

ETHICAL DILEMMA WITH RESPECT TO CBD REGULATIONS IN GENETIC MODIFICATION OF BIOLOGICAL RESOURCES IN CAMEROON

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Abstract

The quest for patent rights has seen bioprospecting as a scientific and commercial research paradigm in which bioprospectors explore secluded locations around Cameroon in order to find 'new drugs from exotic plants'. Bioprospectors derive genetic and biochemical materials that are both scientifically and commercially valuable, and they subsequently patent these materials abroad away from the original source to justify legal ownership through intellectual property law. An almost unprecedented amount of discussion has been stimulated on the merits and demerits of genetic engineering of crop plants and biodiversity exploitation and has divided both the public and scientific communities. The arguments for and against genetic engineering are invariably based on visions or missions of the new technology from widely different ethical perspectives. Fundamental issues of man's relationship with nature and theological matters are issues of concern. The genetic engineering of living cells, plants, animals and human beings has brought ethical concerns and issues to the conservation of biodiversity. Agricultural productivity depends in part on the availability of biodiversity for the development of improved cultivars. Until the 1970s, biodiversity was considered to be part of the 'common heritage of humanity'. Under the regime of patent rights, biological resources are treated as belonging to the 'public domain' and are not owned by any individual, group, or state. From a common heritage of mankind, biodiversity is evolving into a resource under the sovereignty of nation states and is subject to intellectual property rights (IPRs). The new technology has witnessed a lot of illegal exploitation and commercialization of these biological resources which is considered as biopiracy.

Keywords: ethical, dilemma, CBD regulations, genetic, engineering, biological resources

Introduction

Imagine a wonder plant like *Prunus Africana* teeming with extraordinary chemical properties. Like most living organisms in a diverse but fragile biosphere, it is native to Cameroon which is one of the many poor countries of our global south. New developments in science, biotechnology, and intellectual property rights (IPR) regimes have come together to fuel a turn to nature as a site for cosmetic, pharmaceutical and agricultural discovery work. In the early 1990s, this particular configuration of actors and regulatory regimes fuelled millennial claims about the possibilities inherent in such ‘pharmaceutical prospecting’ and the potential for massive benefits that could be garnered from the genetic wealth of areas with a high concentration of biodiversity. At the time, one of the most promising strategies employed to identify how this material and the attendant knowledge of its use could be collected and used was a practice called ‘bioprospecting’. The term is now generally used generically for any program that endeavors to collect genetic material and/ or the knowledge of its use, usually from areas with high concentrations of biodiversity.¹

The increased demand for biodiversity on the one hand, is driven by factors as diverse as plant breeding, drug development, and ecosystem services, and, on the other hand, by decreasing supplies, caused by overpopulation and globalization and the ensuing habitat destruction and cultural homogenization.² Biological resources constitute the backbone of the African economy as well as the life-support system for most of Cameroon people, especially the marginalized rural communities. Many of these resources, such as timber and agricultural crops, are traded commercially, and others are used traditionally for crafts like basket weaving and carving, in addition, many of the species with medicinal properties are harvested by local communities and pharmaceutical multinationals alike.

Biodiversity prospecting continues to be the exploration, extraction, and screening of biological diversity and indigenous knowledge for commercially valuable genetic and biochemical resources. The growing number of bilateral bioprospecting agreements among which the vast majority of cases cannot be effectively monitored or enforced by source communities, countries,

¹ Chris Hamilton ‘Biodiversity ‘Biopiracy and benefits: what allegations of biopiracy tell us about intellectual property’, *New York Oxford University Press US*, (2006)

²[file:///D:/Desktop%20files/PhD%20Research%20Materials/Bioprospecting Biopiracy%20and%20Indigenous%20Peoples%20 %20ETC%20Group.htm](file:///D:/Desktop%20files/PhD%20Research%20Materials/Bioprospecting%20and%20Indigenous%20Peoples%20%20ETC%20Group.htm) accessed 6 July 2017

thereby amounting to biopiracy.³ The International Convention on Biological Diversity (CBD) entered into force in December 1993. The Convention offers a multilateral facade for addressing conservation and sustainable use of biodiversity. Article 8(j) of CBD states that Member States shall ‘subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices’.⁴ Although, the Convention promotes bilateral deals (such as commercial contracts and other agreements for access to biodiversity) is without plans to guard against ethical issues for access to and development of biological diversity. The Convention recognizes that States have sovereign rights over their natural resources and those terms and conditions for access to these materials are within the domain of national legislation.⁵

Cameroon among other African nations and communities are faced with a daunting task when trying to govern access to genetic resources or ensure equitable sharing of benefits.

The interaction of social, cultural, and economic factors in environmental and agricultural management is complex. In addition, the administrative regime of Cameroon endures a chronic shortage of financial and material resources. This is particularly challenging in the realm of genetic resources, which is simultaneously technical, legal, and policy-oriented, cutting across many disciplines.⁶ The African Model Law on Local Communities Rights and other regional initiatives indicate that African nations increasingly recognise the practical, political, and legal benefits of developing common African positions and approaches regarding genetic resources. These legal instruments and more are highlighted in this paper as I discuss the ethical dilemma in genetic engineering in Cameroon.

³ Ibid

⁴ Article 8(j) of CBD 1992 available at <https://www.cbd.int/doc/legal/cbd-en.pdf> (accessed 6 July 2017)

⁵ Supra note 2

⁶ Nnadozie Kent et al. ‘*African Perspectives on Genetic Resources: A Handbook on Laws, Policies, and Institutions Governing Access and Benefit Sharing*’, Environmental Law Institute Washington D.C (2003)

1. Genetic Engineering of Biological Resources: Risks, benefits, and impacts on society and the environment

According to The Guardian Newspaper Report, in 1994 more than 100 countries, signed the International Convention on Biological Diversity that promised to recognise the property rights of developing countries. The Convention recommended all agreements endeavour to share any commercial benefit that emerges from collected species. Western medical, horticultural and cosmetic products are 'pirated' from Africa. Seven patents granted by the UK authorities now face accusations of biopiracy.⁷

Some of the biopiracies or exploitations include;

- A diabetes drug being developed by a British firm that comes from the Libyan plant *Artemisia judaica*
- An immunosuppressant drug being developed by GlaxoSmithKline that comes from a compound found in a termite hill in Gambia.
- A treatment for HIV taken from mycobacteria discovered in mud samples from the Lango district of central Uganda.
- Infection-fighting drugs from amoebas in Mauritius and Venezuela.
- An anti-diarrhoea vaccine developed from Egyptian microbes.
- A slug barrier made from a Somalian species of myrrh.⁸

The *Prunus Africana*, for example, is the fourth most popular medicinal plant used in the Mount Cameroon area and nearly all traditional healers in the Bioko island of Equatorial Guinea use its bark and leaves in their therapeutic practices. *Prunus* products are used as purgative for cattle. In the Ijum Mountain area in the North West Region of Cameroon, concoctions produced from the bark and leaves are used in the treatment of Malaria, stomach ache and fever. Traditional healers in the North West Region of Cameroon suggest that a mixture of *Prunus* bark with the bark of other species such as *Trechilliasp* and *Oleacapeusis* has proven to be effective against syphilis. Other reports suggest that a concoction of *Prunus* bark can regulate blood pressure and purify the

⁷ The Guardian 'Biopiracy in Africa', available at <https://www.theguardian.com/world/2006/sep/22/outlook.development> (accessed 10 May 2016)

⁸ Ibid

blood, is effective against Asthma, mental disorder, urinary problems. Apart from its medicinal use, the timber of the species is reported to be of high value too.⁹ It is used by farmers in Cameroon to make axes and hoe handles.

The *Prunus Africana* is being exploited and its medical properties isolated to produce western drugs by a commercial company, Plantecam Medicam. It is worthy to note that in the 1970s, this company was issued the exclusive permit to harvest *Prunus* bark in the Mount Cameroon area. The company employed harvesters from the Western Region of Cameroon which became unacceptable by local populations that *Prunus* was exploited on their lands without them being employed by the company. To express their dismay, they started unsustainable exploitation of *Prunus* (such as felling of trees to maximise the quantity of bark harvested) and they sold the bark to middlemen at very low prices.¹⁰

Consequences of the development and deployment of transgenic drugs or crops, the risks, benefits, and impacts, which are referred to as ‘extrinsic’ concerns by, are foremost in many discussions of the relative merits of the new technology. Obviously, these issues are inherently linked and any absolute division is artificial.¹¹

Without the consent of society at large, genetic engineering crops or medicine will fail in the marketplace.¹²

Biotechnological Science has had an enormous impact on human life, and scientists have been regarded as trustworthy and ethically sound, and pharmaceutical research and its role in drugs production as being intrinsically good. This view has been altered somewhat by the ethical issues surrounding the exploitation of biological resources or genetic modification of these resources.¹³

⁹ Tonye Mahop Marcelin ‘Summary sheet for an African bioprospecting/biopiracy example’, Queen Mary Intellectual Property Research Institute, University of London, (2005) Regional ABS Capacity-Building Workshop for Eastern and Southern Africa hosted by the Institute for Biodiversity Conservation (IBC) Addis Ababa, Ethiopia

¹⁰ Ibid

¹¹ Jonathan Robinson ‘Plant Breeding Research Department, Institute of Crop and Soil Science’ *2Ethics and transgenic crops: a review, Vol.2* (1999)

¹² Lopez, Carlos Scott ‘Intellectual Property Reform for Genetically Modified Crops: A Legal Imperative.’ *Journal of Contemporary Health Law and Policy* 20.2 (2004): 367-434

¹³ Supra note 6

2. The Biopiracy threat to Biodiversity Conservation in Cameroon

The Convention on Biological Diversity (CBD) recognizes the role of local and indigenous communities in the conservation of biological diversity, leading to concerns about the granting of private, individual and exclusive rights to life forms would create conflict between the Trade Related Aspect of Intellectual Property Rights Agreement (TRIPs) and the CBD. Thus the IPR system established by the TRIPs Agreement seemed to undermine the CBD in protecting biodiversity and associated knowledge and contrary to the full realization of its benefit-sharing requirement.¹⁴ Article 8(c) of the CBD called on each Contracting Party to the Convention to manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use.¹⁵ Article 27(2) of the TRIPs Agreement states that the Contracting States may exclude from patentability inventions of biological resources from their territory¹⁶ but there is no provision for enforcement of this rule under the TRIPs Agreement. IPRs were instead seen as encouraging biopiracy by allowing and protecting private ownership claims over the collective innovations and practices of local and indigenous communities, thereby robbing the community of the economic benefits derived from such products of collective intellectual endeavour.¹⁷

Biodiversity's relevance to human health is becoming an international political issue, as scientific evidence builds on the global health implications of biodiversity loss. This issue is closely linked with the issue of climate change, as many of the anticipated health risks of climate change are associated with changes in biodiversity.¹⁸ The temptation to pillage this proverbial “Garden of Eden” is even greater when considering the current economic crisis and saturation of the

¹⁴ Article 27(1) of TRIPs Agreement; Subject to the provisions of paragraphs 2 and 3, patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application..

¹⁵ Article 8 (c) of the CBD, regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use;

¹⁶ WTO TRIPs Agreement available at https://www.wto.org/english/docs_e/legal_e/27-trips.pdf (accessed 13 December 2016)

¹⁷ http://www.abs-initiative.info/uploads/media/GAP_Analysis_and_Revision_African_Model_Law_FINAL_2902_01.pdf (accessed 13 December 2016)

¹⁸ Paris COP21 Agreement 2016 on Climate Change, available at http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf accessed 10 December 2016

pharmaceutical industry and its perennial quest for new materials and biological processes.¹⁹ Biodiversity in Cameroon today is being threatened by Western countries engage in their own piracy ‘biopiracy’ by taking our genetic resources and the associated traditional knowledge without permission, then patenting related inventions, and failing to share any of the resulting commercial profits.²⁰ This patenting has resulted in the disincentive and other ethical dilemmas in the conservation efforts of the remaining biological resources. Biopiracy operates through the application of Intellectual Property Rights (IPRs) to genetic resources and traditional knowledge. Patents on life forms threaten community access to three of the most critical elements of human survival: food, water, and health care. Cameroon among other developing countries is calling for international resolution of this biopiracy phenomenon through the amendment of TRIPs Agreement and proposes suitable international equitable agreements.²¹

Cameroon’s legislature has not provided details regarding governance of genetic resources. The Law of 19 January 1994 established rules for managing forests, wildlife, and fisheries and focused on reiterating the procedures for determining the ownership of these resources in Article 12(1), which states: ‘The genetic resources of the national heritage shall belong to the State of Cameroon . . .’²²

Cameroon is a country of exceptionally high ethnic groups and biodiversity. A key resource for food, pharmaceutical, and agricultural products, it is this diversity which now endangers it. Cameroon is losing huge benefits from biodiversity for lack of legal protection against biopiracy yet biodiversity is the fifth thematic area of World Summit on Sustainable Development (WSSD). The knowledge its people have developed over centuries on the properties of plants, seeds, algae and other biological resources is now coveted by scientists for medicinal, agricultural and other purposes. The multinational companies have benefited much from Africa’s biodiversity without sharing the benefits with the communities who discovered, kept and transmitted the knowledge.²³

¹⁹ Gavin Stenton ‘Biopiracy within the pharmaceutical industry: a stark illustration of how abusive, manipulative and perverse the patenting process can be towards countries of the South’,²⁶*European Intellectual Property law Review*, (2004):17-26

²⁰ Ho, Cynthia M. ‘Biopiracy and Beyond: A Consideration of Socio-Cultural Conflicts with Global Patent Policies’,³⁹*University of Michigan Journal of Law Reform* (2006): 433-542

²¹ Ibid

²² Nguiffo Samuel ‘Access to Genetic Resources in Cameroon’ in Kent Nnadozie et al.(eds) *African Perspectives on Genetic Resources: A Handbook on Laws, Policies, and Institutions Governing Access and Benefit Sharing*, 89

²³ Supra note 20

Through subtle processes, the roots of scientific knowledge are being starved, even as they are being rapidly exploited and harvested for profits. There are other actors who are arguing that the scientific manipulation of our biological resources is logical claiming that there's no such thing as biopiracy at all. The proponents of this idea argue that most corporations are acting in accordance with existing international intellectual property law.²⁴ Intellectual Property Rights (IPRs) lead to the skewing of research whose targets is to maximise profit. As such molecular biology has become a major source of techniques for biotechnological inventions. We are on the verge of losing our ability to tell one plant from another, and of forgetting how the known species interact among themselves and with their environment based on overexploitation of these biological nature.²⁵

Changes in once priorities from social needs to potential return on investment, which is the main criteria for commercially guided research, entire streams of knowledge and learning will be forgotten and become extinct. While these diverse fields might not be commercially profitable, they are socially necessary. Our societies are now facing ecological problems, we need epidemiology, ecology, and evolutionary and developmental biology. We need experts on particular taxonomy groups, such as microbes, insects, and plants, to respond to the crisis of biodiversity erosion. The moment we ignore the useful and the necessary, and concentrate only on the profitable, we are destroying the social conditions for the creation of intellectual diversity.²⁶

3. Bioprospecting and biopiracy

Bioprospecting has recently been coined to describe the practice of collecting and screening plant and other biological material for commercial purposes, such as the development of new drugs, seeds, and cosmetics.²⁷ Nevertheless, bioprospecting in Cameroon is said to have been the sustainable utilization of biodiversity by making significant contributions to the social and economic development of Cameroon in several different ways. These include nature-oriented tourism and payment of environmental services.²⁸ The primary objective is to identify

²⁴ Gubarev, Maxim V 'Misappropriation and Patenting of Traditional Ethnobotanical Knowledge and Genetic Resources', 8 *Journal of Food Law and Policy* (2012): 65-98

²⁵ Shiva Vandana 'Biopiracy: The Plunder of Nature and Knowledge', Natraj Publishers New Delhi, India (2012), p16

²⁶ Ibid

²⁷ <http://wiki.p2pfoundation.net/Bioprospecting> (accessed 6 July 2017)

²⁸ Supra note 22

biologically active compounds to be developed into pharmaceutical agents and/ or genetically modified organisms.²⁹

The complexity of nature is, therefore, an ideal avenue for the streamlined production of new products. Thus, corporations often seek to profit from the labor of indigenous groups, rather than perform their own research and development. It can be estimated that seventy-five percent of current plant-derived pharmaceuticals were initially synthesized using information obtained from indigenous peoples³⁰. Given the nature of the global market, namely its relatively free market status aimed at maximizing profits, it is not surprising that corporations seek shortcuts in their efforts to produce new drugs, thereby reducing labour cost. However, the nature of such a business model inherently results in an exploitative system in which the indigenous peoples or local communities in biodiversity-rich southern hemisphere from whom the biological information is obtained are ultimately marginalized and cut out of the profit model.³¹

Corporations cannot be criticized for attempting to maximize profits; however, they can be scrutinized for not upholding ethical business practices when dealing with the indigenous peoples from whom many of their products are derived; current practices directly conflict with ethical standards of business. One argument against biopiracy lies in the practice of patenting biological and genetic materials obtained from indigenous peoples. In order to profit without fear of rival companies stealing a product, corporations must patent their findings. However, the concept of patenting biological processes is an inherent contradiction to the traditional meaning applied to patents. Patents are issued to protect “human inventions;” however, biological systems isolated from plants are inherently not “human inventions,” but rather human discoveries.³²

²⁹ Suzie Key et al. ‘Genetically modified plants and human health’ 101(6)*Journal of the Royal Society of Medicine*, (2008): 290–298

³⁰ Shand Hope ‘Patenting the Planet’ Multinational Monitor Academic One File, (2009)

³¹ Shiva Vandana ‘*Protect or Plunder? Understanding Intellectual Property Rights*’, New York: ZED Books, 2001

³² Y Daya & N Vink ‘Protecting traditional ethno-botanical knowledge in South Africa through the intellectual property regime’, *Agrekon*, Volume 45, Issue 3, (2006): 319 - 338

4. National and International Policy Frameworks on Biopiracy

The legally binding language of CBD Article 15(7)³³ points to an inter-State benefit-sharing obligation, that is not expressly linked to specific access activities and that is to be implemented through the adoption of domestic measures on benefit-sharing. Fair and equitable benefit-sharing, however, is not defined in the CBD other than by reference to the means for its realisation. The language of the third CBD objective seems to point to three such means, each underpinned by specific provisions of the Convention: appropriate access to genetic resources, appropriate transfer of relevant technologies, and including biotechnology.³⁴

Before 1993, there was no policy framework document in Cameroon on forestry resources, biodiversity, or genetic resources serving as a means to regulate illegal exploitation and commercialisation (biopiracy) of these resources. Difficulties in developing national Access Benefits-Sharing frameworks have been due to the complexity of the subject matter and limited international guidance.³⁵ Cameroon, after signing the Convention on Biological Diversity (CBD), put in a place a number of policies in the domain of biodiversity exploitation and conservation among which were:

- The Forestry Policy of Cameroon;
- The National Environment Management Plan, with components addressing forestry and the environment;
- The Biodiversity Status Strategy and Action Plan for Cameroon (2003); and
- Cameroonian's Tropical Forest Action Plan.

The National Biodiversity Management Strategy prepared by Ministry of Environment and Nature Protection (MINEP), as part of the National Environmental Management Plan grants a

³³ CBD Convention Article 15(7) Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, and in accordance with Articles 16 and 19 and, where necessary, through the financial mechanism established by Articles 20 and 21 with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources. Such sharing shall be upon mutually agreed terms.

³⁴ Ibid

³⁵ Morgera Elisa et al. 'Unraveling the Nagoya Protocol: a commentary on the Nagoya Protocol on access and benefit-sharing to the Convention on Biological Diversity' in Koninklijke Brill nv, Leiden, The Netherlands, (2014) Pg 14 -18

high importance to wood products and gives little attention to genetic resources, which are treated in the category of ‘other forest products’ such as timber and wildlife.³⁶

Article 3 of the CBD has reiterated on the fact that the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction³⁷

To satisfy the three goals of the CBD (conservation, development, and benefit sharing), the principle of sovereign rights is best applied through what has become known as Access and Benefit Sharing Agreements (ABAs).

The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity in her preamble provides that parties to the Protocol have the potential role of access and benefit-sharing to contribute to the conservation and sustainable use of biological diversity, poverty eradication and environmental sustainability and thereby contributing to achieving the Sustainable Development Goals³⁸

Under the CBD, prior informed consent is the standard for ensuring a fair and equitable access and benefit-sharing agreements (ABA). The source country providing access to genetic resources must know in advance what will be done with the resource, and what benefits will be shared. Without such an understanding between the collector and the supplier, there could be no true meeting of the minds, and no fair agreement on benefit sharing. Benefits may include support for research and conservation, contributions of equipment and materials, assistance to indigenous and local communities, upfront fees, milestone payments, and royalties.³⁹

The problem with current international policy framework efforts is that they try to address the causes of biodiversity loss in precisely the reverse order of their current relative significance

³⁶ Supra note 22

³⁷ Article 3 of CBD, States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

³⁸ Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity: text and annex / Secretariat of the Convention on Biological Diversity (2011), Available at <https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf> (accessed 13 December 2016)

³⁹ <https://www.cbd.int/abs/about/> (accessed on 10 December 2016)

focusing more attention on the primary cause of diversity loss in Paleolithic times namely over-harvesting of large and endangered mammalian and avian life than on wide-scale habitat destruction, which was first set in motion by the rise of Neolithic agriculture and the spread of sedentary human settlements across much of the globe and is now the leading cause of biodiversity loss. This is seen with the rise in genetic engineering or technological innovations. The *in situ* preservation of ecosystems remains the only effective way to save biodiversity, and the academic community has a singularly immense responsibility to educate the public on the importance of realigning environmental law with the scientific understanding of biodiversity loss, a task, that promises its own epiphany more spiritually satisfying understanding of the biosphere at its fullest and most diverse.⁴⁰

Article 24(1) of the African Model Law on Rights of Communities, Farmers, Breeders, and Access to Biological Resources says that Farmers' Rights are recognized as stemming from the enormous contributions that local farming communities, especially their women members, of all regions of the world, particularly those in the centres of origin or diversity of crops and other agro-biodiversity, have made in the conservation, development and sustainable use of plant and animal genetic resources that constitute the basis of breeding for food and agriculture production.⁴¹ The African Model Law laid emphasis on the grant of access permit to the biological resources by the National Competent Authority in which such access agreement shall according to Article 8(ix) abide by the relevant laws of the country particularly those regarding sanitary control, biosafety and the protection of the environment as well as by the cultural practices, traditional values, and customs of the local communities.⁴²

Non-governmental Organisations and other stakeholders working under the banner of the REDD+ process and the VPAs-FLEGT projects mechanism, have expressed the need for a revision of the current laws on access to benefits sharing from the exploitation of natural resources in Cameroon⁴³. The Reducing Emissions from Deforestation and Forest Degradation,

⁴⁰McManis Charles R, 'Intellectual Property, Biotechnology and Traditional Knowledge', Earthscan in Biodiversity and the law, London (2007) 2

⁴¹ Article 24(1); Farmers' Rights are recognized as stemming from the enormous contributions that local farming communities, especially their women members, of all regions of the world, particularly those in the centres of origin or diversity of crops and other agro-biodiversity, have made in the conservation, development and sustainable use of plant and animal genetic resources that constitute the basis of breeding for food and agriculture production; and... OAU MODEL LAW, ALGERIA, (2000)—Rights of Communities, Farmers, Breeders, and Access to Biological Resources

⁴² Ibid

⁴³ <http://www.asb.cgiar.org/article/cameroon-redd-ready-stakeholders-weigh> (accessed 12 December 2016)

Conservation and Sustainable Management of Forest, REDD+ process are efforts aimed at conserving the forests within the framework of the Climate Change Convention.

They believe that for benefits sharing to have an impact on the lives of local councils and the population, a higher percentage should rather be allocated to these entities. It was noted that what is being paid for the exploitation of forest and hunting areas in Cameroon is very insignificant as compared to what obtains in other countries. It was also said that in some countries, the State has nothing to do with revenue accruing from the REDD+ process.⁴⁴

Cameroon like the many Africa States stands to lose huge benefits from its biodiversity for lack of legal protection against biopiracy, concluded the Second South-South Biopiracy Summit held August 30, 2002, in Johannesburg during the World Summit on Sustainable Development (WSSD).⁴⁵

Cameroon Legislation to address the ethical dilemma of Biopiracy in Relation to CBD Regulations

Biopiracy remains the theft of biological matter, like plants, seeds, and genes. In the absence of laws regulating access to these resources, pharmaceutical, agrochemical and seed multinationals exploit Cameroon's biological wealth and obtain rights of intellectual ownership to the resources and knowledge of communities.

The Cameroon Biosafety Law No 2003/006 titled "Law No 2003/006 of 21 April 2003 To Lay Down Safety Regulations Governing Biotechnology in Cameroon" ("Biosafety Law") was signed by the President of Cameroon on the 21 April 2003 and passed by the Cameroon Parliament during November 2003. Cameroon is a Party to the Cartagena Protocol on Biosafety ("Biosafety Protocol") and the Nagoya Protocol on access to benefit sharing (ABS) from genetic engineering and commercialization of biological resources.

The Cameroon Biosafety Law is first and foremost an enabling framework law not sufficient to regulate access benefit sharing relating to biological exploitations. It requires several regulations

⁴⁴Nformi Sonde Kinsai 'REDD+ Proponents Want Laws on Benefits Sharing Reviewed', (2014) available at <http://www.cameroonpostline.com/redd-proponents-want-laws-on-benefits-sharing-reviewed/> accessed on 16 August 2017

⁴⁵ Law of 2003/006 of 21 April (2003) To Lay Down Safety Regulations Governing Biotechnology in Cameroon

to be made on key issues, in order for the Law to become operational and meaningfully implemented.⁴⁶

5. Some Ethical Issues surrounding Biopiracy activities

Some authors like Shiva Vandana analysed the ethical dilemma surrounding biopiracy activities such the treatment of organisms as if they are machines, life seen as having instrumental rather than intrinsic value. The ethical, ecological, and health implications involved in the manipulation of plants and animal for industrial ends.⁴⁷

Treating animals and plants as machines, however, has a major impact on their behavior and health. The issues of health and plants or animals welfare are intrinsically related to the ecological impact of the new technologies on the capacity of self-regulation and healing. The making of the organism, the multiplying cells seem to be instructed as to their respective destinies, and they become permanently differentiated to compose organs. But the instructions or pattern for making the whole structure remain somewhat latent. When a part is injured some cells become undifferentiated in order to make new, specialized tissues.⁴⁸

Ethical dilemmas concerning biopiracy are much less obvious, particularly when there are poor cross-cultural exchanges between those that have appropriated traditional knowledge and those groups that have provided it, either willingly or unknowingly. In certain circumstances, indigenous or local groups may find that they are excluded from further sale or export of their products as a result of a patent or a plant breeder's right. Although in practice this may not occur as frequently as might be imagined, there is evidence that it can occur through the pursuit of litigation or even the threat of legal action.⁴⁹

Conclusion

The interaction of social, cultural, and economic factors in environmental and agricultural management is complex. Scientific research in providing numerous innovations which have

⁴⁶ Supra note 22

⁴⁷ Supra note 31

⁴⁸ Supra note 31

⁴⁹ Robinson, Daniel F 'Confronting biopiracy : challenges, cases and international debates', Earthscan Ltd, Dunstan House, 14a St Cross Street, London EC1N 8XA, UK (2010), p102

improved the lives of many, and scientists have been regarded, in the main, as trustworthy and ethically sound, and biotechnological research and its role in drug production has altered the understanding of these scientific innovations with mass exploitation of natural resources for commercial purpose by multinational firms from indigenous communities in developing countries without compensation to their traditional knowledge to these resources. Even the international and national regulatory frameworks put in place guard against any illegality in this domain remain largely insufficient. Cameroon like other developing biological resources rich countries are losing a huge part of her biodiversity because the standards set by most of the international agreements are discriminatory to the local communities. It is worthy to note that bioprospecting and trade have the potential of generating significant economic benefits to Cameroon as well as other African countries if properly controlled, communities are fully involved and are important potential components of an integrated sustainable development strategy. The absence of appropriate policy framework and watertight legislation to combat the ethical issues surrounding bioprospecting, Cameroon will continue to lose its share of the potential millions of dollars in revenues from renewable plant, and microbial resources exploited by international pharmaceutical for their interests without compensation to the original owners of these bioresources. Any benefit sharing arising from this scientific innovation or genetic engineering will have an improved healthcare, environmental protection, and sustainable development.

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- Article 8 (c) of the CBD, regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use;
- WTO TRIPs Agreement available at https://www.wto.org/english/docs_e/legal_e/27-trips.pdf (accessed 13 December 2016)
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