# A COMPARATIVE STUDY OF LAWS AND POLICIES IMPACTING ON CONSERVATION OF BIODIVERSITY WITH SPECIAL REFERENCE TO AGRICULTURAL BIODIVERSITY

BY

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A thesis submitted in fulfilment of the requirement for the degree of Doctor of Philosophy in Law

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# ABSTRACT

The process of rapid development comes with a price and it is mostly done at the expense of biodiversity and general environmental degradation. The complex interrelationship between agricultural biodiversity and biotechnology as well as the conflicting institutional interplay in the international governance of the conservation and use of plant genetic resources has resulted in a trade-environment deadlock between the technologically advanced developed nations and genetically resource rich developing and least developed nations to the detriment of the collective interests of the global community. The aim of the current research is to investigate the origins, operations and effects of legal regimes, policies and practices related to conservation of biodiversity. It undertakes a comparative study of laws and policies in this area to gain an in-depth understanding of the factors behind the lack of success in conserving biodiversity in general and agricultural biodiversity in particular and explores ways in which the conflicts between the WTO Agreements and the CBD can be resolved. The research undertook a socio-legal approach utilizing a qualitative research method which predominantly relied on content analysis of provisions in the various treaties that had a bearing on conservation of biodiversity as well as decided cases, reports and studies that analyzed the implementation of these treaties. The findings of the study indicated that global governance structures such as the WTO and the CBD have to reinvent themselves in order to meet the challenges of the millennia brought about by cutting edge technologies such as modern biotechnology. The global community also must have an Ubuntu mindset i.e. unity consciousness to tackle global challenges such as biodiversity loss and global warming which threatens the wellbeing of the planet and its inhabitants. Without such a mindset, no technology, policies or laws will be able to avert the global crises which may culminate into massive extinctions and jeopardize the future of this planet. We need to ensure that our policies and laws are entrenched with ethical values promoted at the global level aimed at ensuring the wellbeing of all.

# خلاصة البحث

إن عملية التطوير السريع تأتي مع السعر ويتم ذلك في الغالب بآثار ضارة على التنوع البيولوجي و البيئة العامة. وقد أدى الترابط المعقدة بين التنوع البيولوجي الزراعي و التكنولوجيا الحيوية وكذلك التفاعل المؤسسي في الإدارة العالمية للحفظ واستخدام الموارد الوراثية النباتية إلى طريق مسدود للتجارة والبيئة بين الدول المتقدمة تقدما من الناحية التكنولوجية والدول النامية و الأقل نموا الغنية بالموارد وراثيا على نحو يضر المصلحة العامة للمجتمع العالمي. وكان الهدف من البحث الحالية هو لتحقيق الأسباب والعمليات و آثار الأنظمة القانونية والسياسات و الممارسات المتعلقة بحفظ التنوع البيولوجي. إنه يتولى دراسة مقارنة للقوانين والسياسات في هذا المجال لاكتساب فهم متعمق للعوامل وراء عدم النجاح في المحافظة على التنوع البيولوجي عموما وفي التنوع البيولوجي الزراعي على وجه الخصوص ويستكشف السبل التي تمكن على حل صراعات بين اتفاقيات منظمة التجارة العالمية و اتفاقية التنوع البيولوجي. أجرى البحث نهج الاجتماعية و القانونية باستخدام أسلوب البحث النوعي التي تعتمد في الغالب على تحليل مضمون الأحكام الواردة في المعاهدات المختلفة التي قد تؤثر على حفظ التنوع البيولوجي وكذلك *القضايا* التي قد قررت والتقارير والدراسات التي حللت تنفيذ هذه المعاهدات. وأشارت نتائج الدراسة إلى أنه يجب على هياكل الحوكمة العالمية مثل منظمة التجارة العالمية واتفاقية التنوع البيولوجي اصلاح نفسها من أجل مواجهة تحديات الألفية التي أحدثتها التقنيات المتطورة مثل التكنولوجيا الحيوية الحديثة. يجب على المجتمع العالمي أيضا أن يكون له التفكير أوبونتو يعني ان يكون على نفس المستوى من الوعي لمعالجة التحديات العالمية مثل فقدان التنوع البيولوجي و ظاهرة الاحتباس الحراري التي تهدد رفاه الكوكب و سكانه. بدون مثل هذا التفكير ، فليس هناك أي تكنولوجيا أو سياسات أو قوانين تكون قادرة على تجنب الأزمات العالمية التي قد تفضي الى انقراض هائل و تعرض للخطر مستقبل هذا الكوكب. نحن بحاجة للتأكد من أن السياسات والقوانين لدينا هي راسخة بالأخلاقيات العالمية التي تضمن الرفاهية للجميع.

# APPROVAL PAGE

The thesis of Lekha Kunju Pillai Laxman has been approved by the following:

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# DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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Signature …… Date ……..

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Affirmed by Lekha Kunju Pillai Laxman

…… ……..

Signature Date

*This thesis is lovingly dedicated to the memory of my late father, K. Laxman and my beloved mother S. Leela who has taught me never to give up in my quest for truth in the name of God. It is also in special honor of the three billion people in this world living on less than $2.50 a day and the 22,000 children who die each day due to poverty.*

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Treaty of the Functioning of the European Union
UNESCO Convention for the Protection of the World Cultural and Natural Heritage
Wildlife and Countryside Act, 1981 of the United Kingdom

# LIST OF ABBREVIATIONS

**Acronym Name**

| | |
|---|---|
| AIA | Advanced Informed Agreement |
| AB | Appellate Body (for the WTO) |
| ABS | Access to Genetic Resources and Benefit Sharing |
| AGR | Access to Genetic Resources |
| APEC | Asia-Pacific Economic Cooperation Group |
| ASEAN | Association of South-East Asian Nations |
| AWGE | ASEAN Working Group on Environment |
| AWGNCB | ASEAN Working Group on Conservation and Biodiversity |
| Bt. | Bacillus Thuringiensis |
| BEAs | Bilateral Environmental Agreements |
| CAC | Codex Alimentarius Commission |
| CBD | Convention on Biological Diversity |
| CCD | Convention on Combat Desertification |
| CERES | Coalition for Environmentally Responsible Economies |
| CGIAR | Consultative Group on International Agriculture Research |
| CGRFA | Commission on Genetic Resources for Food and Agriculture |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| CMS | Convention on Migratory Species |
| COP | Conference of the Parties to the Convention on Biological Diversity |
| CSR | Corporate Social Responsibility |
| CTE | Committee on Trade and Environment (of the World Trade Organization) |
| DNA | Deoxyribonucleic acid |
| EC | European Community |
| ECA | UN Economic and Social Commission for Africa |
| ECE | UN Economic Commission for Europe |
| ECJ | European Court of Justice |
| ECLAC | UN Economic and Social Commission for Latin America and the Caribbean |
| EKC | The environmental Kuznets curve |
| EMS | Environmental Management System |
| ENGOs | Environmental Non-Governmental Organizations |
| EPA | Environmental Protection Agency |
| ESCAP | UN Economic and Social Commission for Asia and the Pacific |
| ESCWA | UN Economic and Social Commission for West Asia |
| ETM | Environmental Trade Measure |
| EU | European Union |
| FAO | UN Food and Agriculture Organization |
| FD | Framework Directive |
| G8 | Group of Eight |
| GATS | General Agreement on Trade in Services |

| | |
|---|---|
| GATT | General Agreement on Tariff and Trade |
| GDP | Gross Domestic Product |
| GEF | Global Environment Facility |
| GHG | Greenhouse gas |
| GISP | Global Invasive Species Programme |
| GM | Genetic Modification |
| | GMO Genetically modified organism |
| GNP | Gross National Product |
| GR | Genetic Resources |
| HGT | Horizontal Gene Transfer |
| IAEA | International Atomic Energy Agency |
| IARCs | International Agricultural Research Centers |
| IAS | Invasive Alien Species |
| IATTC | International Organization for Standardization |
| IBRD | International Bank for Reconstruction and Development or World Bank |
| ICAO | International Civil Aviation Organization |
| ICSU | International Council of Scientific Unions |
| IE | International Expert Group on Biotechnology, Innovation and Intellectual Property |
| IEA | International Energy Agency |
| IFAD | International Fund for Agricultural Development (of UN) |
| IGC | Intergovernmental Committee on Genetic Resources and Intellectual Property Rights; Traditional Knowledge and Folklore (of WIPO) |
| ILC | Indigenous and Local Communities |
| ILO | International Labour Organization |
| IMF | International Monetary Fund |
| IMO | International Maritime Organization |
| IPCC | International Panel on Climate Change |
| IPOA | International Plan of Action |
| IPPC | International Plant Protection Convention |
| IPR | Intellectual property rights |
| ISDR | International Strategy for Disaster Reduction |
| ISO | Inter-American Tropical Tuna Commission |
| ITC | International Trade Centre |
| ITLOS | International Tribunal for the Law of the Sea |
| ITO | International Trade Organization |
| ITPGRFA | International Treaty for Plant Genetic Resources for Food and Agriculture |
| ITTO | International Tropical Timber Organization |
| ITU | International Telecommunications Union |
| IUCN | World Conservation Union (previously International Union for the Conservation of Nature and Natural Resources) |
| IWC | International Whaling Commission |
| LDC | Least Developed Country |
| LMO | Living Modified Organism |
| LMO-FFP | Living Modified Organism for Food and Feed or for Food Processing |

| | |
|---|---|
| LOP | Level of Protection |
| MA | Millennium Ecosystem Assessment |
| MAI | Multilateral Agreement on Investment |
| MAT | Mutually Agreed Terms |
| MDGs | Millennium Development Goals |
| MEAs | Multilateral Environmental Agreements |
| MEPC | Marine Environment Protection Committee |
| MFN | Most Favored Nation |
| NAFTA | North American Free Trade Agreement |
| NASA | National Aeronautics and Space Administration |
| NATO | North Atlantic Treaty Organization |
| NGO | Non-governmental organization |
| OECD | Organization for Economic Cooperation and Development |
| OCHA | Office for the Coordination of Humanitarian Affairs |
| OHCHR | Office of the High Commissioner for Human Rights |
| PBR | Plant Breeder's Rights |
| PCB | Polychlorinated Biphenyl |
| PD | Pesticide Directive |
| PGRFA | Plant Genetic resources for Food and Agriculture |
| PGRs | Plant Genetic Resources |
| PIC | Prior Informed Consent |
| PP | Precautionary Principle |
| PPD | Process and production method |
| RNA | Ribonucleic acid |
| rDNA | Recombinant Deoxyribonucleic acid |
| SAC | Special Area of Conservation |
| SBC | Secretariat of the Basel Convention |
| SBSTTA | Subsidiary Body on Scientific, Technical and Technological Advice (of COP) |
| SCBD | Secretariat of the Convention on Biological Diversity |
| SCM Agreement | Subsidies and Countervailing Agreement |
| SCP | Standing Committee on the Law of Patents (WIPO) |
| SPA | Special Protection Area |
| SPLT | Substantive Patent Law Treaty |
| SPS | Uruguay Round Agreement on the Application of Sanitary and Phytosanitary Measures |
| TAC | Total allowable catch |
| TCE | Traditional Cultural Expressions |
| TED | Turtle Excluder Device |
| TEG | Technical Expert Group of the CBD |
| TK | Traditional Knowledge |
| TEK | Traditional Ecological Knowledge |
| TT | Technology Transfer |
| TBT Agreement | Agreement on Technical Barriers to Trade |
| TRAFFIC | Trade Records Analysis of Fauna and Flora in Commerce |
| TRIPS | WTO Agreement on Trade-Related Aspects of Intellectual Property Rights |
| UNCCD | UN Convention to Combat Desertification |
| UNCED | UN Conference on Environment and Development |

| | |
|---|---|
| UNECE | UN Economic Commission for Europe |
| UNCTAD | UN Conference on Trade and Development |
| UNDESA/DSD | United Nations Department of Economic and Social Affairs Division of Sustainable Development |
| UNDESA/CSD | United Nations Department of Economic and Social Affairs Commission of Sustainable Development |
| UNDP | United Nations Development Program |
| UNEP | United Nations Environment Program |
| UNESCAP | United Nations Economic and Social Commission of the Asia Pacific |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNFCCC | UN Framework Convention on Climate Change |
| UNFF | UN Forum on Forests |
| UNFPA | United Nations Population Fund |
| UN-HABITAT | UN Human Settlements Programme |
| UNHCR | United Nations High Commissioner for Refugees |
| UNICEF | United Nations Children's Fund |
| UNIDO | United Nations Industrial Development Organization |
| UNITAR | United Nations Institute for Training and Research |
| UNU | United Nations University |
| UPOV | *Union International pour la Protection des Obtentions Végétales* (International Union for the Protection of New Varieties of Plants) |
| WCMC | World Conservation Monitoring Group |
| WCO | World Customs Organization |
| WEHAB | Water, Energy, Health, Agriculture & Biodiversity |
| WFP | World Food Programme |
| WHO | World Health Organization |
| WIPO | World Intellectual Property Organization |
| WMO | World Meteorological Organization |
| WSSD | World Summit on Sustainable Development |
| WTO | World Tourism Organization |
| WTO | World Trade Organization |
| WWF | World Wide Fund for Nature |

# CHAPTER ONE

# THE CONSERVATION OF GLOBAL BIODIVERSITY & RESEARCH FRAMEWORK

*O great King, the birds of the air and the beasts have as equal a right to live and move about in any part of the land as thou. The land belongs to the people and all living things; thou art only the guardian of it.*

A sermon on Buddhism preached to King Devanampiya Tissa around 223 BC[1]

## 1.0 INTRODUCTION

Man is part and parcel of the ecology of the earth and the delicate balance of nature is maintained when man co-exists with all species in a symbiotic relationship. The infinite value of biological diversity (hereinafter biodiversity) [2] is irrefutable for it has sustained the planet from time immemorial. Numerous benefits both material and non-material continually accrue from natural ecosystem processes but many are yet to be discovered by mankind.[3] Some of these possess immense economic value[4] for it has

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[1] Ian McHarg, "Values, process and form," in *The fitness of man's environment,* edited by the Smithsonian Institution, Smithsonian Institution Press, 1968, 213

[2] 'Biodiversity' is an extremely complex cum multilayered term and thus extremely difficult to define with precision. The concept of biodiversity relates to all life form on earth; it goes beyond the organisms and includes their genetic make-up, and the invisible ecosystem processes and services of which individual species are a part (e.g. photosynthesis, soil formation and pollination).The most legally accepted definition of "biodiversity" is "the variability among living organisms from all sources, including, inter alia, terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they part; this includes diversity within species, between species and of ecosystems"; this definition was formulated during the 1992 United Nations Earth Summit in Rio De Janeiro and is currently adopted by the United Nations Convention on Biological Diversity as per Article 2. Source: <http://www.cbd.int/doc/meetings/sbstta/sbstta-11/official/sbstta-11-17-en.pdf> (accessed 12 January 2009).

[3] Balmford, A., Bennun L., ten Brink, B. et al., "The Convention on Biological Diversity's 2010 target," *Himalayan Journal of Sciences,* vol.3 issue 4 (Jan-June 2005): 43-45, 43. See also: Raustiala, Kal and Victor, David G., " Biodiversity since Rio: The Future of the Convention on Biological Diversity," *Environment,* vol.38 no.4 (May 1996): 17-43, 18; Díaz S, Fargione J, Stuart Chapin F III, Tilman D, "Biodiversity Loss threatens Human Wellbeing," *PLoS Biology*, vol.4 issue 8 (August 2006): 1300-1305, 1300

[4] Ansari, Abdul Haseeb and Jamal, Parveen, "The Convention on Biological Diversity: A Critical Appraisal with Special Reference to Malaysia," *Indian Journal of International Law,* vol.40, no.2 (April-June 2000):137-177, 144

the potential to yield tangible benefits as a result of direct harvesting of plants and animals for food, medicine, fuel, etc. whilst others have environmental benefits such as regulation of air quality and climate, water purification, disease control, biological pest control, pollination, shoreline protection and prevention of soil erosion.[5] It has been estimated that 40 percent of the global economy is based on biological products and processes.[6] Non-material benefits are also obtained from eco-systems namely spiritual, cultural, aesthetic and recreational values not to mention research values as well as traditional knowledge systems.[7] It is safe to surmise that biological diversity offers significant benefits to the global community for it not only sustains livelihoods but life itself.[8] Its universal relevance thus necessitates the safeguarding of the collective biological diversity[9] as its protection is a fundamental part of efforts to ensure a thriving and healthy environment for present and future generations of humans and all other living species[10].

The global population today is undergoing various challenges that are closely linked to the environment they live in. The inclination of humans to set themselves apart from the environment and the species that co-habit with them whilst assuming to be superior even to the laws of nature have given rise to many of the challenges faced by the global inhabitants today. In the name of development,[11] many nations have

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[5] The ASEAN Centre for Biodiversity (ACB), "Importance of Biodiversity," <http://www.aseanbiodiversity.org/index.php?option=com_content&view=article&id=78&Itemid=97> accessed 20 January 2009

[6] Koziell, I., *Diversity not Adversity: Sustaining Livelihoods with Biodiversity*, International Institute for Environment and Development and Department for International Development, 2001, 1

[7] ACB, n. 5

[8] Koziell, n.6, 1

[9] Ansari & Parveen, n. 4, 138

[10] Macquarie Statement: Statement of the Third Colloquium of the IUCN Academy of Environmental Law in *Biodiversity Conservation, Law and Livelihoods: Bridging the North-South Divide*, Michael I Jefferey, Jeremy Firestone, Karen Bubna-Litic (eds.), Cambridge University Press, 2008, xiii.

[11] 'Development' is a concept associated with positive attributes. In fact it denotes "evolution from within" and until mid-twentieth century, it was "synonymous with evolution as self-organization." But today the "development ideology" is closely intertwined with the process of globalization – it has "implied the globalization of the priorities, patterns and prejudices of the West." Thus it is not self-

engaged in non-sustainable activities that have endangered the biodiversity of the world. Thus, many species of plants and animals are fast becoming extinct if not already so.[12] The existing pool of genetic resources thus is eroding rapidly mainly due to globalization, habitat loss and fragmentation, species introduction, global warming, overharvesting of flora and fauna, climate change, pollution, tourism.[13] Other contributing factors include industrialization, loss of indigenous knowledge, widespread use of simple variety crop, and lack of gene banks.[14] Amongst these factors, destruction and deterioration of habitats as well as introductions of exotic species constitute the greatest of threats to biodiversity particularly in tropical developing countries.[15]

All of the above mentioned drivers of biodiversity loss not only threaten the sustainability of global biodiversity but also cultural diversity due to the close linkages between the two since they are "mutually reinforcing and mutually dependent."[16] Although biological diversity is relatively a newer concept than cultural diversity,[17] both diversities are crucial since they "consist of values of and for the very long

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generated but imposed, does not come from within but externally guided. The net effect is homogeneity and uniformity as opposed to "maintenance of diversity." Source: Shiva, Vandana, *Biopiracy: the plunder of nature and knowledge*, South End Press, 1997, 107

[12] Ansari, Abdul Haseeb, "Future Directions in Conservation of Biological Diversity: An Interdisciplinary Approach," 1 in *Biodiversity Conservation, Law and Livelihoods: Bridging the North-South Divide*, Michael I Jefferey, Jeremy Firestone, Karen Bubna-Litic (eds.), Cambridge University Press, 2008

[13] Jeffery et al., n. 10, 1

[14] Ansari & Parveen, n. 4, 137

[15] Ammann, Klaus, "The impact of agricultural biotechnology on biodiversity: A Review," at 3, <http://www.botanischergarten.ch/Biotech-Biodiv/Report-Biodiv-Biotech12.pdf> accessed 15 April 2009

[16] UNESCO & UNEP, "Cultural Diversity and Biodiversity for Sustainable Development," at 8, <http://unesdoc.unesco.org/images/0013/001322/132262e.pdf> accessed 15 February 2009. See also Jeffery et al. n.10, 1

[17] There is a general consensus that the concept 'biological diversity' was introduced in 1986 and within a very short time was developed and enshrined in multilateral environmental agreements. Source: Bridgewater, P., Arico, S. and Scott, J., "Biological Diversity and Cultural Diversity: The Heritage of Nature and Culture through the Looking Glass of Multilateral Agreements," *International Journal of Heritage Studies* vol.13 no.4-5 (July-September 2007): 405-419, 405

term."[18] In fact a growing body of evidence has validated the link between biological and cultural diversity and continues to explore the interface between these and other forms of diversity.[19] This has led to the realization of the crucial role of indigenous peoples around the world both as "custodians of biodiversity and proponents of cultural diversity."[20] Although there is tremendous diversity in the cultures and values of these indigenous peoples, all of them have a commonality. They subscribe to conservation of nature in which the Earth and its resources are "a sacred heritage" arising from the "intergenerational obligation to pass the land to future generations" as well as "to use it in sustainable ways." [21]

Cultural diversity irrefutably is a "powerful guarantee of biodiversity" given that "human action with respect to the environment, including management itself, is a social act and an expression of culture."[22] Both these diversities are not only jointly addressed in many Multilateral Environmental Agreements (MEAs)[23] but also "recognized, explicitly and implicitly, as part of the global heritage of humankind, with the attendant responsibilities that flow from that."[24] Nevertheless, their mutual strengths have not been adequately tapped in the MEAs to address the rapid loss of biodiversity of global proportions.[25]

Maintaining and protecting global biodiversity requires addressing these multitudinous factors in order to stem the rate of loss occurring at such an unprecedented rate which simultaneously creates ecological imbalances and ultimately

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[18] UNESCO & UNEP, n. 16
[19] Bridgewater et al., n. 17, 406
[20] Ibid.
[21] Id.
[22] UNESCO & UNEP, n. 16
[23] Multilateral environmental agreement is "an intergovernmental document intended as legally binding with a primary stated purpose of preventing or managing human impacts on natural resources." Source: Kanie, Norichika, "Governance with Multilateral Environmental Agreements: A Healthy or Ill-Equipped Fragmentation?" <http://www.cenerforunreform.org> accessed 12 April 2009
[24] Bridgewater et al. n. 17, 405
[25] Ibid.

erodes the capacity of this planet to sustain life on earth.[26] The mode and mechanisms to address these factors are increasingly subsumed by international environmental governance [27] in the 21st century as environmental protection is progressively viewed from a global perspective.[28]

The face of modern international environmental law has undergone successive transformations beginning from the 1970s. Not only were a multitude of international environmental instruments[29] (bilateral and multilateral of the binding and non-binding types) concluded,[30] the look and feel of these provisions had also drastically altered to resolve complex environmental issues threatening our planet. The provisions of these instruments are "more stringent and detailed" in comparison to their predecessors, their "subject matter wider in scope" and the "provisions for implementation more sophisticated."[31]

Environmental problem solving however does not occur in the context of "streamlined" international institutions like other international policy fields such as trade, economic policy or health.[32] The existing institutional architecture has evolved incrementally over the last forty years in an "ad hoc and fragmented" manner[33] in response to environmental issues that increasingly epitomizes "the complexity and

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[26] Extracts from UN Secretary-General Ban Ki-moon's speech on International Day for Biological Diversity on 22 May 2007, <http://www.un.org/News/Press/docs/2007/sgsm10994.doc.htm> accessed 8 May 2009

[27] International environmental governance consists of the United Nation's Environmental Program (UNEP), a multitude of international environmental agreements and various international institutions dealing with environmental issues. Source: Simon, Nils and Dröge, Susanne, "Rio 2012 and Reform of International Environmental Governance," in *On the Road to Sustainable Development: How to Reconcile Climate Protection and Economic Growth*, Bärbel Kofler and Nina Netzer (eds.), May 2012

[28] Jeffery, Michael I., "An International Regime for Protected Areas," at 1, <http://www.earthlore.ca/clients/WPC/English/grfx/sessions/PDFs/session_1/Jeffery.pdf> accessed 9 May 2009

[29] The International Environmental Agreements Database (University of Oregon, United States) contains details on over 1,100 multilateral and 1,500 bilateral agreements. Source: Simon and Dröge, n. 27, 105

[30] Weiss, Edith Brown, "International Environmental Law: Contemporary Issues and the Emergence of a New World Order," *Georgetown Law Journal* vol.81 (March 1993): 675-710, 678

[31] Ibid.

[32] Kanie, n. 23, 67

[33] Ibid.