PROTECTION OF BIOLOGICAL DIVERSITY UNDER INTERNATIONAL LAW: NEW DIMENSIONS

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I. Introduction

Biodiversity can be expressed, most conveniently but not exclusively in relation to three hierarchical categories which describe different aspects of living systems measured in different ways: (i) genetic diversity – the variation of genes within a species, (ii) species diversity – the variety of species within a region, (iii) ecosystem diversity – the variety of ecosystem within a region. Other expressions of biodiversity include the relative abundance of species, the pattern of communities in a region, the age structure of populations, changes in community composition and structure over the years.[2] The importance of biodiversity is beyond measure. Firstly, it provides an actual and potential source of biological resources (e. g. food, pharmaceutical etc.), secondly, it contributes to the maintenance of the biosphere in a condition which supports human and other life, and thirdly, it is worth maintaining for non-scientific reasons of ethical and aesthetic value.

The 1992 Convention on Biological Diversity (CBD) has been ratified by 196 states (India has ratified on February 18, 1994, while USA has not ratified so far and came into force on 29 December, 1993) and it affirms the **"**States have sovereign rights over their own biological resources."[3] Nevertheless, the Convention is a clear example of combination of "hard" multilateral treaty law with a "soft" foundation as regards the obligations of the States parties and the implementation of the Convention by the States parties. This is evident from the fact that in some of the substantive provisions of the Convention where "soft" phrases are used, for example, "in accordance with its particular conditions and capabilities", "as far as possible and as appropriate", and "taking into account the special needs of developing countries".[4] Thus, the inbuilt flexibility and latitude

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[2] Philippe Sands, *Principles of International Environmental Law* (Cambridge University Press, 2003) at p. 498; Daniel M. Bodansky, "International Law and the Protection of Biological Diversity", 28(4) *Vanderbilt Journal of Transnational Law* (1995) pp. 623-634.

[3] Preamble of the 1992 Convention on Biological Diversity. For the commentaries on the Convention see M. Heinrich, *Handbook of the Convention on Biological Diversity* (Earthscan, London, 2001).

[4] Ibid., Articles 5-12 and 14.

provided to the States parties *inter-alia*, has created an institutionalised form of cooperation among States.[5] So far as the implementation of the Convention is concerned the formulations of the phrases such as "shall take", "shall be provided", "shall facilitate", "shall consider", "shall promote", and "shall also take into consideration" indicate a classical promotional pattern has been adopted for seeking implementation of Convention. Thus, the Convention categorically recognises that States parties are responsible "for conserving their biodiversity and for using their biological resources in a sustainable manner".[6]

II. Evolution of Conservation of Biodiversity

II.I. Law under International Level

The evolution of conservation of biodiversity law begins under national laws protecting terrestrial and marine living resources since comparatively early times, the perception that species require conservation under an international legal regime is of comparatively recent origin. In fact the evolution of international biodiversity law is traced from its early *ad-hoc* measures.[7] Thus, whales, birds, salmon were regulated *ad-hoc* by one or two states from 1597 onwards.[8] During the second half of the 19th century a large number of international treaties were signed between the States to develop regulatory framework for fisheries. The Convention between France and Great Britain Relating to Fisheries, 1867 and Convention Establishing Regulation Concerning Uniform Fishing between Constance and Basel, 1869 were the initial attempt to formulate law relating to conservation of biodiversity.

In 1895 International Geographic Congress in which an international effort was made to coordinate and conduct scientific research on fisheries and to plan, collect, and evaluate the data on an international basis regarding marine biology. Subsequently it was found that there were serious adverse effects of over exploitation of certain species particularly at sea and there was a need of development of more sophisticated legal regime. But until late nineteenth century scientists had taken little interests in marine biology. Following the initiatives taken in 1895, congress the International

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5 Ibid., Articles 16-20.

6 Ibid., Preamble.

7 See Bryan Bachner, "Biodiversity Conservation and Endangered Species Protection" in *International Sustainable Development Law* (UNESCO, 2010); C. Krieps, "Sustainable use of Endangered Species under CITES: Is it a Sustainable Alternative", 17 *University of Pennsylvania Journal of International Economic Law* (1996) pp. 461-504.

8 See Jaye Ellis, "Fisheries Conservation in an Anarchical System: A Comparison of Rational Choice and Constructivist Perspectives", 3(2) *Journal of International Law and International Relations* (2007) pp. 1-40.

Council for the Exploration of the Sea was formed in 1902 and the purpose was laid down in the congress.[9] Ultimately the perceptions of philosophers and moralists in relation to living creatures have been changed and thus the legal developments have also been influenced by the changing philosophical perceptions.

These concepts were underpinned by the Roman law doctrine that animal *ferae naturae* did not belong to any person and could, therefore, be captured by anyone when found in international areas, such as the high seas and the airspace above them. Species which could not be corralled and domesticated, such as fish, marine mammals, and birds outside national territory, were thus regarded as common property resources.[10] Due to cause of changing perceptions attention is being paid to the concept of animal rights and the common property doctrine is being overlaid with new concepts of "common heritage", "common inheritance", "common interest", and "common concern".

III. Development of Conservation of Biodiversity

II.II. Law at International Level

II.II.I. Development upto 1972: Initial Stage

Although the need of codification and progressive development of international biodiversity law has been addressed in several international conferences the initial stage of codification and development of it begins with the Antarctic region. In 1959, the *Antarctic Treaty*[11] was adopted to regulate international relations with respect to Antarctica, Earth's only continent without a native human population. The treaty was a diplomatic expression of the operational and scientific cooperation that had been achieved "on the ice".

Soon after a decade of the adoption of 1959 *Antarctic Treaty*, the *Ramsar Convention*, 1971[12] was adopted which is an international treaty for the conservation and sustainable use of wetlands. Wetlands are vital for human survival. They are among the world's most productive environments;

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9 See A. E. Went, *Seventy Years of Growing: A History of the International Council for the Exploration of the Sea, 1902–1972* (Copenhagen, 1972).

10 See Fulton, *The Sovereignty of the Seas* (W. Blackwood, Edinburgh, 1911).

11 See *The New Encyclopædia Britannica* (Chicago, 15th edn., 1992, Vol. 1) p. 439. Initially, twelve states were parties to this treaty, which was signed in Washington (USA) on December 1, 1959 and it entered into force on 23rd June, 1961. India acceded to the treaty on August 19, 1983 as it also wanted to carry on some scientific studies in that region.

12 This Convention was adopted at Ramsar, Iran, 30 January - 3 February 1971. India ratified the Convention on February 1, 1982. The Convention now has 130 contracting parties.

cradles of biological diversity that provide the water and productivity upon which countless species of plants and animals depend for survival. Thus, it cannot be said that prior to the 1972 Stockholm Conference on the Human Environment any principles specifically concerning conservation of wildlife or biodiversity had clearly emerged in international customary law. The Stockholm Declaration[13] adopted by this Conference identified a number of relevant and important principles which have since been elaborated upon in other sets of principles, guidelines, and standards, and have formed the basis of treaties concluded between 1972 and 1992. Nevertheless, more significant attempts at codification and development of legal norms were made by United Nations Environment Programme and International Union for Conservation of Nature.

II.II.II. Development from 1972 to 1992: Foundational Stage

Foundational stage of codification and development of international biodiversity law begins with the 1972 Stockholm Declaration and this development continued up to 1992 until the 1992 Convention on Biological Diversity is adopted which provides the codified international biodiversity law. Over two decades from 1972 to 1992 the codification and development of international environmental law has been crystallized in the form of certain declaration and global conventions which are the basis of international codified law on biodiversity. The Stockholm Declaration consists of a preamble featuring seven introductory proclamations and 26 principles.[14] Thus, after affirming that "both aspects of man's environment, the natural and the man-made, are essential to his well-being"[15], the Stockholm Declaration axiomatically labels "economic and social development"[16] as essential. The Declaration- rather modestly-emphasize the need for environmental and development planning[17] and provides that

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[13] For the text of the stockholm declaration on the human environment see U.N. Doc. A/Conf.48/14/Rev. 1, reprinted in 11 *International Legal Materials* 1416 (1972). For legal analysis of the declaration see Louis B. Sohn, "The Stockholm Declaration on the Human Environment", 14 *The Harvard International Law Journal* (1973) pp. 423-515.

[14] See Gunther Handl, "Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration), 1972 and the Rio Declaration On Environment And Development, 1992" (2012) United Nations Audiovisual Library of International Law *visit* www.un.org/law/avl. See also R. K. Lal Panjabi, "From Stockholm to Rio: Comparison of the Declaratory Principles of International Environmental Law", 21 *Denver Journal International Law and Policy* (1993) pp. 215-287.

[15] The Stockholm Declaration on the Human Environment, 1972; Preambular Paragraph 1.

[16] Ibid., Principle 8.

[17] Ibid., Principles 13-15 and 17-18.

"the precautionary approach shall be widely applied by States according to their capabilities."[18]

The World Heritage Convention, 1972[19] declared the need for preservation of unique natural sites and objects which are of "outstanding universal value from the aesthetic or scientific point of view." It was realised in this convention that climate change is an additional risk as it endangers the species of plants and animals and thus adversely affects the biodiversity. There are 167 contracting parties to the Convention which reflects four concrete obligations; two obligations are of general nature and five "soft" obligations or incentives. The Convention "represents a masterpiece of human creative genius and cultural significance," and also "exhibits an important interchange of human values, over a span of time, or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning, or landscape design". The Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973 (also known as the Washington Convention)[20] is a multilateral treaty to protect endangered plants and animals.

The United Nations World Charter for Nature, 1982[21] provides that "every form of life is unique, warranting respect regardless of it's worth to man, and, to accord other organisms such recognition, man must be guided by a moral code of action."[22] The 1987 Brundland Commission Report (formally known as the World Commission on Environment and Development) contains within it two key concepts: (i) the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and (ii) the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.[23] The 1992 Rio Declaration[24]

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18 Ibid., Principle 15.

19 The Convention Concerning the Protection of the World Cultural and Natural Heritage, adopted by UNESCO in 1972. For the text see 1037 UNTS 151; 27 UST 37; 11 *International Legal Materials* 1358(1972).

20 The Convention was signed at Washington, D.C., on 3 March 1973. For the text of the Convention see 12 *International Legal Materials* (1973) 1105.

21 The World Charter for Nature was adopted by United Nations member nation-states on October 28, 1982. For the text of the Charter see A/37/51 (1982); 22 *International Legal Materials* (1983) 455.

22 Ibid., Preamble.

23 For the concept sustainable development see J. C. Dernbach, "Achieving Sustainable Development: The Centrality and Multiple Facets of Integrated Decision Making", 10 *Indiana Journal of Global Legal Studies* (2003) pp. 247-285; J. C. Dernbach, "Sustainable Development as a Framework for National Governance", 4(1) *Case Western Reserve Law Review*(1998) pp. 1-103.

24 For the text of the declaration see U.N. Doc., A/CONF. 151/ 5/ Rev. I, June 13, 1992; 31 *International Legal Materials* (1992) 874.

adopted by the United Nations Conference on Environment and Development did not include any provisions concerning natural resources as specific as those proposed in the instruments discussed earlier, since its prime concern was to recognise the need for, and to promote sustainable development. Still less it addressed animal rights. Its aims are anthropomorphic, the mentioned goal "working towards international agreements, which respect the interests of all and protect the integrity of the global environmental and developmental system".[25]

The Convention on Biological Diversity, 1992 reaffirms that states have sovereign rights over their own biological resources but insists that states are responsible for conserving their biological diversity and for using their biological resources in a sustainable manner.[26] The Convention links the reduction of biological diversity to human activity, emphasizes the need for further research[27] and adopts the precautionary principle: where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.[28]

IV. New Dimensions of the Conservation of Biodiversity

IV.I. Law at International Level

Overtime the issue of conservation of biodiversity presents greater regulatory challenges to international law. Thus, the aforementioned framework of law have been evolved through a number of declarations, conventions, report of study as well as resolutions and thus a number of substantive provisions of law are working for conservation of biodiversity throughout the world. Under the contemporary international biodiversity law a large number of concepts have been recognised in broad terms and phrases such "as appropriate", "as far as possible", "practicable in accordance with particular conditions and capabilities", "taking into account special needs", "likely to", "grave and imminent", "significant", and such limited requirements as to "endeavour", "encourage", "promote" and "minimize".[29] These terms and phrases are not defined in international biodiversity law. Similarly, the scope and ambit of the legal status of biodiversity and its

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[25] Ibid., Preamble.

[26] Ibid., Preamble. For critical discussion on 1992 Convention on Biological Diversity see Rachelle Adam, "Missing the 2010 Biodiversity Target: A Wake-up Call for the Convention on Biodiversity", 21(1)*Colorado Journal of International Environmental Law and Policy* (2010) pp. 123-166.

[27] Ibid.

[28] Ibid.

[29] Lyle Glowka, Francoise Burhenne-Guilmin, Hugh Synge, Jeffrey A. McNeely and Lothar Gundling, *A Guide to the Convention on Biological Diversity* (IUCN Environmental Law Centre, Gland, 1996).

implications of common concern, sustainable use, intergenerational equity, precautionary approach, biological resources, conservation of alien species, rights of indigenous peoples in relation to biodiversity, fair and equitable sharing of benefits, final incentives, transfer of technology and scope of jurisdiction are controversial issues. Few of these issues need detail deliberation.

IV.I.I. Legal Status of Conservation of Biodiversity

This highly contentious issue has been resolved by "affirming" in the Preamble of the 1992 Convention on Biodiversity that "the conservation of biodiversity is a common concern of humankind". The 1992 Convention promises that non-party states and various international organisations, as well as governmental and non-governmental bodies qualified in relevant fields, can have observer status,[30] provided a forum in which criticism can be voiced and common problems and solutions discussed now that the Convention is operational. Much will depend on effective use of these processes if the Convention is to achieve its aims. Adoption of this approach also makes it clear that biological resources are neither shared resources nor common property available for appropriation and use by all, as are migratory species of animals or fish which cross national boundaries or are found in the high seas.

The 1992 Convention on Biodiversity includes a strong emphasis on national sovereignty, but this emphasis is offset by the idea that the conservation of biodiversity is a common concern of humankind. The reason behind it is that "most components" of biological diversity have tended to be located within national borders, as have activities that are likely to affect biodiversity, national action plans represent a significant focus for operationalizing the Convention's mandates.[31] Paradoxically it has been pointed out that, "although state sovereignty over plant genetic resources reigns supreme, other States have a legitimate right of 'common concern' on how those resources are conserved and exploited."[32] More specifically, common concern of humankind balances sovereignty and biodiversity through reporting obligations and obligations to meet global standards in conserving biodiversity. Despite the emphasis on nationally created

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[30] Convention on Biological Diversity, 1992, Article 23.

[31] Elisa Morgera and Elsa Tsioumani, "Yesterday, Today, and Tomorrow: Looking Afresh at the Convention on Biological Diversity", 21(1) *Yearbook of International Environmental Law* (2010) pp. 3-40 at p. 6.

[32] Ikechi Mgbeoji, "Beyond Rhetoric: State Sovereignty, Common Concern, and the Inapplicability of the Common Heritage Concept to Plant Genetic Resources", 16(4) *Leiden Journal of International Law* (2003) pp. 821-837 at 837.

strategies and plans in the 1992 Convention,[33] the designation of biodiversity as a common concern ensures that States are aware of their responsibility to "humankind" and provides for global involvement and interest, particularly through reporting and other requirements.

IV.I.II. Sustainable Use of Natural Resources

The sustainable use of natural resources is an independent concept which is best understood in the context of the evolution of international law concerning the conservation of biodiversity. The Article 2 of the 1992 Convention on Biological Diversity defines sustainable use. Which means the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations. Thus, sustainable use of biological diversity and its conservation is one of the objects of the Convention.

The Convention on Biological Diversity explains *"In-situ conservation"* as the conservation of ecosystems and habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.[34] The ordinary meaning of conservation and to conserve is "to keep in safety or from harm, decay, or loss; to preserve in being; to keep alive" or now more usually, "to preserve in its existing state from destruction or change", or from "destructive influences, decay or waste".[35] This suggests a high test for environmental management, and that any diminution or reduction in quality or/and quantity of the entity to be protected will not accord with the true meaning of conservation and protection.

IV.I.III. The Inter-generational Equity

The rights of future generations to enjoy "conserve and sustainably use biological diversity" have been formally recognized under international law. One of the objects of the 1992 Biological Diversity Convention is to "conserve and sustainably use biological diversity for the benefit of present and future generations".[36] Thus the convention is adopted for, *inter-alia,* the conservation of biodiversity, its sustainable use for the benefits of both current and future generations, and the equitable sharing between countries,

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[33] See Convention on Biological Diversity, 1992, Article 6(a).

[34] Convention on Biological Diversity, 1992, Article 2; 31 *International Legal Materials* (1992) 818.

[35] See Patricia Birnie and Alan Boyle, *International Law and the Environment* (Oxford University Press, Oxford, 2002) at p. 550.

[36] Convention on Biological Diversity, 1992; Preamble.

of the products derived from gene stocks.[37] As an element of "conserve and sustainably use biological diversity" a link has been developed with one generation to other generations which is popularly known as inter-generational equity which includes intra-generational equity as well. The theory of inter-generational equity has been advanced to explain the optimum basis for the relationship between one generation and the next. The theory requires each generation to use and develop its natural and cultural heritage in such a manner that it can be passed on to future generations. Unlike inter-generational equity, intra-generational equity addresses inequity within the existing economic system. In terms of biodiversity conservation, this implies an ethical base for countries to fund the provision of protected areas with economic assessment being focused on: (i) facets of biodiversity; (ii) ethics and equity; (ii) implications for biodiversity conservation and prospects. There are three principles which form the basis of inter-generational equity:

i) Each generation should be required to conserve the diversity of the natural and cultural resource base, so that it does not unduly restrict the options available to future generations in solving their problems and satisfying their own values, and should also be entitled to diversity comparable to that enjoyed by previous generations. This principle is called "conservation of options";

ii) Each generation should be required to maintain the quality of the planet so that it is passed on in no worse condition than that in which it was received, and should also be entitled to planetary quality comparable to that enjoyed by previous generations. This is the principle of "conservation of quality";

iii) Each generation should provide its members with equitable rights of access to the legacy of past generations and should conserve this access for future generations. This is the principle of "conservation of access." [38]

There are three principles adopted in the final declaration of the conference held in 1992 Rio which make explicit the preferred underlying approach to biodiversity policies: (i) The right to development should be achieved by equitably meeting the development and environmental needs of the current and future generations; (ii) Environmental protection shall

[37] See Pierre Nemb, Ndjom Ndjom Mathias, and Fidoline Ngo Nonga, "Intergenerational Equity for Biodiversity Conservation: Implications and Prospects", 12(1) *Journal of Sustainable Development in Africa* (2010) pp. 306-322.

[38] See Edith Brown Weiss, "The Planetary Trust: Conservation and Intergenerational Equity", 11(4) *Ecology Law Quarterly* (1984) pp 495–581.

constitute an integral part of the development process so that sustainability may be achieved; and (iii) The precautionary approach should be widely adopted to protect the environment.

Biodiversity is an intrinsic attribute of the biosphere, which provides the resource base and the environmental services needed to support life on Earth and to maintain viable economic systems. Hence, the implications for biodiversity conservation policies of seeking to achieve intergenerational equity are analysed by addressing the wider issue of the use of natural resources. Thus, the Preamble of the 1992 Convention on Biological Diversity begins by recognising, without further explanation, "the intrinsic value of biological diversity", as well as a range of other values – ecological, genetic, social economic, scientific, educational, cultural, recreational, and aesthetic. The substantive articles define "biological resources" as including "genetic resources organisms or parts thereof, populations or any other biotic component of ecosystems with actual or potential use or value to humanity, a more anthropocentric approach". The Preamble reinforces this in noting that conservational and sustainable use of biodiversity is critical for meeting the food, health, and other needs of the growing world population.

IV.I.IV. Precautionary Approach

One of the elements of sustainable use of natural resources and conservation of biodiversity is the precautionary principle. The Preamble and Article 2 of the 1992 Biodiversity Convention on "Use of Terms" provide for important conservatory principles such as "Biological diversity", "Biological resources, "Biotechnology", "Ecosystem", "*Ex-situ* conservation" etc The Convention's Preamble notes that "where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat. The idea of a precautionary principle (or precautionary principles) is beginning to come to the wider attention of the environmental community, governmental agencies, regulatory agencies, and the regulated community.[39] The precautionary principle was first employed internationally in the North Sea Conference in 1984[40] where explicitly stated that in order to protect the North Sea from possibly damaging effects of the most dangerous substances, a precautionary approach is necessary. This applies especially when there is reason to assume that certain damage or harmful effects on the living resources of the sea are likely to be caused by

[39] Carl F. Cranor, "Toward Understanding Aspects of the Precautionary Principle", 29(3) *Journal of Medicine and Philosophy* (2004) pp. 259-279.

[40] International Conference on the Protection of the North Sea, London, England, Nov. 24-25, 1987.

such substances, even where there is no scientific evidence to prove a causal link between emissions and effects ("the principle of precautionary action").[41]

In cases where the environment is threatened, a lack of scientific evidence as to the probability of damage cannot be used as an argument to continue the damaging activity. Thus, the 1992 Rio Declaration on Environment and Development endorsed the precautionary principle in the following terms:

> In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.[42]

IV.I.V. Conservation of Biological Resources

The object of the international biodiversity law is to conserve biological diversity including biological resources and its sustainable use. According to Article 2 of the 1992 Convention on Biological Diversity "Biological resources" includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity. Parties to the Convention must adopt national strategies, plans or programmes for their conservation and sustainable use and integrate these into their national sectoral or cross-sectoral plans, programmes, and policies, monitor identified components of biodiversity and identify processes and categories of activities impacting adversely upon it. But the most significant obligations placed on parties concern *in situ*, and to a lesser extent, *ex situ* conservation which are dealt with under Articles 8 and 9 of the Convention.[43]

"*Ex situ* conservation" means, according to Article 2 of the Convention, "the conservation of components of biological diversity outside

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[41] See James Cameron and Juli Abouchar, "The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment", 14(1) *Boston College International and Comparative Law Review* (1991) pp. 1-27.

[42] Principle 15; Rio Declaration on Environment and Development, 1992. See UN Doc. A/CONF.151/26 (Vol. I), date 12 August 1992 .

[43] See Temitope Israel Borokini, "The State of Ex-Situ Conservation in Nigeria", 4(2) *International Journal Of Conservation Science* (2013) pp. 197-212; Mohammed Kasso and Mundanthra Balakrishnan, "*Ex Situ* Conservation of Biodiversity with Particular Emphasis to Ethiopia", *ISRN Biodiversity* (2013) pp.1-11.

their natural habitats" which means removing specimens or parts thereof from the wild and keeping them in viable conditions elsewhere such as generally in zoos, aquarium and wildlife parks. "*In situ* conservation" means "the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings, and in the case of domesticated or cultivated species in the surroundings where they have developed their distinctive properties". "*In situ* conditions" refers to the situation "where genetic resources exist within ecosystems and natural habitats, and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties". The interpretation and application of these definitions thus rests largely on scientific advice concerning the viability of species and habitats. Article 9(a) of the Convention makes it clear that *ex situ* conservation is predominantly to be used for the purpose of complementing *in situ* measures.[44] Articles 8 of the Convention lists the wide range of measures required to protect the diffuse elements which collectively constitute the essential elements of *in situ* biodiversity. They include:

> (i) protected areas to conserve biological diversity; (ii) regulation and management of biological resources both inside and outside protected areas for conservation and sustainable use; (iii) protection of ecosystems and natural habitats and population of species in natural surroundings; (iv) environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas; (v) rehabilitation of degraded areas and recovery of species with the help of management strategies; (vi) control of use and release of modified living organisms when they are likely to have adverse environmental impacts and risks to human health; (vii) develop regulatory provisions for protection of threatened species and populations; (viii) regulation or management of relevant processes and activities which threaten biodiversity.

In both the cases of *in situ* and *ex situ* conservation parties are required under Articles 8(m) and 9(e) respectively to co-operate in providing financial and other support for the conservation measures listed, especially to developing countries. In the case of the latter, they must also co-operate in

[44] See Ayonghe Akonwi Nebasifu, "Ex-situ Conservation: Primate Protection in the Limbe Wildlife Centre," 2(6) *The Journal of Zoology Studies* (2015) pp. 12-21.

establishing and maintaining *ex situ* conservation facilities in developing countries.[45]

V. Conclusion

It emerges from the aforementioned discussion that the Convention on Biological Diversity offers various provisions of law in its substantive articles to conserve biological diversity. However the Convention makes no provision for enforcement in the sense of establishing an international inspection or observer system; indeed that would be an impossibility for a convention of this kind which provides a broad framework of 'soft' obligation and requires much enactment of national legislation of its efficacy. The Convention's Preamble notes that the fundamental requirement for conservation of biological diversity is *in situ* conservation of ecosystems and natural habitats and maintenance and recovery of viable populations and species in their natural surroundings. As the majority of the areas and species concerned are found within national jurisdiction, enforcement *strictu sensu* is, therefore, a matter for national authorities. But as the conservation of biodiversity is categorised as 'a common concern of humankind' the efficiency with which its contracting parties, and even non-parties, fulfil this obligation is potentially subject to international overview and complaints. The effectiveness of this criticism depends largely on the institutional structures available for voicing it both inside the Convention's structure and in the wider international community.

[45] See Michael Bowman, Catherine Redgwell (ed.), *International Law and the Conservation of Biological Diversity* (Kluwer Law International, The Hague, 1996) pp. 135-142.