafrique

Anna Mampye
Department of Environmental Affairs & Tourism, South Africa

Denis Eddy Matatiken
Division de l'Environnement, Seychelles

Simon Mbarire
National Environment Secretariat, Kenya

Mireille Mbombo
C.R.E.F. Central Africa, Cameroon

Michel Mbomoh-Upiangu
Association pour le Développement de l'Information Environnementale (ADIE), Programme Régional de Gestion de l'Information Environnementale (PRGIE), Central Africa, Gabon

Jean Boniface Memvie
Ministère de l'Environnement, Gabon

Beyene Zigta Mesghenna
Department of Environment, Eritrea

Watipaso Mkandawire
Common Market for Eastern and Southern Africa, Zambia

Rajendranath Mohabeer
Commission de l'Ocean Indien, Mauritius

Yagoub Mohamed
Ministry of Environment and Physical Development, Sudan

Jobo Molapo
Southern African Development Community (SADC), Environment and Land Management Sector, Lesotho

Santaram Mooloo
Ministry of Environment, Mauritius

Yakobo Moyini
Environmental Management Associates (EMA), Kampala

Sam Moyo
Independent Policy Analyst, Zimbabwe

Lucy Mulenkei
Indigenous Information Network, Kenya

Maria Mutama
SARDC-IMERCSA, Zimbabwe

Catherine Mutambirwa
SARDC-IMERCSA, Zimbabwe

Jocselyne Mutegeki
Environmental Management Associates (EMA), Uganda

Leonard Ntonga Mvondo
CREF Central Africa Cameroon. GEO/AEO Focal Point in Central Africa.
Association pour le Développement de l'Information Environnementale (ADIE),
Programme Régional de Gestion de l'Information Environnementale (PRGIE),
Central Africa, Cameroon

Benjamin Nami
Cameroon, Consultant

Fatou Ndoye
Network for Environment and Sustainable Development in Africa (NESDA),
Côte d'Ivoire

John Nevill
Ministère de l'environnement et du Transport, Seychelles

Protasius Nghileendele
Ministry of Environment and Tourism, Namibia

Deborah Nightingale
Environmental Management Advisors, Kenya

Steven Njinyam
CEMAC, Central African Republic

Marie Tamoifo Nkom
Association Jeunesse Verte du Cameroun, Cameroon

Etienne Ntsama
Etablissement Ntsama et Fils, Cameroon

Zacharie Nzooh
ECOFAC, Cameroon

Charles Obol
Southern African Development Community (SADC), Environment and Land
Management Sector, Lesotho

Agnes F. Odejide
FOSA Expert Advisory Group, Nigeria

Peter Ondiege
KEIPET Consultants Ltd., Kenya

Mohamed Youssouf Oumouri
Ministère de l'Environnement, Comoros

Rajesh Parboteeah
Consultant, Mauritius

Rolph Payet
Ministère de l'environnement et du Transport, Seychelles

Joyce Phoshoko
Department of Environmental Affairs & Tourism, South Africa

Fatou Planchon
Centre de Suivi Ecologique, Senegal

Danny Poiret
Ministère de la Santé, Seychelles

Johannes Rudolph Pretorius
Department of Environmental Affairs & Tourism, South Africa

Deepnarain Prithipaul
Ministère de l'Environnement et du Développement Rural et Urbain, Mauritius

Fouad Abdou Rabi
ONG AIDE, Comoros

Georges Rafomanana
Ministère de l'Environnement, Madagascar

Côme Ramakararo
Ministère de l'Environnement, Madagascar

A. Ramsewak
Ministère des Affaires Etrangéres et de la Cooperation Regionale, Mauritius

Pierre Randah
CEMAC, Central African Republic

Jean de Dieu Ratefinanahary
Ministère des Affaires Etrangères, Madagascar

Herisoa Razafinjato
Office National pour l'Environnement, Madagascar

J. L. Roberts
Ministry of Health and Quality of Life, Mauritius

Soonil Dutt Rughooputh
Université de Maurice, Mauritius

Renison K. Ruwa
Kenya Marine and Fisheries Research Institute, Kenya

Osama Salem
Consultant, Egypt

Munyaradzi Saruchera
Programme for Land and Agrarian Studies, South Africa

Craig Schwabe
GIS Centre, Human Sciences Research Council (HRSC), South Africa

Charles Sebukeera
National Environment Management Authority (NEMA), Uganda

Daniel Sibongo
Consultant Comms, Zimbabwe

Jay Singh
Department of Environmental Affairs & Tourism, South Africa

Didier Slachmuylder
Indian Ocean Commission, Mauritius

Soondaree Devi Soborun
Ministry of Land Transport, Shipping and Port Development, Mauritius

Lovemore Sola
GEOFLUX, Botswana

Nouri Soussi
Ministry for Environment and Land Management, Tunisia

Blondeau Talatala
Ministère de l'Environnement et des Forêts, Cameroon
Coordonnateur National ADIE-PRGIE, Cameroon

Marie Tamoifo
Jeunes et Environnement, Cameroon

Nicodème Tchamou
Central Africa Regional Programme for the Environment (CARPE),
Central Africa, Gabon

Jonathan Timberlake
Biodiversity Foundation for Africa, Zimbabwe

Gabolekwe Lesole Tlogelang
Office of the President, Botswana

Tsala Abina
Secrétariat Permanent à l'Environnement, Cameroon

Jean Pierre Vandeweghe
Association pour le Développement de l'Information Environnementale (ADIE),
Programme Régional de Gestion de l'Information Environnementale (PRGIE),
(Central Africa), Gabon

Michel Vieille
Ministère de l'environnement et du Transport, Seychelles

Ahmed Wagdy
Centre for Environment and Development for the Arab Region & Europe
(CEDARE), Egypt

Enock Wakwabi
Kenya Marine and Fisheries Research Institute, Kenya

Conmany B. Wesseh
Center for Democratic Empowerment, Cote d'Ivoire

Jessica Wilson
Environmental Monitoring Group, South Africa

Tesfaye Woldeyes
Environment Protection Authority (EPA), Ethiopia

Cletus Wotorson
Mineral Resources Policy Development Expert, USA

Alaphia Wright
University of Zimbabwe, Zimbabwe

Joseph Ipalaka Yobwa
Ministère de l'Environnement, République Démocratique du Congo Coordonnateur National ADIE-PRGIE, RDC

Rose Don Zoa
Ministère de l'Environnement et des Forêts, Cameroon

UNEP

Subramonia Ananthakrishnan

Jacquie Chenje

Munyaradzi Chenje

Salif Diop

Sheila Edwards

Beth Ingraham

Kagumaho Kakuyo

Rungano Karimanzira

Jesper Kofoed

Dave MacDevette

Strike Mkandla

Naomi Poulton

Megumi Seki

David Smith

Anna Stabrawa

Thomas Tata

Sekou Toure

Laura Williamson

Other UN bodies

Mr Kwame Awere-Gyekye
ECA, Ethiopia

Mr Jean Louis Blanchez
FAO, Italy

Mr Seraphin Dondyas
FAO Consultant, Gabon

Mr Michel Laverdiere
FAO, SAFR, Zimbabwe

Dr Ousmane Laye
ECA, Ethiopia

Dr C. T. S. Nair
FAO, Italy

Ms Ada Ndeso-Atanga
Consultant, FAO Regional Office for Africa, Ghana

Mr Ojijo Odhiambo
UNDP, Kenya

Dr Kwadwo Tutu
ECA, Ethiopia

Mr Hassan Musa Yousif
UNOPS/NLTPS/African Futures, Côte d'Ivoire

Institutions

Association pour le Développement de l'Information Environnementale, Programme Régional de Gestion de l'Information Environnementale (ADIE-PRGIE)

Central Africa Regional Programme for the Environment (CARPE), Cameroon

Centre for International Forestry Research (CIFOR)

Communauté Economique et Monétaire de l'Afrique Centrale (CEMAC)

ECOFAC Cameroon

Global Forest Watch Cameroon

Institut National de Cartographie du Gabon (INC Gabon)

IUCN, Regional Office for Central Africa

Ministry of Environment and Forestry, Yaounde, Cameroon

Network for Environment and Sustainable Development in Africa (NESDA), Cameroon

Programme de Développement Participatif Urbain

Shoals of Capricorn, Seychelles

WWF Cameroon

WWF Gabon

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Note for users: A separate list of acronyms and abbreviations is also located on pages 405 to 406.

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