



International Environmental
Law Research Centre

BIOLOGICAL DIVERSITY MANAGEMENT IN AFRICA

LEGAL AND POLICY PERSPECTIVES IN THE RUN-UP TO WSSD

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Published in: 11/1 *Review of European Community and
International Environmental Law* (2002), p. 38.

*This paper can be downloaded in PDF format from IELRC's website at
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Biological Diversity Management in Africa: Legal and Policy Perspectives in the Run-up to WSSD

Patricia Kameri-Mbote and Philippe Cullet

INTRODUCTION

The African continent is today facing severe environmental crises. Some of the most critical environmental problems include deforestation, desertification, soil erosion and the decline in biological diversity. These crises directly impact on food supplies, as demonstrated by the increased frequency and magnitude of famines. Biodiversity is very important for African people, most of whom live in rural areas. They depend directly on the extraction and exploitation of natural resources such as food, water and wood for fuel to satisfy their basic needs.

Individual African countries are parties to a number of international agreements concerning the management of biological resources. There have also been regional initiatives in this area. The challenge for these countries is to move from the realm of the international and regional regimes to the national sphere through effective and concrete legal and institutional frameworks. Further, effective national regimes will have to incorporate all actors involved in the management of biological resources, from subsistence farmers to national resource management agencies and the private sector.

It is important to reflect on past and current efforts to sustainably manage biological resources in the run-up to the World Summit on Sustainable Development (WSSD). Despite significant gains over the past couple of decades, the overall picture remains bleak. As acknowledged by the Regional Roundtable for Africa, comprising of eminent persons analysing the progress in African countries since Rio, despite an increased awareness of the fragility of the African environment and its natural resources, and some improvements in the management of natural resources such as land, forests and water, the natural resource base continues to deteriorate.¹

¹ *Report of the Regional Roundtable for Africa – 2002 World Summit on Summit on Sustainable Development* (Cairo, 25–27 June 2001).

In this article, the international and regional framework for the management of biodiversity will first be set out. In the second section, the dominant legal and policy trends in biological resource management at national levels and the influence of international law are identified. The third section analyses specific legal and institutional initiatives for biodiversity management. Finally, suggestions are made for the development of more sustainable and effective laws and policies for biodiversity management in African countries.

INTERNATIONAL AND REGIONAL LEGAL AND POLICY FRAMEWORK FOR BIODIVERSITY MANAGEMENT

Biodiversity comprises the variety of genetically distinct populations and species of plants, animals and micro-organisms with which human beings share the Earth, and the variety of ecosystems of which they are functioning parts.² It contributes directly to meeting the basic food, health and energy needs of a majority of humankind. Indeed, most African countries rely heavily on wild and traditionally cultivated plant species as a source of their basic needs. The prevalence, and in some cases increase, of malnutrition in sub-Saharan countries makes the sustainable management of biological resources a concern of immediate relevance in the context of the fight against malnutrition and poverty generally.³ The challenge is especially acute in sub-Saharan Africa, which remains the region of the world with the highest incidence of undernourishment.⁴

² See P.R. Ehrlich and A.H. Ehrlich, 'The Value of Biodiversity', 21 *Ambio* (1992) 219. See also, United Nations, *Glossary of Environment Statistics* (UN Doc. ST/ESA/STAT/SER.F/67, 1997).

³ See, for example, Food and Agricultural Organization, *The State of Food Insecurity in the World 2001* (Food and Agricultural Organization, 2001).

⁴ *Ibid.*, at 51.

The recognition of the importance of biodiversity has led the international community, over the last century, to put in place elaborate legal mechanisms for use and conservation of biological resources. Traditionally, biodiversity management focused, on the one hand, on strict habitat and species conservation, and on the other hand, on large-scale resource extraction. Over time, there has been a progressive shift to a more balanced approach recognizing the need to integrate conservation and use of biological resources. This is today covered by the notion of sustainability.

The central instrument in this field today is the Convention on Biological Diversity ratified by nearly all African States. It seeks to promote the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from the use of the resources, including appropriate access to genetic resources and transfer of relevant technologies.⁵

There are also a number of instruments which focus on species and habitat conservation and/or use. At the global level, the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat was the first convention to be exclusively concerned with habitat protection.⁶ It emphasizes the need to conserve wetlands and their sustainable utilization in a way compatible with the maintenance of the natural properties of the ecosystem in question.⁷ Similar principles guide the African Convention on the Conservation of Nature and Natural Resource, which seeks to protect animal and plant species that are threatened with extinction and to safeguard their habitats.⁸

Some instruments focus more generally on ecosystem management. The Convention to Combat Desertification provides, for instance, a broad framework for coordinating efforts against desertification and aims at mitigating the effects of drought in countries experiencing serious water shortages and desertification.⁹ The Convention on the Law of the Sea for its part focuses on marine areas and regulates most issues

linked to their use.¹⁰ It is supplemented by United Nations Environment Programme sponsored regional conventions which emphasize both action with regard to marine pollution and action to ensure sustainable environmental management of natural resources.¹¹ African States have also initiated cooperation concerning the management of shared rivers with an increasing emphasis on environmental factors.¹²

Other treaties focus on specific conservation-enhancing techniques. These include the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which focuses on trade as a mechanism to foster conservation.¹³ CITES is aimed at the identification of endangered species and their withdrawals from world markets through a listing process. CITES appendices list the species that are currently threatened with extinction and those that face a similar threat in the future. CITES has been supplemented by efforts at the regional levels to curb and eliminate illegal trade in fauna and flora.¹⁴

The legal and institutional framework for biodiversity management also comprises a number of other instruments, some of them are not directly concerned with biodiversity. The United Nations Framework Convention on Climate Change and its Kyoto Protocol seek, for instance, to address the problem of global warming at the international level.¹⁵ Climate change is intrinsically related to biodiversity management, since changes in mean temperatures will probably affect the growth and regeneration of trees and have negative consequences for agriculture.¹⁶

⁵ Article 1 of the Convention on Biological Diversity (Rio de Janeiro, 5 June 1992), reprinted in 31 *ILM* (1992), 818.

⁶ See, for example, P.W. Birnie and A.E. Boyle, *International Law and the Environment* (Clarendon Press, 1992), at 465.

⁷ Article 3 of the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar, 2 February 1971), reprinted in 11 *ILM* (1972), 963; see also Third Conference of the Contracting Parties, Recommendation C.3.3. on Wise Use of Wetlands (Regina, 1987).

⁸ Article VIII(1) of the African Convention on the Conservation of Nature and Natural Resource (Algiers, 15 September 1968), reprinted in 1001 *UNTS* (1968), 3 (hereafter, 1968 Conservation Convention).

⁹ Article 2 of the Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (Paris, 17 June 1994), reprinted in 33 *ILM* (1994), 1328.

¹⁰ United Nations Convention on the Law of the Sea (Montego Bay, 10 December 1982), reprinted in 21 *ILM* (1982), 1261.

¹¹ See, for example, Article 4 of the Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (Abidjan, 23 March 1981), reprinted in 20 *ILM* (1981), 729; and Article 4 of the Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi, 21 June 1985).

¹² See, for example, Agreement on the Action Plan for The Environmentally Sound Management of the Common Zambezi River System (Harare, 28 May 1987), reprinted in 27 *ILM* (1988), 1109 (hereafter, Zambezi Action Plan); and Revised Protocol on Shared Watercourses in the Southern African Development Community (SADC) (Windhoek, 7 August 2000), reprinted in 40 *ILM* (2001), 321.

¹³ Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington, 3 March 1973), reprinted in 12 *ILM* (1973), 1085 (hereafter, CITES).

¹⁴ See, for example, Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora (Lusaka, 8 September 1994).

¹⁵ United Nations Framework Convention on Climate Change (New York, 9 May 1992), reprinted in 31 *ILM* (1992), 849.

¹⁶ See M.U.F. Kirschbaum *et al.*, 'Climate Change Impacts on Forests', in R.T. Watson *et al.* (eds), *Climate Change 1995 – Impacts, Adaptations and Mitigation of Climate Change: Scientific-Technical Analyses* (Cambridge University Press, 1996); and J. Reilly *et al.*, 'Agriculture in a Changing Climate: Impacts and Adaptation', in R.T. Watson *et al.* (eds), *ibid.*, at 427.

International instruments concerning intellectual property rights, such as the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), also play a role.¹⁷ One of the areas where TRIPS has important impacts for a majority of African countries is agriculture, since it requires all countries to protect plant varieties, either by patents or by an alternative system (*sui generis* system).¹⁸ Another intellectual property based agreement is the International Convention for the Protection of New Varieties of Plants (UPOV Convention), which focuses specifically on the introduction of intellectual property rights standards over plant varieties. It was first adopted in 1961 and comprised for a long time mainly developed countries. Membership has increased significantly over the past few years and now includes a number of other countries, including Kenya and South Africa. The Convention recognizes the rights of individual plant breeders who have developed or discovered plant varieties which are new, distinct, uniform and stable.¹⁹ Revisions to the UPOV Convention in 1991 have strengthened the rights of plant breeders, making them, in effect, almost similar to patents.²⁰

Lastly, the recently concluded Treaty on Plant Genetic Resources for Food and Agriculture will be of major importance in the management of biodiversity. Its significance for biodiversity management in Africa stems from its focus on the conservation and sustainable use of agricultural biodiversity, its attempt to give an international legal definition to farmers' rights, and from the access and benefit-sharing regime that it sets up.²¹

LEGAL AND POLICY TRENDS IN BIOLOGICAL RESOURCE MANAGEMENT IN AFRICA

This section highlights the different legal and policy instruments employed by African States to manage and conserve their biological resources. It further emphasizes some of the impacts of international environmental law on the development of national and regional frameworks.

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LAW AND POLICY MAKING

Natural resource laws in many African countries during the colonial and immediate post-colonial period were mainly geared towards resource extraction for export. Conservation concerns were however introduced as early as the 1900s following colonial authorities' concerns with the erosion of biological resources and, in particular, wildlife. This prompted the promulgation of laws and policies to conserve those resource. The emphasis was put on the conservation of Africa's wilderness in its perceived pristine condition. The two main international treaties of that period, the 1900 and the 1933 London Conventions, were premised on the idea that nature preservation could best be achieved through the establishment of areas where human activity would either be reduced or prohibited.²² These early laws were mainly reactionary and ad hoc, and consequently were not very effective in achieving the sustainable management of biological resources. Over time, natural resource management laws have become part of an intricate web of international, regional and national legal norms. The conclusion of landmark international environmental agreements to which most African countries subscribe has had an important influence in the spread of natural resource conservation laws throughout the continent. These national and regional environmental laws remain strongly influenced by pre-independence developments and by the evolving international environmental law regime. The central role of governments has remained untouched, as exemplified by the doctrine of police power which asserts that, by dint of political sovereignty, the State has a duty to ensure that its use does not harm the public welfare. It justifies, for instance, the limitation of private property holders in the interest of the general public.²³ Some countries even restate this doctrine in their constitutions as an exception to the guarantee of fundamental rights and freedoms.²⁴ This legacy therefore has led to the

¹⁷ Agreement on Trade-Related Aspects of Intellectual Property Rights (Marrakech, 15 April 1994), reprinted in 33 *ILM* (1994), 1197 (hereafter, TRIPS Agreement).

¹⁸ *Ibid.*, at Article 27(3)(b).

¹⁹ See Article 5 of the International Convention for the Protection of New Varieties of Plants (Paris, 2 December 1961), as revised at Geneva on 10 November 1972, 23 October 1978 and 19 March 1991 (UPOV Doc. 221(E), 1996) (hereafter, UPOV Convention).

²⁰ See, for example, B. Greengrass, 'The 1991 Act of the UPOV Convention', 13 *Eur. Intell. Prop. Rev.* (1991), 466.

²¹ See International Treaty on Plant Genetic Resources for Food and Agriculture (FAO Doc. C 2001/LIM/17, Rome, 13 November 2001).

²² See Convention destinée à assurer la conservation des diverses espèces animales vivant à l'état sauvage en Afrique qui sont utiles à l'homme ou inoffensive (London, 19 May 1900), reprinted in F. Stoerk, *Nouveau Recueil de traités et autres actes relatifs aux rapports de droit international – Continuation du grand recueil de G. Fr. de Martens*, 2d series, Vol. XXX (Dieterich, 1904); and Convention Relative to the Preservation of Fauna and Flora in their Natural State (London, 8 November 1933), reprinted in 172 *LNTS* (1936), 241 (hereafter, 1933 Preservation Convention).

²³ See, for example, H.W.O. Okoth-Ogendo, 'Juridical Framework of Environmental Governance', in H.W.O. Okoth-Ogendo and G. Tumushabe (eds), *Governing the Environment: Political Change and Natural Resources Management in Eastern and Southern Africa* (ACTS, 1999), at 41.

²⁴ See, for example, Constitution of Kenya 1998, section 75.

adoption of many African conservation and environment laws that focus on restrictive and centralized command-and-control tools, rather than on the dilution of power to local people.

Current Legal Frameworks and Strategies for Environmental Management

African States use various strategies for managing their biological resources. As far as laws are concerned, different types of interventions have been proposed. These include the consecration of guiding environmental principles in constitutions, the use of anti-pollution laws, the creation of laws on the conservation and use of natural resources, and the promulgation of general land use and land tenure laws. The Ugandan Constitution provides, for instance, that Parliament is to provide measures for protecting the environment, managing it sustainably and promoting environmental awareness.²⁵ A majority of countries have also inserted provisions relating to the environment in their bills of rights.²⁶ Thus, the South African Constitution provides that everyone has the right to a clean environment and to have it protected, and to have the environment protected through measures which secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.²⁷ Some, like the proposed amendments to Mauritius' Environmental Protection Act, also include a duty of all persons to preserve and enhance the quality of life and to care responsibly for the environment.²⁸

Environmental law has developed on a sectoral basis in most countries of the world. Africa has been no exception to this rule, but like elsewhere, a number of countries have tried to remedy this situation by adopting framework laws and national environmental plans. Framework laws often incorporate general principles of environmental management, provide the institutional framework for biodiversity management, and set up national environmental funds. Countries like Uganda, the Gambia, Guinea and Comoros have adopted framework legislations.²⁹ National environmental action plans seek to guide activities having an impact on biodiversity management more generally by identifying a country's most pressing environmental

issues and setting priority actions for addressing these issues. These plans are informed by the need to coordinate and harmonize sectoral initiatives.³⁰ The principles guiding such plans can be very broad, as exemplified by the draft Kenyan Biodiversity Strategy and Action Plan.³¹ This plan seeks to foster the integrated management of soil, water and biodiversity for enhancing food security and improving agricultural productivity and sustainability, and to stem the erosion of genetic diversity. Today, most countries possess National Environmental Policies and Plans (NEAPs) which contain statements on conservation and use of biodiversity and its components.³² The objectives of these plans are wide-ranging and include such goals as poverty alleviation, enhancing public participation, harmonizing activities, bringing environmental considerations into mainstream decision-making processes, determining priority actions, and sectoral and cross-sectoral policy analysis to ensure compatibility among sectors and interest groups.

On another level, States have put in place diverse mechanisms to implement the broader objectives of their national laws and policies. Most States have based their biodiversity management policies on the control of biological resources by the State in the interest of the public. In the case of biological resource preservation, States have established protected areas for *in-situ* conservation, and zoos and botanical gardens for *ex-situ* conservation. Trade measures, such as permits and bans, have also been used to foster conservation goals. With regard to biological resource use, States have, for instance, instituted measures such as quarantine and import/export restrictions to regulate the flow of genetic material. In the case of marine resources, the two main concerns have been the utilization of living resources and the prevention of pollution.

Many African countries have relied heavily on penal sanctions, such as fines and imprisonment, to enforce their environmental laws. The Ugandan National Environmental Statutes provide, for instance, that the wasteful use of natural resources renders one liable on conviction to a maximum fine of 18,000,000 shillings (US\$10,000), while the illegal traffic in hazardous wastes attracts a maximum fine of 36,000,000 shillings (US\$20,000).³³ The reliance on penal sanctions

²⁵ Constitution of Uganda 1995, Article 245.

²⁶ See, for example, C. Bruch *et al.*, 'Constitutional Environmental Law: Giving Force to Fundamental Principles in Africa', 26 *Columbia J. Envtl. L.* (2001), 131, at 143.

²⁷ Constitution of the Republic of South Africa, Article 24.

²⁸ Mauritius, Draft Environment Protection (Amendment) Bill of 2001, section 3, inserting an Article 1(A) in the Environment Protection Act 1991.

²⁹ See Uganda, National Environmental Statutes (17 May 1995); Comoros, Loi-cadre No. 94-018 relative à l'environnement (22 June 1994); Gambia, National Environmental Management Act (No. 13 of 1994); and Guinea, Ordonnance No. 045/PRG/87 portant code de l'environnement (28 May 1987).

³⁰ See generally H.W.O. Okoth-Ogendo and G.W. Tumushabe (eds), n. 23 above.

³¹ Kenya, National Biodiversity Strategy and Action Plan (June 1999).

³² See, for example, J. Mugabe, 'Biodiversity and Sustainable Development in Africa', in J. Mugabe and N. Clark (eds), *Managing Biodiversity – National Systems of Conservation and Innovation in Africa* (ACTS, 1998), at 5.

³³ Uganda, National Environmental Statutes (17 May 1995), Articles 99 and 100.

has, on the whole, proved to be an ineffective tool to ensure compliance with the standards put in place. Specific sanctions have failed to deter potential offenders and, in some cases, offenders may find it more cost effective to flout the standards than to comply.³⁴ In recent years, African States have moved away from strict command-and-control measures towards using incentives to enlist the involvement of diverse actors engaged in the management of biological resources. These may take the form of economic measures such as trade and fiscal measures.³⁵

States have also sought to use real and intellectual property rights to engender sustainable management of biodiversity resources. Real property rights, such as land rights, significantly impact on the management of biological resources and the realization of health and food needs. Intellectual property rights, such as patents and plant breeders' rights, have also assumed prominence in the wake of increased biotechnology activities utilizing plant genetic resources. This has, for instance, led States to put in place access regulations and mechanisms for ensuring that the benefits derived from the use of these resources are equitably shared.

At the institutional level, States have attempted to harmonize environmental policies and laws across sectors by establishing environmental ministries or departments. In Cameroon, a national consultative commission for environment and sustainable development has been set up to assist the Government in national environmental policy formulation.³⁶ In some cases, existing institutions are given new guiding principles or new duties and responsibilities. The Malawi Environmental Management Act establishes, for example, a National Council for the Environment, comprised of members drawn from existing institutions to advise the Government on environmental management matters and to ensure the integration of environmental considerations in all aspects of economic planning and development.³⁷

INFLUENCE OF INTERNATIONAL LAW

International treaty and customary international law have had significant influences on environmental law, policy and institutional developments at the national

level in many African countries. This influence extends to such impacts as the incorporation into national legislation of specific international obligations and general principles of international law by State parties.

Influence of Principles of International Law

The duty of States to ensure that activities within their jurisdictions or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction is recognized as one of the fundamental principles of international environmental law.³⁸ It has, for instance, been incorporated by the Comoros in their framework environmental legislation which provides that the State should refrain from engaging in any activities which are likely to cause environmental degradation to another State.³⁹ The principle of sustainable development, which is now a central tenet of international environmental law, has been incorporated by a number of African countries in their framework environmental laws. For instance, the Algerian Environmental Protection Act provides that national development implies a necessary balance between the necessities of economic growth and those of environmental protection.⁴⁰

A number of other principles have been incorporated in domestic laws. The polluter-pays principle has, for instance, been included in the Eritrean Environmental Proclamation which states that '[a]ny polluter shall bear the cost of preventing pollution and of cleaning up and removing the effects and consequences thereof'.⁴¹ The precautionary principle is embodied in the Mozambican Environment Act, which states that environmental management activities should be undertaken so as to avoid significant or irreversible negative environmental impacts, independently of the existence of scientific certainty concerning the occurrence of these impacts.⁴² The precautionary and prevention principles are also embodied in the Cameroon Environment Act where they constitute some of the fundamental principles upon which rational environmental management is based.⁴³

The need for environmental impact assessments, public participation and cooperation at the international level has also been explicitly embodied in domestic

³⁴ See also B. Faso, Loi No. 005/97/ADP portant code de l'environnement (30 January 1997), which provides a relatively much higher fine of CFA 5,000,000,000 for illegal handling of hazardous waste.

³⁵ See, for example, Eritrea, Environment Proclamation of 1996, Article 38 and Ghana, Forest and Wildlife Policy 1994.

³⁶ Cameroon, Décret 94/259/PM portant création d'une Commission nationale consultative pour l'environnement et le développement durable (31 May 1994).

³⁷ Malawi, Environmental Management Act (Act No. 23, 5 August 1996), Articles 9 and 11.

³⁸ See, for example, Principle 2 of the Declaration on Environment and Development (Rio de Janeiro, 14 June 1992), reprinted in 31 *ILM* (1992), 874 (hereafter, Rio Declaration) and Declaration of the United Nations Conference on the Human Environment (Stockholm, 16 June 1972), reprinted in 11 *ILM* (1972), 1416.

³⁹ Comoros, Article 5, n. 29 above.

⁴⁰ Algeria, Loi No. 83-03 relative à la protection de l'environnement (5 February 1983), Article 4.

⁴¹ Eritrea, Environment Proclamation 1996, Article 14.

⁴² Mozambique, Lei No. 97 of 1997, Article 4(3).

⁴³ Cameroon, Law No. 96/12 Relating to Environmental Management (5 August 1996), Article 9.

laws. The Congo Environment Act provides, for instance, that any development project must include an environmental impact assessment.⁴⁴ The Ugandan National Environment Statutes provide that one of the principles of environmental management should be to encourage the maximum participation by people in the development of policies, plans and processes for the management of the environment.⁴⁵ The Angolan Environment Act provides on its part that one of the principles guiding action in the environmental field is that the State undertakes to cooperate with other countries and international organizations to provide concerted solutions to common problems.⁴⁶

Broader guiding principles, such as a human right to a healthy environment and equity considerations, have also been incorporated into national laws. Ugandan law accepts the principles of intra-generational and inter-generational equity, and provides that environmental management should be carried out with a view to use and conserve the environment equitably and for the benefit of present and future generations.⁴⁷ Further, a number of countries have domesticated the human right to environment. The Comoros provides, for instance, that every citizen has the fundamental right to live in a clean environment and the right to contribute to its conservation.⁴⁸

Influence of International Legal Instruments

International treaties have influenced the development of domestic environmental laws and policies in African countries for a long time. Wildlife laws in Africa have, for instance, been influenced largely by international and regional laws on wildlife conservation and management. Indeed, the provisions of the 1968 Conservation Convention have provided the framework for many wildlife laws in Africa. This Convention incorporates the substantive principles of the 1933 Preservation Convention relative to the preservation of fauna and flora in their natural state.⁴⁹ These instruments have provided the basis for the setting aside of land for wildlife conservation which has become the hallmark of wildlife policies in Africa. The 1968 Conservation Convention generally seeks to ensure the conservation, utilization and development of natural resources in accordance with scientific principles and with regard to the best interests of the

people.⁵⁰ It emphasizes in particular the need to protect animal and plant species that are threatened with extinction and to protect their habitats, and it obligates parties to take conservation-related measures, such as establishing conservation areas.⁵¹

Another international instrument that has significantly influenced wildlife laws and policies in Africa is CITES. Many countries have ingrained the proscription of trade in endangered species of flora and fauna in their wildlife legislation. The Kenya Wildlife (Conservation and Management) Act adopted, for example, the provisions of CITES by banning all game animal hunting and revoking all licences to trade in wildlife products in 1977.⁵²

More recently, concerns with biodiversity management have assumed prominence at international and regional levels. In this context, African countries, by conforming to Article 6 of the Convention on Biological Diversity, have, for instance, prepared national strategies, plans and programmes for the management of biodiversity. This process has, in most cases, entailed the integration of the conservation and sustainable use of biological diversity into relevant cross-sectoral plans, programmes and policies.

International treaties have not only provided the basis for national developments in a number of cases, but are also relevant at the regional level. The preambles of a number of legal instruments show that their direct or indirect sources of inspiration were treaties or declarations of general international environmental law. This is, for instance, the case of the 1987 Zambezi River Action Plan and the Bamako Convention on Hazardous Wastes.⁵³ In some cases, international environmental treaties provide the momentum for the (re)negotiation of a treaty at the regional level. This was the case of the renegotiation of the Shared Watercourses Protocol of the South African Development Community which was undertaken following the adoption of the 1997 United Nations Watercourses Convention.⁵⁴ Apart from the influence of international

⁴⁴ Congo, Loi No. 003/91 sur la protection de l'environnement (23 April 1991), Article 2.

⁴⁵ Uganda, Article 3(2)(b), n. 29 above.

⁴⁶ Angola, Lei No. 5/98 (18 June 1998), Article 4(f).

⁴⁷ Uganda, Article 3(2)(c), n. 29 above.

⁴⁸ Comoros, Article 4, n. 29 above.

⁴⁹ See 1933 Preservation Convention, n. 22 above, and accompanying text. The 1933 Convention emphasized the need for establishing national parks and strict natural reserves with the general aim of reducing human interference in the protected areas. It also advocated species-specific protection and the regulation of trade in listed species.

⁵⁰ 1968 Conservation Convention, Article II, n. 8 above.

⁵¹ See *ibid.*, Articles VIII(1) and X, n. 8 above.

⁵² See Kenya, Wildlife (Conservation and Management) (Prohibition on Hunting of Game Animals) Regulations, 30 *Kenya Gazette Supplement* (20 May 1977); and also Wildlife (Conservation and Management) (Revocation of Dealer's Licences) Act No. 5 of 1978, 35 *Kenya Gazette Supplement* (23 June 1978).

⁵³ See Zambezi Action Plan, n. 12 above; and see Convention on the Ban of the Import into Africa and the Control of Transboundary Movements and Management of Hazardous Wastes within Africa (Bamako, 29 January 1991), reprinted in 30 *ILM* (1991), 773.

⁵⁴ See Preamble of the Revised Protocol on Shared Watercourses in the Southern African Development Community (SADC) (Windhoek, 7 August 2000), reprinted in 40 *ILM* (2001), 321; and Convention on the Law of the Non-Navigational Uses of International Watercourses (New York, 12 May 1997), reprinted in 36 *ILM* (1997), 700.

principles and treaties, the role of financial mechanisms should not be overlooked as a force driving the development of environmental standards in African countries. Indeed, the process of 'mainstreaming' environmental concerns at the World Bank and in other financial mechanisms has led to the development of direct or indirect environment-related conditionality. To take but one example, the funds available through the Global Environmental Facility (GEF) are specifically earmarked 'to meet the agreed incremental costs of measures to achieve agreed global environmental benefits' in the areas in which the GEF is active.⁵⁵ Further, the availability of GEF resources has been instrumental in the operationalization of international environmental treaties. A number of African countries have, for instance, received GEF funding to implement the obligations they have under the Convention on Biological Diversity to develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity.⁵⁶

LEGAL AND INSTITUTIONAL FRAMEWORKS FOR BIODIVERSITY MANAGEMENT: SELECTED INITIATIVES

African countries have used a vast number of legal and policy tools to implement their international environmental obligations or to realize their own legal and policy frameworks. This section of the article focuses on a limited number of initiatives that illustrate some of the main issues that African States have had to address in recent years.

CONSERVATION-RELATED EFFORTS

In-Situ Conservation The importance of *in-situ* conservation measures highlighted in the Convention on Biological Diversity has been acknowledged by several African countries which have included provisions for *in-situ* conservation measures in their laws. Indirect provisions are found, for instance, in laws on the preservation of antiquities and monuments, management of grass fires, plant protection and pollution control.⁵⁷ Some countries have also adopted laws and policies that provide incentives and disincentives to influence *in-situ* conservation of biodiversity in gen-

eral, such as provision of subsidies to farmers to maintain natural habitats on their lands and land tax credits to preserve unique plant species on private lands.⁵⁸

Many countries have put significant emphasis on explicit *in-situ* conservation measures in the realm of forests and wildlife, and a number of them have devoted more than 10% of their territories to protected areas. These include Botswana (17.43%), Tanzania (13.83%), Rwanda (12.42%) and Namibia (12.58%).⁵⁹ Different countries adopt diverse *in-situ* wildlife management policies, ranging from a stringent State-driven preservation approach informed by the 'king's game' concept, whereby all wildlife is owned, managed and controlled by the State, to community-oriented sustainable management approaches.

Kenya exemplifies the former approach. Its Wildlife Conservation and Management Act vests wildlife resources ownership in the State and seeks to control illegal access to, and exploitation of, wildlife resources.⁶⁰ Individuals and/or institutions have no right to extract protected wildlife or parts thereof without authority of the Kenya Wildlife Service (KWS). The Act requires every person or institution seeking access to wildlife to obtain the prior consent of the relevant authorities.⁶¹ The Act does not however contain provisions requiring the sharing of benefits arising from accessing or using wildlife resources. It is also silent on the participation of local people in determining access to wildlife, particularly that found on private lands.

In contrast, Zimbabwe emphasizes the participation of landowners, including communities, in wildlife management. Its Parks and Wild Life Act seeks to confer 'privileges on owners or occupiers of alienated land as custodians of wildlife'.⁶² It is a recognition of the fact that efficient and sustainable wildlife utilization regimes are more likely to be enhanced by local proprietorship than by exclusive State ownership. The changes in law were prompted by surveys carried out in the 1980s which indicated that the most suitable land use in marginal areas was exploitation of wildlife populations (due to the occurrence of periodic drought which affected cattle ranching severely).⁶³ While the

⁵⁸ See, for example, Kenya, National Biodiversity Strategy and Action Plan (June 1999); and South Africa, National Environmental Management Act: Biodiversity Chapter, first draft (October 2000).

⁵⁹ See B. Grombridge (ed.), *Global Biodiversity – Status of the Earth's Living Resources* (Chapman, 1992).

⁶⁰ Kenya, Wildlife Conservation and Management Act (as amended in 1989).

⁶¹ Currently these are the Minister of Natural Resources and the KWS.

⁶² Zimbabwe, Parks and Wildlife Act (Act No. 14 of 1975, as amended, 1990), Preamble.

⁶³ See J.H. Peterson, *CAMPFIRE: A Zimbabwean Approach to Sustainable Development through Wildlife Utilization* (University of Zimbabwe, 1991). See also B. Sibanda, *Wildlife and Communities at the Crossroads: Is Zimbabwe's Campfire the Way Forward?* (Sapes Trust, 2001).

⁵⁵ See Instrument for the Establishment of the Restructured Global Environment Facility (Geneva, 16 March 1994), reprinted in 33 *ILM* (1994), 1273.

⁵⁶ See CBD, Article 6, n. 5 above; see also n. 32 above, at 22.

⁵⁷ *Ibid.*, Mugabe, at 16.

Zimbabwean Act is mainly directed to commercial farmers, it has provisions enabling the Minister of Natural Resources and Tourism to designate district councils in communal lands as appropriate authorities for the management of wildlife on lands under their jurisdiction, analogous to custodianship of wildlife conferred on owners or occupiers of alienated lands.⁶⁴

Regulation of Trade in Wildlife for Conservation and Tourism As part of their biodiversity management strategies, many African countries have adopted policies, laws and administrative measures to regulate trade in biological resources, with emphasis on wildlife, fisheries and forests. In fact, management of trade in wildlife and wildlife products has received a lot of attention.⁶⁵ The 1968 Conservation Convention, for instance, urges its parties to regulate and control trade in wildlife.⁶⁶ It provides for the issuance of permits for the export of trophies and specimens (a provision later superseded by CITES).

Some African countries have emphasized the use of wildlife and wildlife products while others promote conservation of wildlife for wildlife-based tourism. In implementing the provisions of CITES, for instance, there are fundamental policy divergences between eastern and southern African countries with respect to the African elephant. Kenya and Zimbabwe have taken divergent positions within the CITES regime regarding the domestic management of the African elephant. Zimbabwe supports wildlife management strategies that incorporate communities living with or near wildlife areas. Kenya, on the other hand, supports preservationist strategies.⁶⁷ Thus, Zimbabwe has communal wildlife management projects, whereby local communities participate in management activities and derive benefits therefrom, while Kenya maintains State control of wildlife management activities with minimal community involvement.⁶⁸

The ivory trade issue brings to the fore concerns about the freedom of African countries to manage their biological resources for the benefit of their national economies and local communities by dint of territorial sovereignty. The prohibition of trade in ivory as a resource for poor countries is an impediment to the

overall development of the country as well as to the ability of these countries to meet their international obligations. Most African countries have a foreign debt problem and would like to consolidate their resources to service that debt. In this regard, it has been suggested that debt for ivory swaps could also be used to deal with legally held ivory.⁶⁹ Thus creditor nations could agree to reduce and/or restructure the debt of the countries allowed to trade in ivory and these countries would channel the savings to conservation and undertake to dispose of their ivory stocks by outright destruction or other means in return. This would assist debt-ridden African countries to service their debts using the resources at their disposal, while generating funds to sustainably manage wildlife and their habitats.

IMPLEMENTATION OF THE PRECAUTIONARY PRINCIPLE

The precautionary principle is of rather recent origin in international law. One of the principle's characteristics has been its rapid acceptance in many countries following its inclusion in the Rio Declaration.⁷⁰ The precautionary principle lies at the heart of the Biosafety Protocol to the Convention on Biological Diversity.⁷¹ The principle is also the inspiration for different environmental measures, such as environmental impact assessments. The international recognition of the precautionary principle has had a significant impact on recent developments in regional and national environmental laws and policies, such as biosafety and environmental impact assessment.

Biosafety Concerns about biosafety have come to the fore in the context of the rapid development and use of living modified organisms. The Biosafety Protocol provides a framework for addressing concerns with regard to the safe handling, use and transfer of living modified organisms. It is particularly significant because its main conceptual basis is the precautionary principle.⁷² Many African countries have signed the Protocol and a number of countries have already put in place frameworks for biosafety.

At the regional level, States in the African region have drafted a model law on biosafety.⁷³ It draws upon the

⁶⁴ See n. 62 above.

⁶⁵ See, generally, D. Harland, *Killing Game – International Law and the African Elephant* (Praeger, 1994).

⁶⁶ 1968 Conservation Convention, Article IX(1), n. 8 above.

⁶⁷ See, for example, M. Murphree, *The Lesson from Mahenye: Rural Poverty, Democracy and Wildlife Conservation*, The Wildlife and Development Series No. 1 (available at: <http://www.wildnetafrica.com/bushcraft/articles/document_campfire1.html>).

⁶⁸ See, for example, D.S. Favre, 'Debate within the CITES Community – What Direction for the Future?', 33 *Nat. Resources J.* (1993), 875, at 903.

⁶⁹ See, for example, D. Williamson, *Debt, the African Elephant, and Ivory Stock*, Discussion Paper (WWF, 1997).

⁷⁰ See Principle 15 of the Rio Declaration, n. 38 above.

⁷¹ See Cartagena Protocol on Biosafety to the Convention on Biological Diversity (Montreal, 20 January 2000), reprinted in 39 *ILM* (2000), 1027 (hereafter, Biosafety Protocol).

⁷² *Ibid.*, at Article 1.

⁷³ See Draft National Model Legislation on Safety in Biotechnology 2001 (on file with the authors).

stance of most of the African States in the Protocol's negotiations where they argued for a comprehensive protocol with identification and documentation, a strong statement on precaution, and strong liability and redress provisions.⁷⁴ The model law explicitly provides for the application of the precautionary principle.⁷⁵ It also requires that genetically modified organisms and their products be labelled and that exporters of these products be subjected to very high liability standards.⁷⁶

Some countries have already attempted to adopt regulatory measures concerning biosafety at the national level. Kenya and Uganda, for instance, have adopted a very precautionary approach to the issue of living modified organisms.⁷⁷ Kenya now requires an environmental impact assessment for all biotechnology activities.⁷⁸ Beyond general biosafety measures, some countries have adopted specific provisions in this field. For instance, Egyptian law provides that breeders' rights can be limited in cases where genetic varieties are hazardous to the natural environment, the agricultural system, or the lives or health of human beings or animals.⁷⁹

Environmental Impact Assessment Environmental impact assessment (EIA) is increasingly used as a mechanism to implement the precautionary principle. Many States use EIA to heighten the profile of specific environmental issues. Biodiversity management in many cases has been an issue highlighted in EIA requirements. In Africa, there is no specific international treaty which deals generally with EIA; however, treaties to which African countries are parties do include EIA provisions. At the national level, some countries have introduced significant EIA requirements. In Mauritius, for instance, the law mandates an EIA in the case of specifically listed projects, ranging from manufacturing to coastal development projects and transportation.⁸⁰ Under proposals to amend the Act, the law would introduce a requirement for a Preliminary Environmental Report (PER) for relatively small-scale projects such as small hotels or petrol stations. Larger projects such as dams, fishing ports or landfills would be subjected to a full EIA.⁸¹

⁷⁴ See A. Cosby and S. Burgiel, *The Cartagena Protocol on Biosafety: An Analysis of Results*, IISD Briefing Note (2000).

⁷⁵ See n. 73 above, Preamble, at para. 3.

⁷⁶ *Ibid.*, at Article 14.

⁷⁷ National Council for Science and Technology, 'Regulations and Guidelines for Biosafety in Biotechnology for Kenya', National Council for Science and Technology Publication No. 41 (1998).

⁷⁸ Kenya, Environmental Management and Co-ordination Act 1999, Schedule II.

⁷⁹ Egypt, Presidential Decree to the Law on Individual Property Rights 2000, section 192.

⁸⁰ Mauritius, Environment Protection Act 1991, First Schedule.

⁸¹ Mauritius, Draft Environment Protection (Amendment) Bill, Ministry of Environment (25 June 2001), section 46, First Schedule.

The EIA is meant to be more comprehensive and stringent than the PER under which public participation is, for example, not proposed.⁸²

In Kenya, the Environment Act imposes on project proponents the obligation to conduct EIAs and it grants all persons the right to participate in the EIA process. A project report must first be submitted to the National Environment Management Authority, which then must determine whether the proposal will result in, or is likely to have, significant impacts on the environment. Where such impacts will result or are likely, an EIA must be undertaken.⁸³ The categories of projects that must undergo an EIA in Kenya include storage dams, river diversions, mining, irrigation, waste disposal and nature conservation areas. The procedure also includes elements of public participation. The public must be notified of the intention to carry out an EIA, be given specific information concerning the project and have 60 days within which to submit comments.⁸⁴

USE OF PROPERTY RIGHTS TO FOSTER THE SUSTAINABLE MANAGEMENT OF BIOLOGICAL AND GENETIC RESOURCES

Property rights have traditionally fallen outside the ambit of environmental laws. However, it has become increasingly apparent that the allocation and enjoyment of diverse property rights has wide-ranging implications for sustainable management of environmental resources. African States have progressively made significant use of real property rights as the basis for natural resource management. More recently, the increasing economic value of knowledge related to biological and genetic resources has made the allocation of intellectual property rights the focus of significant interest.

Land ownership traditionally has been of fundamental importance in most African societies. Given the symbiotic relationship between a majority of African communities and their environment, land tenure and land use laws are of great significance for the conservation and use of biological resources.⁸⁵ More specifically, the nature and quantum of rights enjoyed by landowners have impacts on the conservation, management and enhancement of agricultural biodiversity, which is

⁸² *Ibid.*, section 17 (section 15 of the principal Act amended).

⁸³ Kenya, Environmental Management and Coordination Act 1999, section 58(2). See, generally, sections 58–67.

⁸⁴ *Ibid.*, section 59.

⁸⁵ Cf. E. Moss, *Land Use Controls in the United States* (Dial Press, 1977).

vital for enhancing food security. In recognition of this symbiotic link, some countries have put in place provisions to ensure that operative land tenure systems do not threaten food security. Burundi provides, for instance, that every household or adult occupying arable land must create and maintain food crop cultivations. The law links rights to land and food security by providing that people who cannot fulfil their obligations to produce food crops should be provided plots close to their homes.⁸⁶

Property rights over biological resources were for a long time vested mostly in the State. States were deemed to be guardians of the public interest and in this capacity owned and controlled pivotal resources, such as water, forests and mineral resources. In most African countries, States have maintained centralized control over the use and management of these resources. Forests in most African countries are, for instance, held by the governments in trust for the public. This gives the State considerable powers to prohibit or restrict access to protected areas. The State also has police powers to regulate human activities, which may include regulatory measures for conservation of both areas and species in non-protected areas. The Kenya Forests Act vests, for example, exclusive control in the Government which can declare unalienated Government land and areas with unique flora and fauna as forest areas demanding special protective measures.⁸⁷ The effect of these declarations is to exclude other forms of land-use activities and to vest monopoly rights of management in the State. The use of such areas for settlement, cultivation, grazing, hunting and the removal of forest produce or the disturbance of flora are prohibited save under a licence issued by the relevant authority.⁸⁸ Similarly, the Kenyan draft regulations concerning access to genetic resources intimate that all plant genetic material in their natural condition or deposited in a gene bank are vested in the Government of Kenya, which holds them in trust for present and future generations of Kenyans.⁸⁹

The shortcomings of the dominant property rights model have become progressively inescapable and States have slowly instituted mechanisms for devolving control and management responsibilities to other actors. In this regard, the enlistment of categories of people who have traditionally been excluded from management, such as local communities, women and farmers, has been increasingly sought in furtherance of international commitments.⁹⁰ For example, in the

realm of wildlife resources, some African countries have put in place mechanisms to ensure that local communities are actively involved in management activities. This constitutes a departure from policies emphasizing State control in the management of biological resources which result, in some cases, in the marginalization of local communities living in symbiosis with the resources. This may, for instance, explain the poor interactions between human beings living in or neighbouring wildlife refuges and the wildlife in some African countries.

Community involvement in wildlife management has been most prominent in Zimbabwe where the Communal Area Management Programme for Indigenous Resources (CAMPFIRE) was established in 1984. The basis for CAMPFIRE is traceable to the Parks and Wildlife Act of 1975 which attempts to devolve State control over wildlife resources.⁹¹ The rationale for this move is twofold. First, as long as wildlife remains the property of the State, nobody is likely to invest in it. Second, commercial and communal range-land management efforts are likely to concentrate more on domestic livestock rather than on wildlife, making protected areas vulnerable and in danger of isolation. The Act permits landowners to make use of wildlife as an economic resource within sound conservation practice limits, thus linking wildlife protection on both communal and privately owned land to sustained utilization of wildlife. CAMPFIRE seeks to enlist voluntary community participation in wildlife management through the development of appropriate institutions and the provision of technical and financial assistance to communities.⁹²

Most initiatives for the involvement of communities in biodiversity management seek to ensure that members of the involved communities get a share of the benefits accruing from the management of the resources. They have however stopped short of giving communities tenure over the resources. Thus, the Kenyan community wildlife initiative seeks to ensure that some of the financial benefits accruing from wildlife conservation are channelled to local communities through the construction of amenities like schools and hospitals, water supplies, and cattle dips.⁹³ Similarly, in Zambia, among the benefits that local people gain from the schemes are the provision of meat at affordable rates,

⁸⁶ Burundi, Ordonnance No. 710/276 portant obligation de créer et entretenir des superficies minimales de culture vivrières (25 October 1979).

⁸⁷ Chapter 385 of the Laws of Kenya.

⁸⁸ *Ibid.*, at sections 10 and 11.

⁸⁹ Kenya, Draft Environmental Management and Coordination Access to Plant Genetic Material Regulations 1999, Article 3(1).

⁹⁰ See, for example, CBD, Preamble, para. 12 and Article 8(j), n. 5 above.

⁹¹ Zimbabwe, Parks and Wildlife Act (Act No. 14 of 1975, as amended in 1990).

⁹² M.W. Murphree, 'Decentralizing the Proprietorship of Wildlife Resources in Zimbabwe's Communal Lands', in D. Lewis and N. Carter (eds), *Voices from Africa – Local Perspectives on Conservation* (World Wildlife Fund, 1993), at 133.

⁹³ See Kenya Wildlife Service, *Report of the Proceedings of Strategic Planning Workshop for the Community Wildlife Service Department* (Nairobi, 29 June–1 July 1992).

the employment of local community members as scouts to police local wildlife, and the payment of revenues from hunting licences or other uses of wildlife. This revenue is used for community purposes as well as to promote sustainable wildlife management.⁹⁴

While community involvement is a relatively new phenomenon, State ownership has traditionally gone alongside private property rights. In fact, individuals constitute the main grantees of land rights. Furthermore, individuals are also the holders of intellectual property rights, such as patents. In recent years, stronger emphasis has been put on individual rights holders. Indeed, the Convention on Biological Diversity not only recognizes the relevance of private property rights in the management of biological resources, but specifically emphasizes the role of intellectual property rights in facilitating the transfer of technologies relevant for biodiversity management to developing countries. The prominence of intellectual property rights in recent years is linked to the increasing economic value of biological and genetic resources, and knowledge related to these resources. In fact, the development of genetic engineering has made the ownership of the resources much less significant compared to the associated knowledge.

Access to Biological Resources and Benefit Sharing

Recent debates concerning the management of biological resources have focused on the rapid development of intellectual property protection for inventions derived from biological resources. Genetic engineering has made it possible to develop drugs or genetic plant varieties which are derived from natural originals. While these developments qualify as 'inventions' under the international intellectual property rights system and can thus benefit from the protection offered by patents, this has caused significant unease in countries where the biological material is used or the knowledge concerning the biological material originates.

The main point of contention is the fact that patent rights grant all benefit streams to the entity recognized as the 'inventor'. This poses problems when the invention is derived from an existing knowledge base. States have therefore progressively tried to develop legal frameworks to regulate access to biological resources and related knowledge. Further, since patent law does not provide for sharing the benefits of the rights with other actors contributing to a given invention, the concept of benefit sharing has been proposed as a way of providing a form of compensation to holders of the original resource and knowledge.⁹⁵ This

⁹⁴ See, for example, D.K. Mwinga, 'The Biodiversity Convention and *in situ* Conservation in Zambia', 6 *Rev. Eur. Community & Int'l Env'tl. L.* (1997), 32.

process is not specific to the African continent but must be emphasized given the important stock of biological resources and related knowledge found in many African countries. It is possible to distinguish between efforts at regulating access both before and after the signature of the Convention on Biological Diversity. In Zimbabwe, for instance, the 1981 Amendment of the Parks and Wild Life Act contains provisions dealing with protected indigenous plants. It intimates that a permit is required to collect protected indigenous plants or parts thereof for export, cultivation and propagation, and for scientific purposes.⁹⁶ Applicants must also provide information on the proposed use of the resources. The Minister of Natural Resources and Water Development, or such other Minister as the President may from time to time assign the administration of the Act, is entitled to prohibit persons from collecting any indigenous plants, whether on alienated or unalienated land, within the area specified in the notice.⁹⁷ Such restrictions on private lands can be brought about in the interests of preservation, conservation, propagation, or control of indigenous plants in Zimbabwe. The Zimbabwean Act constitutes an early attempt at regulating access to biological resources. It remains, however, an early endeavour which stops at regulating access and does not offer any form of benefit sharing.

Increasing opportunities for the commercial use of biological resources have led more and more countries to develop legal frameworks for access and benefit sharing. Uganda has, for example, proposed regulations on access and benefit sharing.⁹⁸ These contain specific provisions on technology transfer and the building of technological capabilities in the area of biotechnology. Technology partnerships are emphasized as a mechanism to foster technology transfer. Generally, Uganda treats access to genetic resources mainly as a technological issue. Thus, it is the Ugandan National Council for Science and Technology which is vested with administrative and overall supervisory responsibilities for implementing access and benefit-sharing requirements.⁹⁹ One of the consequences of the emphasis on the technological dimension of access and benefit sharing is that the proposed regulations are not explicitly integrated in Uganda's attempt to implement its obligations under Article 6 of the Convention on Biological Diversity.¹⁰⁰ In fact, the two processes are deeply interrelated and access

⁹⁵ On access and benefit sharing, see generally K. ten Kate and S.A. Laird, *The Commercial Use of Biodiversity – Access to Genetic Resources and Benefit-Sharing* (Earthscan, 1999).

⁹⁶ Government of Zimbabwe, Parks and Wildlife Act (Act No. 14 of 1975, as amended in 1981), Parts VIII and IX.

⁹⁷ *Ibid.*, section 45.

⁹⁸ Uganda, Draft Regulations on Access to Biological Resources and Benefit-sharing in Uganda, revised version (3 May 1999).

⁹⁹ *Ibid.* CBD, Article 6.

¹⁰⁰ See n. 56 above and accompanying text.

regulations should definitely be based on the broader framework for biodiversity management.¹⁰¹

Beyond attempts at providing general access and benefit sharing regimes, African regulation of access has also been undertaken in more specific contexts, such as the development of plant variety protection regimes. Egypt provides, for instance, as part of its plant breeders' rights regime, that to obtain the protection offered under the law, the breeder must reveal the plant genetic source used in developing the protected variety.¹⁰²

Farmers' Rights and Breeders' Rights African countries that are members of the World Trade Organization (WTO) have the obligation to provide a form of intellectual property right protection for plant varieties.¹⁰³ Before 1994, only a handful of countries had introduced some form of intellectual property right protection for plant varieties. This reflected the fact that the private sector seed industry was a marginal actor in agricultural development. The WTO and the rapid development of genetic engineering have forced African countries to draft and adopt regimes for the protection of plant varieties.

As envisaged in the WTO context, the introduction of intellectual property rights in the seed sector constitutes an attempt to foster the development of a private sector seed industry by giving commercial breeders the added incentive that comes with exclusive commercial rights. This implies that the early debates concerning plant variety protection focused more on the protection offered to breeders than on the protection offered to farmers. This is in line with the current legal framework in countries belonging to the Organization for Economic Development for which the UPOV Convention was first developed.¹⁰⁴

The African response to WTO demands and to the growth of biotechnology industries has been very mixed. The group of sub-Saharan Francophone countries (members of the African Intellectual Property Organization) decided to take what can be considered the simplest route to TRIPS compliance, by both generally incorporating the UPOV Convention regime in their own regional intellectual property convention and by committing themselves to join the UPOV Convention.¹⁰⁵ Adherence to UPOV standards is, from the

point of view of developing countries, the easiest way to be in compliance with TRIPS without having to devise their own framework for plant variety protection.

A more balanced response has been proposed at the level of the Organization of African Unity through the adoption of a model law dealing with access to biological resources, benefit sharing, and the rights of farmers and breeders over their knowledge and resources.¹⁰⁶ It is based on conceptual premises that differ significantly from the TRIPS/UPOV model in so far as it rejects patents on life and the exclusive appropriation of any life form.¹⁰⁷ Despite its strong provisions against exclusive appropriation, the model law is not against the recognition of plant breeders' rights.¹⁰⁸ It, however, attempts to define not just breeders' rights, as is the case of the UPOV Convention, but also the rights of communities and farmers. The community rights that are recognized include rights over biological resources, the right to collectively benefit from the use of their biological resources, rights to innovations, practices, knowledge and technology of the community, and rights to collectively benefit from their utilization. In practice, these rights allow communities the right to prohibit access to their resources and knowledge, but only in cases where access would be detrimental to the integrity of their natural or cultural heritage.¹⁰⁹ Further, the State is to ensure that at least 50% of the benefits derived from the utilization of their resources or knowledge is channelled back to the communities.¹¹⁰ The rights of farmers are slightly more precisely defined. These include the protection of their traditional knowledge relevant to plant and animal genetic resources, the right to an equitable share of benefits arising from the use of plant and animal genetic resources, the right to participate in making decisions on matters related to the conservation and sustainable use of plant and animal genetic resources, the right to save, use, exchange and sell farm-saved seed or propagating material, and the right to use a commercial breeders' variety to develop other varieties.

African countries' responses to the TRIPS challenge which forces them to rethink completely their policies with regard to property rights over seeds is yet to fully take shape. This is due to the fact that a number of countries classified as developing countries in the

¹⁰¹ See, for example, J. Mugabe *et al.*, *Managing Access to Genetic Resources* (Biopolicy International No. 17, ACTS, 1996).

¹⁰² Egypt, Presidential Decree to the Law on Individual Property Rights 2000.

¹⁰³ In accordance with Article 27(3)(b) of the TRIPS Agreement, n. 17 above.

¹⁰⁴ See UPOV Convention, n. 19 above, and related text.

¹⁰⁵ Agreement to revise the Bangui Agreement on the Creation of an African Intellectual Property Organization of 2 March 1977 (Bangui, 24 February 1999).

¹⁰⁶ See Organization of African Unity, African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources (2000).

¹⁰⁷ The provisions on access to biological resources highlight that the recipients of biological resources or related knowledge cannot apply for any intellectual property right of an exclusionary nature. See Article 8(5), *ibid.*

¹⁰⁸ See Article 1(b), *ibid.*

¹⁰⁹ Article 20, *ibid.*

¹¹⁰ Article 23, *ibid.*

WTO are yet to fully implement their commitments, even though the official deadline was 1 January 2000. Furthermore, countries classified as least developed countries still have until 2005 to implement their obligations with regard to plant variety protection.

TOWARDS MORE EFFECTIVE LAWS AND POLICIES FOR BIODIVERSITY MANAGEMENT

The domestication of international conventions through national laws and the incorporation of principles from international law into national laws are important steps towards the effective management of biodiversity in African countries. However, they only constitute the first link of a long chain of causation. One of the crucial elements is the establishment of institutional capacities to ensure the effective implementation of conventions. This depends on a variety of factors informed by, first, an integrated process for biodiversity management incorporating long-term cross-sectoral approaches and harmonized policies and legislation. The practice, however, seems to point to the existence of uncoordinated initiatives, as exemplified by the development of access regimes outside the context of national biodiversity strategies and action plans. Moreover, while the policies may provide for all the tenets necessary in sustainable management of biodiversity, their failure to consider domestic political, economic and social contexts sets them up for failure. To implement national biodiversity strategies and action plans, African States require financial and technical resources. The absence of additional resources implies that such implementation is carried out alongside competing national imperatives, and this greatly affects the efficacy of the strategies.

DEALING WITH THE SHORTCOMINGS IN THE LEGAL AND INSTITUTIONAL FRAMEWORKS

A number of international instruments provide the broad framework for the management of biodiversity in African countries. Some of these instruments do not focus specifically on biodiversity. Overall, the various regimes are not synchronized because they were negotiated in different institutional contexts and cover different subject matter. Indeed, the TRIPS Agreement negotiated in a trade context has wide-ranging implications for biodiversity management, even though it is primarily concerned with fostering the powers of intellectual property rights holders and not with engendering sustainable use of resources.

Different instruments foster different property rights regimes, ranging from national sovereignty to common property or common heritage and private property such as intellectual property rights. The lack of coordination between the different instruments and regimes has ensured that the potential tensions between the assertion of different property rights has not been adequately addressed at the international level. These contradictions should not be carried over at the national level by, for instance, allowing different ministries to deal with different treaties without coordination among themselves. Furthermore, most international instruments make provision for the transfer of technologies and financial resources to assist developing countries in implementing their obligations. Actual transfers have however neither been adequate nor appropriate for African countries given their needs.¹¹¹ Effective implementation of the various instruments is also hampered by the lack of clarity of the obligations set out and the vagueness of the commitments.

A number of shortcomings can also be identified at national levels. National laws seeking to implement international instruments usually follow the priorities set out in these instruments without matching those to local priorities and needs. This is typically the case for countries adopting the UPOV Convention to fulfil their Article 27(3)(b) obligations under TRIPS, even though their agricultural needs and conditions are completely different from the ones of the countries that devised UPOV. Another problem is the lack of coordination between the various policies relating to biodiversity management. For instance, these policies tend to overlook climate change mitigation interventions. Further, the lack of sufficient expertise, awareness and institutional capital within the countries has hampered the implementation of their obligations under Article 6 of the Convention on Biological Diversity, despite the availability of GEF funding.¹¹²

The increasing importance and complexity of biodiversity management has been progressively acknowledged at the domestic and regional levels. The most specific effort at the regional level, to provide a more comprehensive approach of the management of environmental resources, is visible in the work of the African Ministerial Conference on the Environment (AMCEN).¹¹³ AMCEN has played a significant role in

¹¹¹ See, for example, A.B. Herrick, 'Global Environmental Agreements and African National Priorities', in P. Veit (ed.), *Africa's Valuable Assets – A Reader in Natural Resource Management* (WRI, 1998), at 185; and United Nations Development Programme, *Human Development Report 2000* (Oxford University Press, 2000).

¹¹² See n. 32 above.

¹¹³ See, for example, Report of the Ministerial Session of the Conference, Sixth Session – African Ministerial Conference on the Environment (AMCEN), Nairobi, 14–15 December 1995 (Doc.\6THSESS\N\6se_rep.min).

consolidating a common African position in several environmental negotiations.¹¹⁴

SETTING PRIORITIES ACCORDING TO DOMESTIC NEEDS

International environmental treaties and principles have had a considerable impact on the shape of regional and national laws and policies dealing with biodiversity management. This influence is partly responsible for the lack of success in implementing biodiversity management regimes which foster their sustainable use in the context of the specific conditions of African countries. Indeed, international law is not necessarily tailored towards the specific conditions of resource-rich, economically poor sub-Saharan African countries. The prominence of the international legal regime in domestic biodiversity management laws and policies in African countries points to the absence of appropriate national agendas in this realm. Indeed, these laws and policies are so significantly pegged to international developments that national needs have often been overlooked. It is remarkable that the upsurge of environmentalism spurred by the Rio agreements has not translated itself into better living standards for the majority of Africans. In fact, the link between environment and development has not been articulated in the agenda of national and regional environmental programmes that emerged after Rio. The promulgation by many African governments of poverty-reduction strategies is a reaction towards this glaring mismatch.

The international legal system also regularly imposes demands on African countries which may hamper the development of national sustainable legal and policy frameworks. The climate-change regime constitutes an area where the priorities and needs of African countries have been overlooked. Even though financial and technical assistance has been made available to African countries, it has generally focused on inventories of greenhouse gas emissions rather than on adaptation needs and priorities.¹¹⁵

The priorities and needs of African countries differ significantly from other parts of the world. The general goals of conservation and sustainable use of biological resources are central in all countries. However, the specifics of most sub-Saharan African countries require those States to view biodiversity management as only one part of a more holistic regime of laws and

policies dealing with the basic food needs, health needs and energy needs of their populations. These States are not helped in devising such policies by the international legal and policy framework, which is itself completely fragmented in various largely independent fields such as trade and environment. African States should however go beyond the insufficiencies and inconsistencies of the international legal framework to take care of their own needs and priorities.

BROADER CONCEPTUALIZATION OF FACTORS AND ACTORS

A comprehensive response to the needs of biodiversity management requires a broader conceptualization of actors and factors. It is, for instance, imperative to look beyond policies that are strictly concerned with biodiversity management. Policies that have the potential to impact negatively on biological resources, such as trade laws and land use and land tenure policies, should also be taken into account. The latter can, for instance, render biodiversity management policies nugatory if efforts to harmonize the two sets are not made. Indeed it has often been pointed out that the major threat to biodiversity is the loss of natural habitats.

Local people, local communities and the private sector are among the most crucial actors in biodiversity management. With regard to local people and communities, the process of enlisting their contribution should be strengthened. More specifically, their tenure over biological resources should be ensured, since they are arguably among the best placed entities to sustainably manage the resources. This calls for measures granting local people and communities rights over land and biological resources.

The involvement of the private sector in biological resource management is not new; however, its contribution has significantly increased in recent years as a result of dwindling resources available to States and the pressures to streamline public sector spending. Legal and institutional frameworks need to be accordingly adapted and should, for example, provide rules of accountability which reflect the greater importance and role of the private sector in biological resource management, so as to ensure that the goals of conservation and sustainable use are achieved.

CONCLUSION

The international legal system for the management of biological diversity comprises a number of instruments in different fields. Some of them are exclusively concerned with biological resources, some deal primarily

¹¹⁴ See, for example, United Nations Environment Programme, *Global Environment Outlook 2000* (United Nations Environment Programme, 1999).

¹¹⁵ See, for example, I. Burton, 'Adapting to Climate Change in the Context of National Economic Planning and Development', in P. Veit (ed.), n. 111 above, at 195.

with other environmental issues while some are agreements in other areas of international law which have a direct impact on biodiversity management. All of them constitute the relevant framework to build and assess biodiversity management policies in Africa.

International law has had a dramatic influence on the development of environmental laws and policies in most African countries. From the point of view of environmental management, the contribution of international law is by and large progressive and has championed significant initiatives. However, the international system is a broad framework and is not necessarily conceived for the specific problems and priorities of States or communities. The concerns expressed in these laws do not necessarily reflect the most pressing needs and challenges in the countries concerned. The success of biodiversity management initiatives will depend significantly on the extent to which countries tailor these initiatives to relate to their development objectives. For African countries there is definitely a need to define sustainable development from an African perspective. Such an endeavour has to address and contend with the issues of

poverty and declining standards of living and land degradation if it is to make a difference for Africans. In the absence of such considerations, biodiversity management will continue to be implemented without the necessary supporting context with which the managers of biological resources in practice identify the imperatives of sustainable management. This constitutes one of the challenges that the WSSD should address if it is to provide effective responses to the needs and priorities of its host continent.

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