Environmental Law in Developing Countries

Selected Issues

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The Carl Duisberg Gesellschaft (CDG) is a non-profit organization dedicated to promoting international advanced professional training and personnel development. In cooperation with German and foreign partners it founded an international confederation offering a broad scope of programmes covering practical advanced training, exchange and foreign language courses for specialists and executive staff throughout the world. One of its main objectives is to support sustainable economic, social and environmental development processes all over the world.

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The Central Placement Office (ZAV) is a service department of the German Labour Administration. It holds a pivotal position in the exchange of personnel and advanced training guests between Germany and co-operating nations. ZAV is involved in defining the goals and framework of advanced training programmes supported by the German Government; it also provides support services to both the trainees and the hosting organizations during the period of training.

Environmental Law in Developing Countries

Selected Issues

Nazrul Islam
Isabel Martínez
Ikechi Mgbeoji
Wang Xi
Co-ordinated by Françoise Burhenne-Guilmin

IUCN Environmental Law Programme

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Foreword

The Carl Duisberg Gesellschaft (CDG) is a non-profit organisation dedicated to international advanced training and human resources development. Since its foundation in 1949, some 300.000 people from all over the globe have participated in its various programmes. In a nutshell, these programmes serve to provide practical international experience for young professionals and executives from all over the developing world.

Among the many means by which CDG builds capacity is the CDG Fellowship Programme, which enables young professionals from countries in which CDG is carrying out projects to spend a few months in Germany undertaking focused research at a designated host organisation.

CDG works in partnership with the Central Placement Office of the Federal Labour Agency (ZAV). ZAV provides practical assistance to the Fellows as well as the fellowship's grants.

The Environmental Law Centre (ELC) of IUCN, located in Bonn, has been designated by CDG as one of its host organisation. Together with the IUCN Commission on Environmental Law, the Centre is responsible for carrying out the Environmental Law Programme of IUCN – The World Conservation Union. It is well equipped to host CDG Fellows, given its focus on capacity building in developing countries. The ELC's large library and worldwide information system on environmental law support these efforts, together with the Centre's professional personnel, whose main function is to promote the development of environmental law at international and national levels, in the context of sustainable development.

It is against this background that CDG, ZAV and IUCN-ELC decided to cooperate.

Four CDG Fellows were hosted at the Centre from November 2000 to January 2001, after spending one month at an introduction course at the Saarbrücken CDG Centre, to gain information about Germany, and prepare them for another three months in the country. Throughout their fellowships, they diligently pursued their individual research at the IUCN Environmental Law Centre.

The result of this initial cooperation among CDG, ZAV and IUCN-ELC is published in this volume. Each Fellow selected his or her own research subject, with advice from the ELC, prior to arrival. Fellows interacted with the ELC personnel, as well as, later on, with outside reviewers.

The papers published here are the sole responsibility of their authors; however, each of the authors has acknowledged the usefulness of the process in enriching their views and their research results.

It is the wish of CDG, ZAV and IUCN Environmental Law Centre that these papers be made widely available, to contribute to the respective debates that each addresses. For this reason, CDG has provided additional support for the publication of this volume. It is also hoped that, in their future professional lives, the Fellows will continue to support the goal of CDG and the IUCN-ELC – enabling young professionals to make their views known, and learn from the views of others.

Meanwhile, the cooperation among CDG, ZAV and IUCN-ELC continues, and may be expected to lead to more publications sharing the views and research of other young professionals in the field of environment and sustainable development.

The partners, as well as the authors, wish to express warm thanks to those who reviewed the papers presented below, for their valuable contribution to this publication.

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Biographies

Dr. Md. Nazrul Islam (Bangladesh)
University teacher, legal consultant and journalist, Dr. Islam studied at the University of London, United Kingdom (Ph.D. 1999) and at the University of Dhaka, Bangladesh (LL.M., 1987 and LL.B., Honours, 1986). He wrote his Ph.D. thesis on "Equitable Sharing of the Water of the Ganges, Applicable Procedural Principles and Rules of International Law and their adequacy". He was the representative of the Ph.D. law students at the School of Oriental and African Studies (SOAS), University of London in 1995-96 and Vice President of Law Review, a Dhaka University Law Department based organisation in 1993-1994. He received the Commonwealth Scholarship (UK) during 1994-97 and the Talent Pool Scholarship (Bangladesh) during 1986-89. Dr. Islam has worked as Legal Consultant to a number of projects including the UNDP Project on Enhancement of Judicial Mechanism concerning Natural Resources Management in Bangladesh; the IUCN Bangladesh Project on developing a Proposal for an Umbrella Law concerning Conservation of Natural Resources; and the DANIDA project on capacity building of the Judicial Administration Training Institute of Bangladesh. Better known in Bangladeshi circles as 'Asif Nazrul' – a journalist and novelist – his publications include 12 books and more than 100 articles on various legal, political and social issues in national dailies and weeklies. He has returned to Bangladesh to continue as Assistant Professor at the Department of Law at the University of Dhaka, Bangladesh.

Isabel Martínez (Venezuela)
Ms. Martínez graduated with a degree in Law from the Universidad Católica Andrés Bello, Caracas, Venezuela (1989) and she received a Master's degree in Natural Resources Management from the University of Leicester, United Kingdom (1993); for this she was granted a fellowship from the British Council and the Fundación Gran Mariscal de Ayacucho of Venezuela. She worked at the Ministry of the Environment and Natural Resources (September 1989-June 1992) as part of various interdisciplinary teams responsible for drafting legislation for protected basin zones and national parks (mainly land-use regulations). When she returned from the United Kingdom, she worked as a freelance consultant on environmental law issues (October 1994-August 1995). During this period, she joined the first Environmental Law NGO in Venezuela (FUJUCAVI), an organisation dedicated to promoting the dissemination of environmental law in the country and assisting local authorities and communities in its application. In September 1995 she began working as a consultant at the Regional Office for Latin America and the Caribbean of the United Nations Environment Programme (UNEP/ROLAC) in Mexico City; two years later she was appointed as Legal Officer (November 1997-December 1999). At UNEP/ROLAC she had the opportunity to develop and supervise projects on access to environmental justice and the implementation of biodiversity-related multilateral environmental agreements, with the primary focus on fostering the exchange of national experiences in these areas. Her other duties included assisting in the organisation of the meetings of the Forum of Ministers of the Environment of Latin America and the Caribbean, and in the preparation of documentation for those meetings. She is now working as Legal Officer at the IUCN Environmental Law Centre in Bonn, Germany.

Ikechi Mgbeoji (Nigeria)
Mr. Mgbeoji is a graduate of Dalhousie University, Halifax, Canada (LL.M.)(1999), University of Nigeria (LL.B.)(1992)(Upper Division), and Nigerian Law School (B.L.)(1993). At Dalhousie University he was adjudged the best graduate student for the year 1999-2000, an honour which earned him the Governor-General of Canada's Gold Medal (2000). He is also the recipient of Isaac Walton Killam Memorial Scholarship for Superior Ability and Excellent Scholarship (2000) and Sheldon Memorial Scholarship for Excellent Scholarship in Environmental and Marine Law (1999) amongst other scholarships and academic awards. While in private legal practice he was the Head of the Environmental Law Department and of the Intellectual Property Law Department of the firm of F.O. Akinrele and Co. (Lagos, Nigeria) from 1997-1998 and 1994-1997, respectively. There he focused on drafting bio-prospecting contracts, negotiating and mediating on claims on environmental degradation, preparing policy papers and documents on environmental law, litigating, negotiating, mediating and settling patent and other intellectual property cases. He has written and published several papers and has been invited as a speaker and lecturer at various universities and international fora. He is presently concluding a doctorate degree at Dalhousie University. The title of his doctoral dissertation is "Patents, Plants, and Cultures: International Law and the Erosion and Appropriation of Plant Genetic Diversity and Traditional Knowledge on the Uses of Plants (TKUP)". Mr. Ikechi Mgbeoji was recently appointed as Assistant Professor of Law at the University of British Columbia, Vancouver.

Dr. Wang Xi (China)
Dr. Wang Xi received his B.A degree from Wuhan Normal College in 1981. He graduated from Wuhan University in 1984 (M.L.) and from Washington University in 1987 (M.J.S.). He concluded his Ph.D. at Wuhan University in the year 2000. The topic of his thesis was "Human Environmental Problems and the Development of Modern International Environmental Law". He has had an extensive career as Law Professor in China and overseas. He is very active in the field of publishing including being Reporter of the Yearbook in International Environmental Law, Oxford University Press and member of the Editorial Committee of the Journal of Asian Pacific Environmental Law, Australia. Some of the books he has authored are "International Environmental Law" (State University Textbook, Law Press Beijing, 1998) and "Environmental Law of USA" (Taiwan Hanxing Publishing House, Taiwan, 1995). He has served as speaker and panellist in many national and international conferences. Another facet of his work experience concentrates on directing research projects and consulting to UN agencies and national institutions such as the Project on Law of the EU and the EU Countries for Greenhouse Gas Reduction, China-EU Higher Education Exchange Programme (2000) and the Project on Development of International Environmental Law and its Impacts on Modern International Law (1998). Dr. Wang Xi is currently Professor at the School of Law, Wuhan University and Deputy Director of the Research Institute of Environmental Law of the same University.

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The authors express gratitude to the Carl Duisberg Gesellschaft (CDG), the Central Placement Office (ZAV) of the Federal Labour Agency and the Environmental Law Centre of IUCN for their dedicated and enthusiastic support. They also thank the reviewers of individual papers for their thoughtful comments: Willemien du Plessis, Johan Nel and Frances Irwin for Nazrul Islam's paper; Silvia Jacquenod de Zsögön, Gil Nolet, Vladimir Passos de Freitas and Charles Lazzari for Isabel Martinez's paper; Graham Dutfield, Susette-Biber Klemm, Johan Bäverbrant, Obiora Okafor, Hugh Kindred, Teresa Scassa, and David Vanderzwaag for Ikechi Mgbeoji's paper; and Ellen Hey, Seth Osafo, June Budhooram and Jacob Werksman for Wang Xi's paper. The efforts of many other individuals, in governmental or non-governmental organisations, are also very much appreciated, as are the assistance and support of many judges and professors in providing information and sharing knowledge.

ISO 14001: Legal Challenges for Developing Countries

Dr. Md. Nazrul Islam

I. Introduction

The International Organisation for Standardisation (ISO) is the worldwide confederation of 135 national standards organisations.[1] Its purpose is to develop voluntary technical standards of products and services to make their manufacture and supply more efficient, safe and clean and to facilitate their international trading process.[2]

By producing the ISO 14000 standards, ISO has recently generated huge interest from the world communities conscious about the importance of integrating the principles of sustainable development into world business and trade activities.[3] The standards ISO produced before were highly specific to the size, feature or format of products or materials[4] and although its 9000 series[5] was the first generic standards, it was not until the development of ISO 14000 series that ISO entered into the realm of environmental management.[6]

ISO is a non-governmental organisation having no direct authority to enforce the standards it develops. But the legal significance of its 14000 series stems mainly from the possibilities of using, in particular, its 14001 standard as a regulatory condition for entry into international trade and business. Such possibilities have been endorsed in the provisions in the 1994 WTO Technical

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1 These organisations are either wholly private sector in origin, or private sector organisations with a special mandate from their governments on matters related to standardisation, or part of the governmental framework of their countries. So, while ISO is an NGO, it receives input from the public sector as it does from the private sector. See Part 1.12, *http://www.iso.ch/infoe/faq.htm.* ISO members are of three categories: member body, correspondent members and subscriber members. A *member body* of ISO is the national body that is most representative of standardisation in its country. Only member bodies are entitled to participate and exercise full voting rights on any technical committee and policy committee of ISO. A correspondent member is usually an organisation in a country which does not yet have a fully-developed national standards activity. Correspondent members are entitled to be kept fully informed about the work of interest to them. A subscriber member pays reduced membership fees and is only allowed to maintain contact with international standardisation bodies. For detail, see *http://www.iso.ch/members/index.html*. Among the 135 ISO members, 90 are member bodies, 36 are correspondent members and 9 are subscriber members. See *http://www.iso.ch/infoe/iso_in_figures.pdf*.

2 For detail, see *http://www.iso.ch/infoe/intro.htm*.

3 See, in this regard, Calkins, M. L., 'Make friends first, certify later: China and ISO 14000', *The Georgetown International Environmental Law Review*, Vol. IX, issue 3, 1997, p. 612.

4 For example, one ISO international standard is the basis for the format of credit cards, phone cards, and "smart" cards. That standard defines features like an optimal thickness of 0,76 mm to facilitate the use of the cards worldwide. See *http://www.iso.ch/infoe/intro.htm*.

5 The ISO 9000 spells out the standardised requirements for a quality management system to facilitate international trade. It was originally concerned with quality assurance requirements. See *http://www.tc176.org/faqs/index.html.* It was published in 1987 and revised in 1994. Further revision was made in 2000 and the revised version was published on 15 December 2000. The revised version of 2000 represents a closer alignment of quality management systems with the needs of organisations. See *http://www.bsi.org.uk/iso-tc176-sc2/FAQs.html*.

6 ISO previously addressed environmental aspects as far as they concern products and services. See Zharen, W. V., *ISO 14000: Understanding the Environmental Standards*, Government Institutes, 1996, p. 2.

Barriers to Trade Agreement (TBT),[7] which allow States to use the international standards as basis for technical regulations governing access to their markets.[8] The TBT also requires States to develop their national standards on the basis of international standards like ISO 14001.

ISO 14001 spells out the elements of Environmental Management Systems (EMS) and requires organisations/companies to get certified as conforming to those systems. Because of the strong endorsement of ISO standards in the TBT agreement, ISO 14001 might influence a large area of international business and trade activities in the near future. This raises a new concern for the developing countries. This concern is mainly due to the fact that the ISO approach to the development of the standards apparently deviates from some established trends in public international law. One fundamental aspect of those trends is the efforts of nation-states and intergovernmental bodies (especially those under the UN Framework) to make international environmental and development norms *more reflective of the context of developing states*. These efforts were manifested in adopting policies and procedures to secure those states' participation in the law and policy-making process and to integrate their concerns and priorities into the substance of the various instruments by providing differential and contextual obligations. As a result, mechanisms such as technical, technological and financial assistance, information exchange, extended timetables and different target levels are established and the principle of 'common but differentiated responsibility' has been reflected in many important international environmental agreements and soft law instruments.[9]

ISO 14001 makes no reference to the different economic and environmental capabilities and priorities of developing countries. The management elements ISO 14001 has specified are equally and invariably applicable to the most developed as well as the least developed countries.[10] This flat generalisation of the management standard raises a number of challenges for developing countries. These challenges are manifold and often inter-linked as far as economic, financial and environmental issues are concerned.

This study, however, focuses mainly on the legal challenges developing countries may have to face from the growing dominance of ISO 14001 in the areas of international business and trade.

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7 The World Trade Organisation (WTO) is the successor of the GATT framework in which multilateral trade negotiations took place before 1995. Unlike GATT, it has permanent institutional basis of the multilateral trading system. Most of its agreements were the outcome of the 1986-94 Uruguay Round of trade negotiations. The full package of multilateral Uruguay Round Agreements, which include the TBT agreement that concerns issues on technical barriers to trade and the Marrakesh Agreement that established the WTO, is called the Round's Final Act. For detail, see *http://www.wto.org/english/thewto_e/whatis_e/eol/e/default.htm.*

8 For a detailed discussion, see below part 2 of this article.

9 Examples include Article 23 of the Stockholm Declaration, Principle 7 of the Rio Declaration and various provisions of the 1992 Biodiversity Convention, 1992 Climate Change Convention, 1991 Espoo Convention on EIA, 1985 Vienna Convention for the Protection of Ozone Layer, 1987 Montreal Protocol and subsequent Amendments, 1989 Basel Convention on Hazardous Waste etc. and environmental guidelines like 1985 UNEP Guidelines on Protection of the Marine Environment from Land Based Sources. See Roht-Arriaza, N., 'Shifting the Point of Regulation: The International Organization for Standardization and Global Lawmaking on Trade and the Environment', *Ecology Law Quarterly*, Vol. 22:479, 1995, pp. 531-2. See generally Halvorssen, A., *Equality among Unequals in International Environmental Law*, Westview Press, 1999; Sands, P. H. *Lessons Learned in Global Environmental Governance,* World Resources Institute, 1990, pp. 8-9; Magraw, D.B., 'Legal Treatment of Developing Countries: Differential, Contextual, and Absolute Norms', 1 *Colo. J. Int'l Envtl. L & Pol'y*, 1990, pp. 69-100.

10 See Part 6.4., *http://www.iso.ch/infoe/faq/htm.*

Its purpose is to examine the legal impacts ISO 14001 may exert on the international environmental regime and to discuss the desirability of those impacts from the perspective of developing countries. It will also suggest the measures developing countries should take to cope with the challenges the standards have posed for them.

The first part of this article describes the contents and requirements of ISO 14001 and indicates its significance. The second part explains the potential mandatory status the ISO 14001 has gained through its recognition in the WTO TBT agreement. This entails an analysis, in the third part of this article, of ISO's standard-making process to explain what the growing dominance of 14001 standards would mean to the least-developed countries compared to their developed counterparts. The fourth part examines the relevant provisions of the TBT agreement to see their adequacy in protecting the interests of developing countries from the possibilities of the use of the ISO 14001 as a trade-restrictive regulation. The next part illustrates the problems developing countries may face in the implementation stage of ISO 14001 by comparing the relevant laws of two neighbouring countries, Bangladesh and India. The conclusion follows with a discussion of the measures that may be considered by international organisations as well as by developing countries to make the EMS standards more efficient and suitable from those countries' perspective.

II. ISO 14000 standards and their status

ISO 14000 is a series of voluntary environmental management standards and guidelines. It provides a common framework for managing corporate environmental issues, which in turn may facilitate trade and improve environmental performance. As generic management system standards, the ISO 1400 series is applicable to any organisation irrespective of the nature of its product or service and irrespective of its size or whether it is a governmental department or business enterprise.

Developed under ISO Technical Committee 207, the 14000 series of standards address the following aspects of environmental management:

- Environmental Management Systems (EMS) (ISO 14001 and 14004);
- Environmental Auditing[11] and Related Investigation (EA) (ISO 14010-12);
- Environmental Labels and Declarations (EL)[12] (ISO 14020 series);
- Environmental Performance Evaluation (EPE)[13] (ISO 14030 series);
- Life Cycle Assessment (LCA)[14] (ISO 14040-43);
- Terms and Definition (T & D) (ISO 14050).

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11 It is a systematic documented process to obtain evidences whether or not Environmental Management Systems (EMS) conform to existing audit criteria. Conducted by an independent third party, it evaluates proper implementation and maintenance of an EMS and identifies areas of potential improvement. See UNDP, Private Sector Development Programme, *ISO 14000 Environmental Management Standards and Implications for Exporters to Developed Markets*, 1996, pp. 6-7.

12 It is intended to provide an internationally consistent approach to evaluate a product's environmental characteristics and to communicate them to the consumers in order to influence their decision whether to select the product. See *id*. p. 7.

13 It provides a tool for a company to create its own system of evaluating the impact it is having on the environment. See *id*.

14 It is the process of analysing a product's environmental impact during its whole life cycle. The purpose is to facilitate decision making for strategic planning, product or process design as well as evaluation of alternative manufacturing methods. See *id*.

Among the ISO 14000 standards, the ISO 14001 has special significance. It is the 'centrepiece' of the 14000 series and the *only* ISO 14000 standard for which an organisation is expected to seek either self-declaration or certification by an independent third party.[15] Other standards of ISO 14000 series basically provide the environmental management tools for strengthening or supporting the Environmental Management Systems.[16]

The ISO 14001 standard was published in September 1996. It provides the basic elements of Environmental Management Systems (EMS) and further guidelines on those systems are provided in ISO 14004.

1. Key elements of ISO 14001 (environmental management systems – specification with guidance for use)

ISO 14001 deals with the steps an organisation or a company (companies are defined as organisations, ISO 14001 does not differentiate between types of organisations) should take to establish, maintain and continually improve its environmental management systems (EMS).[17] It specifies the key elements of satisfactory environmental management systems, which should be an integral part of a company's overall management system.[18]

The elements of ISO 14001 are inter-linked and would not be assessed in isolation while a company applies for its ISO 14001 certification or registration. These elements, in brief, are as follows.

a) ***Environmental Policy:*** A company should have an environmental policy which must include commitments to all 'applicable' environmental laws and regulations as well as other relevant requirements[19] and to 'continual improvement' of the EMS. The policy must be appropriate to address the environmental impact of the company's activities, products and services. It must be documented, communicated to all employees and made available to the public.[20]

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15 See Roht-Arriaza, N., 'Developing Countries, Regional Organisation, and the ISO 14001 Environmental Management Standard', *The Georgetown International Environmental Review*, Vol. IX, issue 3, Spring 1997, p. 587. See also, Roht-Arriaza, N., 'Shifting the Point of Regulation: The International Organization for Standardization and Global Lawmaking on Trade and the Environment', *Ecology Law Quarterly*, Vol. 22:479, p. 503; Pinckard, P., 'ISO 14000', *Colo. J. Int'l Envtl. L. & Pol'y*, Vol. 8.2. 1997, p. 431. ISO 14001, however, may also be used as an internal standard for in-house good practices of an organisation.

16 For example: ISO 14001 requires the conduct of EMS audits, and guidelines for carrying out such audits are available in ISO 14010, ISO 14011 and ISO 14012. Again, ISO 14001 requires an organisation to monitor the environmental performance of its activities, products and services in order to continually improve such performance, and ISO 14031 contains guidance for this purpose. See 'ISO 14000 - Meet the Whole Family!' pp. 5-6, in *http://www.iso.ch/9000e/iso14000.pdf.*

17 International Organisation for Standardisation (ISO) 14001:1996 (E), 3.5.

18 For a summary of the elements, see *http://www.iso.ch.tc207.org/faqs/index.html*. See also, The Bureau of National Affairs, *Analysis and Perspective, Environmental Management Systems: ISO standard 14000*. Washington, D.C., 1996, reprinted in International Environment Reporter, 7-8-1996, pp. 715-717.

19 Such requirements may include industry codes of practice, agreements with public authority and non-regulatory guidelines to which the organisation subscribes.

20 For detail, see *ISO 14001:1996 (E), 4.2*.

b) ***Planning:*** The company should have a plan to establish and maintain various procedures in order to be able to i) identify the environmental impacts of its processes, activities and services, ii) identify all applicable statutory and regulatory requirements, iii) set its environmental objectives and goals in line with its environmental policy, iv) set an environmental programme for achieving its environmental goals and objectives.[21]

c) ***Implementation and operation:*** The company should *inter alia* employ adequate human, technological and financial resources to ensure that efficient environmental management systems are established, implemented and maintained. It should make arrangements for training of all the concerned employees, internal and external communication proceedings, and environmental documentation.[22]

d) ***Checking and corrective action:*** This stage consists of regular monitoring and measurement of the company's activities that can have a significant impact on the environment and initiating corrective and preventive actions. The company should develop a procedure to define responsibilities and authorities for investigating non-conformance with its environmental targets, objectives and legal requirements, and for completing appropriate corrective actions. It should have a system of periodic EMS audits in order to determine whether its EMS conforms to ISO 14001 and whether it has been properly implemented.[23]

e) ***Management review:*** This stage requires periodic review of the EMS by the organisation's top management. The review should address the needs for modification of the company's policy, procedures, targets and objectives particularly in the light of the EMS audit results and the changes, if any, in the applicable legal and other requirements. It should lead to continual improvement of the EMS to ensure its continuing suitability, adequacy and effectiveness. It would complete the cyclical process of plan, implement, check, review and continually improve.[24]

2. Conformity assessment and certification

Conformity assessment in the case of ISO 14001 EMS specification is the basis for the certification/registration of a company to the standard.[25]

Once a company has established an EMS, it may make a self-declaration that its EMS conforms to the ISO 14001. But, in order to achieve the confidence of the market and consumers, the conformity of an EMS to the ISO 14001 standard should be assessed by a third party (registration or certification body) accredited or approved for that purpose by an authoritative body. Normally that authoritative body is the National Accreditation Body, which a country may set up to control the environmental management system certification bodies.

3. The ISO 14004 guidelines

ISO 14004 (Environmental management systems – General Guidelines on principles, systems and supporting techniques) provides the general guidelines that supplement the requirements of ISO 14001 for a comprehensive EMS. Although these guidelines are not *essential* requirements for certification under ISO 14001, they are useful in establishing efficient EMS or modifying existing EMS.

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21 For detail, see *ISO 14001:1996 (E), 4.3.*

22 For detail, see *ISO 14001:1996 (E), 4.4.*

23 For detail, see *ISO 14001:1996 (E), 4.5.*

24 For detail, see *ISO 14001:1996 (E), 4.6.*

25 See *http://www.tc207.org/faqs/index.html.*

Somee guidelines of ISO 14004 are not explicitly mentioned in the ISO 14001. These relate to establishment of a senior management committee, initial environmental review to find a baseline for an appropriate EMS, principles of environmental policy of EMS, long and short-term environmental strategic plan, integration of EMS into management elements, defining accountability of all employees, etc.

4. Significance of ISO certifications

As a product of a non-governmental organisation, ISO standards, including the ISO 14000 series, are not obligatory even for ISO members.[26] But these standards can attain mandatory or *quasi*-mandatory force mainly through two ways. First, as has happened in cases of the ISO standards concerning health, safety and environment, countries may incorporate the standards in their regulatory framework or may refer to them in legislation to serve as technical basis.[27] Second, the standards may become a market requirement, as has happened in the case of ISO 9000 quality management systems, or ISO freight container dimension.[28]

In case of ISO 14000 series, as we will see below, the likelihood of attaining mandatory force both through government initiatives[29] and market factors has increased due to the prior endorsement of the international standards in the 1994 WTO Agreement on Technical Barriers to Trade.[30] The Agreement requires the Contracting Parties to use the international standards as a basis for their national regulations as well as standards governing access to international trade.

III. International standards as endorsed in the TBT agreement

The TBT agreement deals with issues related to technical barriers to international trade. While it seeks to ensure that technical regulations and standards do not create 'unnecessary' obstacles to international trade, it also recognises countries' rights to use international standards, where these are appropriate, for protection of human, animal or plant life or health or the environment. Article 2 of the Agreement contains the key provisions that allow countries to use international standards as basis for their technical regulations.[31] Article 2.4 of the Agreement reads:

> Where technical regulations are required and relevant international standards exist or their completion is imminent, Members shall use them, or the relevant parts of them, as a basis for their technical regulations…

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26 For a brief description of ISO membership, see *supra* note 1.

27 Paragraph 2.22., *http://www.iso.ch/infoe/faq*.

28 See *id*.

29 That may include judicial measures also. For example, EMS as an entity was discussed in a Canadian Court (R. v. Bata Industries Ltd, 1992) and certification to ISO 14001 was included as part of a decision of an American court (R. v. Prospect Chemical Ltd, 1996). For detail, see Taylor, D., 'ISO 14001 and Environmental Regulations', *Journal of Environmental Law and Practice*, Vol. 9, 2000, pp. 20-21.

30 For text of the TBT agreement, see *http://www.wto.org/english/docs_e/legal_e/17-tbt.pdf*.

31 In paragraph 4 of its preamble the TBT agreement recognises the important contribution that international standards and conformity assessment systems can make in improving efficiency of production and facilitating the conduct of international trade.

As the latter part of the same article provides, this obligation does not apply in cases "when such international standards or relevant parts would be an ineffective or inappropriate means for the fulfillment of the legitimate objectives pursued, for instance because of fundamental climatic or geographical factors or fundamental technological problems."

The TBT not only encourages the Parties to use the standards as a basis for their technical regulations, it also appears to justify their legitimacy as a basis for regulations limiting access to markets. Article 2.2. read with Article 2.5 suggests that:[32]

a) Technical regulations could permissively be trade-restrictive to the extent they are necessary to fulfil any legitimate objective.
b) Those legitimate objectives include national security requirements, prevention of deceptive practices, protection of human health or safety, animal or plant life or health or the environment.
c) Trade-restrictive regulations with any of the above objectives shall be rebuttably presumed not to create an 'unnecessary' obstacle to international trade.

It can thus be argued that, because of the above provisions of the TBT agreement, any country may effectively justify a trade-restrictive regulation concerning environmental management systems by designing it in line with the ISO 14001 standard.[33]

Apart from mandatory regulations, the TBT agreement has also mandated the use of international standards for formulating national standards. A clear reference to that effect is made in Annex C to the agreement, which Article 3.5. of the agreement requires to be accepted and complied with by the countries (as well as by their local government and non-governmental bodies) for the development and application of national standards.[34] This annex contains a 'Code of Good Practice for the Preparation, Adoption and Application of Standards' and according to Article 15.5, it constitutes an integral part of the TBT agreement. The Code requires national standardising

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32 As Article 2.2. of the TBT agreement provides, "…technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfillment would create. Such legitimate objectives are, *inter alia,* national security requirements; the prevention of deceptive practices; protection of human health or safety, animal or plant life or health, or the environment". The relevant part of Article 2.5. provides that "whenever a technical regulation is prepared, adopted or applied for one of the legitimate objectives explicitly mentioned in paragraph 2, and is in accordance with relevant international standards, it shall be rebuttably presumed not to create an unnecessary obstacle to international trade".

33 As observed in a WWF Legal Briefing, the WTO uses ISO standards as 'benchmark for mandatory regulations'. See WWF, *ISO Eco-Labelling Standards, The WTO and Multilateral Environmental Agreements: A Legal Briefing Examining Elements of DIS 14020*, 1997, p. 8. Rohterham, T., in 'The ISO 14001 Environmental Management System Standard', *BRIDGES*, Vol. 2, No. 2, ICTSD, p. 11 suggests that the WTO has recognised the competency of ISO for setting international standards 'that may later be used as the basis for legislation'. Thimme, P.M., in 'Environmental Management, ISO 14001 and EMAS', *RECIEL*, Vol. 5(3), 1996, p. 267 observes that, under the TBT rules, the ISO standards would influence both 'standard-setting regulations and policy making' at the national level. See also European Environment Bureau, *ISO 14001: An Uncommon Perspective*, 1996, p. 5.

34 As of 11 December 2000, 131 standardising bodies from 91 countries have notified their acceptance of the WTO TBT Code of Good Practice. For a list of those organisations, see *http://www.iso.ch/wtotbt/tbt-list.pdf*. The notification is required 'in the interest of transparency'. See, in this regard, *http:// www.iso.ch/wtotbt/sch2000e.pdf.*

bodies to use the international standards as the basis for national standards and instructs the national members of ISO to become a member of ISONET.[35]

Given that the validity of trade-restrictive regulations and national standards relates so much to the ISO standards, it is relevant to examine the extent to which the ISO standards have reflected the interests and priorities of vastly diverse world communities. Further, examination is required to determine i) whether the WTO TBT agreement has taken the interests of developing countries into account while authorising uniform standards to be the basis of technical regulations and ii) what measures it has actually taken for preventing discriminative use of the international standards against its weaker and less-developed members.

IV. ISO process and developing states

The capacity of a country to comply with international obligations largely depends on whether it or a sufficient number of other similarly situated countries were able to effectively participate in the negotiation of those obligations. This is more obvious in cases of environmental obligations, which tend to exert great influence over the economic and development activities of states. That is why intergovernmental organisations, particularly those in the UN system, put heavy emphasis on ensuring a very broad-based participation in the negotiation of environmental instruments. The UN has developed several methods to ensure particularly the participation of less developed countries constrained by their financial and logistic problems.[36] In this part, we will see what measures ISO takes to ensure the input of the developing countries into the development of a standards that apply equally to them as well as to the other countries and how these have resulted in the ISO 14001 certification of companies worldwide.

1. ISO procedural rules

As a private body, ISO does not have to follow the methodologies of intergovernmental negotiations adopted by the UN for ensuring broad-based participation. To date, it is clear that ISO does not follow them either.

Although ISO has membership from many developing countries,[37] their participation in the standard setting process is generally very limited. The highly developed OECD countries dominate the ISO Technical Committees, their Sub-Committees and the Working Groups, which carry out

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35 The relevant provisions of Annex 3 reads as follow:
"E. The standardising body shall ensure that standards are not prepared, adopted or applied with a view to, or with the effect of, creating unnecessary obstacles to international trade.
F. Where international standards exist or their completion is imminent, the standardizing body shall use them, or the relevant parts of them, as a basis for the standards it develops, except where such international standards or relevant parts would be ineffective or inappropriate, for instance, because of an insufficient level of protection or fundamental climatic or geographical factors or fundamental technological problems.
K. The national member of ISO/IEC shall make every effort to become a member of ISONET or to appoint another body to become a member as well as to acquire the most advanced membership type possible for the ISONET member. Other standardizing bodies shall make every effort to associate themselves with the ISONET members."

36 For detail, see UNCTAD, Commodities Division, *ISO 14001: International Environmental Management Systems Standards, Five Key Questions for Developing Country Officials, Draft for Comments*, UN, Geneva, 1996, pp. 32-37.

37 For a list of ISO members, see *http://www.iso.ch/members/index.html*.

the most important work in developing ISO's standards. According to the ISO Annual Report 1998, the non-OECD countries together had only 56 members of a total of 705 members of Technical Committees (TC) and Subcommittees (SC). In case of the convenors of Working Groups (WG), the non-OECD countries had 46 of the total of 1967 members.[38]

TC 207, the Technical Committee that was entrusted with preparing the ISO 14001, was not an exception to the general practice. Its membership was 'heavily concentrated in large global industry and industry-related government standard-setting bodies' and at the working groups in which most of the drafting work was done, 'a significant majority of the 16 convenors come from corporations or industry federations'.[39] The ISO's procedural rules in this regard differ from those of the United Nations and many other intergovernmental bodies. As a draft UNCTAD report states, 'For the ISO 14000 series, the chairs of all the TC Subcommittees are in the industrialised countries and the convenors of TC 207 Working Groups come from industrialised countries as well. In the UN system practice the chairs of the intergovernmental groups are distributed throughout the geographic or political regions used by the sponsoring organisation'.[40]

Compared to the UN system, the ISO also has 'different voting procedures, different membership classes, different rules for participation, different procedures for adopting final reports, and different methods of having international staff support for negotiations'.[41] The influence of those differences in the formulation of ISO 14001 is summed up in the UNCTAD report in the following way:

> The practical aspects of their participation together with membership and procedural rules have made it difficult for developing countries to participate or participate effectively in designing the ISO standards. Existing ISO standards do not fully reflect

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38 ISO Annual Report 1998, available in *http:// www.iso.ch/presse/membership.pdf.*

39 Roht-Arriaza, N., 'Shifting the Point of Regulation: The International Organization for Standardization and Global Lawmaking on Trade and the Environment', *Ecology Law Quarterly*, Vol. 22:479, 1995, p. 524. It may be noted here that there are allegations even from small and medium-sized businesses of the developed countries that ISO significantly underrepresent their interests. At the governmental level also, there are differences in how the developed countries approach technical standard setting. For example, European governments have a long history of working closely with the standard setting bodies out of which many ISO standards including ISO 14001 developed, whereas U.S. government has left standards to develop mostly through market forces. For detail, see Pacific Institute for Studies in Development, Environment, and Security, *Managing a Better Environment: Opportunities and Obstacles of ISO 14001 in Public Policy and Commerce*, 2000, (in particular, Chapter II).

40 UNCTAD, Commodities Division, *ISO 14001: International Environmental Management Systems Standards, Five Key Questions for Developing Country Officials, Draft for Comments*, UN, Geneva, 1996, p. 33. This report draws heavily on primary materials and secondary literature and on a survey of officers and senior staff from developing country standard-setting organisations and governmental agencies that participated in the ISO process. See *id.* pp. 5-6.

41 See *id*. p. 21. For example, consent of two-thirds of the voting full members and an expression of interest for active participation of only five (or more) full members is required to open negotiation on a given topic under the ISO. Those five members provide the chair and staff support for the working groups and standing committees. In the UN system, generally, unanimous approval of all members is necessary for intergovernmental negotiations and formal approval of all voting countries is needed to establish an intergovernmental expert group. In this system, the designated UN agency provides the staff support. Again, consensus decision in ISO means consent of a two-thirds majority of voting members of the technical committee or subcommittee, whereas consensus decision in the UN means that no delegation opposed the proposed outcome. For detail, see UNCTAD, *id*. pp. 27-35.

> the economic, cultural, social and business background and other elements that are typical in many developing countries. ... In short, the impression given by interviews of those participating in the ISO 14001 negotiations is that developing countries have voted on a standard in which they have had no input, on a standard largely prepared and developed by corporate experts from industrialised countries.[42]

The resultant ISO 14001 standard, unlike the outcomes of public international law negotiations that offer developing countries access to mechanisms such as extended timetables and technical and financial assistance, has instead suited the companies in large developed countries, which already had similar EMS and far greater logistic capabilities.[43] In spite of that, the compelling reason for accepting those standards by developing countries might have been the fear of 'more stringent and less controllable unilateral trade action by developed countries or their organisations'.[44] But it was foreseeable that uniform standards would be 'impossible' for many developing country industries to meet, and the industries and businesses of the developed world would far outpace their counterparts in the developing world in taking the advantages of ISO 14001 certification.[45] ISO's own survey on ISO certifications three years after the introduction of ISO 14001 in 1996 substantiates such suggestions.

2. Key findings on ISO 14000 certification

Developing countries have many industrial sectors to which EMS could be applicable. These include agriculture and fishing, food products, beverage and tobacco, textile and textile products, leather and leather products, pulp, paper and paper products, rubber and plastic products, basic metal and fabricated metal products, gas supply, and water supply. But as the Ninth Cycle (up to and including 31 December 1999) of the ISO survey of ISO 9000 and ISO 14000 reveals, their rate of having ISO 14001 certification is miserably low compared to the most developed OECD countries.[46]

According to this latest available survey, up to the end of 1999, the total number of ISO 14001 certifications in 84 countries is 14106. Among them, the companies of the 29 OECD countries together account for 12381 certifications. The total number in the most advanced six countries – Japan (3015), UK (1492), Germany (962), Sweden (851), Australia (708) and US (636) – alone is 7664, which is more than 50 % of the total certifications worldwide.[47]

Among the world growth of 6219 certifications in 1999, Japan had the highest increase with 1473 new certificates awarded. The United Kingdom follows with an increase of 571 and the

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42 UNCTAD, *id*. p. 38.

43 In fact, the ISO EMS standards are based mostly on The British Standard BS7750 and the European Union's Eco Management and Audit Scheme. See UNCTAD, *id*. p. 42. It partly explains why industries in European countries generally welcome ISO 14000 standards. See, 'Business in a number of European Countries Favouring ISO 14000 over EMAS, FoE Report Finds' in *International Environmental Reporter*, Vol. 21, No. 23, pp. 1107- 8.

44 Roht-Arriaza, *supra* note 39, p. 526.

45 *Id*. p. 527.

46 ISO, 'ISO Survey of ISO 9000 and ISO 14000 Certificates, Ninth Cycle: Up to and including 31 December 1999', available at *http://www. iso.ch/presse/survey9.pdf*. The survey was based on the figures provided by the certification bodies.

47 On the basis of the figures in Annex B: ISO 14000 Certification Worldwide: Growth from 1995 to end of 1999, see *id*.

increase in Sweden, Australia, USA and Germany is 547, 356, 345 and 311 respectively. The growth in these six countries together is 3603, well above 50% of the total growth.[48]

The companies in the 21 African/West Asian Countries have 337 ISO 14001 certificates, which are only 2.39% of the total number. Barring India (111) and South Africa (82) the number reduces to 193 that is around 1% of the total number. Fourteen countries of Central and South America together hold 309 certifications, that is 2.21% of the total certificates. Barring Brazil (165) and Argentina (84), the number reduces to 60; that is less than 0.5%.[49]

Among the 150 countries that have at least one ISO 9000 certified company, 76 countries have no 14000 certifications at all. With a very few exceptions, these countries are either in Africa, West Asia or in the Central and South America. Some of them – for example Bangladesh, Jamaica, Kyrgyzstan, Nigeria – have adopted the ISO 14001 and 14004 as their national standards and have given the standards a national designation (for example: Bangladesh – BDS ISO 14001:1996). But they have not yet achieved a single ISO 14001 certified company by the end of 1999.[50]

It can be well assumed that unless some radical steps are taken to assist the developing countries, their companies will always lag way behind those of the developed countries in obtaining ISO 14001 certification. The consequence may be far-reaching. The certified companies would not only receive an early competitive edge over the non-certified; some of them may put pressure on suppliers, including those in the developing countries, to conform to EMS standards. As a UNDP report predicts, such pressure could go as far as to 'use certification as a criteria to award preferential trade status, fix suppliers quotas or even drop suppliers without certification in favour of certified competitors'.[51]

The ISO 14001 standard might have more serious implications for the developing countries once the developed countries incorporate the elements of the standard into the regulation governing access to their market or promote its implementation by private companies or require suppliers' compliance as a condition for procurement.[52] A number of United Nations specialised agencies or

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48 *Id.*

49 *Id.*

50 On the basis of the figures in Annex C: Table of worldwide equivalence of ISO 9000 and ISO 14000 families of standards and the figures in Annex B: ISO 14000 Certification Worldwide: Growth from 1995 to end of 1999, see *id.*

51 UNDP, Private Sector Development Programme, *ISO 14000 Environmental Management Standards and Implications for Exporters to Developed Markets*, 1996, p. 12. As Roht-Arriaza in 'Environmental Management Systems and Environmental Protection: Can ISO 14001 be useful within the context of APEC?', *Journal of Environment and Development*, Vol. 6, No. 3, p. 304 mentioned in Rotherham, T., 'The ISO 14001 Environmental Management System Standard', *BRIDGES*, Vol. 2, No. 2, ICTSD, p. 11 provides an example, tropical timber suppliers of a British home improvement company have already lost business because of their failure to conform to 14001.

52 The indications are already visible. For example, as the UNCTAD report (UNTAD, *supra* note 40, p. 81) noted, the US Department of Energy would require 14001 for procurement contracts. The UK government in a bidding round for North Sea oil and gas lease rights awarded 10% of the evaluation points to bidders certified with any voluntary standards for environmental management. Conversely, some governments in Asia and Latin America are considering making ISO 14001 a condition of country entry for foreign oil exploration and production operators.
In this regard, see also, Roht-Arriaza, *id*, p. 299. The ISO 14001 would also become the building block of the revised EU Eco-Management and Audit Scheme (EMAS) under a proposal formally adopted by the EU November 3, 1998, and thus it may be an influential factor in governing access

affiliated bodies has already raised concern about the impact of ISO 14000 standards, particularly ISO 14001, on the developing states.[53]

The apprehension of trade-restrictive use of the ISO 14001 was also voiced in the Technical Committee that developed the ISO 14000 series. The Committee stated that it is 'aware that environmental management standards can be used to limit trade' and it still has a challenge to 'help ensure' that the standards are not used 'as a barrier to trade'.[54] As long as barrier removal is not ensured, it is obvious that the principal sufferers of such trade barriers would be the least developed countries. They have various constraints, including poor technical and financial resources, lack of skilled human resources, weak legal systems, inexperience in environmental management, urgent development needs etc., to conform with EMS standards.[55] As we will see in part 5, even if the companies in those countries establish their EMS, they will still face problems in conformity assessment controlled by countries with much more transparent and comprehensive environmental legal systems.

It may be argued here that the differentiation embodied in ISO 14001 in terms of compliance to the legal requirements of the country in which a company operates is indeed the mechanism to allow companies in developing countries to implement ISO 14001 without struggling to comply with performance standards that companies in developed countries have achieved. But the real problem for the companies in many developing countries may rather lie in applicable domestic laws and regulations that are vague and indeterminable. These loopholes may expose those companies to enormous risk of financial losses unless their attempted implementation of ISO 14001 satisfy the scrutiny of a certification body that can interpret the applicable laws in a different way.

The TBT agreement did not ignore these issues while endorsing the ISO standards. But the measures it has suggested fall short of protecting the developing countries from technical trade barriers.

V. TBT agreement on the issues of developing countries

The TBT agreement recognises the special difficulties of the developing countries in the formulation and application of technical regulations and standards (paragraph 10 of the preamble) and provides for special and differential treatment of developing country members (Article 12).

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to EU markets. The EMAS was more extensive than ISO 14001 insofar as it required public reporting, employee involvement, performance improvement, and legal compliance. See 'European Union: ISO 14001 Would Be Basis for Revisions To EMAS Under New Commission Proposal' in *International Environmental Reporter*, Vol. 21, No. 23, pp. 1107-8.

53 See, for example, UNDP, Private Sector Development Programme, *ISO 14000 Environmental Management Standards and Implications for Exporters to Developed Markets*, 1996, p. 12. See also paragraph 4-5, Recommendation Adopted by the Expert Meeting, in UNCTAD, Trade and Development Board, Commission on Trade in Goods and Services, and Commodities, *Report of the Expert Meeting on the Possible Trade and Investment Impacts of Environmental Management Standards, particularly the ISO 14000 Series on Developing Countries, and Opportunities and Needs in this Context*, 10 November 1997, UN DOC. TD/B/COM.1/10; TD/B/COM.1/EM.4/3. 62 state members of UNCTAD, various IGOs/ NGOs including ISO participated in the expert meeting.

54 See ISO, TC 207, 'Trade issues related with ISO 14000' in *http://www.tc207.org/faqs/index.html.*

55 See, in this regard, UNDP, *supra* note 53, pp. 12-13; UNCTAD, *supra* note 40, pp. 82-91.

1. Key provisions

Article 12.3 provides that Members shall take account of the special development, financial and trade needs of developing country Members in the preparation of technical regulations, standards and conformity assessment procedures in order to ensure that these do not create unnecessary obstacles to exports from developing country Members. Article 12.4. provides that developing country Members should not be expected to use international standards as a basis for their technical regulations or standards, including test methods, which are not appropriate to their development, financial and trade needs.

The member states are also required:

1. to take 'available' reasonable measures to ensure active and representative participation of all countries in the organisation and operation of international standardising bodies and international systems for conformity assessment (Article 12.5);
2. to take 'available' reasonable measures to ensure that international standardising bodies, upon request of developing country Members, examine the possibility of international standards concerning products of special interest to developing country Members and, if practicable, prepare such standards (Article 12.6);
3. to provide technical assistance to developing country Members to ensure that the preparation and application of technical regulations, standards and conformity assessment procedures do not create unnecessary obstacles to the expansion and diversification of exports from them (Article 12.7).

In order to ensure that developing country Members are able to comply with the TBT agreement, the Committee on Technical Barriers to Trade (provided for in Article 13) is allowed to grant, upon request, specified, time-limited exceptions in whole or in part from obligations under the Agreement (Article 12.8). The Committee could, in particular, take into account the special problems of the least-developed country Members (Article 12.8).

2. Shortcomings of TBT provisions

The above provisions do suggest that the TBT agreement recognises the special difficulties of the developing countries in conforming with uniform environmental standards governing access to international markets. But the adequacy of the TBT measures in addressing the problem can be criticised for the following reasons.

First, the TBT encourages differential treatment for the developing countries on the basis of standards which themselves do not recognise or reflect the principles of differential treatment. The ISO 14000 standards, which according to the TBT agreement may be the basis for mandatory regulations or national standards, are premised on establishment of same management elements by companies irrespective of where they are operating. Furthermore, the TBT does not clarify how the legitimacy of developing technical regulations to protect one state's 'health, safety and environment' (as provided in Article 2.2 and 2.5. of TBT) would be balanced with the need for differential treatment of developing countries. The complexity of this question may yet to be resolved in future disputes brought before the WTO dispute settlement panel.

Second, while encouraging its contracting parties to take the interests of the developing countries into account, the TBT makes no references to the relevant provisions of the intergovernmental environmental instruments (like the Montreal Protocol, Basel Convention, Climate Change Convention or Biodiversity Convention) on differential treatment of developing countries. Therefore, if national regulations governing access to market are developed in the light of those agreements or on the basis of intergovernmental guidelines like UNEP Environmental, Health and Safety Guidelines, it might be claimed that those regulations are technical barriers to trade. Because of the strong endorsement of ISO standards in the TBT, such claims, however, could not be made

in cases of regulations developed on the basis of ISO standards. This prejudice of the TBT towards ISO standards may encourage ignoring intergovernmental agreements in favour of ISO standards and if that happens, 'it may reduce the authority of the governments and the UN system to set and enforce international environmental agreements'.[56]

Third, the requirement of the TBT for active and representative participation of the developing countries is limited to the measures 'available' to its members. As noted earlier in part 3.1 of this article, the process of development and adoption of the ISO standards falls far short of ensuring 'active and representative' participation of the states having financial and technical constraints.[57] The TBT has not suggested any obligation of following the principles of intergovernmental negotiations in this regard. It has not clarified whether an international standard developed without such participation could be equally weighed as an acceptable basis for technical regulations.

Fourth, the TBT provisions in Article 12.6 allow developing countries to request the development of standards for 'products' of special interest to them. As an assistance measure, however, this is not adequate. It will not have any impact on the ISO 14000 standards which are generic standards relating to the processes and services, not to any specific product.

Finally, the TBT is unable to ensure that conformity assessment of an EMS in one country would be accepted in another country. Article 6.1. of the TBT agreement encourages countries to recognise each other's conformity assessment procedures provided that they are satisfied that the procedures of other countries offer 'an assurance of conformity with applicable technical regulations or standards equivalent to their own procedures'. The requirement of such "assurance" itself may operate as a technical trade barrier and it is obvious that because of the weakness of legal and technical requirements of many developing countries, it would be difficult for their conformity assessment procedures to offer such assurance.

VI. The problems in acceptance of EMS: A case study

The ISO 14001 centres around the commitments of a company to perform the obligations under the applicable laws of the country where it is registered. These commitments form the basis of the company's policy and thus, in turn its objectives and targets. The ISO 14001 has not clarified whether these commitments should also concern the international environmental agreements to which the Nation-State is a party. Theoretically, a state's mere signature or even ratification of an international agreement requiring it to impose certain restrictions does not create legal obligations for the companies of that State to comply with those restrictions, unless and until that State promulgates enabling domestic legislation to be applied to those companies. Therefore, in the absence of such enabling legislation particularly in some developing States, the companies therein may only be required to commit themselves to the already existing domestic laws promulgated in line with national considerations.[58]

These national laws may vary widely in different countries or regions, or in two neighbouring countries. The institutional framework for executing and implementing those laws may also vary immensely. It is sometimes suggested that ISO 14000 could at least be an alternative method of inducing companies in states with weak enforcement machinery to comply with environmental

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56 UNCTAD, *supra* note 40, p. 49.

57 See *supra* notes 40-41 and the accompanying text.

58 Companies are, however, free to adopt for themselves standards set under international environmental agreements and upon their adoption the agreements become similarly applicable as other legal requirements.

laws.[59] This optimism, however, loses much of its essence in countries where laws themselves are very vague and sketchy. Consequently, it may well be found that even with the implementation of an ISO EMS, companies in such countries will still lag far behind the companies in countries with more developed regulations.[60] We can take a representative example of India and Bangladesh, neighbouring countries, who although both have accepted ISO 14001 standards, stand far apart in terms of the extent to which they provide grounds for implementation of ISO 14001.

1. India's environmental laws

India's environmental regulations are known to be among the more developed of the non-OECD countries. The Environmental (Protection) Act (EPA), 1986,[61] which is the foundation of later regulations, makes express reference in its preamble to the 1972 Stockholm Conference and authorises the government to take all measures necessary for protecting the environment and improving environmental standards and preventing, controlling and abating environmental pollution.[62]

In exercise of the powers conferred by Section 6 and Section 25 of the EPA 1986, the Indian Government had promulgated The Environmental Protection Rules, 1986[63] which provides various provisions for controlling and abating environmental pollution. Rule 3 deals with the standards for emission or discharge of environmental pollutants according to which industries, operations and processes can not exceed the level of emission as specified in a Schedule attached to the Rules.[64] Rule 4 describes the methods of corrective actions to be taken and their time limit and the role of the central government in supervising the actions. A number of other laws were also promulgated in furtherance of the objectives of the EPA 1986.[65]

India has also a number of regulations in the form of notifications dealing with various aspects conducive for an efficient environmental management system. These include Environmental Impact Assessment Notifications,[66] Public Hearing Notifications,[67] and Eco-labelling Notifica-

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59 Roht-Arriaza, N., 'Developing Countries, Regional Organisation, and the ISO 14001 Environmental Management Standard', *The Georgetown International Environmental Review*, Vol. IX, issue 3, 1997, p. 589.

60 *Supra* note 11, p. 16; Christopher L. Bell, *The ISO 140001 One American's View*, p. 69.

61 For text, see Bharat Desai (ed.), *Environmental Laws of India, Basic Documents*, Lancers Books, New Delhi, 1994, pp. 81-94.

62 These measures may include laying down standards for the quality of the environment in its various aspects and standards for emission or discharge of environmental pollutants from various sources. The government can also take measures for procedures and safeguards for the handling of hazardous substances, examination of manufacturing processes and carrying out investigation and research, as well as inspection of any premises. See Section 3, The Environmental Protection Act, 1986, in Bharat Desai, *id*.

63 For text, see Bharat Desai, *supra* note 61, pp. 95-110.

64 The Schedule lists the industry-wide parameters and standards, i.e., highest permissible emission levels. See *id*. p. 103.

65 For example, The Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms/Genetically Engineered Organisms or Cells Rules, 1989 (*id*. pp. 111-130); The Manufacture, Use, Import, Export and Storage of Hazardous Chemical Rules, 1989, (*id*. pp. 131-150); The Hazardous Waste (management and handling) Rules, 1989, (*id*. pp. 151- 160).

66 See the 'Environmental Impact Assessment Notifications' in *Environmental Law (Documents)* Vol. 1, *Major Environmental Laws In India*, Compiled by CEERA, Centre for

tions.[68] Among them one important notification for the purpose of EMS requirements is the Notification S.O. 85 (E), 29.01.1992. This Notification requires governmental environmental clearance in cases of construction, expansion or modernisation of any industry or projects listed in schedule I (List of 24 categories of projects requiring clearance from the central government) and schedule II (List of 45 categories of projects requiring clearance from the state government). According to the notification, the application to be submitted for such clearance must be accompanied by a detailed project report, Environmental Impact Assessment (EIA) and an *environmental management plan* prepared in accordance with the guidelines issued by the central government in the Ministry of Environment and Forests (Sec. 4).[69] Similarly, Notification S.O. 60 (E), 27.01.1994 also requires that the applications for some industries have to be accompanied by project feasibility report, EIA and an *environmental management plan*.[70]

Thus the requirements for Indian industries to have an environmental management plan have already familiarised them at least to some elements of environmental management system. Consequently, implementation of ISO 14001 would be generally easier for them (but certainly not easier than the companies of countries with more comprehensive environmental management requirements) than the companies operating in a country like Bangladesh where environmental management requirements are almost non-existent or hardly explicit.

2. Bangladesh's environmental laws

The majority of environmental laws in Bangladesh were passed under substantially different population and development conditions. For example, the Factories Act of 1965 and some other health protection laws were designed before industrial pollution and hazardous substances became serious concerns.

The Environment Policy of 1992 of Bangladesh has recognised the need for a better and comprehensive approach to address environmental issues. It requires specific actions in the development sectors of the country to facilitate long-term sustainable use of all natural resources. In the industry sector, it provides for EIA for new industries, corrective measures for polluting industries, a ban on establishment of polluting industries, and development of environmentally sound and appropriate technology for sustainable and efficient utilisation of natural resources.[71]

Very few of the elements of the Environmental Policy, however, have yet been translated into laws. The only legislation which specifically deals with environmental issues is the Bangladesh Environmental Conservation Act (ECA), 1995.[72] The Act was passed to provide for conservation

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Environmental Education, Research and Advocacy, National Law School of India University, Bangalore, 1998, pp. 310-324.

67 See *id.* pp. 325-332.

68 See *id.* pp. 344-66.

69 According to Section 4 of the Notifications, the application shall be evaluated and assessed by the Impact Assessment Agency of the Central Government or by the State Government in consultation with a committee of experts. For the prescribed Application Form, see *id.* pp. 315-6.

70 For the text of the notification, see *id.* pp. 317-21.

71 For the text of the Environmental Policy, see Farooque, M., and Hasan, R., *Laws regulating Environment in Bangladesh*, BELA, Dhaka, 1996, pp. 729-737.

72 For an unofficial English version of the Act, see *id.* pp. 720-28.

and improvement of environmental standards and for controlling and mitigating environmental pollution. It, however, provides very few substantive obligations relating to environmental management of industries. Industries and projects would require environmental clearance from the Department of the Environment, and any person affected or likely to be affected by such activities can apply to the Director General seeking remedy of environmental pollution or degradation.[73] The major limitation of the Act is its silence on the standards, parameters, emission levels and management elements based on which the environmental clearance should have been applied and obtained.

The Environmental Conservation Rules, 1997, were promulgated in furtherance of the objectives of the ECA, 1995. Regarding management of toxic and hazardous substances, the Rules have broadly defined guidelines for disposal of waste from different categories of industries. But unlike the Environmental Protection Rules of India, The Environmental Conservation Rules, 1997 have not specified the permissible extent of emissions or the obligations of corrective actions.[74]

Among Bangladeshi sectoral laws, environmental issues are seldom referred to, and when they are they bear no real substance. For example, Article 6 of The Bangladesh Petroleum Act, 1974,[75] provides that it shall be the duty of any person engaged in any petroleum operation to ensure that the operation is carried out i) in proper and workmanlike manner and in accordance with good oil-field practice, ii) in a manner that does not interfere with navigation, fishing, and conservation of resources of the sea and sea-bed, and to consider factors connected with the ecology and environment. The Act has not defined what the factors 'connected with the ecology and environment' are and what management elements a company should establish and maintain to discharge its obligations under Article 6.

3. Implications

The above differences in the applicable laws in the two neighbouring countries well indicate the wide varieties which exist in environmental regulations in many parts of the world. This may give rise to many complications in matters relating to ISO 14001 certifications.

First: Companies in a country with vague and indeterminable environmental legal obligations like Bangladesh may find it difficult, if not impossible, to ascertain the applicable legal requirements. Their conformance with ISO 14001 would have more risk of being rejected by the certification bodies and in order to compromise those risks they might be pushed to consider employing such an amount or level of financial, technical and human resources that is beyond their capabilities.

Second: The companies in developing countries may, either in fear of losing importers' confidence or in the absence of local certification bodies, have to resort to the established foreign certification bodies for obtaining ISO 14001 certification. They may find it difficult to obtain certification there (because of the indeterminable nature of their domestic obligations or their less familiarity with environmental management elements etc.) or may incur high costs for certifica-

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73 See Section 4, 6-12 of the Bangladesh Environment Conservation Act, 1995. Section 15 of the Act provides that the penalty for breach of any provision of the Act may extend up to five years' imprisonment and/or one hundred thousand taka in fines. See *id.*

74 See, in this regard, IUCN-Bangladesh, *Review of the Laws and Policies concerning Natural Resources Management in Bangladesh*, 2000, p. 21.

75 This Act provides for the exploration, development, exploitation, production, processing, refining and marketing of petroleum. For text, see Farooque, *supra* note 71, pp. 465-67.

tion, which would put them in a disadvantage compared to foreign companies that incur lower costs for certifications.[76]

Third: Instead of making resort to third party certification, a company may choose to make self declaration of its conformance to the ISO 14001 standards. But it can be assumed that the exercise of this choice by companies under weaker environmental regimes would be less acceptable compared to the companies operating under developed and more transparent legal regimes. Since weaker environmental regimes are much more common in underdeveloped countries, their companies would have less favourable treatment compared to the companies in the developed world.

The exact impact of ISO 14001 on the trade and business of developing countries is yet to be ascertained. But the indications as revealed so far in the miserably lower rate of certification of developing countries' companies do suggest that it is the most developed countries' companies which dominate and would continue to dominate the trade and other advantages that result from ISO 14001 certifications.

VII. ISO's concern for developing countries

In view of the financial and logistic difficulties the developing countries may face to conform with the ISO standards, an UNCTAD expert meeting in 1997 recognised the importance of enhancing the representation and effective participation of developing countries in ISO's work in general, including in the build-up to the revision of ISO 14001. As the experts observed, such participation requires financial and technical assistance, better co-ordination at the national level between standardisation bodies, the government and other stake holders as well as review by the ISO of its internal processes.[77]

ISO has already taken some measures in this regard, the effectiveness of which is yet to be seen. It has signed a Memorandum of Understanding with the UNCTAD on a Programme of Cooperation aimed at promoting in developing countries greater understanding of and more effective involvement in international standardisation activities. The purposes are to foster sustainable development in those countries and facilitate access of their products and services to world markets. The programme, however, is mostly concerned with information exchange and co-ordination in future activities.[78]

UNCTAD and ISO also reached an understanding on offering joint technical assistance to developing countries. That assistance could include information exchange, training, and capacity-

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[76] For example, reliance on foreign consultants and auditing firms for ISO 9000 certifications forced Malaysian companies to incur a cost higher than companies in many other countries. See, Rohterham,T., 'The ISO 14001 Environmental Management System Standard', *BRIDGES*, Vol. 2, No. 2, ICTSD, p. 12.

[77] Paragraph 3, Recommendation adopted by the Expert Meeting, UNCTAD, Trade and Development Board, *supra* note 53.

[78] Within the framework of this Programme, ISO and UNCTAD agreed to comment on each others' official documents and reports addressing issues related to standards, regulations, accreditation, conformity assessment, mutual recognition agreements, technical barriers to trade and sustainable development. The issues would specifically include those related to the impact on international trade of specific ISO series of standards, such as the ISO 14000 series and the ISO 9000 series. ISO and UNCTAD also agreed to actively participate in relevant meetings of each organisation where the issues mentioned above are raised. See 'ISO and UNCTAD join hands to help the developing world' in *http:www.iso.ch/presse/unctad.htm.*

building activities according to the specific needs of the requesting country. A Joint Committee of representatives of ISO and UNCTAD was established to implement this Programme of Cooperation and to ensure its follow-up.[79] ISO itself has established a scheme called DEVCO, which aims at cooperating with the developing countries. It has serious logistic shortages and its success largely depends on the funds it may receive from the donors.[80]

It may be expected that because of the UNCTAD and ISO initiatives, the participation of developing countries could be increased in future ISO activities. But even if this increase in participation happened immediately, it would have little effect since the mandate of next revision of ISO 14001 in 2001 has already been minimised. In the plenary meeting of ISO's Special Committee 1 (SC1) on Environmental Management Systems in June 2000, its Working Group 1 was assigned to initiate the revision process of ISO 14001:1996.[81] As the SC1 instructs, that revision will be 'limited to consideration of issues related to compatibility of ISO 14001 with ISO 9001 and to clarification of the existing text' and that will be 'without resulting in additional requirements in ISO 14001'. The SC1 only ensured that any existing/new issues in environmental management, not dealt with within its current revision process, would be recorded for future analysis.

UNCTAD and ISO have also begun to take account of the complexities of conformity assessment issues. While appreciating the necessity of an internationally recognised certification and accreditation system, the UNCTAD experts stressed the need for providing assistance to the developing countries in identifying the possibilities of increasing their share in the domestic and external markets for certification bodies and consultants.[82] In 1996, the ISO Committee on Conformity Assessment (CASCO), which is both monitoring and participating in international efforts in this area, formed an EMS working group, whose mandate includes 'developing general requirements for bodies operating assessment and certification/registration for environmental management systems'.[83] The job is not completed yet and it is not clear whether and how the ISO is going to ensure the interests of the developing countries in line with the above UNCTAD recommendation.

VIII. Conclusion

ISO 14000 series may play a considerable role in ensuring sustainable industrial development in many corners of the world. Compared to the 'command and control' based regime of public

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79 See *id*.

80 At a special session for developing countries in the annual meeting of ISO TC 207 in 1998, the discussion focused on the ability or the lack thereof of developing countries to attend the ISO meeting. The director of the DEVCO commented that they have approached agencies and multinationals for funding. See *The World Bank/IFC/M.I.G.A. Official Memorandum*, Dated July 1 1998. Subject, 'ISO Technical Committee 207's Annual Meeting San Francisco, June 17-19, 1998'.

81 The meeting was held during the plenary meetings of ISO in Stockholm from June 11 to June 18, 2000. It was participated in by member bodies from 60 countries and 11 liaison organisations. The SC1 resolved to hold its ninth meeting in June 2001 in conjunction with the next ISO/TC 207 plenary meeting in Kuala Lumpur'. See ISO/TC 207, 'Communiqué, 8th Annual Meeting of ISO/TC 207 on Environmental Management' in *http://www.tc207.org/articles/index.html*.

82 Paragraph 6, Recommendation of the Expert Meeting, UNCTAD, Trade and Development Board, *supra* note 53.

83 See *http://www.tc207.org/faqs/index.html*.

international law, the market incentives ISO standards offer could arguably influence the industries more to perform the environmental obligations ISO develops.[84]

The objection particularly against the ISO 14001, however, lies not in its objectives, but in the approaches it takes to achieve those objectives. ISO 14001 insists on the application of uniform standards and provides no safeguard against discriminative assessment by the developed countries of the implementation of those standards in developing countries. It has bolstered the ability of the developed world to dictate the performance of environmental management obligations by the developing countries' industries and to squeeze them out of the international market in cases of their failure to establish environmental management systems according to the formers' satisfaction. Consequently the developing countries may lag further behind in international business and trade, so that ISO may in the long run reduce their ability to perform environmental obligations under existing or future agreements. One can even argue that the TBT agreement's prejudice in favour of the ISO standards has undermined the freedom of developing countries to design their environmental strategies in line with their differential responsibilities as enshrined in intergovernmental environmental instruments.

It should be noted here that the concept of sustainable development could not rest on equal and invariable treatment throughout the world community, particularly where countries' contributions to environmental degradation vary widely and their capabilities to employ resources to perform environmental obligation differ almost accordingly. The incorporation of the principle of 'common but differentiated responsibility' in Rio Declaration and its reflection in later intergovernmental environmental instruments is a firm recognition to that reality.[85] The ISO 14001, because of the confluence of market factors including the relevant provisions of TBT agreement, may exert greater impact than the environmental norms under public international law regime in areas of export-oriented industrial activities. Thus, it may threaten the environmental norms, which through the appropriate participation of developing countries are more suitable to implementation within those countries.

In view of the aforesaid possibilities, concerned international organisations, including the ISO, could play a more effective role in reflecting the special difficulties of the developing countries. Such a role could be played by taking some radical steps to distribute the obligations of EMS more contextually. For example, provisions could be made (possibly by the WTO) to the effect that the financial and technical responsibilities in establishing EMS by the suppliers in the developing countries would have to be shared by the big transnational countries or that conformity assessment in a developing country has to be accepted at least until a certain period. The ISO could reform its procedural rules in line with UN systems to make the negotiation of the standards affordable and attainable by the developing countries. It may also take steps to reflect the TBT provisions concerning the developing countries in the revisions of ISO 14000 series.

The developing countries themselves have a greater role to play to guard their interests and also to perform their share of environmental responsibilities. They need to be more organised,

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84 Command and control based regime is criticised for being reactive, rigid, complex and time consuming. It is argued that the ISO approach of proactive standard setting is at least partially free from these defaults. See, for detail, Taylor, D., 'ISO 14001 and Environmental Regulations', 9 *Journal of Environmental Law and Practice*, 2000, pp. 2-3.

85 As principle 7 of the Rio Declaration provides, …'In view of the different contribution to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressure their societies place on the global environment and of the technologies and financial resources they command'.

probably on a regional basis, to facilitate their active representation in the negotiation of environmental obligations influencing international trade and business. They could establish and maintain various programmes of cooperation including for exchange of information, human resource development, training and technical assistance to make the best possible use of the ISO standards and conformity assessment procedures. They should also be aware of the need for streamlining and strengthening their laws and legal systems to secure acceptance of the conformity assessment of their companies and, as a whole, to contribute to the global efforts of environmental protection.

It cannot be ignored that environmental issues are no longer a good-will gesture of the world community. It is becoming an area of strict compliance. Consumer choice is going to have more and more impact on compliance obligations in the coming years. ISO 14001 along with other ISO standards particularly those relating to eco-labelling have broadened that scope more than any time before. Unless the needs for legal and structural development in the developing countries are fulfilled accordingly, the disparity in the environmental and development choices in different parts of the world will only intensify.

Summary

This article argues that, although ISO 14001 (Environmental Management Systems (EMS)) produced by the International Organization for Standardisation (ISO) could be used as regulatory conditions for entry into global trade and business (in light of the 1994 WTO Technical Barriers to Trade Agreement), such regulations could operate to the detriment of the economic and environmental interests of less developed countries.

The ISO procedural rules offer little scope for participation of the developing countries in the negotiations of ISO 14001. Consequently the ISO 14001, unlike the instruments resulting from many public international law negotiations, has largely failed to reflect the need for special treatment of those countries. In this regard, the single major exception is one provision of ISO 14001, which allows the companies of developing countries to establish EMS tailored to the legal requirements of their own countries. Unfortunately, this provision too could have negative consequences for developing countries. Due to the vagueness and sketchiness of their legal requirements, developing countries' companies could run the risk of being rejected by the Bodies entrusted with certifying conformance with ISO 14001. Furthermore, due to the lack of safeguards in WTO and ISO mechanisms, developing countries and their companies may find it difficult to garner the financial and technical assistance needed for establishing and maintaining ISO 14001 Environmental Management Systems (EMS). These concerns partly explain why the current rate of ISO 14001 certification of developing countries' companies is wretchedly poor in contrast with those of OECD countries.

This article concludes that, unless (i) the financial and other logistic responsibilities of establishing EMS are redistributed, (ii) the representation of developing countries' interests in Certification Bodies is ensured and (iii) the needs for streamlining and improving the environmental laws in developing countries are fulfilled, the ISO 14001 process is likely to intensify the existing disparities in the environmental and economic choices prevalent in different parts of the world.

El Acceso a la Justicia Ambiental en América Latina durante la Década de los Noventa: Reformas y Desarrollos

Isabel Martínez

I. Introducción

El dos de octubre de 1990, el Tribunal de Garantías Constitucionales del Ecuador (actualmente, Tribunal Constitucional) emite su primera resolución en materia ambiental. Ella tuvo lugar en el caso de la Corporación de la Defensa de la Vida (Cordaví) contra la empresa estatal Petroecuador y el Ministerio de Agricultura. El Tribunal determinó en su dictamen "evitar en lo posterior hacer concesiones de áreas para la explotación petrolera dentro de los parques nacionales y áreas de reserva natural o equivalentes" (...) Más adelante, la resolución fue modificada por las presiones ejercidas por cuatro compañías petroleras. La nueva decisión asentó que la actividad petrolera podía ser ejercida en los parques nacionales y reservas naturales protegidas siempre que se adoptasen medidas de protección ambiental.[1]

El veinticuatro de julio de 1998, cuarenta y cinco organizaciones nacionales defensoras de los derechos humanos en América Latina, nueve redes regionales latinoamericanas y cuatro instituciones de países desarrollados señalaron que una de las violaciones más comunes a los derechos económicos, sociales y culturales en América Latina y el Caribe era la falta de acción de los Estados frente a las transgresiones y amenazas a dichos derechos provenientes de agentes privados, tales como las empresas que desconocen su obligación de respetar los derechos fundamentales de la persona en el trabajo y el derecho de la colectividad a un medio ambiente sano y protegido.[2]

El ocho de junio de 1999, el Tribunal Regional Federal de la 4ª región de Brasil condenó a prisión al capitán de un barco que no tuvo la suficiente cautela para evitar el naufragio del barco que dirigía y que derramó 3.100 toneladas de ácido sulfúrico.[3]

El veintiocho de enero de 2000, nueve jueces del más alto nivel de nueve países de América Latina declararon que (...) "La práctica judicial de nuestros países nos indica que muchos de los conflictos jurídicos que llegan a los tribunales de justicia no pueden ser resueltos satisfactoriamente para los litigantes y para la propia protección del medio ambiente. Se trata de problemas inéditos que requieren de soluciones también inéditas".[4]

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1 Moscoso, R. (2000). El acceso a la justicia constitucional en Ecuador. En *El acceso a la justicia ambiental en América Latina. Memorias del simposio judicial realizado en la Ciudad de México del 26 al 28 de enero de 2000*. Serie documentos sobre derecho ambiental, n° 9, Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) y Procuraduría Federal de Protección al Ambiente del Gobierno de México (PROFEPA), Ciudad de México, México, p. 169.

2 Declaración de Quito acerca de la exigibilidad y realización de los derechos económicos, sociales y culturales en América Latina y el Caribe, párrafo 49, http://www.derechos.org.ve/situacio/quito.index.html. Sitio consultado en diciembre de 2000.

3 Passos de Freitas, V. (2000). El acceso a la justicia constitucional en Brasil. En *El acceso a la justicia ambiental en América Latina. Memorias del simposio judicial realizado en la Ciudad de México del 26 al 28 de enero de 2000*. Serie documentos sobre derecho ambiental, n° 9, Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) y Procuraduría Federal de Protección al Ambiente del Gobierno de México (PROFEPA), Ciudad de México, México, p. 122.

4 Declaración del simposio judicial sobre derecho ambiental y desarrollo sostenible: El acceso a la justicia ambiental en América Latina. En *El acceso a la justicia ambiental en América Latina. Memorias del simposio judicial realizado en la Ciudad de México del 26 al 28 de enero de 2000*. Serie documentos sobre derecho ambiental, n° 9, Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) y Procuraduría Federal de Protección al Ambiente del Gobierno de México (PROFEPA), Ciudad de México, México, párrafo 9, p. 221.

Las decisiones y declaraciones transcritas muestran someramente intereses privados, conflictos sociales, preocupaciones culturales, al igual que retos comunes para actores sociales, gobiernos y jueces en torno a la defensa judicial del derecho a un ambiente sano y la protección ambiental.

También indican que, a finales de la década pasada, las situaciones de intervención en el poder judicial están cambiando en América Latina, al igual que el sentido de sus decisiones, gracias al papel más activo de organizaciones no gubernamentales, ciudadanos y el propio poder judicial a favor del ambiente.

El interés de este estudio es profundizar en ciertos eventos relacionados con la institucionalidad del estado de derecho que han marcado el acceso a la justicia ambiental en América Latina durante la década del noventa, examinar sus impactos en la producción jurisprudencial ambiental, así como revisar las vinculaciones entre ellos. Los eventos a que se hace referencia son las reformas judiciales, y las reformas constitucionales y legales ambientales desarrolladas en la mayoría de los países latinoamericanos durante ese período, así como los desarrollos jurisprudenciales ambientales producidos en el mismo marco temporal. El acceso a la justicia ambiental se examina indistintamente desde el punto de vista constitucional, civil, penal y contencioso-administrativo.

Para este propósito, en el siguiente capítulo se describe muy brevemente el contexto socioeconómico y ambiental imperante en América Latina. En el tercer capítulo se acotan el concepto de acceso a la justicia ambiental y sus diferentes jurisdicciones. En el cuarto capítulo se revisan las reformas judiciales impulsadas por diversas agencias financieras y de cooperación en lo que al tema del acceso a la justicia se refiere, incluyendo las ambientales. En el quinto capítulo se identifican las reformas constitucionales y jurídicas más relevantes para la defensa judicial del derecho a un ambiente sano y la protección ambiental y se comenta su influencia en ese proceso. En el sexto capítulo se muestra un abanico de fallos ambientales que intenta denotar la variedad de asuntos ambientales que han sido resueltos en los más altos tribunales de los países de América Latina en forma principalmente positiva; además se reseñan las innovaciones introducidas en su interpretación. En el último capítulo se presentan las conclusiones finales derivadas del presente estudio.

La resolución de conflictos de naturaleza ambiental ante los tribunales constituye la acción última y extrema de aspiración de solución cuando han fracasado otras vías (por ejemplo, la participación en la toma de decisiones, la fiscalización o la justicia de paz). En general, en la mayoría de los países, el acudir a este mecanismo se percibe como consumidor de gran cantidad de tiempo, con implicaciones de altos costos económicos y de resultados poco confiables. Las reformas judiciales generales y las jurídicas ambientales particulares que se verán más adelante, se vislumbrarían como promotoras de un cambio y reversión de esta situación.

Así, con este trabajo se pretende mostrar y realzar el papel del poder judicial en la aplicación y cumplimiento de la legislación ambiental, en valorar y balancear los aspectos del desarrollo y del ambiente en sus decisiones y en la introducción de conceptos e interpretaciones novedosas para el derecho ambiental. Igualmente, se pretende ayudar a suplir el vacío de información que existe sobre este tema en la literatura, especialmente en el idioma español.[5]

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[5] Por último se hacen tres advertencias: La primera, si bien este estudio propone como marco temporal la década de los noventa, se mencionan reformas y fallos de los ochenta o del recién transcurrido año 2000 por sus aportes al desarrollo del acceso a la justicia ambiental latinoamericana; la segunda es que no se examina en forma explícita el papel que han jugado la sociedad civil, organizaciones no gubernamentales, organizaciones privadas o personas individuales que han estado y están detrás de muchas de las reformas o de los litigios ambientales. Sin embargo, sus aportes se hacen de alguna forma latentes a través de las declaraciones, reportes y casos que son extensamente citados aquí y; la tercera es que tampoco se han abordado los procesos alternativos para la resolución de conflictos como mecanismos

II. Contexto socio-económico y ambiental de América Latina

América Latina posee invalorables riquezas naturales, paisajísticas, mineras, energéticas y culturales. Brasil, Colombia, México y Perú han sido clasificados como países megadiversos.[6] Las cataratas de Iguazú compartidas por Brasil y Argentina, el volcán Cotopaxi de Ecuador o el arrecife coralino mesoamericano representan paisajes naturales extraordinarios de la región. Chile y Venezuela cuentan con grandes reservorios de cobre, el primero y de petróleo, el segundo. México, Guatemala, Honduras, Perú y Bolivia, entre otros, conservan construcciones pre-hispánicas y asientan poblaciones indígenas muy importantes.

La población de América Latina alcanza casi los 450 millones de personas, y está principalmente concentrada en zonas urbanas.[7] La mayoría de las economías de la región no se han diversificado y dependen en gran medida de actividades extractivas. Así ocurre con Bolivia y Chile.[8] La desigualdad económica en la región es de las más altas del planeta de acuerdo con la Comisión Económica para América Latina y el Caribe (CEPAL).[9]

Según el informe GEO para América Latina del año 2000 del PNUMA,[10] los problemas ambientales más graves son: Las concentraciones urbanas en grandes ciudades donde la calidad del aire y la escasez del agua amenazan la salud y necesidades humanas; la pérdida de bosques aparejada con perjuicios a la diversidad biológica; y la influencia potencial del cambio climático que apunta a incendios forestales, desastres naturales y aumento del nivel del mar. Además, la región carece de tecnologías apropiadas –y de acceso a las mismas– para un uso más eficaz de sus recursos.

III. Acceso a la justicia ambiental

En este capítulo se revisa el alcance del acceso a la justicia en general y se intenta establecer el significado y alcance del acceso a la justicia ambiental en particular.

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aplicables al tema ambiental que se están aplicando en la región, ya que el trabajo se ha concentrado en el área jurisdiccional.

6 Panamundo, http://panamundo.com/ecolo-latinoamerica.html (Brasil, Colombia y Perú) y La Jornada, http://www.jornada.unam.mx/1998/nov98/981116/cien-forestal.html (México). Sitios consultados en diciembre de 2000.

7 Programa de las Naciones Unidas para el Medio Ambiente –PNUMA– (2000). GEO. América Latina y el Caribe. Perspectivas del medio ambiente. Impreso en Costa Rica, p. 9.

8 Acuña, G. (1999). Marcos regulatorios e institucionales ambientales de América Latina y el Caribe en el contexto del proceso de reformas macroeconómicas: 1980-1990. CEPAL. Serie Medio Ambiente y Desarrollo, n° 20, pp. 62, http://www.eclac.cl/cgi-bin/getProd.asp?xml=/agrupadores_xml/aes7.xml&xsl=/agrupadores_xml/agrupa_listado.xsl. Sitio consultado en diciembre de 2000, p. 11 y 21.

9 De acuerdo con la CEPAL "alrededor de 220 millones de personas en la región viven en situación de pobreza, cifra que se acerca al 45% de la población de América Latina y el Caribe." Comisión Económica para América Latina y el Caribe –CEPAL– (2000). Resumen del panorama social 1999-2000, http://www.eclac.cl. Sitio consultado en diciembre de 2000.

10 PNUMA. (2000), *supra* n. 7, p. 9 y 81.

1. El acceso a la justicia en general

La discusión sobre el acceso a la justicia redunda alrededor de asuntos que, eventualmente, afectan las causas ambientales. Sinnar[11] explica que "actualmente se debaten los propósitos del acceso a la justicia entre aquellos que dan prioridad a los aspectos procesales (acceso a los tribunales) y los que dan mayor importancia a los aspectos sustantivos (acceso a la justicia), como la producción de decisiones más justas y equitativas."

Lechuga Pino[12] menciona otros temas que condicionan el acceso a la justicia. Ellos son la cantidad y distribución geográfica de los tribunales (relacionados con la frecuencia e intensidad de los conflictos en determinadas zonas, igual que la situación económica predominante en las mismas), así como la simplificación de trámites y procedimientos.

Y, por otra parte, en las Constituciones de América Latina no parece haber referencias explícitas al tema; éste se regula mayoritariamente desde la perspectiva de la administración y del administrador de la justicia, es decir, no de quienes la ponen en marcha, sino de quienes tienen la obligación de responder a las demandas particulares y colectivas. Excepcionalmente, en Colombia, Paraguay y Venezuela existen disposiciones constitucionales que se refieren directamente al acceso a la justicia como un derecho ciudadano.[13]

2. El acceso a la justicia ambiental en particular

El problema sobre el acceso a la justicia ambiental tiene que ver con "la posibilidad de que los conflictos jurídicos de naturaleza ambiental puedan tener por parte de los órganos jurisdiccionales una solución expedita y completa, que contribuya, en la medida en que pueden hacerlo los tribunales de justicia, a la protección del medio ambiente y a la promoción del desarrollo sostenible."[14] La solución expedita y completa, a su vez, ha sido confrontada con cuestiones que la obstaculizan como la falta de recursos económicos para promover las pruebas, la falta de aplicación de principios procesales ajustados a los casos ambientales (entre otros, el reconocimiento de los intereses colectivos y difusos, la adopción de medidas cautelares, la proactividad de los órganos jurisdiccionales) y el contenido de las sentencias (alcance de la reparación del daño ambiental, las medidas para hacerlas cumplir).

Otros factores que condicionan el acceso a la justicia ambiental también han sido apuntados por Scott.[15] Ellos son la complejidad de la legislación o la abundancia de fórmulas incompletas,

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11 Sinnar, S. (s/f). Access to justice, http://www1.worldbank.org/publicsector/legal/access.htm. Sitio consultado en noviembre de 2000.

12 Lechuga Pino, E. (1998). Reforma y modernización de la administración de justicia en la región andina, http://www.cajpe.org.pe/ELP1.htm. Sitio consultado en noviembre de 2000.

13 En Colombia se limita su ejercicio a una ley posterior (artículo 229); en Paraguay el enunciado es vago y deja en manos del Estado el "allanar los obstáculos que la impidiesen" (artículo 47). En Venezuela, la regulación es mucho más específica y se refiere, incluso, a los derechos colectivos o difusos; describiendo a renglón seguido las características que debe tener esa justicia, a saber, gratuidad, accesibilidad, imparcialidad, idoneidad, transparencia, autonomía, independencia, responsabilidad, equidad, rápida, sin formalismos o reposiciones inútiles (artículo 26).

14 Declaración del simposio judicial sobre derecho ambiental y desarrollo sostenible: El acceso a la justicia ambiental en América Latina, *supra* n. 4, párrafo 3°.

15 Scott, I. (2000). The inter-american system of human rights: An effective means of environmental protection? En *Virginia Environmental Law Journal*, vol. 19 (2). Virginia Environmental Law Journal Association. London, UK, p. 220. Scott muestra las innovaciones introducidas por la

el concepto tradicional de carga de la prueba y los retos de interpretación y creatividad que la legislación ambiental impone a los jueces.

Es de destacar que a nivel internacional, particularmente en Europa, ha sido adoptada la Convención sobre el acceso a la información, la participación del público en la toma de decisiones y el acceso a la justicia en asuntos ambientales.[16] Los signatarios fueron 40 países europeos y ha sido ratificada por 9. Entrará en vigor una vez que haya sido ratificada por 16 países (artículo 20). Esta Convención no define el acceso a la justicia ambiental, sino que la considera como un mecanismo de cumplimiento en caso de transgresiones a las disposiciones sobre el acceso a la información y a la participación pública en asuntos ambientales en el ámbito de la Convención y de la legislación ambiental nacional. Por ejemplo, el acceso a la justicia ambiental opera si se ignoran, rechazan o son insuficientes las informaciones solicitadas (artículo 9°, párrafo 1°), o para "impugnar las acciones u omisiones de particulares o de autoridades públicas que vayan en contra de las disposiciones del derecho nacional ambiental" (artículo 9°, párrafo 3°). En la Convención se hace énfasis en la eliminación o reducción de obstáculos financieros que entorpezcan el acceso a la justicia ambiental (artículo 9°, párrafos 4° y 5°). También, en la obligación para las Partes de ofrecer recursos objetivos, equitativos y rápidos" (artículo 9°, párrafo 4°).[17]

De manera que, esta Convención delimita situaciones muy específicas de accesibilidad a la justicia ambiental como son las violaciones al derecho a la información y a la toma de decisiones ambientales.

IV. Reformas judiciales

"La reforma de la administración de justicia que estamos apoyando incluye, entre otros objetivos, el de asegurar su mayor eficiencia, de garantizar la tutela de los derechos humanos y de facilitar el acceso expedito de los ciudadanos a las decisiones judiciales, de conformidad con las circunstancias y la legislación de cada país."[18]

Manifestaciones como la precedente han sido reiteradas en los foros políticos nacionales, subregionales y regionales de alto nivel en América Latina durante la década de los noventa. Sus razones e impacto en el acceso a la justicia ambiental son el objeto del presente capítulo.

Corte Interamericana de Derechos Humanos en el análisis de los casos de desaparecidos y propone que los casos ambientales que eventualmente lleguen a la Comisión o la Corte sean valorados con la misma fórmula de inversión de carga de la prueba. De esta forma, explica que "los gobiernos estarían forzados a presentar pruebas que demostraran, por ejemplo, que la explotación de petróleo no daña el ambiente de las poblaciones locales." (Traducción de la autora).

16 Convención sobre el acceso a la información, la participación del público en la toma de decisiones y el acceso a la justicia en asuntos ambientales. Aarhus, 25 de junio de 1998, http://www.unece.org/env/pp. Sitio consultado en enero de 2001.

17 United Nations Economic Commission for Europe –UN/ECE– (2000). The UN/ECE Convention on access to information, public participation in decision-making and access to justice in environmental matters (Aarhus, Denmark, 1998). An implementation guide. Preparado por Stephe Stec y Susan Casey-Lefkowitz in collaboration with Jerzy Jendroska, editorial adviser. New York y Geneva, pp. 171-186.

18 Declaración de Margarita de la VII cumbre iberoamericana de los jefes de estado y de gobierno de los países iberoamericanos. La cumbre se realizó en la Isla de Margarita, Venezuela, los días 8 y 9 de noviembre de 1997, párrafo 22, http://www.mre.gov.ve/iberpyme/basico/margarit.htm. Sitio consultado en noviembre de 2000.

1. Los intereses reformistas

La mayoría de los países latinoamericanos arremetió profundas reformas judiciales entre 1990 y 1999, a partir de los recursos proporcionados por organizaciones financieras y para la cooperación como el Banco Mundial (BM), el Banco Inter-Americano de Desarrollo (BID), el Programa de las Naciones Unidas para el Desarrollo (PNUD), la Agencia para el Desarrollo Internacional de los Estados Unidos de América (USAID) y países de la Unión Europea (UE) como Holanda.

Los intereses detrás de las reformas, explicados desde la perspectiva de las organizaciones financistas, reflejan el objetivo de proporcionar seguridad jurídica a las inversiones extranjeras que, paralelamente, se estaban introduciendo como parte de las llamadas reformas estructurales. Así, el Sr. Andrés Rigo en representación del Presidente del BM manifestó que la intención de las reformas judiciales variaban de región en región y de país a país pretendiendo la "reorientación del funcionamiento de los tribunales frente a un sistema económico nuevo, (...) o cómo ganarse la confianza de los ciudadanos o de los inversores bien sean nacionales o extranjeros, o cómo desarrollar controles judiciales de los sistemas financieros, o cómo solucionar la falta de capacidad de los jueces en general o en temas económicos."[19]

Y, Biebesheimer[20] afirma que la reforma judicial es un tema crucial para un "funcionamiento eficiente de los mercados y del crecimiento económico con equidad", apuntando que "tras la ola de inversiones extranjeras, cada día más litigantes foráneos ponen a prueba las garantías legales de la región."

Para Pásara,[21] las razones de mayor peso en las reformas también tienen un corte económico. Las vincula con el papel del poder judicial en la resolución de conflictos económicos, de capitales internacionales, de la promoción del sector privado y con el hecho de que las compañías extranjeras no son tan hábiles para reclamar o defenderse en estructuras judiciales desconocidas. No obstante, también se refiere a los problemas que tienen que ver con la administración de justicia (designación política de los cargos, la interferencia política en las decisiones, la corrupción, entre otros) y los que tienen que ver con los derechos humanos (a raíz de las modificaciones constitucionales y legales que ampliaron la protección de los derechos humanos).

Otra cara de las reformas es presentada por autoridades gubernamentales o por autores de la región y, hasta cierto punto, desde una perspectiva sub-regionalizada. Así, en el cono sur se estimó necesario llevar a cabo las reformas a raíz de los cambios histórico-políticos de principios de la década vinculados con la caída de las dictaduras. En este sentido, Buergenthal[22] ha opinado que "no hay que subestimar el hecho de que los sufrimientos causados en algunos estados por regímenes dictatoriales, ha tenido un papel muy importante en la adopción de mecanismos constitucionales

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19 Rigo, A. (1999). Reforma judicial y jurídica: Experiencia y papel futuro del Banco Mundial. Discurso pronunciado en la Conferencia de Cortes Supremas de Justicia de las Américas. Caracas, Venezuela, http://www1.worldbank.org/legal/legop_judicial/docs/venezuela.doc. Sitio consultado en noviembre de 2000.

20 Biebesheimer, C. (1999). Nota publicada por el BID, htpp://www.iadb.org/exr/IDB/stories/1999/esp/c1299d.htm. Sitio consultado en noviembre de 2000.

21 Pásara, L. (1994). Judicial reform and civil society. En *Justice delayed. Judicial reform in Latin America*. Inter-American Development Bank, Jarquín E. y Fernando Carrillo F. (eds.), Washington D.C. U.S.A., p. 88-89.

22 Buergenthal, T. (1997). Modern constitutions and human rights treaties. En *Columbia Journal of Transnational Law*, v. 36, New York, N.Y., U.S.A., 211-223.

que fortalecen el papel de un poder judicial independiente para hacer cumplir derechos humanos internacionales en conflicto con la legislación nacional" …

Para los países andinos, de acuerdo con Lechuga Pino[23] los problemas judiciales son de tipo general (inestabilidad en los aparatos judiciales, la ausencia de coordinación con los otros poderes del Estado, la corrupción como amenaza permanente sobre jueces y funcionarios judiciales), de orden jurisdiccional (excesiva carga procesal, un deficiente manejo y aplicación defectuosa de la jurisprudencia, inadecuados mecanismos de control de magistrados y funcionarios) o de índole procesal (falta de seguimiento permanente en la tramitación de los procesos, la complejidad y rigidez de los trámites judiciales, la excesiva duración de los procesos y la falta de promoción de mecanismos alternativos para la resolución de conflictos).

En Centroamérica, el autoritarismo que predominó mayoritariamente en el istmo conllevó a una "verdadera concentración de poder en manos o bien de un dictador o bien de una élite y como contrapartida Poderes Judiciales sumamente disminuidos" …[24]

2. Las acciones reformistas

Bajo las premisas enunciadas anteriormente de intereses económicos, políticos y sociales las reformas judiciales se orientaron hacia una diversidad de cometidos que van desde la creación de instituciones destinadas a la administración de la función judicial (por ejemplo, Consejos de la Judicatura) hasta la informatización, pasando por la reformulación de leyes sustantivas, procesales y de organización, la capacitación de los operadores jurídicos, la mejora de la infraestructura o los aumentos presupuestarios y salariales.

El acceso a la justicia, en forma explícita, se encuentra presente en unos pocos programas de las reformas judiciales.

Así, en Guatemala, este componente es uno de los dos que conformó el Programa de Apoyo a la Reforma del Sector Justicia del BID y consistió en "mejorar la cobertura judicial de las comunidades marginadas, facilitando el acceso físico, linguístico y cultural a la justicia mediante la construcción y puesta en marcha de 8 centros de administración de justicia, 47 juzgados de paz y 10 fiscalías distritales, así como la implementación de actividades especiales dirigidas a comunidades."[25]

En el Ecuador, en el proyecto aprobado por el BM por US $ 10.7 millones se incluye el mejoramiento del acceso a la justicia a través de servicios legales para mujeres pobres y sus hijos.[26]

El Proyecto de Fortalecimiento del Sistema Judicial Uruguayo de 1998 financiado por el BID destaca como uno de los desafíos del poder judicial uruguayo el acceso a la justicia lo cual implica el fortalecimiento de la Defensoría de Oficio (con sistemas modernos de información, organización

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23 Lechuga Pino, E. (1998), *supra* n. 12.

24 Tenorio, J. D. (1999). Documento conceptual. Justicia y transparencia desde una perspectiva Centroamericana, http://www.iadb.org/re2/consultative_groups/transparency-workshop2esp.htm. Sitio consultado en noviembre de 2000.

25 Banco Inter-Americano de Desarrollo (BID). Programa de apoyo a la reforma del sector justicia, GU-0092, resumen ejecutivo, http://www.iadb.org/exr/doc98/apr/gu1120s.htm. Sitio consultado en noviembre de 2000.

26 World Bank. Legal and Judicial Reforms Initiatives supported by the Bank, stand-alone projects approved (1996), Ecuador, http://www1.worldbank.org/legal/legop_judicial/Judannex.html. Sitio consultado en noviembre de 2000.

y gestión) y los centros pilotos para "expandir los servicios de la mediación hacia otras áreas de la capital y de los departamentos."[27]

Recientemente, un nuevo proyecto de reforma judicial para Nicaragua de mayo de 2000, preparado por el BID, se titula Programa de Fortalecimiento Judicial y Acceso a la Justicia. Los problemas y desafíos frente al acceso a la justicia se basan en: la debilidad institucional en la prestación del servicio, la falta de infraestructura adecuada y variables de carácter geográfico, socioeconómico y cultural, agravándose para los grupos vulnerables de la población (los pobres y analfabetos).[28]

El tamiz del acceso a la justicia en los proyectos o programas del BM y el BID en Guatemala, Ecuador y Nicaragua está sesgado a la atención de poblaciones pobres o vulnerables en zonas geográficamente aisladas y con características culturales particulares.

3. El componente ambiental en las reformas

La proyección de las reformas hacia el sector ambiental es exigua. Excepcionalmente, en Centroamérica (Belice, Costa Rica, El Salvador, Honduras, Guatemala, Nicaragua y Panamá) el BID, en 1995, dedicó recursos para capacitar a jueces, fiscales, así como otros operadores jurídicos en torno a la necesidad y a los beneficios de la protección ambiental y del uso sostenible de los recursos naturales. Igualmente, para apoyar el fortalecimiento de organizaciones no gubernamentales de derecho ambiental de la región. El financiamiento fue destinado a la elaboración de materiales de capacitación y manuales explicativos de la legislación ambiental y de las posibilidades ofrecidas para la resolución de conflictos. El monto total del financiamiento fue de US $ 415.000 e incluía una contribución de US $ 175.300 del Gobierno de Holanda.[29]

Hasta enero de 1998, de acuerdo con el Comité de Abogados para los Derechos Humanos, el valor total de los préstamos otorgados por el BID y el BM para reformas judiciales excedía los US $ 500 millones (contabilizando 16 proyectos del BID aprobados o en planificación y 23 del BM igualmente aprobados o en fase de planificación).[30] Tomando como base de cálculo esa cifra, los

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27 Banco Inter-Americano de Desarrollo (BID). Fortalecimiento del Sistema Judicial Uruguayo, perfil II, julio 1998, http://www.iadb.org/exr/doc98/pro/uur0122.htm. Sitio consultado en noviembre de 2000.

28 Banco Inter-Americano de Desarrollo (BID). Programa de fortalecimiento judicial y acceso a la justicia. Perfil II. Nicaragua. Mayo 1998, http://www.iadb.org/search97cgi/s97is.dll. Sitio consultado en noviembre de 2000.

29 Nota de prensa del 02/10/95, CP-203/95, BID, http://www.iadb.org/exr/PRENSA/1995/cp20395c.htm. Sitio consultado en noviembre de 2000. El proyecto de Centroamérica se realizó con recursos no reembolsables, a diferencia de la mayoría de las operaciones del Banco que, obviamente, son a través de préstamos reembolsables. Por otra parte, el BID, tiene un mecanismo interno de revisión de proyectos para garantizar que los impactos sociales y ambientales de los mismos sean evaluados y, tratándose de proyectos sobre reformas judiciales, uno de los criterios de evaluación es el de acceso a la justicia, especialmente para los grupos pobres y vulnerables. Además, el Banco ha aprobado operaciones que están relacionados con factores que influencian el acceso como el manejo de conflictos, la participación pública (mejora de la participación pública en las evaluaciones de impacto ambiental en Chile) y el acceso a la información (apoyo a la Línea Verde en Uruguay). Nolet, G. Comuniciación por correo electrónico de 20/03/2001.

30 Lawyers Committee for Human Rights –LCHR– (1998). IFI's judicial reform and the environment. A preliminary assessment: environmental enforcement in Paraguay. May. New York, N.Y., U.S.A, p. 2, pie de página 1, p. 1.

desembolsos para las reformas judiciales de estos Bancos, con componentes directamente ambientales, tan sólo representan el 0,083 % (concentrados en Centroamérica).[31]

4. Balance de los resultados de las reformas judiciales para el acceso a la justicia ambiental

El balance de los resultados de las reformas judiciales de los noventa está bajo examen, probablemente, porque muchas de ellas todavía están en curso u otras apenas se empiezan a desarrollar.

Por parte del BM, el Sr. Rigo[32] ha comentado la experiencia del Banco en el apoyo a los programas de reforma judicial y ha hecho una serie de reflexiones relacionadas con las negociaciones e implementación de los proyectos. Entre ellas destaca que es importante: El conocimiento a profundidad de los problemas y un enfoque de "bases" para contar con la participación de todos los involucrados, la conformación de grupos interdisciplinarios para la preparación de las estrategias de las reformas, el diseño de estrategias integrales, el ajustar los ritmos de las reformas a la capacidad disponible (o aumentar tal capacidad) y la coordinación entre los promotores de las reformas, entre otras. Por argumento en contrario, tales reflexiones podrían interpretarse como debilidades en los procesos de las reformas judiciales desarrollados.

Más frontal ha sido Pásara[33] quien argumenta que, en la práctica, han tenido lugar reformas diferentes y paralelas que no se han tomado en cuenta unas a las otras. Considera que las reformas se han llevado a cabo sin datos confiables y sin el análisis profundo de las raíces de las causas de los problemas judiciales. En consecuencia, las reformas se han concentrado en los diseños institucionales y en actividades de administración no muy útiles para resolver los problemas.

Cierto es que, indirectamente, el acceso a la justicia ambiental no se deja de beneficiar de acciones que promueven la informatización de los tribunales, la elección de jueces por sus méritos o a la disminución del plazo de tramitación de los expedientes judiciales, que son elementos comunes en la mayoría de las reformas judiciales. Directamente, no se ha podido corroborar su impacto sobre el acceso a la justicia ambiental –ni siquiera en los países centroamericanos– por la falta de suficiente información accesible a través de fuentes secundarias.

V. Reformas jurídicas

Paralelamente a las reformas judiciales revisadas anteriormente, los países de América Latina llevaron a cabo diversas reformas jurídicas directa o indirectamente relacionadas con el derecho a un ambiente sano y la protección ambiental. Estas reformas y su efecto en el acceso a la justicia ambiental se examinan a continuación.

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31 Para julio de 1999, el BM estaba manejando 11 proyectos en 8 países de la región, 7 aprobados y cuatro en preparación alcanzando un total de US $ 42 millones en préstamos. Por su parte, el BID había aprobado 14 proyectos por US $ 186 millones en préstamos y estaba preparando 6 más por US $ 189 millones. Lawyers Committee for Human Rights –LCHR– (2000). Advancing judicial reform. An environmental case study in Bolivia, New York, N.Y., U.S.A, p. 3.

32 Rigo, A. (1999), *supra* n. 19.

33 Pásara, L. (1998), *supra* n. 21, p. 90.

1. La constitucionalización del derecho a un ambiente sano

Según Brañes[34] el reconocimiento constitucional del derecho a un ambiente sano en América Latina ha resultado en un proceso de "enverdecimiento" de las constituciones de América Latina en los últimos 25 años. Este autor destaca que en las constituciones se ha pasado del mandato político para el Estado de la conservación y protección del ambiente al reconocimiento del derecho a un ambiente sano como un derecho humano.

En **Argentina**, la Constitución reformada en 1994 tuteló el derecho a un ambiente sano como un derecho colectivo y de carácter inter-generacional, vinculado a un contexto socio-económico y cuya vulneración da cabida a su indemnización (artículo 41). En **Colombia**, según Barrera Carbonell,[35] los principios ambientales más importantes pasaron a tener rango constitucional con la Constitución de 1991. La cantidad de referencias ambientales en esta Constitución es tal que se ha popularizado la calificación de "Constitución Ecológica." El derecho a un ambiente sano se reconoce a todas las personas (artículo 79). En **Costa Rica**, la reforma constitucional de 1994 consagró el derecho a un ambiente sano a título individual y la legitimación para reclamar la reparación del daño causado (artículo 50). En 1996 se incorporaron los derechos del consumidor que integran otros derechos dirigidos a proteger la salud, el ambiente y la seguridad (artículo 46). La Constitución del **Ecuador** modificada también en 1996 garantiza el derecho a vivir en un medio ambiente libre de contaminación (artículo 22). **México** constitucionalizó el derecho a un ambiente sano en una reforma de 1999 (artículo 4°, párrafo 5°). En **Paraguay**, la Constitución reformada en 1992 agregó el derecho a un ambiente sano para toda persona (artículo 7). En **Venezuela**, en 1999 fue aprobada una Constitución completamente nueva donde el tema ambiental fue ampliado en relación con la Constitución de 1961 y se incorporó el derecho a un ambiente sano como potestad individual y colectiva, tanto para las generaciones actuales como las futuras (artículo 127).

En **Uruguay**, la reforma constitucional de 1997 incluyó una disposición específicamente ambiental (artículo 47), pero de naturaleza distinta a la de la mayoría de las constituciones de la región ya que no se catalogó como un derecho, sino como asunto de "interés general."[36] En **Panamá** la Constitución reformada en 1994 agregó el deber del Estado de garantizar que la población viva en un ambiente sano y libre de contaminación (artículo 114).

Perú, **Chile** y **Brasil** ya habían incorporado este derecho en 1979 (artículo 2°, inciso 22), 1980 (artículo 19, inciso 8°) y 1988 (artículo 225), respectivamente.

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34 Brañes, R. (2000). El acceso a la justicia ambiental en América Latina: Derecho ambiental y desarrollo sostenible. En *El acceso a la justicia ambiental en América Latina. Memorias del Simposio Judicial realizado en la Ciudad de México del 26 al 28 de enero de 2000*. Serie documentos sobre derecho ambiental, n° 9, Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) y Procuraduría Federal de Protección al Ambiente del Gobierno de México (PROFEPA), Ciudad de México, México, p. 45.

35 Barrera Carbonell, A. (2000). El acceso a la justicia ambiental en Colombia. En *El acceso a la justicia ambiental en América Latina. Memorias del simposio judicial realizado en la Ciudad de México del 26 al 28 de enero de 2000*. Serie documentos sobre derecho ambiental, n° 9, Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) y Procuraduría Federal de Protección al Ambiente del Gobierno de México (PROFEPA), Ciudad de México, México, p. 137-138.

36 Centro Latinoamericano de Ecología Social –CLAES– (1999). Balance de la gestión legislativa en temas ambientales 1995-1999. Documento de trabajo preparado por Gudynas, E y Santandreu, A., n°48, octubre de 1999, http://www.ambiental.net/claes/biblioteca/DocTrabajo 48.html. Sitio consultado en noviembre de 2000.

Otros países como **Cuba** y **Bolivia** han reconocido el derecho a un ambiente sano en sus leyes marco sobre el ambiente: En la Ley n° 81 del Medio Ambiente de 1997 de Cuba (artículo 4°, inciso a) y en la Ley del Medio Ambiente de Bolivia de 1992 (artículo 17).

2. Los desarrollos legislativos ambientales

Por otra parte, durante la década de los noventa, en casi todos los países se aprobaron o modificaron leyes o instrumentos jurídicos de inferior jerarquía reguladores de diferentes asuntos ambientales (forestales, diversidad biológica, atmosféricos, hídricos, residuos, entre otros) o instrumentos de política ambiental (evaluación del impacto ambiental, ordenación del territorio, fondos ambientales, educación ambiental).[37] Excepcionalmente en **Uruguay**, de acuerdo con el informe del Centro Latinoamericano de Ecología Social (CLAES)[38] durante el período 1995-1999 no se "aprobó ninguna ley generada en su totalidad en nuestro país y específicamente dedicada a los temas y problemas uruguayos." Sin embargo, fueron adoptadas leyes que indirectamente repercuten en la gestión ambiental, como por ejemplo la Ley de riego con destino agropecuario (Ley n° 16.858 de 1997) y el marco legal de regulación del sector eléctrico (Ley n° 16.832 de 1996).

Igualmente relevantes para la protección ambiental desde un punto de vista penal, han sido la Ley Penal del Ambiente de **Venezuela** de 1992 y la Ley de Crímenes Ambientales de **Brasil** de 1998 al unificar en textos únicos la mayoría de los delitos ambientales. En **México**, una reforma del Código Penal de diciembre de 1996, agregó un capítulo sobre delitos ambientales. En **Paraguay**, la Ley n° 716 de 1996 estableció claramente un grupo de delitos ambientales.[39]

3. Las acciones jurídicas para acceder a la justicia ambiental

En general las acciones jurídicas para garantizar el nuevo derecho constitucional al ambiente sano, y la protección ambiental se han desarrollado en menor escala que los aspectos sustantivos antes descritos. Los mecanismos judiciales de defensa todavía recaen principalmente en las acciones del derecho tradicional como la acción de amparo (llamada acción de tutela en Colombia), la de constitucionalidad o ilegalidad de los actos u omisiones del poder público, el recurso contencioso-administrativo, la acción de cumplimiento, la penal o la civil.

Pocos países cuentan con acciones específicamente ambientales. Entre ellos se encuentran **Brasil** y **Chile**. Si bien sus acciones se originaron en reformas o innovaciones de los ochenta, enseguida se pasan a comentar por su relevancia e impacto efectivo en la resolución judicial de los conflictos ambientales.

En **Brasil**, diferentes autores coinciden en que existe un balance positivo en cuanto a la defensa judicial del ambiente,[40] gracias, entre otras muchas razones, a la Ley n° 7.347 de 1985 sobre la

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37 Véanse, por ejemplo, los cuadros con la síntesis comparativa de marcos regulatorios e institucionales ambientales en países seleccionados de América Latina y el Caribe en: Acuña, G. (1999), *supra* n. 8.

38 CLAES. (1999), *supra* n. 36.

39 LCHR. (1998), *supra* n. 30, p. 7.

40 Chang, L. (1990). The new emerald hunters: Brazilian environmental jurisprudence, 1988-1988. En *Georgetown International Environmental Law Review*, v. III, n° 2, Washington D.C., U.S.A., pp. 395-416. Fernandes, E. (1994). Defending collective interests in Brazilian environmental law: An assessment of the "civil public action." En *Review of European Community and International Environmental Law*. (RECIEL), v. 3, n° 4, Basil Blackwell Ltda,

acción pública de responsabilidad por daños causados al medio ambiente, al consumidor, a bienes y derechos de valor artístico, estético, histórico, turístico y paisajístico.[41]

Más adelante, la Ley nº 9.605 de Crímenes Ambientales de 12/02/98 ha sido muy importante al introducir innovaciones como la transacción entre el Ministerio Público y el infractor, por lo cual una gran cantidad de lesiones ambientales se resuelven mediante acuerdos a través de los cuales los infractores prestan servicios sociales como los de limpieza y mantenimiento de parques o contribuyen con la labor de organizaciones no gubernamentales (artículo 28); esta disposición complementa la de los artículos 76 y 89 de la Ley nº 9.099 de 1995. La Ley nº 9.605 también ha sido positiva al establecer la responsabilidad penal de las personas jurídicas (artículo 3); así, actualmente en Brasil existen aproximadamente 15 procesos contra ellas. En general esta ley ha tenido un efecto intimidador ya que las sanciones penales son tan severas que los empresarios se han sentido lo suficientemente disuadidos para hacer las correcciones y adaptaciones necesarias.[42]

Otra acción concretamente concebida para la defensa judicial del ambiente es el recurso de protección previsto en la Constitución de **Chile** de 1980 (artículo 20). En este país, además, la Ley nº 19.300 de 1994 posibilita la obtención de la reparación del medio ambiente dañado a cualquier persona, natural o jurídica, pública o privada perjudicadas, así como a las Municipalidades y Estados, sin perjuicio de la intervención de terceros (artículo 53).[43]

Paralelamente, de acuerdo con el artículo 54 de la Ley n° 19.300, se prevé una acción indemnizatoria que puede ser ejercida por el sujeto directamente afectado quien tiene que probar la culpa del daño, excepto si éste se produce por la transgresión de normas de calidad ambiental, a las regulaciones especiales para los casos de emergencias ambientales o las normas sobre protección, preservación o conservación ambientales establecidas en la Ley n° 19.300, en cuyo caso, en virtud del artículo 52 de dicha ley, se presume la responsabilidad del autor del daño (artículo 54).[44]

Adicionalmente, la Ley n° 19.300 incorporó la acción de requerimiento (artículo 56) que pueden ejercer las Municipalidades y demás órganos del Estado con competencia ambiental y

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London, UK, p. 257; Leme Machado, P. A. (s/f). Environmental law suits in Brazil. En *Agenda 21 and Latin America. The challenges of implementing environmental law and policy*. Inter-American Development Bank, Washington, D.C., p. 278-282; Praus, S. (s/f). Public participation and the role of tribunals. En *Agenda 21 and Latin America. The challenges of implementing environmental law and policy*. Inter-American Development Bank, Washington, D.C., p. 278-282.

41 Passos de Freitas, V. (2000), *supra* n. 3, p. 120. Este juez sostiene que el Ministerio Público ha sido exitoso al promover esta acción. Anteriormente, la Ley n° 6.938 de 1981 sobre la Política Nacional del Medio Ambiente había atribuido al Ministerio Público de la Unión y a los Estados la legitimidad para defender los intereses difusos derivados de daños al ambiente, y la Ley n° 7.347 amplió esta legitimidad. Posteriormente, la Constitución de 1988 consagró constitucionalmente la legitimidad del Ministerio Público para promover la acción civil pública para la defensa del ambiente (artículo 129, III).

42 Passos de Freitas, V. Comunicación por correo electrónico de 12/03/2001.

43 Kokisch, D. (2000). El acceso a la justicia constitucional en Chile. En *El acceso a la justicia ambiental en América Latina. Memorias del simposio judicial realizado en la Ciudad de México del 26 al 28 de enero de 2000*. Serie documentos sobre derecho ambiental, n° 9, Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) y Procuraduría Federal de Protección al Ambiente del Gobierno de México (PROFEPA), Ciudad de México, México, p. 130.

44 *Ibid*., p. 131.

cualquier persona natural o jurídica con la finalidad de sancionar a responsables de fuentes emisoras que no cumplan con los planes de prevención o descontaminación o con las regulaciones especiales para situaciones de emergencia ambiental o los infractores por incumplimiento de los planes de manejo (artículo 56).[45]

En **Argentina**, la acción constitucional de amparo ha servido de base para promover decisiones muy importantes. En este país, la responsabilidad civil conlleva la posibilidad de obtener una indemnización integral. Como la responsabilidad civil es objetiva, el daño debe ser reparado independientemente de la culpa o el dolo de quien lo produjo. Se consideran legitimados para accionar el afectado directo, el Defensor del Pueblo, el Ministerio Público y las asociaciones que luchen por la defensa de esos intereses y estén registradas conforme a la ley especial. En materia de responsabilidad penal, la Ley n° 24.051 que establece el Régimen de Desechos Peligrosos prevé la responsabilidad penal y administrativa derivada del manejo irregular de residuos peligrosos.[46]

En **Colombia**, dos acciones de tipo general han sido muy exitosas para la resolución de conflictos ambientales en los tribunales. Se trata de las acciones de tutela y las populares.

La tutela es procedente contra la acción u omisión de cualquier autoridad pública o de los particulares, cuando se produzca la vulneración o amenaza de vulneración de los derechos fundamentales; excepcionalmente se puede intentar contra decisiones judiciales. La tutela según Cepeda Espinosa[47] (...) "fue acogida para responder a una serie de problemas de muy diversa índole: la enorme brecha entre los textos constitucionales y la realidad social (problema de implementación), la distancia entre el ciudadano común y la justicia (problema de acceso), la precariedad del poder judicial frente a la administración pública y a imponentes poderes privados (problema de debilidad de la rama judicial), la rigidez y lentitud de los mecanismos procesales para defenderse de la arbitrariedad (problema del formalismo excesivo), la ausencia de herramientas para asegurar que los nuevos valores constitucionales penetrarían un minucioso ordenamiento jurídico anterior a ellos (problema de supremacía constitucional concreta y efectiva)."

Las acciones populares facultan a todas las personas a impugnar actuaciones u omisiones de las autoridades o de los particulares que atentan contra el interés público o los bienes de la comunidad (artículo 88 de la Constitución). Con estas acciones se buscó dar "un paso fundamental en el desarrollo de un nuevo derecho solidario, que responda a nuevos fenómenos de la sociedad como es el daño ambiental, los perjuicios de los consumidores, los peligros a que se ven sometidas las comunidades en su integración física y patrimonial, los daños que se causan a las mismas por el ejercicio abusivo de la libertad económica, sin consideración a conductas comerciales leales y justas."[48]

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45 *Ibid.* p. 132.

46 Dugo, S. (2000). El acceso a la justicia constitucional en Argentina. En *El acceso a la justicia ambiental en América Latina. Memorias del simposio judicial realizado en la Ciudad de México del 26 al 28 de enero de 2000*. Serie documentos sobre derecho ambiental, n° 9, Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) y Procuraduría Federal de Protección al Ambiente del Gobierno de México (PROFEPA), Ciudad de México, México, p. 102.

47 Cepeda Espinosa, M. J. (1999). La acción de tutela colombiana. En *La protección constitucional del ciudadano –Argentina, Brasil, Chile, Colombia, Costa Rica y Venezuela–.* Fundación Konrad Adenauer. Centro Interdisciplinario de Estudios sobre el Desarrollo Latinoamericano. Buenos Aires, Argentina, p. 111.

48 *Ibid.,* p. 61, sentencia de la Corte Constitucional T-437 del 30/06/92. Por otra parte, las acciones populares fueron jurídicamente desarrolladas en la Ley n° 472 sobre las acciones populares y de grupo de 1998.

En **Costa Rica**, se han estado discutiendo unos proyectos de ley que introducirían mecanismos más favorables para la resolución judicial de los conflictos ambientales. Uno de ellos es el Proyecto de Ley de Jurisdicción Agraria y Ambiental que prevé un procedimiento oral, más expedito y rápido en la materia agroambiental, y la posibilidad de dictar medidas cautelares para la protección del ambiente. El otro instrumento es el Proyecto de Código Procesal General bajo el cual se pretenden unificar los procesos civiles, laborales, contencioso-administrativos, agrarios y de familia en uno solo, incorporar un sistema de tutela cautelar para permitir a la ciudadanía proteger cualquier infracción al ambiente sin tener que esperar una sentencia de los tribunales y dar cabida a que la sentencia beneficie a grupos más amplios.[49]

En **Perú**, según el Juez Betancourt de la Corte Superior de Justicia de Lima, el Código del Medio Ambiente y los Recursos Naturales (Decreto Legislativo n° 613 del 07/09/90) marcó el inicio de la tutela jurisdiccional para la protección del ambiente en ese país. Con este nuevo código se introdujo el derecho de toda persona a exigir una acción rápida y efectiva ante la justicia en defensa del ambiente y los recursos naturales y culturales. En contraposición, gremios empresariales presionaron por la aprobación de la Ley Marco para el Crecimiento de la Inversión Privada. Así, en esta ley se introdujo un artículo destinado a desincentivar la interposición de acciones legales en defensa del ambiente al establecer la responsabilidad de daños y perjuicios por parte de quien, habiendo intentado una demanda, no resultase favorecido en la sentencia.[50]

Por otra parte, el Código Procesal Civil vigente (Decreto Legislativo n° 768 del 29/02/92) dispone que el Ministerio Público y las asociaciones sin fines de lucro pueden promover o intervenir en el patrocinio de intereses difusos, y condiciona la participación de las personas naturales.

En **Ecuador**, tanto la Constitución reformada en 1994, como la Ley de Gestión Ambiental de 1999, contemplan la acción popular para la defensa del ambiente. No obstante, de acuerdo con Pérez[51] la Ley restringió el concepto constitucional al determinar a los actores como aquellos "vinculados por un interés común y afectados directamente por la acción u omisión dañosa" … En **Bolivia**, la Ley de Medio Ambiente de 1992 contiene la acción civil derivada de los daños cometidos contra el medio ambiente, la cual puede ser ejercida por cualquier persona legalmente calificada. Con esta expresión también se limita la legitimidad de los accionantes (artículo 102).

En **Guatemala**, el Código Procesal Penal, Decreto 51-92, establece que las asociaciones cuyo objetivo sea la protección del medio ambiente pueden intervenir como agraviados en los procesos penales (artículo 117, inciso 4°) abriendo, de esta forma, un canal para intentar acciones en defensa del ambiente. Por su parte, el Código Procesal Civil establece esa posibilidad únicamente en el caso de los interdictos de obra nueva o peligrosa (aunque ha sido poco utilizado).[52]

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49 Zeledón Zeledón, R. (2000). El acceso a la justicia ambiental en Costa Rica. En *El acceso a la justicia ambiental en América Latina. Memorias del simposio judicial realizado en la Ciudad de México del 26 al 28 de enero de 2000*. Serie documentos sobre derecho ambiental, n° 9, Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) y Procuraduría Federal de Protección al Ambiente del Gobierno de México (PROFEPA), Ciudad de México, México, p. 155.

50 Betancourt Bossio, P. A. (2000). El acceso a la justicia ambiental en Perú. En *El acceso a la justicia ambiental en América Latina. Memorias del simposio judicial realizado en la Ciudad de México del 26 al 28 de enero de 2000*. Serie documentos sobre derecho ambiental, n° 9, Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) y Procuraduría Federal de Protección al Ambiente del Gobierno de México (PROFEPA), Ciudad de México, México, p. 181.

51 Pérez, E. (2000). Derecho ambiental. Serie Jurídica. Mc Graw Hill. Santafé de Bogotá, Colombia, p. 111.

52 Instituto de Derecho Ambiental y Desarrollo Sustentable –IDEADS– (1999). Manual de

En **Honduras**, según la Lic. Edy Lagos de la Fiscalía Especial de Medio Ambiente, el delito ambiental es un concepto nuevo en el contexto judicial nacional, éste se aplica en el país a partir de 1992 con la Ley General del Ambiente. La Fiscalía fue creada en 1994, y aún hay poca experiencia en la materia; a la fecha se han conocido cuatro casos con decisiones firmes por parte de los tribunales por delitos forestales y usurpación de agua.[53]

Y, en **El Salvador**, por ejemplo, la acción civil de reparación de daños ambientales es ejercida por la persona natural o jurídica que ha sufrido el daño en forma directa e inmediata; por cinco ciudadanos miembros de una comunidad o por el Fiscal General de la República.[54]

4. Balance de los resultados de las reformas jurídicas ambientales para el acceso a la justicia ambiental

Las reformas se perciben como cambios puntuales de país en país, y al interior de cada uno de ellos. Las mismas no guardan una relación causal con los cambios judiciales abordados en el capítulo anterior, ni forman parte de un paquete financiero de reformas como aquellos. Por otra parte, se aprecia que el reconocimiento del derecho a un ambiente sano, la promulgación de leyes o normas jurídicas con instrumentos reguladores y preventivos, y el establecimiento de delitos ambientales, entre otros, no dejan de ser elementos favorecedores al acceso a la justicia ambiental.

VI. Desarrollos jurisprudenciales ambientales

Las reformas judiciales y jurídicas tendrían que ponerse a prueba frente a países, casos, concepciones, figuras jurídicas y fallos judiciales concretos para analizar el alcance de su impacto en la defensa judicial del ambiente en América Latina.

Lo más adecuado, en los países centroamericanos, sería evaluar la influencia de los cursos de capacitación dictados a los jueces, fiscales y otros operadores jurídicos sobre la protección ambiental y el uso sostenible de los recursos naturales, las acciones de fortalecimiento de organizaciones no gubernamentales de derecho ambiental, así como el efecto de los manuales explicativos de la legislación ambiental, en los fallos judiciales en el período bajo estudio. La escasez de información accesible a través de fuentes secundarias dificulta esta tarea.

Para otras regiones o países de América Latina, lo apropiado sería examinar en qué medida las reformas judiciales generales y las referidas al acceso a la justicia en particular (en aquellos países donde las reformas explícitamente incluyeron este componente), han pautado una diferencia en la resolución de problemas ambientales en los tribunales. De nuevo, ante la ausencia de información sistematizada, cualitativa y cuantitativamente, resulta aventurado emprender este análisis.

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legislación ambiental de Guatemala, http://www.rolac.unep.mx/library/derecho/guatem.doc. Sitio consultado en enero de 2001.

53 Tinoco, R. Red de Desarrollo Sostenible de Honduras. Comunicación por correo electrónico de 17/12/2000 y http://rds.org.hn/alerta-ambiental/docs/fiscalia_ambiente/index.html. Sitio consultado en diciembre de 2000.

54 Fundación Salvadoreña de Derecho Ambiental –FUNDASALDA– (1998). Manual de derecho ambiental de El Salvador, http://www.rolac.unep.mx/library/derecho/salvador.doc. Sitio consultado en enero de 2001.

La prueba para las reformas jurídicas podría ser más sencilla porque como se vio en el capítulo precedente, durante los noventa, en todos los países se hicieron reformas constitucionales o legales en el área ambiental. De especial significación, desde un punto de vista político y social, fueron las de orden constitucional. No obstante, el acceso a la información también constituye una limitante para este examen. No todos los países parecen disponer de investigaciones y comparaciones sustantivas y cuantitativas sobre la evolución de las instituciones y figuras jurídicas para la protección ambiental.

Una excepción es México y su principal entidad para vigilar y promover el cumplimiento de la legislación ambiental y de los recursos naturales, cual es la Procuraduría Federal de Protección al Ambiente (PROFEPA). Esta, por ejemplo, en su informe trianual (1995-1997)[55] indicó que durante ese período empezaron a aumentar los casos jurisdiccionales, principalmente los contencioso-administrativos con fundamento en impugnaciones ulteriores a resoluciones sobre recursos administrativos, también en respuesta a los juicios de nulidad y a los juicios de amparo.

En todo caso, y en el marco de las reformas judiciales y jurídicas comentadas en los capítulos anteriores, a continuación se recogen decisiones judiciales de diferentes países, sobre distintas materias, producto de una diversidad de acciones y de una variedad de pretensiones. Sus rasgos más parecidos son que la mayoría proviene de la máxima autoridad judicial del país y que reflejan fallos favorecedores al reconocimiento de un ambiente sano y de la protección ambiental reclamada. Los fallos judiciales pueden dar una idea del impacto de las reformas, tanto judiciales como jurídicas. Lo curioso, como se comprobará más adelante, es que en varios países, no fueron precisamente las reformas judiciales o jurídicas las que motorizaron un mayor acceso a la justicia ambiental, sino las demandas por individuos o grupos sociales y la apertura, visión, sensibilidad, atrevimiento e inteligencia de las Cortes o tribunales superiores hacia los conflictos que llegaron a sus despachos.

Algunos jueces latinoamericanos son los que han dicho que … "han podido encontrar algunas soluciones novedosas, hasta donde lo permite la discrecionalidad que les concede la legislación vigente. No pocas veces, estas soluciones han terminado siendo incorporadas a la propia legislación. El derecho ambiental jurisprudencial se ha transformado, de esa manera, en una importante fuente del derecho ambiental positivo."[56]

Por otra parte, Fabra Aguilar[57] ya en 1994 expresaba "se puede argumentar, pero ninguna otra región del mundo ha visto la promoción y protección de derechos ambientales con el entusiasmo y el progreso de América Latina. El poder judicial ha jugado un papel clave en el reconocimiento formal y cumplimiento de los derechos ambientales y las cortes (que comparten una tradición similar) están desarrollando un verdadero enfoque regional para la protección del derecho a un ambiente sano, contribuyendo rápidamente a definir y clarificar su contenido." (Traducción de la autora).

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55 Procuraduría Federal de Protección al Ambiente –PROFEPA– (1998). Informe trianual 1995-1997. Secretaría de Medio Ambiente, Recursos Naturales y Pesca (SEMARNAP). México D.F., México.

56 Declaración del simposio judicial sobre derecho ambiental y desarrollo sostenible: El acceso a la justicia ambiental en América Latina, realizado del 26 al 28 de enero de 2000 en la Ciudad de México, México, párrafo 10, *supra* n. 4.

57 Fabra Aguilar, A. (1994). Enforcing the right to a healthy environment in Latin America. En *Review of European Community and International Environmental Law (RECIEL*), v. 3, n° 4, Basil Blackwell Ltda, London, UK, p. 215. Esta autora revisó los desarrollos más importantes de la protección ambiental desde la perspectiva de los derechos humanos en los tribunales nacionales de América Latina de los países de Argentina, Chile, Colombia, Costa Rica, Ecuador y Perú en plena efervescencia de las reformas judiciales y jurídicas descritas en los capítulos precedentes.

La selección de resoluciones judiciales ambientales se presenta por grupos de países. Se proponen dos grandes categorías de países en virtud de su mayor o menor actividad judicial ambiental. El primer grupo (de mayor actividad) lo componen países como: Argentina, Brasil, Chile, Colombia y Costa Rica. El segundo grupo (de menor actividad) lo integran países como: Ecuador, Honduras, México, Nicaragua, Perú, Paraguay, Uruguay y Venezuela. Con respecto a la situación de Cuba, el juez Narciso Cobo ha dicho que "las reglas actuales de procedimiento de aplicación por las salas en lo económico en nuestro país, no fueron diseñadas ni concebidas tomando en consideración las exigencias de un proceso medio-ambiental" y apuntó que están en el proceso de superar esta limitación.[58] Los criterios para la selección de las sentencias fueron, en primer lugar, resultados positivos o interpretaciones novedosas y en segundo lugar, acciones, temas y actores representativos de una amplia variedad de casos.

1. Decisiones de países con mayor actividad judicial ambiental

1.1 Argentina

El volumen de fallos y jurisprudencia ambiental en Argentina es tal que, ha servido de base para una publicación sobre la materia de parte del Centro Interdisciplinario de Estudios sobre el Desarrollo Latinoamericano (CIEDLA) en 1997.[59] La recopilación que comprende la jurisdicción nacional y de las Provincias de Buenos Aires y Mendoza recoge casi 50 decisiones relacionadas con el ambiente y la salud pública que se remontan a antes de la década de los noventa.

El impacto de las decisiones judiciales ambientales en Argentina ha llevado a que el Juez de la Cámara Federal de Apelaciones de La Plata, Sergio Dugo, afirme: "La legislación ambiental argentina se ha nutrido en gran medida de la jurisprudencia de los tribunales. El caso Kattan, Alberto E. y otro c/ Poder Ejecutivo Nacional en 1983 es muy destacado porque se afirmó que para accionar judicialmente en defensa del ambiente no era imprescindible la legitimación individual y se expresó que el derecho de todo habitante a la no modificación de su hábitat constituía un derecho subjetivo."[60]

Otro ejemplo, a través del cual se demuestra el papel de la Corte Suprema de Justicia de Argentina en favor de la protección ambiental es el caso Almada c/ Copetro (mayo de 1993). Aquí la Corte Suprema dictaminó que la tutela del medio ambiente, patrimonio de todos, justifica soluciones expeditas, usualmente extrañas a los tiempos que suele tomarse la justicia.[61]

Más decisiones importantes han sido las derivadas de los casos que se reseñan a continuación:

- La Municipalidad de Tandil introdujo un recurso contra la empresa Transportes Automotores La Estrella S.A. requiriendo la reparación de los daños ocasionados por un ómnibus

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58 Cobo Roura, N. (2000). El acceso a la justicia constitucional en Cuba. En *El acceso a la justicia ambiental en América Latina. Memorias del simposio judicial realizado en la Ciudad de México del 26 al 28 de enero de 2000*. Serie documentos sobre derecho ambiental, n° 9, Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) y Procuraduría Federal de Protección al Ambiente del Gobierno de México (PROFEPA), Ciudad de México, México, p. 164.

59 Rovere, M.B. (1997). Medio ambiente y salud pública: Compilación de jurisprudencia comentada. Centro Interdisciplinario de Estudios sobre el Desarrollo Latinoamericano. Konrad Adenauer Stiftung. Buenos Aires, Argentina, p. 331.

60 Dugo, S. (2000), *supra* n. 46, p. 104.

61 *Ibid* p. 104.

de dicha empresa, que se desplazó sin conductor por la calle Avellaneda de Ciudad de Azul, chocando contra la fuente y el grupo escultórico Las Nereidas.

La Cámara de Apelaciones en sentencia del 22/10/96 (Cámara de Apelaciones en lo Civil y Comercial, Sala II de Ciudad de Azul) dictaminó: La admisión del "daño colectivo extrapatrimonial sufrido por la comunidad de Tandil –incluidos sus ocasionales visitantes– por la privación del uso, goce y disfrute de un bien relevante del dominio público municipal"; igualmente, que con base a la evolución de la doctrina y la jurisprudencia, la municipalidad de Tandil podía actuar en "representación globalizante de todos y cada uno de los sujetos cuyo derecho difuso se ha vulnerado; y que debido a las dificultades para cuantificar el daño moral colectivo, su cuantía debía ser reducida y, en igual sentido, se pronunció con respecto al resto del daño resarcible recurrido –consistente en la minoración de la obra– ya que pese a la tarea de restauración artística, ésta no recuperaría su carácter primigenio.[62]

- Dante Duarte y otros apelaron de la sentencia del Juzgado Nacional de Primera Instancia en lo Civil que se pronunció sobre la demanda por daños y perjuicios contra la Fábrica de Opalinas Hurlingham (dedicada a la fabricación de vidrio opal). La demanda se motivó en los sufrimientos físicos y posterior muerte del Sr. Duarte. Los padecimientos se imputaron al arsenismo crónico provocado por la contaminación ambiental originada por la explotación comercial de la demandada.

  La Cámara Nacional Civil de la Capital Federal, Sala I, en fecha 30/06/94 pronunció que quedó demostrado que los efluentes producidos por la empresa contenían compuestos arsenicales y otros productos químicos. Que las autoridades municipales y provinciales fueron negligentes en el control de la legislación que regulaba las actividades de la fábrica. También, que constantemente hubo conflictos entre la fábrica, los vecinos de la zona, la municipalidad y con otros organismos del Estado. Los conceptos por los cuales la demandada fue condenada a indemnizar fueron: costos del tratamiento, el daño moral por la lesión a las "legítimas afecciones de la esposa e hijos" del Sr. Duarte, el lucro cesante durante el período de internación, asistencia y tratamiento hasta su fallecimiento. Se hizo referencia al daño ecológico como "daño a futuro" y "daño genético" ocasionado por la contaminación de la demandada y sus efectos en generaciones futuras."[63]

1.2 Brasil

La producción jurisprudencial de Brasil es extensa, principalmente en materia civil como se mencionó en el capítulo anterior. La misma data desde mediados de los 80 gracias a la acción civil pública establecida en la Ley n° 7.347 de 1985. Lo siguiente es una ínfima muestra del contenido y alcance de las resoluciones judiciales tan ricas de este país.

- El Ministerio Público interpuso una acción civil pública contra la Unión Federal para solicitar la suspensión inmediata de cualquier actividad conducente a la construcción de la hidrovía Paraguay-Paraná.

  El Tribunal Federal de 2ª Vara del Estado de Mato Grosso concedió la acción con la finalidad de que la Unión se abstuviese de realizar o autorizar la realización de cualquier

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62 Sentencia de la Cámara de Apelaciones en lo Civil y Comercial, Sala II de Ciudad Azul, Provincia de Buenos Aires, 22/10/96, expediente 47.756, Municipalidad de Tandil contra T.A. La Estrella S.A. y otro. Publicaciones DJBA, t. 152, p. 21.

63 Sentencia de la Cámara Nacional Civil de la Capital Federal, Sala I, 30/06/94, expediente 93.318. Duarte, Dante y otros contra Fábrica de Opalinas Hurlingham S.A. Publicaciones LA LEY, 1995-C, p. 361.

estudio u obra de implementación de la hidrovía Paraguay-Paraná o iniciar su funcionamiento o disponer de recursos para tal fin antes que el Congreso Nacional, una vez oída a las comunidades indígenas, autorizase el proyecto. Fijó una multa diaria de 100.000 reales en caso de incumplimiento de la orden.[64]

- La empresa GR Extraçao de Areia y Transportes Rodoviarios Ltda recurrió la decisión dictada por el Tribunal inferior a raíz de la acción civil pública propuesta por el Ministerio Público sobre responsabilidad por daños causados al ambiente.

  El Tribunal de Justicia del Estado de Paraná en sentencia del 01/03/94 declaró que se comprobaron los daños que la empresa venía causando al ambiente al extraer arena del margen derecho del río Iguaçu, por lo tanto, procedió la acción propuesta por el Ministerio Público y condenó a la empresa a responder por los daños causados al ambiente, a reforestar el área dañada y a presentar una evaluación de impacto ambiental.

  En cuanto a un argumento sobre la *ultra petita* el tribunal dictaminó que no se había decidido *ultra petita* ya que la evaluación del impacto ambiental ya había sido solicitada por SUREHMA y, además, de acuerdo con la opinión de la Procuraduría General de Justicia, la actividad minera requiere de la aprobación previa de la evaluación del impacto ambiental y la subsecuente fiscalización de las medidas comprometidas.[65]

- El Ministerio Público ejerció acción penal contra Orlando Linden, ex-Prefecto Municipal y Hermes Gildo Masera, Prefecto Municipal de Rolante-RS porque, de forma continuada y sin mediar licencia ambiental, expusieron a seres humanos, animales y vegetales a una situación de peligro. Tal situación se derivó del depósito de 4 toneladas diarias de residuos sólidos domésticos y hospitalarios, así como del depósito diario de residuos sólidos industriales provenientes de las actividades de las industrias areneras a cielo abierto, junto a una ribera en la localidad de Gloria, en un área considerada de preservación permanente.

  El Tribunal de Justicia del Estado do Rio Grande do Sul, en sentencia del 30/04/98 concluyó que existían suficientes pruebas documentales para demostrar los daños al ambiente. Consideró que los acusados debían ser responsables desde el punto de vista penal por el daño ocasionado al medio ambiente local ya que ellos no hicieron todo lo que debían o podían haber hecho para evitar lo ocurrido. En consecuencia, el Tribunal fijó como sanciones penales dos años de reclusión para cada uno de los condenados y 10 días de multa. Por cierto, la pena privativa de la libertad podía ser sustituida por la prestación de servicios gratuitos a la comunidad.[66]

1.3 Chile

En el capítulo anterior se indicó que la Constitución de Chile contempla como principal instrumento para la protección del ambiente el llamado "recurso de protección" que, si bien tiene limitantes en materia ambiental, ha servido para garantizar en buena medida los derechos fundamentales de las personas en este tema.[67] Una de las primeras y más significantes sentencias ambientales fue la dictada el 23/06/88 por la Corte de Apelaciones de Copiacó en el caso de Pedro

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64 Sentencia del Tribunal de Justicia da 2ª Vara, Estado de Mato Grosso, 19/01/98, expediente 1997.36.00.005387-0, consultada en copia del original.

65 Sentencia del Tribunal de Justicia del Estado de Paraná, 01/03/94, expediente 20.277-7, consultada en copia del original.

66 Sentencia del Tribunal de Justicia del Estado do Rio Grande do Sul, 30/04/98, expediente 695062950, consultada en copia del original.

67 Kokisch, D. (2000), *supra* n. 43, p. 125.

Flores San Martín y otros contra la empresa de gobierno Codelco-Chile, división El Salvador ejerciendo recurso de protección y argumentando que la empresa había estado contaminando por décadas la costa de Chañaral con relaves mineros provenientes de la explotación del mineral de cobre en El Salvador, los cuales eran altamente contaminantes, y que la empresa desvió el río Salado para hacerlo desembocar en la Caleta Palitos del Parque Nacional Pan de Azúcar ocasionando destrucción del hábitat submarino y de la superficie, mediante el vaciado de borras tóxicas.

La Corte pronunció que: "Los presentes recursos revisten singular importancia por estar referidos a proteger el derecho a vivir en un medio ambiente libre de contaminación y a preservar de ella a la naturaleza, problemas que afectan no sólo al bienestar, sino la vida misma del hombre, y por cierto, no solo el de una comunidad concreta de hombres presentes, sino que generaciones futuras reclamarán la falta de previsión de sus ancestros, si se contamina el medio ambiente y se destruye la naturaleza, con lo cual se agotan los recursos renovables y el ecosistema pierde su capacidad de regenerarse o de cumplir sus funciones principales en los procesos biofísicos."

En consecuencia, la Corte decidió acoger los recursos de protección y ordenó que en el plazo máximo de un año desde la ejecución del fallo, la División Salvador de CODELCO Chile, terminase definitivamente el depósito de sus relaves, originados en la explotación industrial de El Salvador, en el Océano Pacífico.

Otros fallos interesantes han sido los dictados con ocasión de los casos que se sintetizan a continuación:

- Sentencia de la Corte Suprema del 19/01/99 que confirmó la sentencia apelada y acogió el recurso de protección incoado por "Administración de Hoteles y Restaurant S.A. o Costanera S.A. en contra del establecimiento The Old Boston Club en cuanto al horario nocturno y niveles de ruido. Sin embargo, rechazó la solicitud de reparación de perjuicios alegando que esa pretensión es "ajena a la naturaleza de la acción cautelar de protección."[68]

- Sentencia de la Corte Suprema de fecha 19/03/97 donde Alejandro Navarro y otros, por sí mismo y en representación del Movimiento Pro-Defensa del Medio Ambiente ejercieron el recurso de protección en contra de la Comisión Regional del Medio Ambiente de Magallanes y Antártica Chilena por la expedición de una resolución violatoria del derecho a un ambiente sano, asociada con deficiencias en el cumplimiento de los requerimientos sobre la evaluación del impacto ambiental de la explotación forestal solicitada por la empresa transnacional Forestal Trillium. En la sentencia, la Corte dictaminó que el acto recurrido era ilegal, arbitrario y que vulneraba el derecho de los recurrentes a vivir en un ambiente libre de contaminación. En el contexto de la decisión se produjeron opiniones interpretativas muy importantes para fijar nuevos conceptos y alcances de los juicios ambientales.

  En efecto, en el fallo la Corte se pronunció a favor de la posibilidad para los ciudadanos de demandar sin tener que demostrar el daño directo. Además, la decisión confirmó la necesidad de aprobar normas que desarrollen las leyes. Es de resaltar que las normas sobre impacto ambiental que no se habían dictado hasta la fecha, se aprobaron inmediatamente después del caso Trillium.[69]

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68 Sentencia de la Corte Suprema, 19/01/99, consultada en copia del original.

69 Organización de Estados Americanos –OEA– (1999). Inter-American strategy for the promotion of public participation in decision-making for sustainable development (ISP), ISP legal and institutional frameworks case studies. The Trillium decision in Chile: Constitutional standing for citizen review of environmental impact procedures, http://www.ispnet.org/documents/indice.html. Sitio consultado en noviembre de 2000.

- Sentencia de la Corte de Apelaciones de Copiapó del 22/06/92 confirmada por la Corte Suprema el 6 de agosto de 1992 sobre el recurso de protección interpuesto por Homero Callejas Molina y otros contra la Compañía Minera del Pacífico S.A. Las sentencias ordenaron a la compañía minera poner término a la contaminación por la planta de pellets y la abstención de evacuar los relaves en el mar de la bahía Chapaco, a menos que adoptara medidas de neutralización de las descargas en un determinado plazo.[70]

1.4 Colombia

Colombia es otro de los países que sobresale por la prolijidad de sus sentencias ambientales[71] y su contenido esclarecedor, creativo y pionero.

La relevancia de la protección judicial del derecho a un ambiente sano y la protección ambiental en Colombia originó que la Sala Plena de la Corte Constitucional, a raíz de la acción de tutela interpuesta por el Sr. Gerardo Ardila en contra de la "decisión del Consejo Nacional consistente en la orden de utilizar desfoliantes prohibidos en especial de fumigar con Glisofato los cultivos de amapola", considerara necesario elaborar un proyecto de fallo que unificara los criterios de la Corte en materia ambiental y sus opciones de protección.[72]

Si bien son muchos los puntos a resaltar del documento, el referido al amparo judicial del derecho a un ambiente sano y los derechos colectivos y difusos se presenta aquí: "La concepción jurídica de los derechos ha tenido por siglos su centro de gravedad en la idea de derecho subjetivo, esto es, en una facultad o prerrogativa otorgada por el derecho y que responde a la naturaleza misma del hombre. Una de las implicaciones más complejas de las nuevas relaciones impuestas por el Estado social de derecho, tiene que ver con el surgimiento de otro tipo de derechos construidos bajo categorías diferentes a la de los derechos subjetivos. Estos nuevos derechos son el resultado del surgimiento de nuevas condiciones sociales y económicas que afectan gravemente la vida de los ciudadanos y el goce de sus derechos y para las cuales los mecanismos jurídicos clásicos de protección de derechos resultan insuficientes."[73]

Diversos casos que concluyeron en sentencias ejemplares son:

- El del procurador delegado para asuntos ambientales y agrarios que intentó la acción de inconstitucionalidad de los párrafos 6° (parcial) y 7° (parcial) del artículo 1° de la Ley n° 507 de 1999 relacionados con los procedimientos de adopción del proyecto del plan de ordenamiento, de las licencias ambientales y de los planes de manejo ambiental, los cuales establecen el silencio positivo como eventual mecanismo de aprobación.

  Por medio de la sentencia del 12/04/2000 la Corte Constitucional declaró inexequibles determinadas expresiones y consideró que "aun invocando un fin legítimo, no es dable a

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70 Kokisch, D. (2000), *supra* n. 43, p. 128.

71 Véase por ejemplo el registro de fallos sobre medio ambiente y licencias ambientales de la Corte Constitucional desde 1992 hasta el primer trimestre de 1996 y que en total suman 70 resoluciones. Corporación Autónoma Regional del Valle de Cauca (1996). Base de datos jurisprudenciales en medio ambiente y licencias ambientales, preparado por María Teresa Restrepo Puentes. Colombia.

72 Sentencia SU-067 de la Corte Constitucional, 24/02/93. Disco Compacto, Legislación e Informática y CIA, LTDA (09/11/98). Sistema Colombiano de Jurisprudencia Constitucional, 1993-1998. Copia registrada a nombre de la Defensoría del Pueblo, Santafé de Bogotá, Colombia.

73 *Ibid.*

la ley relevar al Estado en su obligación constitucional de prevenir el deterioro ambiental, paradójicamente, a título de sanción por la actitud omisiva y morosa de algunas autoridades" (por cierto, continuó la jurisprudencia ya asentada en este sentido).[74]

- El de la señora María Elena Burgos, residente en el municipio de Campoalegre (Huila), que ejerció la acción de tutela para que se le protegieran sus derechos fundamentales a la salud y al medio ambiente que estaban siendo vulnerados por sus vecinas Soledad Herrera Bustos y María Nirza Alvarez Collazos, debido a que éstas poseían criaderos de cerdos en sus viviendas que emanaban malos olores, produciéndoles fiebre y asfixia a ella y su familia.

  Por medio de la sentencia del 27/02/97 la Corte Constitucional estimó que había pruebas suficientes sobre las pestilencias y contaminación de las porquerizas vecinas y que a la demandante, efectivamente, se le estaba vulnerando su derecho a disfrutar de un medio ambiente adecuado y que, además, habían transcurrido 4 años sin que se resolviera el problema. En consecuencia, acordó revocar las sentencias de los Juzgados inferiores y concedió la tutela a los derechos a la salud y al medio ambiente sano de la señora María Elena Burgos. También ordenó la erradicación de las porquerizas de la señora Soledad Herrera Burgos que estaban en su vivienda.[75]

- El de la ciudadana Marlene Beatriz Durán Camacho, que en ejercicio de la acción pública de inconstitucionalidad demandó la inconstitucionalidad de varios artículos de la Ley nº 99 de 1993 y del Decreto Ley n° 2.811 de 1974 relacionados con tarifas y tasas ambientales.

  La Corte en sentencia del 26/09/96 estimó entre otros que:

  "La Ley n° 99 de 1993, especialmente, los artículos cuestionados, implican la generación de costos económicos para quienes causan efectos nocivos sobre los sistemas ambientales, por ello, el Congreso de la República, al expedir el marco jurídico regulatorio del medio ambiente, y en atención al principio constitucional del "desarrollo sostenible", ha utilizado el mecanismo económico de la tasa con el fin de trasmitir un costo a quienes se beneficien de una u otra manera con la utilización de los recursos naturales, con lo cual se está financiando las medidas correctivas necesarias para sanear los efectos nocivos de los ecosistemas y a través de la misma, la ley ha adoptado un sistema económico de ingresos con destino a las Corporaciones Autónomas Regionales, encargadas de ejecutar las políticas, planes, programas y proyectos sobre el medio ambiente y recursos naturales renovables."

  "En el caso de que se ocupan las disposiciones acusadas existen dos clases de servicios que originan las dos clases de tasas en cuestión, es decir, de una parte se trata de mantener a disposición de todas las personas el aire, agua o suelo para que depositen sus desechos, que da lugar a una tasa retributiva y de otra se encuentra el servicio de garantizar la renovabilidad de los recursos, que da lugar a una tasa compensatoria."[76]

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74 Sentencia C-431 de la Corte Constitucional, 12/04/2000, consultada en copia del original.

75 Sentencia T-95 de la Corte Constitucional, 27/02/97. Disco Compacto, Legislación e Informática y CIA, LTDA (09/11/98). Sistema Colombiano de Jurisprudencia Constitucional, 1993-1998. Copia registrada a nombre de la Defensoría del Pueblo, Santafé de Bogotá, Colombia.

76 Sentencia C-495 de la Corte Suprema de Justicia, 26/09/96. Disco Compacto, Legislación e Informática y CIA, LTDA (09/11/98). Sistema Colombiano de Jurisprudencia Constitucional, 1993-1998. Copia registrada a nombre de la Defensoría del Pueblo, Santafé de Bogotá, Colombia.

1.5 Costa Rica

Según el magistrado Ricardo Zeledón[77] de la Corte Suprema de Justicia de Costa Rica "hace algún tiempo era difícil conocer un asunto de esta naturaleza o jurisprudencia específica, hoy existen múltiples vías judiciales, el volumen crece en forma abundante, e incluso ya comienza a configurarse un verdadero derecho del ambiente jurisprudencial como consecuencia de los criterios reiterados de los tribunales ubicados en la cúspide del sistema judicial. La jurisprudencia incluso permitió justificar la existencia de un cierto derecho al ambiente como derecho fundamental, sin estar previsto en la Constitución Política, y más tarde frente a este planteamiento jurídico las reformas constitucionales decantaron casi como consecuencia."

La jurisprudencia ambiental en Costa Rica es abundante y proviene principalmente de los fallos de la Sala Primera de Casación y de la Sala Constitucional. A modo de ejemplo se citan los siguientes:

- Sentencia de la Sala Constitucional n° 0725 del 06/02/98 a través de la cual se reconoce la obligación del Estado de proporcionar la protección necesaria para que todos los individuos disfruten de un ambiente libre de contaminación y se condena a una municipalidad al pago de las costas, daños y perjuicios derivados del funcionamiento inadecuado de una feria agrícola.[78]

- Sentencias n° 0112 y n° 0113 del 11/10/95 en las que la Sala Primera sentó el principio de la responsabilidad objetiva para quien dañe el ambiente y ordenó las indemnizaciones del caso.[79]

- Sentencia n° 0144 del 09/01/96 de la Sala Constitucional donde se reconoce que la explotación agrícola o el aprovechamiento del recurso forestal están sujetos al régimen de autorizaciones del Estado por razones de interés social o colectivo.[80]

- Sentencia n° 1.700 del 16/04/93 donde la Sala Constitucional aceptó la legitimación de cualquier persona para accionar la tutela de los recursos forestales en la instancia constitucional.[81]

2. Decisiones de países con menor actividad judicial ambiental

2.1 Ecuador

- El Alcalde y el Procurador Síndico Municipal del I. Municipio de Cuenca interpusieron la acción de amparo constitucional en contra del Sr. Juan Ugalde Núñez para que suspendiera y diera por terminada la explotación piscícola en la laguna de Llaviucu, debiendo mantenerse como área protegida dentro de un Parque Nacional.

  El Tribunal Constitucional, a través de la decisión del 26/11/98 dictaminó que se probó "el serio e inminente riesgo a la salud comunitaria de la tercera ciudad del país" a causa de la

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77 Zeledón Zeledón, R. (2000), *supra* n. 49, p. 145.

78 Sentencia n° 0725 de la Sala Constitucional, 06/02/98, consultada en copia del original.

79 Zeledón Zeledón, R. (2000), *supra* n. 49, p. 148-154.

80 *Ibid*., p. 148-154.

81 *Ibid*., *supra* n. 49, p. 148-154.

contaminación de las aguas de la laguna Llaviucu. También que, la Ley Forestal, que prohibe el deterioro de los recursos naturales en las áreas naturales prevalecía sobre el convenio firmado entre el Sr. Ugalde y el Estado; convenio que, por demás, era ilegítimo por contravenir normas legales sobre el tratamiento y manejo de las áreas protegidas. Finalmente, aceptó la acción de amparo constitucional y declaró "suspendida de manera inmediata la explotación piscícola que mantiene el accionado en la laguna de Llaviucu ubicada en el Parque Nacional del Cajas, Provincia de Azuay."

En la decisión, el Tribunal también tomó en cuenta como referencia la sentencia de la Corte Constitucional de Colombia que resolvió la acción de tutela incoada por el Defensor del Pueblo en nombre de la Comunidad Indígena U'wa en contra del Ministerio de Medio Ambiente y la Empresa Privada Occidental de Colombia, Inc.[82]

- Teodoro Bustamante Ponce, representante de la Fundación Ecuatoriana para la Conservación y Protección de la Naturaleza (Fundación Natura) ejerció un recurso de amparo constitucional contra PETROECUADOR y PETROINDUSTRITAL ante el Juez Undécimo de lo Civil de Pichincha. La Fundación expuso que PETROECUADOR continuaba produciendo combustibles con tetraetilo de plomo, a pesar de las obligaciones constitucionales que ordenan al Estado garantizar el derecho a vivir en un medio ambiente libre de contaminación y de las disposiciones de la Ley de Regulación de la Producción y Comercialización de Combustibles que prohibía la utilización de tetraetilo de plomo en la preparación de gasolinas. Igualmente, expuso los efectos dañinos de esa substancia en la salud humana.

El Juez de primera instancia declaró el amparo parcialmente con lugar. Ante la apelación de las partes, el Tribunal Constitucional conoció de la causa; éste en fecha 19/06/98 confirmó la sentencia apelada y resolvió exigir a PETROECUADOR y sus empresas filiales cumplir con la "ineludible obligación de mejorar la calidad de los combustibles a fin de que éstos no contaminen el ambiente; en agilizar los trámites ante los correspondientes Ministerios; preparar los estudios que sean necesarios y de requerir una nueva legislación, ante el Congreso Nacional, para que puedan tener el marco legal adecuado, que les permita a la brevedad posible, concluir los proyectos de modernización de sus estructuras, para beneficio de la comunidad."[83]

2.2 Honduras

- Por denuncia policial se abrió una averiguación penal en contra de Salvador Irias del Municipio Tatumbla, Departamento de Francisco Morazán, por la extracción de madera de la quebrada Las Olominas, y de la tala de árboles en la zona forestal protegida Uyuca, dentro del área de protección de una corriente de agua. La Fiscalía del Ambiente recopiló diversas pruebas que demostraron daños al suelo, erosión y disminución del cauce de la quebrada que abastece a varias comunidades.

  El Juzgado Tercero de Letras en lo Criminal del Departamento de Francisco Morazán falló condenando a Salvador Irias a dos años de reclusión por la comisión del delito de aprovechamiento ilegal del bosque en perjuicio de la Administración Forestal del Estado de Honduras. La Corte Primera de Apelaciones dictó sentencia el 10/05/2000 confirmando la sentencia condenatoria venida en consulta.[84]

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82 Sentencia del Tribunal Constitucional, 26/11/98, expediente 547-98-RA, consultada en copia del original.

83 Sentencia del Tribunal Constitucional, 19/06/98, expediente 221-98-RA, consultada en copia del original.

84 Sentencia de la Corte Primera de Apelaciones, 10/05/2000, consultada en copia del original.

- Denuncia de Manuel de Jesús Cruz contra Bernardino Cruz ante el Juez de Paz de lo Criminal de Sabanagrande por la captación de agua de una pila de concreto que cortó el suministro de agua a tres familias de la zona. El demandante alegó que Bernardino Cruz "les niega el derecho a usar el agua" sin ser propietario de la fuente.

  El Juzgado Tercero de Letras en lo Criminal del Departamento de Francisco Morazán falló condenando a Bernardino Cruz a dos años de reclusión por la comisión del delito de usurpación de aguas en perjuicio del Manuel de Jesús Cruz. La Corte Primera de Apelaciones dictó sentencia el 02/03/2000 confirmando la sentencia condenatoria venida en consulta.[85]

2.3 México

Un caso de relevancia en la jurisprudencia ambiental mexicana fue el decidido el 12/11/96 por el Primer Tribunal Colegiado en Materia Administrativa del Primer Circuito que concedió el amparo indirecto y el recurso de revisión solicitados por Homero Aridjis Fuentes, como persona física y el Grupo de los Cien Internacional. El Tribunal reconoció que la materia regulada por el acuerdo reclamado (simplificación del trámite de la presentación de la manifestación de impacto ambiental) sí incide en la protección del ambiente. Además, admitió que el Acuerdo de Cooperación Ambiental de América del Norte sí concede legitimación a los particulares para intervenir o gestionar la aplicación de leyes, reglamentos y normas ambientales.[86]

Por lo demás, ya se ha comentado la situación del acceso a la justicia contencioso administrativa de México.[87]

2.4 Nicaragua

El 27/02/97 la Corte Suprema de Justicia de Nicaragua por primera vez ordenó la suspensión de una concesión maderera a una transnacional (Sol del Caribe, S.A. –SOLARCASA–). Esto ocurrió por un recurso de amparo interpuesto por dos concejales de la región del Atlántico Norte. La empresa contaba con una concesión para explotación de madera por parte del Instituto de Recursos Naturales (IRENA) del 10/09/93. La decisión de la Corte consideró inconstitucional la concesión. Sin embargo, el dictamen no fue cumplido y la fábrica continuó trabajando (instalando una planta de plywood sin la evaluación del impacto ambiental, cortando más de 16.000 árboles y no cumpliendo compromisos con la comunidad indígena Fenicia, entre otros). Por ello, los concejales interpusieron un nuevo amparo donde pedían que se ordenase al Presidente de la República exigir al Ministro del Ambiente y de los Recursos Naturales cerrar definitivamente la empresa. Así fue decidido por la Corte en febrero de 1998.[88]

2.5 Paraguay

En Paraguay, a pesar que la Constitución de 1992 incorporó el derecho a un ambiente sano y se ampliaron las facultades del Ministerio Público para defender los derechos ambientales y

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85 Sentencia de la Corte Primera de Apelaciones, 02/03/2000, consultada en copia del original.

86 Sentencia del Primer Tribunal Colegiado en Materia Administrativa del Primer Circuito, 12/11/96, consultada en copia del original.

87 Procuraduría Federal de Protección al Ambiente –PROFEPA– (1998), *supra* n. 55.

88 Red de Desarrollo Sostenible de Honduras, http://rds.org.hn/impunidad/casos/docs/caso_01.html. Sitio consultado en noviembre de 2000.

colectivos,[89] según el Ministerio Público del Paraguay citado en el informe del Comité de Abogados de Derechos Humanos, después de 15 meses de haberse aprobado la Ley n° 716 no se han intentado demandas contra la deforestación y el tráfico ilegal de madera.

2.6 Perú

Ante una demanda de *habeas data*[90] de la Sociedad Peruana de Derecho Ambiental (SPDA) contra el Ministerio de Energía Minas, la Sala de Derecho Constitucional y Social en fecha 19/09/96 favoreció a la reclamante.

La SPDA solicitaba "información de carácter público, relacionada a las canchas de relaves de la Compañía Aurífera Retama S.A. que no le había sido proporcionada por los canales administrativos previstos en la Ley, violando su derecho a la información, reconocido en el artículo 2º, inciso 5°) de la Constitución vigente."[91] Los derrames produjeron la contaminación de la quebrada Mushmush y ocasionaron la muerte de 8 personas, así como la destrucción de bosques naturales y cultivados. El amparo de *habeas data* se interpuso después de haber intentado los recursos administrativos correspondientes sin respuesta.

2.7 Venezuela

En Venezuela, la Constitución de 1999 está rápidamente constituyendo un parteaguas en el alcance de las decisiones judiciales con respecto a la protección ambiental.

Apenas en 1998 la ex-magistrada de la Sala Político-Administrativa de la Corte Suprema de Justicia de Venezuela (hoy, Tribunal Supremo de Justicia) Josefina Calcaño de Temeltas, expresaba: "La participación del poder judicial de Venezuela en la protección y la defensa del ambiente ha sido escasa. En este sentido, por lo que respecta a una materia de tanta actualidad, como la ambiental, la Corte no ha tenido, lamentablemente, tantas oportunidades de establecer su criterio interpretativo, lo que pensamos puede obedecer a la relativamente reciente importancia que se le ha dado a este tema."[92]

La representación de intereses difusos o colectivos en materia ambiental no tenía una amplia cabida ante los órganos jurisdiccionales. Para 1997 la postura de la Corte Suprema de Justicia en relación con la representación de los intereses difusos o colectivos era restringida.[93]

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89 LCHR. (1998), *supra* n. 30, p. 8.

90 Se basa en el artículo 2º de la Constitución Política de 1993 de Perú que dispone: "Toda persona tiene su derecho: 5. A solicitar sin expresión de causa la información que requiera y a recibirla de cualquier entidad pública, en el plazo legal, con el costo que suponga el pedido. Se exceptúan las informaciones que afectan la intimidad personal y las que expresamente se excluyan por ley o por razones de seguridad nacional ..."

91 El Peruano, 04/09/96, año VI, nº 392, p. 2297.

92 Calcaño de Temeltas, J. (1998). Tratamiento de los derechos humanos en la jurisprudencia de la Corte Suprema de Justicia. Charla pronunciada el 18 de junio de 1998 en las Segundas Jornadas en Ciencias Jurídicas y Políticas. Universidad José María Vargas, http://www.csj.gov.ve/cortealdia/aulavirtual/derechoshumanos.html. Sitio consultado en julio de 2000.

93 Ramírez Landaeta, Belén. (1999). El derecho de amparo en Venezuela. En *La protección constitucional del ciudadano –Argentina, Brasil, Chile, Colombia, Costa Rica y Venezuela–.* Fundación Konrad Adenauer. Centro Interdisciplinario de Estudios sobre el Desarrollo Latinoamericano. Buenos Aires, Argentina, p. 214.

Ahora bien, muy recientemente, y con fundamento en las disposiciones de la nueva Constitución, el Tribunal Supremo de Justicia admitió un recurso de amparo que dio pie a una nueva jurisprudencia sobre el tema. Así, en sentencia del 22/05/2000 el Tribunal dictaminó: "El nuevo marco constitucional, ... , plantea ahora de manera expresa la posibilidad de que dirijan a tales órganos solicitudes que tengan por finalidad el logro de la tutela judicial de intereses colectivos, o bien que los peticionantes aleguen la violación o amenaza de derechos o garantías fundamentales que forman parte de la esfera de intereses difusos, tutela jurisdiccional de la que se verían privados."[94]

Por otra parte, en una de las primeras sentencias –si no la primera– de carácter ambiental y cultural el Tribunal Supremo de Justicia, en el marco de la nueva Constitución, declaró sin lugar la acción de amparo constitucional ejercida por Melchor Flores, Darío Castro y otros el 19/05/2000 contra la República Bolivariana de Venezuela y la Empresa Electrificación del Caroní C.A. (EDELCA).[95]

En cualquier caso, lo positivo en la decisión fue ordenar al Ministerio del Ambiente y de los Recursos Naturales, a que con el apoyo de la Defensoría del Pueblo y de los representantes de diferentes comunidades indígenas procediera "al diseño y ejecución inmediata de un Plan destinado a verificar y garantizar el debido cumplimiento de las condiciones y medidas de mitigación previstas en las autorizaciones administrativas otorgadas a EDELCA, para la ocupación del territorio y la afectación de los recursos naturales."[96]

Con respecto a la jurisdicción penal, la promisoria Ley Penal del Ambiente aprobada en 1992 apenas cambió el panorama de la impunidad ambiental en esta jurisdicción.[97]

3. Balance de la producción jurisprudencial ambiental

A modo de balance, con este pantallazo tan diverso de aportes jurisprudenciales se puede afirmar que la tendencia de la región hacia la defensa judicial del derecho a un ambiente sano y la protección ambiental continua. El ritmo en cada país es, sin embargo, muy diferente, al igual que el espectro y la creatividad de las interpretaciones de las Cortes y Tribunales.

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94 La decisión se emitió a raíz del recurso de amparo constitucional interpuesto el mismo 22/05/2000, por los ciudadanos Elías Santana y Liliana Ortega, actuando en nombre propio y en el de las organizaciones "Queremos Elegir" y el "Comité de Familiares de las Víctimas de los Sucesos de febrero-marzo de 1989" ("COFAVIC"), contra el Consejo Nacional Electoral. El motivo fue "la violación de varios derechos constitucionales debidamente enunciados en el presente recurso y, en consecuencia, solicitar la suspensión el acto electoral fijado por la Asamblea Nacional Constituyente para el 28 de mayo de 2000." Tribunal Supremo de Justicia de Venezuela, http://www.tsj.gov.ve/decisiones/scon/Mayo/483-29-5-00-00-1642.htm. Sitio consultado en julio de 2000.

95 Tribunal Supremo de Justicia, Sala Constitucional, 17/11/2000, http://www.tsj.gov.ve. Sitio consultado en noviembre de 2000.

96 Tribunal Supremo de Justicia, Sala Constitucional, 19/05/2000, http://www.tsj.gov.ve. Sitio consultado en noviembre de 2000.

97 El Ministerio Público, quien tiene la obligación de iniciar la acción penal y civil proveniente de los delitos de la Ley (artículos 21 y 23), sólo tramitó 680 casos en los tribunales entre 1990 y 1998 (en promedio 9 casos por mes en todo el territorio nacional). De ellos, sólo 100 fueron llevados a tribunales. Loaiza Millán, M. I. (1998). Trabajo especial de grado para optar al título de especialista en Derecho Ambiental y Desarrollo Sostenible. Centro de Estudios del Desarrollo (CENDES), Universidad Central de Venezuela. Caracas, Venezuela.

VII. Conclusiones

En el marco temporal seleccionado para analizar los impactos de las reformas judiciales, y las reformas constitucionales y legales ambientales en el acceso a la justicia ambiental en América Latina durante la década pasada se ha podido apreciar que:

1. El acceso a la justicia ambiental está condicionado por aspectos propios de la materia, ya sea desde un punto de vista constitucional, civil, penal o contencioso-admnistrativo. Tales aspectos se pueden sistematizar conforme a cuatro grandes categorías: a) Los de naturaleza jurídica (sustantivos, procesales y económicos), b) los relacionados con la interpretación jurisprudencial y la cultura judicial, c) los de índole judicial (de infraestructura y administrativos), y d) los extra-jurídicos (como la divulgación y capacitación y los políticos). En particular, cada una de esas categorías, a su vez, incluye entre otros:

   a) Aspectos jurídicos
      i) Sustantivos, como el reconocimiento del derecho a un ambiente sano, la protección ambiental, los derechos colectivos e intereses difusos, las acciones específicas para la defensa del ambiente como la acción civil pública prevista en la Ley n° 7.347 de 1985 de Brasil,[98] incluyendo las de tipo precautorio o preventivo[99] y, eventualmente, algunas específicas para ciertos asuntos como la biotecnología,[100] la responsabilidad objetiva para la determinación de la responsabilidad ambiental, la reparación y la compensación por los daños ambientales, y la ampliación de los efectos de la sentencia a las personas interesadas aunque no hayan sido partes del proceso.

      ii) Procesales, como la ampliación de la legitimación a los derechos colectivos o intereses difusos, el establecimiento de las garantías del debido proceso para los titulares de intereses difusos, la habilitación de los litigios en las lenguas indígenas o autóctonas,[100] el reconocimiento a las cuestiones de género, la posibilidad de adoptar medidas cautelares durante los procesos, el uso más liberal de las pruebas administrativas e informes de los procesos civiles,[102] la inversión de la carga de la prueba, el establecimiento de la llamada prueba "emprestada",[103] la disposición de experticia o capacidad técnica para valorar el daño ambiental,[104] la simplifi-

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98 Ley n° 7.347 de 1985 sobre la acción pública de responsabilidad por daños causados al medio ambiente, al consumidor, a bienes y derechos de valor artístico, estético, histórico, turístico y paisajístico. Sin perjuicio de tantas otras acciones generales como se explica en el capítulo V.

99 Praus García, S. (s/f). Public participation and the role of tribunals. En *Agenda 21 and Latin America. The challenges of implementing environmental law and policy*. Inter-American Development Bank, Washington, D.C., U.S.A., p. 287.

100 Ferretti, J. M. (1993). Looking for the big picture-Developing a jurisprudence for a biotechnological age. En *Pace Environmental Law Review*. v. 10, spring, n° 2, White Plains, N.Y., U.S.A., p. 745.

101 LCHR. (1998), *supra* n. 30, p. 16.

102 *Ibid*., *supra* n. 30, p. 15-16.

103 Artículo 19, parágrafo único de la Ley de Crímenes Ambientales de Brasil de 1998. En palabras del juez Passos de Freitas, se trata de la prueba hecha entre las partes del proceso civil o contradictorio que puede servir de prueba en otro proceso. Comunicación por correo electrónico de 12/03/2001.

104 Passos de Freitas, V. (2000), *supra* n. 3, p. 124.

cación de las etapas procesales, la flexibilización y agilización de los tiempos procesales, y el establecimiento de procedimientos para garantizar la ejecución de las sentencias.

iii) Económicos, como la creación de fondos para la constitución de pruebas anticipadamente, para honorarios de abogados y para las reparaciones ambientales,[105] el establecimiento de beneficios de gratuidad de los costos y costas procesales o la inversión del principio de quien pierde paga,[106] y la creación de incentivos para los litigios en defensa del interés público.

b) Aspectos relacionados con la interpretación jurisprudencial y la cultura judicial
Como el reconocimiento de los principios de precaución, prevención y equidad intergeneracional, entre otros, la reparación o compensación de los daños ambientales, la producción de decisiones creativas y socialmente adecuadas,[107] y la apertura hacia procesos y decisiones menos formalistas y legalistas.[108]

c) Aspectos judiciales (de infraestructura y administrativos)
Como la distribución de tribunales según las necesidades geográficas y en virtud de la mayor incidencia de conflictos o de violaciones ambientales,[109] la especialización de los tribunales,[110] y la constitución de tribunales colegiados e interdisciplinarios (jueces, sociólogos, economistas, expertos ambientales).[111]

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105 La Ley n° 7.347 de 1985 de Brasil creó un fondo para administrar y canalizar la inversión de las indemnizaciones en la reparación de los bienes afectados, a través del Consejo Federal y de los Consejos Estadales. En Colombia, un instrumento de gran valor para captar fondos para la reparación de daños ambientales o llevar a cabo planes de conservación es el Fondo Nacional del Ambiente creado en la Ley nº 99 de 1993. Este Fondo obtiene parte de sus recursos "del monto de las indemnizaciones impuestas y recaudadas como consecuencia de las acciones instauradas, en virtud de lo dispuesto en [el artículo 88 de la Constitución Nacional], por daños ocasionados al medio ambiente y a otros de similar naturaleza que se definan en la ley que regule esta materia" (artículo 90 de la Constitución).

106 Por ejemplo, en Argentina existe el "beneficio de litigar sin gastos" que permite probar la falta de recursos como condición para obtener la gratuidad del proceso y supone la exención en el pago de las costas del juicio en el caso de resultar vencido quien reclama los daños ambientales. Dugo, S. (2000), *supra* n. 46, p. 106.

107 Este es un aspecto repetido numerosas veces por diversos actores y autores: Pásara, L. (1994), *supra* n. 21, p. 88-89. Brañes, R. (2000), *supra* n. 34, p. 91.

108 Pásara, L. (1998), *supra* n. 21, p. 88-89.

109 *Ibid.,* p. 124. Este juez comenta una experiencia muy exitosa en el Brasil como ha sido la creación de la jurisdicción ambiental itinerante. La misma ha sido instaurada en algunos estados como el de Mato Grosso que cuentan con una gran riqueza de recursos naturales. El balance de 1998 de uno de estos tribunales itinerantes –que navega y funciona en un barco– fue de 56 procedimientos para investigar daños a la flora, la captura de 15 vehículos que transportaban madera y la confiscación de 5.638 Kg. de pescado, entre otros.

110 En Nueva Zelanda y la India existen tribunales especializados desde 1996 y 1995 respectivamente, http://www.courts.govt.nz/environment_court/environment.html y http://envfor.delhi.nic.in/legis/others/tribunal.html, respectivamente. Sitios consultados en febrero de 2001. Así también ocurre en Brasil como se indica en la nota anterior en el estado de Mato Grosso (Cuibá) y en el estado Amazonas (Manaus).

111 En Australia en el Estado de New South Wales existe un Tribunal de Tierras y Medio Ambiente de esta naturaleza creado a través de la Ley de la Corte de Tierras y Ambiente de 1979, http://www.austlii.edu.au/au/legis/nsw/consol_act/laeca1979274. Sitio consultado en febrero de 2001.

d) Aspectos extra-jurídicos
   i) De divulgación y capacitación, como la divulgación de los fallos ambientales innovadores, y la organización de cursos de capacitación y de actualización sobre el derecho ambiental para los operadores jurídicos y litigantes.

   ii) Políticos, como la ausencia de corrupción, y la independencia del poder judicial.

2. Resulta valioso para este trabajo tomar las palabras del Comité de Abogados para los Derechos Humanos[112] que expresan las razones que los motivaron a examinar los asuntos de las reformas judiciales y ambientales en Paraguay. Para "el Comité, los asuntos ambientales constituyen un gran lente para evaluar las iniciativas de reformas judiciales en América Latina. Primero, porque los dos bancos (Banco Mundial y Banco Inter-Americano de Desarrollo) cuentan con portafolios de proyectos ambientales en varios de los países que fueron elegidos para desarrollar las reformas ambientales. En consecuencia, y desde una perspectiva del manejo de proyectos y bajo un plan estratégico coherente para cada país, parecería que los dos grupos de proyectos deberían estar de alguna forma coordinados, o que al menos, cada uno de ellos tomaría en cuenta al otro para su respectivo diseño. Finalmente, las crisis paralelas de daños ambientales severos y de falta de cumplimiento de la legislación ambiental muestran el vínculo orgánico entre la actividad económica, la reforma judicial y el ambiente (...) La reforma judicial destinada a apoyar el desarrollo debe afrontar esos dos asuntos que están inter-relacionados." (Traducción de la autora).

   El caso ha sido que las reformas judiciales de los noventa, promovidas por las agencias financieras y de cooperación multilaterales y endosadas por los gobiernos, no han previsto como una prioridad el acceso a la justicia. Mucho menos, el acceso a la justicia ambiental. Esto tiene su razón de ser en que, las reformas han estado muy vinculadas a los paquetes económicos de reformas estructurales que, al mismo tiempo, se estaban imponiendo. Tales reformas estructurales exigían proporcionar mayor seguridad jurídica a los nuevos inversionistas y socios financieros, a través de un poder judicial más confiable y más eficiente desde un punto de vista administrativo.

3. Las reformas jurídicas en materia ambiental durante los noventa, casuísticamente han favorecido el acceso a la justicia ambiental. A pesar de que no se llevaron a cabo como parte una estrategia jurídica orientada a garantizar el derecho a un ambiente sano y la protección ambiental, han dejado ciertas bases para avanzar en ese sentido.

4. Dado que muchas de las reformas todavía están en marcha, y otras tantas, están en preparación, las organizaciones financistas y de cooperación internacional, junto con los poderes judiciales, gobiernos, parlamentarios, organizaciones no gubernamentales y demás sectores de la sociedad civil no dejan de estar a tiempo en esta nueva década para revisar sus programas de reformas judiciales y jurídicas y establecer vinculaciones estratégicas que beneficien a los ciudadanos y al ambiente latinoamericanos.

5. La jurisprudencia ambiental entre 1990 y 1999 ha aumentado. En unos pocos países en forma muy intensa, contundente, efectiva y creativa para la defensa judicial del ambiente. En otros, a un ritmo menor y con contenidos más formales y restringidos. Algo interesante es que, en algunos países, justamente las interpretaciones judiciales han nutrido las reformas jurídicas ambientales de esa década.

6. Es difícil detectar una tendencia en cuanto a los tipos de acciones que más frecuentemente se presentan, o las materias que son recurrentes en los países, o los actores que predominan

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[112] LCHR. (1998), *supra n*. 30, p. 2.

en el ejercicio de las acciones judiciales. Indudablemente, las características y adecuados desarrollos jurídicos en el ámbito nacional determinan diferencias. Sin embargo, de los fallos aquí analizados (la mayoría producidos por las Cortes Supremas o Constitucionales) se puede aventurar a expresar que: a) Predomina el accionar a través del amparo constitucional, seguido de las acciones civiles, después las penales y por último, las contencioso-administrativas; b) en las áreas extra-urbanas, prevalecen los casos relacionados con los bosques por explotaciones ilícitas, a continuación los casos de contaminación de las aguas (marinas y continentales), de los suelos y del aire por actividades mineras, petroleras, botaderos de basura e industriales, y, finalmente, se repiten los casos relacionados con actividades ilícitas en parques nacionales o áreas naturales protegidas y con la ausencia de la evaluación del impacto ambiental; en el ámbito urbano se aprecian numerosos casos relacionados con porquerizas y contaminación sonora; c) imperan las acciones promovidas por particulares y organizaciones no gubernamentales, quedando rezagadas las acciones por parte del poder público (con contadas excepciones como ya se ha dicho).

7. El papel del poder judicial en la defensa judicial del ambiente y en la resolución satisfactoria de las violaciones al derecho a un ambiente sano ha sido y puede ser más importante. El ejemplo de los países que van abanderando esta tendencia puede servir de estímulo a los demás.

8. A través de este estudio se evidencia que hay un campo muy amplio para desarrollar relaciones de mayor comunicación y cooperación horizontales entre diversos actores, así: a) entre los más altos tribunales de justicia de la región en el tema ambiental; y b) entre las agencias internacionales de cooperación, los jueces, parlamentarios, funcionarios de gobierno, ciudadanos y organizaciones no gubernamentales a nivel nacional y descentralizado, para mejorar el ordenamiento jurídico ambiental, darlo a conocer, aplicarlo, cumplirlo e interpretarlo en favor de la sociedad.

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Summary

This paper examines events that have influenced – or should have influenced – access to environmental justice in Latin America during the 90s. The events referred to are: 1) The judicial reforms that were undertaken by major international financial and cooperation organizations, 2) the legal reforms that were carried out in most Latin American countries and, 3) the developments in national environmental court decisions.

This paper shows that the judicial reforms – in which the states invested hundreds of millions of dollars – lacked environmental components. Further, although legal reforms did not attempt to incorporate changes promoting access to environmental justice directly, they nevertheless induced positive impacts, and the environmental judicial decisions in a selected group of countries did actually strongly further its progress.

It argues that access to environmental justice requires (i) specific consideration from legal, procedural and economic points of view; (ii) a creative judicial culture and; (iii) improvements in the administration and infrastructure of the judiciary, amongst others. Future review of the reforms must be more comprehensively tackled in order to fully address all these considerations.

Finally, the paper draws a distinction among countries in Latin America, based on their environmental case law. Argentina, Brazil, Chile, Colombia and Costa Rica lead with a solid record of many pioneering judicial decisions, which illustrate important key developments in the interpretation and production of new legal concepts. Most of the remaining countries are still in an early stage with regard to the judicial resolution of environmental conflicts.

This paper intends to underscore the role of the judiciary in advancing compliance and enforcement of environmental legislation in Latin America, as well as the wide range of cooperation opportunities that arise for international financial and cooperation agencies, governmental organizations, parliamentarians, the judiciary, NGOs, legal practitioners and citizens. Lastly, it aims at remedying the lack of information on this topic, particularly with regard to information that is available in Spanish.

Patents and Plant Resources-Related Knowledge: Towards a Regime of Communal Patents for Plant Resources-Related Knowledge

Ikechi Mgbeoji*

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* This paper is dedicated to the memory of my mother whose death on 6 January 2001, gave strength to a weakling like me.

I. Introduction and overview

In recent times, the international community has made some efforts to effectively draw global attention to the unfolding realities of the depletion of biological diversity and mutually supporting human cultures. To add legal muscle to the awareness created, there is an expanding body of national and international legislative instruments seeking to regulate the complex realm of biological diversity. The most comprehensive and ambitious global legal instrument aimed at enshrining a framework vision of equitable and sustainable regime on biological diversity, particularly, plant resources-related knowledge, is the Convention on Biological Diversity, otherwise known as the Biodiversity Convention – the CBD.[1]

Before proceeding further, it is pertinent at this stage to define and clarify the concept of plant resources-related knowledge, hereinafter, PRRK. The concept of "PRRK" is preferred in this paper because it is more inclusive than the commonly used terms or concepts of, "indigenous knowledge," or "traditional knowledge" on plant resources. First, it is virtually impossible to extricate knowledge of a plant's utility or properties, from the plant itself. In the absence of knowledge of a plant's utility, the plant in question, at least in a utilitarian sense, becomes a weed. Hence, it is the knowledge of the utility of the plant resource in question that confers economic value on the plant and makes the plant and the related knowledge a prospective or actual subject of patents or other forms of economic unitization. Second, the term "indigenous knowledge" is unduly narrow and restrictive in geography, history and experience. As the *Draft Report of the World Intellectual Property Organization (WIPO) Fact-Finding Missions on Intellectual Property and Traditional Knowledge* (1998-1999) clearly acknowledges, "indigenous knowledge fits into the traditional knowledge category, but traditional knowledge is not necessarily indigenous. That is to say, indigenous knowledge is traditional knowledge, but not all traditional knowledge is indigenous".[2] On the other hand, the notion of "traditional knowledge" perpetuates the mistaken impression that such knowledge is antiquated and inferior to Western science. Or, as some writers assert, that non-Western plant resource-related knowledge is culture-bound or ethnic in nature. Plant resources-based knowledge, whether in the Western or non-Western paradigm has universal validity and efficacy. Therefore, references to plant resources-related knowledge in this paper should be read to include the plant resource, parts or derivatives thereof and the knowledge of their various uses regardless of the particular paradigm in which it may be practised.

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1 *Convention on Biological Diversity*, done at Rio de Janeiro on 5 June 1992, entered into force 29 December 1993, *reprinted* in 31 I.L.M. 818 (1992). Other international legislative instruments take a sectoral approach and also fail to deal with related or collateral issues of plant resources-related knowledge such as sovereignty over and access to those resources. See *African Convention on the Conservation of Nature and Natural Resources*, (1968) 1001 U.N.T.S. 4; *Convention on Nature and Wild Life Preservation in the Western Hemisphere*, (1940) 161 U.N.T.S. 193*; Convention on International Trade in Endangered Species*, (1973) 993 U.N.T.S. 243.

2 See *Draft Report of the World Intellectual Property Organization (WIPO) Fact-Finding Missions on Intellectual Property and Traditional Knowledge* (1998-1999), Geneva, Switzerland, at 28. Hereinafter, *WIPO Report*. Copies of this report are available from WIPO headquarters at, WIPO, 34, Chemin des Colombettes, 20, Geneva, 1211 Switzerland. Fax number +41-22-338-8120 or by e-mail at ffm-report-comments@listbox.wipo.int. On indigenous peoples, see, *The International Labour Organization Convention 169 Concerning Indigenous and Tribal Peoples in Independent Countries*, 7 June 1989, *reprinted* in 28 I.L.M. 1382; *Commission on Human Rights, Preliminary Report on the Study of the Problem of Discrimination Against Indigenous Populations*, UN Doc.E/CN.4/sub.2/L.566 [1972]; *Chapter 2 paragraph 34, UN Declaration of the Rights of Indigenous Peoples*, UN. Doc. E/CN.4/1995/2, *reprinted* in 34 I.L.M. 541 (1995); Rudiger Wolfrun, "The Protection of Indigenous Peoples in International Law" (1999) 59 *Zaorv-Heidelberg Journal of International Law* 369.

Having dispensed with the definition, it should be noted that inasmuch as the CBD offers room for more detailed juridical initiatives for the creation of an equitable and sustainable regime on the exploitation of PRRK, there are compelling reasons for sobriety, indeed, for a calm reassessment of the potentials of the Convention. In a world riven by economic and political inequities, it may not be easy to translate such a grand vision to practice. This is particularly so given that the CBD regime shares the juridical space on exploitation of plant resource-based knowledge with other instruments with juridical provisions and ideological interests difficult to reconcile with the CBD. For example, Article 27 of the Trade-Related Aspects of Intellectual Property Rights Agreement, hereinafter, TRIPs,[3] is not easily reconciled with the CBD.

The fact of the matter is that what is at stake is the economic value and control of PRRK: a complex and controversial debate of who gets what, at what mutual costs to the parties and the environmental implications thereof? In other words, a juridical ferment on the relentless privatization of the so-called global commons, particularly, information deemed to be of economic value. At the core of this phenomenon, especially on PRRK, is the global patent system.[4] With the phenomenal attainments of science in a globalized age, added value and inter-penetration of markets have sharpened the areas of disagreements on the process by which patents facilitate what may be described in inflammatory language as the appropriation and privatization of PRRK,[5] or bio-piracy.

The debate is complex, recondite, ideological and traverses the philosophical and ethical incompatibility of the Western-inspired patent system with non-Western jurisprudence on property. There are also issues of the ramifications of globalization and the economic, political and human rights implications of the emergent dispensation of patents on PRRK. However, the patent system is not new to controversy. Indeed, conceived in circumstances, which Owen Lippert has described as "blackmail",[6] the patent system in its history and modern character, is a paradoxical and intellectually inconsistent model often deployed to the changing interests of both industrializing and the industrialized States.[7]

On both sides of the debate, the respective arguments have been compelling.[8] First, the antinomy and conflict between the underlying philosophy of the patent system with non-Western forms of property and notions of legal personality is a difficult question to resolve. Further, the

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3 *Agreement on Trade-Related Aspects of Intellectual Property Rights*, 33 I.L.M 1197.

4 Anthony Stenson & Tim Gray, *The Politics of Genetic Resource Control* (London: Macmillan, 1999); Ulf Anderfelt, *International Patent Legislation and Developing Countries* (The Hague: Martinus Nijhoff, 1971).

5 Jack Kloppenburg, *First the Seed: The Political Economy of Plant Biotechnology, 1492-2000* (Cambridge University Press, 1988).

6 Owen Lippert, "One Trip to the Dentist is Enough-Reasons to Strengthen Intellectual Property Rights Through the Free Trade Area of the Americas Now" in, Owen Lippert, (ed.,) *Competitive Strategies for the Protection of Intellectual Properties* (Vancouver: The Fraser Institute, 1999) at 129.

7 Bruce William Bugbee, *The Early American Law of Intellectual Property: The Historical Foundations of the United States Patent and Copyright Systems* (Ann Harbor: Michigan, 1961) at 76. [Hereinafter, Bugbee]

8 Carlos Correa & Abdulqawi Yusuf, (eds.,) *Intellectual Property and International Trade* (The Hague: Kluwer, 1998); Michael Gadbaw & Timothy Richards (eds.,) *Intellectual Property Rights: Global Consensus, Global Conflict*? (Boulder: Westview Press, 1988); Michael Goldman (ed.,) *Privatizing Nature-Political Struggles for the Global Commons* (London: Pluto Press, 1998).

express and implied social, economic, environmental and human rights implications of the patent system's application to PRRK is a subject of legitimate concern. On the other hand, the immense capital investment in the improvement of plant resources, whether in the formal or informal sector cannot be discounted and the need for a mechanism to recompense investors should not be lightly dismissed.

In recognition of these imperatives, particularly, the latter, the patent system, especially in Western societies, is ostensibly designed to recompense investors by its offer of a temporary monopolization of the commercial benefits of a clearly defined invention. However, the crux of the matter here is whether the patent system is inherently universal in its philosophy and if so, whether it offers the best economic incentive for protecting and rewarding inventions in the realm of plant resources, particularly, in non-Western societies. Law, as most jurists have restated, is a mirror of societal values. In other words, does the Euro-centric patent concept reflect non-European values? Or, better still, is the Euro-centric system of patents able to reflect non-European values?

In resolving these difficult questions, certain factors must be taken into consideration. Primarily, the passage of time since the introduction of European legal systems to non-Europeans has modified the jurisprudence on property ownership, the social nature of the inventive process, notions of legal personality, *et cetera*, which underpin the patent system. The crucial task thus is to locate the areas of modifications and thus synthesize a realistic solution to the problems posed by the application of patents to PRRK. Hence, the issue for analysis and resolution in this paper may be framed as follows: assuming but without conceding that the patent system offers a workable and equitable paradigm for PRRK, are such inventions which lie outside the paradigm of industrial, "formal" invention protectable under the norms of the contemporary patent system?

This issue may best be examined within the context of the provisions of the CBD, Article 27 (3) of the TRIPs Agreement,[9] and perhaps, other international instruments purporting to deal with the subject, especially, the Food and Agriculture (FAO) Undertaking of 1983 (as clarified or amended by a number of other resolutions). This paper argues that given the difficulties in achieving binding global consensus on the "patent question" on PRRK, a two-tiered response, international and domestic, offers reasonable prospects of success.

First, at the international level, an amendment to the TRIPs Agreement prescribing a global standard of novelty of inventions in PRRK is indispensable. That is to say, the threshold standard of what constitutes "obvious" knowledge, "prior art" and "invention" should be raised to accord with the norm in patents for mechanical inventions. Second, the proposed minimum threshold should be universal instead of relative as presently the case. At the domestic level, gene-rich States should exploit the malleability of the patent system with a view to devising a regime of community patents on their PRRK, at least, as a defensive measure. Finally, local laws and institutions which would invalidate patents on PRRK which fall short of the letter and spirit of the CBD should be created. For greater effect, a regional approach is suggested.

The patent system, as this paper demonstrates is pre-eminently malleable;[10] showing remarkable capacity to be adapted, construed, (and even contorted) in such manners as to serve the

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9 The literature on this burgeoning school of thought is quite remarkable. See generally, Tom Greaves, (ed.,) *Intellectual Property Rights for Indigenous Peoples: A Source Book* (Oklahoma: Society for Applied Anthropology, 1994).

10 Moureen Coulter, *Property in Ideas: The Patent Question in Mid-Victorian Britain* (Missouri: The Thomas Jefferson University Press, 1991). [Hereinafter, Coulter] See also, Paul David, "Intellectual Property Institutions and the Panda's Thumb: Patents, Copyrights, and Trade Secrets in Economic Theory and History" in M.B. Wallerstein, *et al*, (eds.,) *Global Dimensions of Intellectual Property Rights in Science and Technology* (Washington, D.C.: National Academy Press).

particular economic interests of States. This capacity may be discerned from a careful study of certain indicators including:

a) the date or period when States decide to implement or enact patent laws;
b) the stated and actual reasons for enacting or implementing such laws;
c) the sanctity which domestic juridical institutions attach to patent laws;
d) and above all, the national policy of the State as it relates to the question of patents.

Thus, a conception of the patent system as a policy instrument of States[11] is crucial in fashioning a juridical response to the TRIPs/CBD *problematique*.[12] Neither the lofty rhetoric against "bio-piracy" nor the sporadic protests against questionable patents on PRRK would yield an institutionalized solution to the problem. Unlike the powerful industrialized countries,[13] developing countries lack the economic and political machinery needed to create an effective but parallel global regime on PRRK. As Lara Ewens notes, "because of the immense investment western corporations have made in plant genetic resources and plant genetic research, and of the important potential biotechnology offers for increases in global food supply, modification of the system is likely to come from *within*, if [it comes] at all."[14]

The "internal" response proposed in this paper is a system of Community Patents (CP) by traditional knowledge holders and practitioners of PRRK. The proposal would first scale the arguments commonly made against the patentability of such so-called "informal" or "ethnic" character of PRRK.[15] For the purposes of a detailed rebuttal of the arguments made against the

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11 Christopher Arup, *Innovation, Policy and Law: Australia and the International High Technology Economy* (Cambridge: 1993); David Vaver, "Intellectual Property Today: Of Myths and Paradoxes" (1990) 69 *Canadian Bar Review* 98.

12 Edith Penrose, *The Economics of the International Patent System* (Connecticut: Greenwood Press, 1973). [Hereinafter, Penrose]

13 For example, when it became obvious to the industrialized states that the existing patent regime could not be stretched long enough to protect computer chip makers, the Washington Semiconductor treaty was quickly concluded and ratified. Meanwhile, as Peter Drahos has noted, "…in contrast, the issue of protection for indigenous knowledge has largely remained just that, an issue." See, Peter Drahos, "Indigenous Knowledge and the Duties of the Intellectual Property Owners" (1997) 11 *Intellectual Property Journal* 201.

14 Lara Ewens, "Seeds Wars: Biotechnology, Intellectual Property and the Quest for High Yield Seeds" (2000) 23 *Boston College International and Comparative Law Review* 285 at 307. [Hereinafter, Lara Ewens] (Emphasis mine). The word "within" in this context means a methodical response to the patent question which operates from inside the pre-existing global system of patents. It means that the existing patent system would need to be expanded.

15 Given the dominance of the Western paradigm of "science", there is a tendency to ethnicize and consider as "culture-specific", "unsophisticated" and "inferior", non-Western paradigms of knowledge. As Makau Wa Mutua notes, "within this logic, history is a linear, unidirectional progression with the "superior" and "scientific" Western civilization leading and paving the way for others to follow." See, Makua Wa Mutua, "Savages, Victims and Saviours: The Metaphor of Human Rights" (2001) 42 *Harvard International Law Journal* 201. See also, David Slater, "Contesting Occidental Visions of the Global: The Geopolitics of Theory and North-South Relations" (1994) Dec, 1994 *Beyond Law* at 97. Be that as it may, philosophers like Karl Polanyi, Alfred Kuhn and others have demonstrated that non-Western forms of knowledge have their own internal logic and are not necessarily crude or inferior to their Western counterpart. Moreover, Western science, like all other structural forms of knowledge is also cultural and not inherently global. See D. Michael Warren, (ed.,) *The Cultural Dimension of Development: Indigenous Knowledge Systems* (London: Intermediate Technol-

patentability of biological inventions by traditional knowledge practitioners, this paper is divided into four parts.

The second part is an exposition and analysis of the patent system as an economic tool and mechanism. The third part of the paper examines the confluence of the TRIPs and CBD regimes on PRRK. It also examines the nature of traditional intellectual contributions to the improvement and conservation of PRRK. Part four revisits the arguments against the patentability of communally generated PRRK. More importantly, it also offers a detailed rebuttal of the arguments made against the concept of Community Patents. Part five is the summary of the paper and sketches the substantive and procedural features of the proposed Community Patent.

The objectives of this paper are fivefold:

- First, to demonstrate that notwithstanding the apparent antinomy between the patent concept and traditional conceptions of biological resources ownership and control, a creative adaptation and expansion of the patent system offers a feasible option; albeit, defensively.

- Second, to keep the intellectual credit and economic reward for PRRK in the hands of the appropriate communities and individuals who have toiled over the years and still toil to sustain the diversity of plant life on earth.

- Third, to place the burden of proof that such innovations are not intellectual feats of the scale of Western science deserving protection and economic reward on the persons or parties asserting same.

- Fourth, to mitigate the effects of the immense pressure on threatened peoples, cultures and plant resources by forces of unregulated bio-prospecting and un-recompensed commercial exploitation of PRRK by appropriators of such knowledge.

- Finally, to institute a more secure threshold on which marginalized peoples and cultures may negotiate equitable and sustainable access to PRRK without further compromising the integrity of plant resources and the ecosystem.

II. The patent system as an economic instrument

1. The origin of patents

The theoretical features of the patent[16] system derive from the circumstances in which Filippo Brunelleschi successfully "blackmailed"[17] the medieval Italian City-state of Florence. According

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ogy Publications, 1995); John Dewey, *Philosophy and Civilization* (New York: 1931); Harold Dorn, *The Geography of Science* (Baltimore: John Hopkins University: 1971); N. Ezeabasili, *African Science: Myth or Reality* (New York: Vantage Press, 1977). See also, The Crucible Group, *People, Plants, and Patents: The Impact of Intellectual Property on Trade, Plant Biodiversity, and Rural Society* (Ottawa: IDRC, 1994). [Hereinafter, Crucible Group]

16 The term "patent" as an adjective derives from the Latin word "patere" which means, "to be open". When used as a noun, it means an open letter addressed to the public. See, Coulter, *supra* note 10 at 8.

17 Owen Lippert, note 6, *supra.*

to Bruce William Bugbee, in 1421, Filippo Brunelleschi, the Italian architect and painter, announced his invention of an iron-clad vessel, the "Badalone" which he claimed could carry marble across the lake Arno for the construction of the now famous cathedral of Florence. Contrary to scientific tradition,[18] Brunelleschi refused to disclose the "Badalone" to the public nor put it at the service of the city unless he was granted a limited right to an exclusive commercial exploitation of the vessel. Florence yielded to his unprecedented demands and on June 19, 1421, the City issued him the first recorded patent in history. To Brunelleschi's embarrassment, the "Badalone" sank on its inaugural trip and the Florentine patent idea sank with it;[19] at least, for a long time.

Recovering from the rather inauspicious watery debut in Florence, the patent concept migrated to Venice where it acquired legislative imprimatur and substantive features. For instance, the Venetian patent law of 1474 provided for patent duration of ten years, examination of patent applications for novelty, and punishment for infringement of patent rights.[20] However, with increasing papal intolerance and the frequent political conflicts in the Italian peninsula, Italian artisans and craftsmen began a process of migration to central and Western Europe.[21] Naturally, they did not leave the concept of patents behind them in Italy. They took the patent concept with them.

Thus, it is fair to say that the modern patent concept owes its original inspiration to the Italian City-States of medieval times. As patent historian, Maximillian Frumkin noted, "Italian influence shows like a thread in all incipient patent systems in Europe."[22] From Central Europe, the patent concept spread with European immigrants to North and South America; and by colonialism and diffusion, to the rest of the world.[23]

Be that as it may, if the medieval patent system had a particularly "unsavoury"[24] reputation, perhaps, attention ought to be directed to medieval Britain and the rise of Royal Monopolies, which will be dealt with later. Suffice it to note at this stage that the contemporary contentious reputation of the patent system was already apparent even in Medieval Europe.[25]

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18 Prior to the modern era of serious inroads by the patent system into scientific discourse, open exchange of scientific discoveries and ideas was the norm. As Stephen Brush has noted, "science is the long conversation among members of …community…the glitter of science to many practitioners is its alternative to pecuniary reward." See, Stephen Brush, "Is Common Heritage Outmoded?" in Stephen Brush & Doreen Stabinsky, (eds.,) *Valuing Local Knowledge–Indigenous People and Intellectual Property Rights* (Washington: Island Press, 1996) 143 at 149. [Hereinafter, Stephen Brush]

19 See generally, Bugbee, note 7 *supra*. See also, Eric Kaufer, *The Economics of the Patent System* (Harwood Academic Publishers, 1989).

20 Coulter, *supra* note 10 at 9. See also, Lynn White Jr., "Jacopo Acontio as an Engineer" (1967) 72 *American Historical Review* 432.

21 Quoted in Christine Macleod, *Inventing the Industrial Revolution: The English Patent System, 1660-1800* (Cambridge: Cambridge University Press, 1988). [Hereinafter, Macleod]

22 Macleod, *supra* at 21.

23 C. Macleod, "The Paradoxes of Patenting: Invention and its Diffusion in 18th and 19th Centuries Britain, France and North America" (1991) *Technology and Culture* 905.

24 By granting monopoly rights on pre-existing skills, trade and industry, the medieval patent system, especially, in England, incurred public opprobium. See Bugbee, Macleod and Coulter, *supra.*

25 Frank Prager, "The Early Growth and Influence of Intellectual Property" (1952) 34 *Journal of the Patent Office Society* 106.

2. Defining patents

At this stage, a definition of the patent concept is apposite. Although there is no universal patent law *per se*, Article 27 (2) of the TRIPs Agreement defines patents in terms of a legal protection for products or processes which are *new*, *involve an inventive step*, are *useful* and *capable of industrial application*.[26] The United States Patents Act of the United States provides that "whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor."[27] Machlup has defined a patent as "that which confers the right to secure the enforcement power of the State in excluding unauthorized persons, for a specified number of years, from making commercial use of a clearly defined invention."[28]

The purport of patents as defined above is that notwithstanding the criteria of novelty, utility and industrial applicability, patents are essentially, discretionary grants by States. For example, the invention may pass all the outlined tests for patentability and yet the State may refuse to grant a patent thereto.[29] Although, patents are designed to reward invention, it does not offer any guarantee that the inventor would in fact be adequately recompensed.

Certain inferences may be made from the above conception of patents. First, in spite of several theories[30] on patents, especially, attempts to couch the arguments for and against patents in the discourse of human rights, there is no such thing as a human right to patents. Accordingly, the "human right"[31] argument on patents has no firm anchor in the law of patents. Be that as it may,

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26 TRIPs Agreement, *supra* note 3. (Emphasis supplied)

27 35 U.S.C. 101. [Hereinafter, US Patents Act] See also, Michael Gollin, "Using Intellectual Property to Improve Environmental Protection" (1991) 4 *Harvard Journal of Law and Technology* 193.

28 Fritz Machlup, *An Economic Review of the Patent System, Study of the Subcommittee on Patents, Trademarks, and Copyrights of the Committee on the Judiciary* (United States Senate, 85th Congress, 2nd Sess, Study No. 15) at 2. [Hereinafter, Machlup]

29 For instance, in the United States and other countries certain types of inventions cannot be covered under the patent regime. For example, inventions solely directed to the use of special nuclear material or atomic energy or weapon cannot be patented. See, *Atomic Energy Act* of 1954 (42 USC 2011). Be that as it may, there are different types of patents including, plant patents, utility patents, petty patents, *et cetera*.

30 There are several theories of patents. The leading theories include the contract theory/ disclosure theory, the natural right theory and the encouragement of invention theory. For a discussion of the theories on patents, see, Samuel Oddi, "Un-Unified Theories of Patents – The Not-So-Quite-Holy Grail" (1996) 71 *Notre Dame Law Review* 267.

31 In the wake of the French Revolution, the French Patent Law of 1791 provided that it would be "a violation of the rights of man" if the innovative products of individuals were not recognized as their individual property and were not legally protected. See Machlup, *supra* note 28 at 23. As an interesting aside, Debouffre, the French jurist who drafted the French patent law of 1791 openly admitted that the natural law theory lacked jurisprudential basis. For a brief but accurate account of the rise and fall of the Natural Law theory of patents, see, Brad Sherman & Lionel Bently, *The Making of Modern Intellectual Property Law-The British Experience, 1760-1911* (Cambridge: 1999). [Hereinafter, Sherman and Bently] See also, Peter Drahos, *A Philosophy of Intellectual Property* (Dartmouth: Aldershot, 1996). On Western conception of property rights, see L.C. Becker, *Property Rights: Philosophic Foundations* (London, 1977); J.C. Waldron, *The Right to Private Property* (Oxford, 1988); G.W.F. Hegel, *Philosophy of Right* (Translated by T.M. Knorr) (Clarendon, 1988).

this paper adopts Machlup's definition that a patent is a discretionary grant of a State on an invention which excludes unauthorized persons, for a specified number of years, from making commercial use of a clearly defined and specified invention.[32]

3. The political economics of patents

The dominant theory of patents is that it propels the march of technological progress by offering an incentive to inventors.[33] The notion is that the temporary exclusion of others from commercial exploitation of the invention enables the inventor to disclose the invention with a reasonable prospect of recouping the expenses s/he might have incurred in the invention.[34] Despite the profusion of literature on this virtually axiomatic notion, the preponderance of well-reasoned scholarly works on the issue show a marked skepticism towards the correctness of the supposed causal or organic relation between the patent system and inventiveness.[35]

In other words, no scholarly work of merit or repute on the issue has yet demonstrated any empirical basis for the alleged direct, causal or organic relationship between patents and inventiveness. Indeed, neither the ancient Chinese, Pharaonic Egypt, nor the great Arab advances in mathematics, medicine, astronomy and other sciences owe any debts to the patent system. In fact, it would be rash and sweeping to say that inventors would not invent, unless the carrot of cash or pecuniary benefits was dangled before them. The better position seems to be that patents enable the commercialization or working of inventions and not that it encourages inventions *per se*.

Be that as it may, patent systems have often betrayed their instrumentality in attracting and sustaining new ideas, inventions and skills from abroad.[36] During the times of Edward the Third in England, letters patent were granted to foreign craftsmen to settle in England and transmit their technological and artistic skills to native English apprentices. Little or no regard was paid to the criterion of novelty of the invention covered by the patent.[37]

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32 *Attorney-General v. Adelaide Steamship Co.*, [1913] Appeal Cases 781.

33 Robert Sherwood, "Human Creativity for Economic Development: Patents Propel Technology" (2000) 33 *Akron Law Review* 351.

34 Donald Gregory, *et al*, *Introduction to Intellectual Property Law* (Washington: BNA Books, 1994). Notwithstanding its remarkable success, this theory is afflicted with fundamental misconceptions and questionable assumptions. First, there is no guarantee that the patented subject would be a commercial success. As already noted, Brunelleschi's invention was a dramatic failure. Second, the emphasis on monetary remuneration is rather generalized. A considerable number of inventors invent for several reasons unrelated to pecuniary motives. Indeed, some of the most successful mechanical innovations of the industrial age were not protected by patents. See W.H. Price, *English Patents of Monopoly* (Boston, 1906). Scientific accounts brim with accounts of inventors like Dr. Salk who invented the polio vaccine and generously contributed his idea to the public without patents. See, Edith Penrose, *supra* note 12 at 55. But see, Edmund Kitch, "The Nature and Function of the Patent System" (1977) 20 *Journal of Law and Economics* 265.

35 See Machlup, Penrose, *supra*. See also, C.T.Taylor & Z.A. Silberston, *The Economic Impact of the Patent System-A Study of the British Experience* (Cambridge: Cambridge University Press, 1973); O.J. Firestone, *Economic Implications of Patents* (Ottawa, 1972). In fact, most brilliant inventions were victims of their own genius in that they were often "ahead of their times" and fetched no money for their inventors.

36 Van Zyl Smit, *The Social Creation of a Legal Reality: A Study of the Emergence and Acceptance of the British Patent System an a Legal Instrument for the Control of New Technology* (Ph.D Thesis, University of Edinburgh, 1980).

37 See the classical and masterful work of Albert Walker, *A Treatise on the Law of Patents* (New

Thus, the introduction of a foreign skill into a country where that skill was hitherto unknown or unavailable was sufficient for the acquisition of patents. There was no pretension to global standards of absolute novelty. As the Court held in the famous case of the *Clothesworkers of Ipswich*,

> [I]f a man *hath brought in a new invention and a new trade within the Kingdom* in peril of his life and consumption of his stock, etc., or …the King …in recompense of his costs and travail may grant by charter unto him that he alone shall use such trade or traffic, for a certain time…[38]

No sooner the introduced skill or technology became established in the State than patents on the same skill or technology ceased being granted.[39] Italian silk-weavers, French glass-makers, *et cetera*, were all drawn to England through the instrumentality of patents notwithstanding that those immigrants were not by any means the originators of the machines or processes involved in the technology in question.

The patent system thus became prone to abuse, especially, in medieval England. Used by some chronically necessitous monarchs, as a means of raising badly needed cash, it acquired a malodorous reputation as an instrument of monopoly[40] and royal arbitrariness with little or no regard for rewarding genuine inventions.[41] Although a bold attempt was made by the famed provisions of the Statute of Monopolies[42] to curb royal abuse of the patent grant, the royalty nevertheless retained residual powers to issue "letters patent" on subjects, which lacked any credible claims to novelty.[43]

Needless to say, this was at a huge social cost. This practice was not limited to the shores of the British Isles but a general affliction of most European patent systems. Hence, the historical

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York: Baker & Voorhis, 1937). Whether in textiles, mining, metallurgy and ordnance, the prevailing motive and goal of the fledgling European states was technological and economic pre-eminence.

38 [1615] Godbolt 252. (Emphasis added)

39 Macleod, *supra* note 21 at 12.

40 The famous case of The Monopolies-*Darcy v. Allen* (1602) 77 E.R. 1263 laid the groundwork for the evolution of genuine invention as a criterion for successful patent applications. See also, *Jeffreys v. Boosey* (1854) 10 E.R. 702.

41 Bugbee, *supra* note 7 at 31.

42 21 Jac. 1., Cap 3. See generally, Bently & Sherman, *supra* note 31. The Statute of Monopolies is generally regarded as the fountain piece of British patent law.

43 Bugbee, *supra* note 7 at 104. King Charles 1 was largely destabilized in his reign by his infamous abuse of the patent system. See Macleod, *supra* note 21 at 17.

44 The movement for the abolition of the patent system achieved some limited success. The Netherlands abolished its patent system. Across the Atlantic, the patent system narrowly survived as the United States' House of Representatives passed a bill abolishing it. This bill narrowly failed in the Senate by less than five votes. See, Fritz Machlup & Edith Penrose, "The Patent Controversy in the Nineteenth Century" (1950) *Journal of Economic History* 1; Gerald Doorman, "Patent Law in the Netherlands: Suspended in 1869 and Re-Established in 1910" (1948) 30 *Journal of the Patent Office Society* 225; J. Gordon, "Patent Law Reform" (1906) 55 *Journal of the Society of Arts* 26; Eric Schiff, *Industrialization Without Patents-The Netherlands, 1869-1912, Switzerland, 1850-1907* (New Jersey: Princeton University Press, 1971). [Hereinafter, Schiff]

movement for the abolition of the patent system in both Europe and North America.[44] Swiss legislators in 1849, 1851, 1854 and twice in 1863, flatly rejected the patent system describing it as "pernicious and indefensible."[45] To the Dutch, a good law of patents was an "impossibility."[46]

Although the patent system narrowly escaped death at the hands of its enemies, its survival was at a cost: substantive and procedural changes.[47] Some of the procedural and substantive changes included the introduction of the inspection system whereby applications for patents were checked for novelty.[48] This was largely dependent upon a reliable regime of specifications of the patent application and an effective bureaucracy. Hence, it was not until the early part of the twentieth century that a decent attempt was made to search patent applications for novelty.[49] The English Patent Office was only established in 1852 and the specification[50] requirement was made a part of the conditions for granting patents.

Given the international nature of competition for technological supremacy and the economic nature of patents, it would be erroneous to presume that these developments mitigated the character of the patent system as an instrument of national policy. A careful study of the fledgling international patent system shows that in spite of the attempts of the Paris Convention,[51] European States and the United States respectively construed the patent system in a manner that served their respective and competing national interests.

Even amongst European States, there were nationalistic disagreements as to what aspects of the emerging industries were to enjoy patent protection. For instance, to the irritation of States like Germany, with a strong chemical industrial base, it was not until a few decades ago that other European States like Italy permitted the patenting of inventions in chemicals and pharmaceuticals in their own countries.[52] Thus, some European States deliberately refused to permit patents on paints, pharmaceutical products until their own domestic industries had attained secure strength and sophistication as the leading industrialized States of Europe such as Germany.[53]

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45 Machlup, *supra* note 28 at 4.

46 Machlup, *supra*.

47 *Supra*.

48 Although specification of inventions is an English contribution to the law and procedure of patents, the system of investigation for novelty is American in origin.

49 James Fawcett & Paul Torremans, *Intellectual Property and Private International Law* (Oxford: Clarendon Press, 1998) at 17.

50 Bugbee, *supra* note 7 at 100.

51 *Paris Convention for the Protection of Industrial Property*, 192 L.N.T.S. 4459. The two main achievements of the Paris Convention was the introduction of two principles, namely, the national treatment principle and the right of priority. The former ensures that domestic and foreign inventors receive equal treatment in the patent application process. The latter ensures that a party filing a patent application in a member country receives that same filing date as in the original application in subsequent applications in member states. See, Laurinda Hicks & James Holbein, "Convergence of National Intellectual Property Norms in International Trading Agreements" (1997) 12 *American University Journal of International Law and Policy* 769.

52 Schiff, *supra* note 44 at 43. See also, J. McKeogh & A. Stewart, *Intellectual Property in Australia* (Sydney: Butterworths, 1989).

53 Schiff, *supra*.

Indeed, the United States, which now pursues a policy of strong global patent systems, had very lax patent laws when it was a net importer of foreign technology. According to the United Congress,

> [W]hen the United States was still a relatively young and developing country, for example, it refused to respect international intellectual property rights on the grounds that it was freely entitled to foreign works to further its social and economic development.[54]

Accordingly, "national policy"[55] shapes the patent system. Of course, States which lose out in this game of competition for technological supremacy, and economic pre-eminence chaff at what they term "free-riding,"[56] by other States (even though they themselves may have engaged in such practices to attain their present economic and technological status).

Perhaps, the most remarkable change in the law of patents and with far-reaching implications even for non-Western PRRK is the fiction that an invention by an employee, under certain circumstances, belongs to his employer. Thus, by this juridical revolution, the patent system as a concept of reward and recompense designed for the individual inventor was altered to serve the realities of the modern day, that is, to protect the massive capital outlay often involved in inventions. Usually, the employers on whom the law vests ownership of such inventions may indeed be unaware of the actual inventive processes leading to the invention. In effect, the "inventive genius" and thus property in the inventions, in those circumstances, belongs not to the actual inventor, but to the capital investment made by a multitudinous number of corporate or public stakeholders. Of course, the notion is that this juridical revolution encourages corporate dedication of capital to research and development.

Another response of the patent system to outlay of capital investment is the relaxation of the specification[57] requirement in patents relating to plants and biotechnological innovations and inventions. Hitherto, the prevailing notion was that patents were limited to mechanical inventions. However, as Jack Kloppenburg Jnr[58] has convincingly argued, the evolution of biotechnology and seed breeding into industries in their own respective rights propelled a move towards the relaxation of the specification requirement and other requirements of patentability.[59] In the words of the United States Congress, this change in the pre-existing scope and substance of patent law was

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54 *US Congress, Office of Technology Assessment, OTA-CIT-302* (Washington, D.C., US Government Printing Office, April 1986) at 228. See also, William Alford, "How Theory Does and Does Not Matter: American Approaches to Intellectual Property Law in East Asia" (1994) 13 *Pacific Basin Law Journal* 8; Dru-Brenner-Beck, "Do As I Say, Not As I Did" (1992) 11 *Pacific Basin Law Journal* 84.

55 Frederick Abbott, "Protecting First World Assets in the Third World: Intellectual Property Negotiations in the GATT Multilateral Framework" (1989) *Vanderbilt Journal of Transnational Law* 689 at 698; John Golden, "Biotechnology, Technology Policy, and Patentability: Natural Products and Invention in the American System" (2001) 50 *Emory Law Journal* 101.

56 Abbott, *supra*.

57 The theoretical function of the patent specification is to reveal to the public, those technical secrets for which the patent has been granted to the inventor. See, Seaborne Davies, "The Early History of the Patent Specification" (1934) 50 *The Law Quarterly Review* 86; Dundas White, "The New Investigation for Patents" (1903) 19 *The Law Quarterly Review* 307.

58 Jack Kloppenburg, *supra* note 5.

59 Nicholas Seay, "Protecting the Seeds of Innovation: Patenting Plants" (1988) 3 & 4 *A.I.P.L.A. Quarterly Journal* 418; Golden, *supra* note 55.

made, "to afford agriculture, so far as practicable, the same opportunity to participate in the benefits of the patent system as has been given industry."[60]

The significant point here is that given the peculiar nature of plant and plant genetic resources, it is well nigh impossible to specify in an exhaustive and replicable manner, the technical features of such "inventions."[61] Thus, in order to obviate the problems posed by this traditional requirement, the United States' Congress, starting from the Plant Patent Act of 1930[62] and culminating with the Plant Varieties Protection Act[63] relaxed the hitherto strict rules on specification of patents.

In sum, the patent system is not an instrument for State friendliness; rather, it is an economic mechanism designed to achieve certain strategic ends. In this context, it seems understandable that as the economic value of PRRK increases in a world of diminishing plant genetic diversity resources, the patent system would also remain in the vortex of the debate in question.[64] Based on this demonstration and analysis, Part Three will examine the nature of the controversy on patents on PRRK and will also evaluate the merits of the arguments against the patentability of PRRK by its practitioners.

III. Patents and the politics of plant resources-related knowledge (PRRK)

1. Defining plant resources-related knowledge (PRRK)

Article 2(2) of the CBD defines biological resources as "genetic resources, organisms or part thereof, population, or any other biotic component of ecosystems with actual or potential use for humanity".[65] However, with reference to PRRK, the definition is relatively narrower as it relates to plants, whether modified or not and of course, knowledge of the use(s) of the plant itself, parts or derivatives thereof.[66] The reason why a definition of plant resources necessarily includes

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60 Hearing Before the Sub-Committee on Departmental Operations of the Committee on Agriculture, 91st Congress., 2nd Sess. 7. (1970). Quoted in, Adelman and Baldia, *supra* note 61. See also, Shayana Kadidal, "Subject-Matter Imperialism? Biodiversity, Foreign Prior Art and the Neem Patent Controversy" (1996) 37 *IDEA* 371. [Hereinafter, Shayana Kadidal, "Subject-Matter Imperialism?"]

61 Martin Adelman & Sonia Baldia, "Prospects and Limits of the Patent Provision in the TRIPS Agreement: The Case of India" (1996) 29 *Vanderbilt Journal of Transnational Law* 507.

62 Plant Patent Act, 35 U.S.C. 161, as amended in 1952.

63 7 U.S.C. 2321 –2583, as amended October 6, 1994. Section 161 thereof provides that "no plant patent shall be declared invalid for non-compliance with section 112 (dealing with specifications) if the description is as complete as is reasonably possible." See also, Jack Kloppenburg, *First the Seed*, *supra note* 5 at 130-150; Nicholas Seay, *supra* note 59.

64 As the COICA Statement of 1994 declares, "the prevailing IPR systems reflect a conception and practice that is colonialist, racist and usurpatory, patents and other IPR forms applied to life forms are unacceptable to indigenous peoples." See The COICA Statement, 30th September 1994 < http://users.ox.ac.uk/~wgtrr/coica.htm. Accessed on 10/05/2000.

65 Note 1, *supra*.

66 See note 2, *supra* and the cited texts therein. See also, L.M. Cook, *Genetic and Ecological Diversity: The Sport of Nature* (London: Chapman & Hall, 1991); D. Macer, *Shaping Genes*

knowledge of its uses is that it is the knowledge of its uses, which, in the utilitarian sense, confers added, or economic value to the plant, parts or derivatives thereof. This inextricable link between plant resources and rational human mediation is dealt with in greater detail in Part 2.3 but suffice it to note that modern scholarship and international law recognize this linkage.[67]

The CBD maps out a framework,[68] approach to biodiversity issues, including access to and equitable sharing of the benefits of PRRK. Given the economic, political and ideological dimensions of this type of resource, it is not surprising that the re-clarification of plant resources as a subject of national sovereignty as against the erroneous notion that it was a mater of common heritage of mankind doctrine,[69] raises complex issues between the gene-rich/technology-poor Southern Hemisphere and the gene-poor/technology-rich Northern Hemisphere.

(Tsukuba, Japan: Eubios Ethics Institute, 1990); Ann McElroy & Patricia Townsend, *Medical Anthropology in Ecological Perspective* (Boulder, Colorado: Westview Press, 1989). See also, Klaus Bosselman, "The International Legal Regime Concerning Biotechnology and Biodiversity" (1995) 7 *Colorado Journal of International Environmental Law and Policy* 111; Curtis Horton, "Protecting Biodiversity and Cultural Diversity Under Intellectual Property Law: Toward a new International System" (1995) 10 *Journal of Environmental Law and Litigation* 1; Martine Koning, "Biodiversity Prospecting and the Equitable Remuneration of Ethnobiological Knowledge: Reconciling Industry and Indigenous Interests" (1998) 12 *Intellectual Property Journal* 261.

67 See, Preamble to the CBD, Articles 2, 8 (j), 10 (c); Tracy Dobson, "Loss of Biodiversity: An International Environmental Policy Perspective" (1992) 17 *North Carolina Journal of International Law and Commercial Regulation* 277.

68 Françoise Burhenne-Guilmin & Susan Casey-Lefkowitz, "The Convention on Biological Diversity: A Hard Won Global Achievement" (1992) 3 *Yearbook of International Environmental Law* 44.

69 The unfortunate notion that prior to the CBD, plants were part of the so-called Common Heritage of Mankind (CHM) is one of the most fallacious and erroneous theories in international environmental law. A lot of scholars have thus laboured under the unfounded notion that the principle of common heritage of mankind applied to plant resources. This is nonsense. Neither customary international law nor any treaty on plant resources supports this view. The control of access to plants within the municipal legal order has always remained an inherent part of state sovereignty. Indeed, state practice amply confirms that states have always regulated the importation and exportation of plants within and without state boundaries.
Indeed, the CHM notion was first floated in the 1960's by Ambassador Parvis Ardo of Malta during negotiations for the Law of the Sea Convention and with specific reference to the areas and jurisdictions outside state sovereignty. It has thus generally been discussed in matters related to the world's oceans, the moon and celestial bodies and Antarctica. Given its recent vintage, it could not have governed transactions related to the transfer of plant resources which predated it by centuries. Second, the concept of CHM has not yet emerged as a generally accepted principle of treaty or customary international law, even in the narrow areas where it has been mentioned. For instance, with respect to the moon and celestial objects, only five countries – none of which is a space-faring nation – has ratified the Moon Treaty.
With respect to the ocean sea-bed where it has been mentioned in the Convention on Law of the Sea, the treaty in question has not yet come into effect because of low number of ratifications. Third, the concept of CHM has never been mentioned or incorporated in any treaty or convention on plant resources. Its only mention is in the non-binding *International Undertaking of Plant Genetic Resources*, Report of the Conference of FAO, 22nd Sess. 285, U.N. Doc. C 83/REP (1983) and also, *Agreed Interpretation of the International Undertaking Resolution 4/89* (see also, *and Farmers Righ*t, Resolution 5/89, of Twenty-fifth session, 1989) For further examination on these issues, see, Kemal Baslar, *The Concept of the Common*

2. Patents and plants: The politics of juridical control of biological resources

In the ensuing debate on patents on PRRK, although Article 15 and other provisions of the CBD recognize a regime of national sovereignty over biological resources within the boundaries of States, there are unresolved questions of the role of patents in the process.[70] The point here is that the patent system evokes controversies.[71] In determining the role of patents in the regulation of access to and equitable sharing of the benefits of PRRK,[72] Articles 11 and 16 (5) of the CBD deserve closer examination. Article 11 obliges Contracting Parties to "as far as possible and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity."[73] It is arguable that the patent concept, as an economic and social incentive may thus play a role, perverse or otherwise, in the process of conservation and sustainable use of PRRK. Article 16 of the CBD lends further weight to this interpretation, particularly, with reference to technology transfer. Article 16 (5) provides that:

> [T]he Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are *supportive of* and do not run counter to its objectives.[74]

It is arguable that the placement of paragraph 5 in Article 16 (which deals mainly with issues of technology transfer), implies that the role of patents in the regime on conservation and sustainable use of biological resources is particularly germane to issues of technology transfer *per se*. This is quite distinct from maintaining those cultures and lifestyles which support diversity of PRRK.[75] This interpretation is in line with the qualifier in the above-quoted provision requiring all such rights to be in support of the objectives of the CBD. However, considering the rather

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Heritage of Mankind in International Law (The Hague: Martinus Nijhoff, 1998); Christopher Joyner, "Legal Implications of the Concept of CHM" (1986) 35 *International and Comparative Law Quarterly* 190; Rudiger Wolfrun, "The Principle of the CHM" (1983) 43 *Heidelberg Journal of International Law* 313; Stepehen Gorove, "The Concept of the CHM: A Political, Moral or Legal Innovation?" (1972) 9 *San Diego Law Review* 390; Bradley Larschan & Bonnie Brennan, "The Common Heritage of Mankind Principle in International Law" (1982-3) 21 *Columbia Journal of International Law* 305.

70 Shayana Kadidal, "Plants, Poverty and Pharmaceutical Patents" (1993) 103 *The Yale Law Journal* 222.

71 There is a general perception, especially in the West, that international laws and institutions created and or sustained by the United Nations or its agencies, such as UNEP, tend to favour or at least reflect the views of the less-developed countries of the Southern hemisphere. This is probably a function of the South's numerical superiority in such forums. On the other hand, international laws and institutions created under circumstances where the powerful economic giants of the West exercise effective dominance tend to embody the interests of such powerful States of the West. See, Ignaz Seidl-Hohenveldern, *International Economic Law* (Dordrecht: Martinus Nijhoff, 1989)

72 See Part Three B, *infra*.

73 CBD, *supra*.

74 CBD, *supra*.

75 Article 8 (j) of CBD, *supra*.

expanding role of patents in the overall regime on conservation and sustainable use of PRRK, a more liberal and expansive interpretation may be preferable.[76]

The crucial question however, is that States are not agreed on the prospects of an ever-increasing role of patents in the conservation and sustainable use of PRRK. Those States which exhibit a distrust of the patent system largely argue from both ideological/philosophical objections, and the tendency of the modern patent regime to encourage a systematic "appropriation" of such resources without acknowledgment of the contributions of the so-called informal sector or even an equitable sharing of the benefits of the commercialized PRRK. Ordinarily, such distrust of the application of patents to PRRK would have remained a matter of sporadic disagreement or agreements amongt various states but in an age of economic globalization under the auspices of the World Trade Organization, Article 27 of TRIPs creates a binding obligation of global juridical importance. The said article provides as follows:

> [S]ubject to the provisions of paragraphs 2 and 3 below, patents shall be available for any inventions, products or processes, in *all fields of technology*, provided they are new, involve an inventive step, and are capable of industrial application…"[77]

Paragraph 3 (b) thereof provides that:

> [M]embers may exclude from patentability …plants and animal other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and micro-biological processes. However, members shall provide for the protection of *plant varieties* either by patents or by an effective *sui generis* system or by any combination thereof.[78]

The juridical effect of the above provisions of the TRIPs Agreement is that (leaving aside the academic speculation as to the juridical superiority or otherwise of the CBD over the TRIPs), States with a distrust of patents on PRRK[79] can no longer refuse patents on PRRK but may devise *sui generis* or patent protection (or a combination of both) for plant varieties. In addition, patents now applies to all fields of technology, particularly, biotechnology. Put simply, the TRIPs Agreement practically elevates western jurisprudence of patents on PRRK into a global norm without defining for the world the concept of novelty and standardizing the elements of patentability.[80]

Besides the cultural and philosophical differences between the West and the rest of the world, especially, the Third World,[81] another question is whether or not at the institutional level "GATT has been used both to expound and to impose the developed world's view of intellectual

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76 Vandana Shiva, *Monocultures of the Mind-Perspectives on Biodiversity and Biotechnology* (New Jersey: Zed Books Ltd, 1993); Vandana Shiva, *The Violence of the Green Revolution* (London: Zed Books, 1991).

77 TRIPs Agreement, *supra*. (Emphasis supplied)

78 TRIPs, *supra*.

79 COICA Statement of 1994, *supra* note 64.

80 J.H. Reichman, "Intellectual Property in International Trade: Opportunities and Risks of a GATT Connection" (1989) 29 *Vanderbilt Journal of Transnational Law* 747.

81 According to the OAU/STRC Task Force Declaration on Community Rights and Access to Biological Resources, "privatization of life forms through any intellectual Property Rights (IPR) regime violates the African sense of respect for life." See *Declaration and Draft Model Law by the OAU/STRC Task Force on Community Rights and Access to Biological Resources*, March 1998 <http://users.ox.ac.uk/~wgtrr/OAU-decl.htm. Accessed on 9/21/99.

property?"[82] In other words, is the TRIPs Agreement, "the most effective vehicle of Western imperialism in history"?[83] As Reichman notes, "imposition of foreign legal standards on unwilling States in the name of 'harmonization' remains today what Ladas deemed it in 1975, namely a polite form of economic imperialism".[84] Vogel has analyzed the contours of the debate within the context of "power relationships".[85] Whatever the case may be, the pertinent but unresolved question remains whether the patenting of PRRK is in conformity with the notion of a sustainable and equitable exploitation of PRRK.

Proponents of the TRIPs Agreement contend that the idea behind the agreement is to "harmonize" global approach to the patent system. While this argument may have its own force of logic, it may not be wholly persuasive, particularly since the critical elements of patentability, especially, novelty of inventions has been mired in inconsistency. The unresolved question raised by this interface[86] and debate is whether the prevailing patent system offers traditional innovators and conservators of PRRK resources sufficient protection, incentive and reward for their role in creating, improving and conserving PRRK? In resolving this conundrum, three different sets of issues fall for determination, to wit,

a) Is there rational human mediation and intervention in the improvement of plants and plant-based resource and knowledge by individuals, communities and peoples operating outside the Western paradigm of what constitutes scientific inventiveness?
b) If the answer to (a) is in the affirmative, do those acts of human intervention rise to the level of legally remunerable and protectable innovation or inventions under the patent system? And third,
c) If the answer to (b) is also in the affirmative, does the contemporary patent system offer

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82 Lara Ewens, *supra* note 14 at 304.

83 Marci Hamilton, "The TRIPs Agreement: Imperialistic, Outdated, and Overprotective" (1996) 29 *Vanderbilt Journal of Transnational Law* 747.

84 Reichman, *supra* note 80 at 813.

85 According to Vogel: [G]enetic resources are a prime example of privatization having more to do with "power relationships in the contemporary world" than with neo-classical economic science. Until quite recently, Northern industry has been able to privatize the benefits of bio-technologies that derive from genetic resources while, at the same time, socializing the cost of access to those genetic resources. Genetic resources were free under the doctrine known as the "common heritage of mankind". Being on the opposite sides of the trade, Southern countries have long wanted to privatize genetic resources but socialize access to bio-technologies. Rather than arguing for a symmetrical reform and the privatization of profits and costs, both the North and the South would like asymmetrical reform: the privatization of just their profits and the socialization of just their costs. For the North this would mean that the South gives up its genetic resources but recognizes Northern intellectual property (IP); for the South this would mean that the North gives up its intellectual property rights (IPRs) but recognizes a Southern claim on the uses of its genetic resources. In the struggle for inefficiency and inequity, the North is winning. See, Josef Henry Vogel, "An Economic Analysis of the Convention on Biological Diversity: The Rationale for a Cartel" (On file with the author). [Hereinafter, Vogel] Persons interested in the article may contact Professor Vogel at: henvogel@earthling.net. See also, Articles 3 and 15 of the CBD; *Permanent Sovereignty over Natural Resources*, G.A. Res 1803, U.N. GAOR., 17th Sess., Supp. No. 17. at 107, U.N. Doc. A/5217 (1962); *Permanent Sovereignty Over Natural Resources*, G.A. Res. 3171, U.N. GAOR, 28th Sess., Supp. No. 30, at 52, U.N. Doc. A/9030 (1973) *reprinted* in 13 I.L.M. 238.

86 Charles McManis, "The Interface Between International Intellectual Property and Environmental Protection: Biodiversity and Biotechnology" (1998) 76 *Washington University Law Quarterly* 255.

a viable framework for rewarding and protecting such innovations and inventions within the spirit of the CBD, at least, defensively?

Question (a) deals with the intellectual quality or lack of it, of human intervention (by local communities and individuals practising their art and science outside the Western paradigm) in the substantial improvement of PRRK. Question (b) deals with the intellectual originality of traditional intellectual intervention in PRRK. Any fruitful consideration of Question (c) should move beyond the theory of patent law and delve fully into the *realpolitik* and evolutionary process of the international patent system. This question is treated separately in Part Four.

3. Human culture and biological diversity

Question (a)

Is there rational human mediation and intervention in the improvement of plants and PRRK by individuals, communities and peoples operating outside the Western paradigm of what constitutes scientific inventiveness?

There is now a universal recognition by scholars[87] and in international law[88] of the profound and inextricable link between cultural diversity and PRRK diversity.[89] Cultural diversity and natural diversity are closely linked concepts.[90] What is more remarkable is that many non-Western cultural and knowledge frameworks and environmental practices, hitherto regarded as savage or superstitious, have on closer and open-minded examination displayed remarkable sophistication and utility. In some instances, the insight displayed by traditional societies has been nothing short of ingenious.[91]

With particular reference to plants and food crops, it is known that domestication of plants leads to increased varieties. This is principally due to the phenomenon of polyploidy: a process by which chromosomes of any particular specie are increased or multiplied to yield new varieties or species.[92] Over the millennia, small-scale farmers and local peoples have contributed to plant diversity by breeding assorted crop varieties to suit particular local conditions.[93]

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87 The literature on the intervention of traditional societies in the process of improving, conserving and preserving biological resources is immense. See Craig Jacoby & Charles Weiss, "Recognizing Property Rights in Traditional Biocultural Contribution" (1997) 16 *Stanford Environmental Law Journal* 74; Emily Marden, "The Neem Tree Plant: International Conflict over the Commodification of Life" (1999) 22 *Boston College International and Comparative Law Review* 279; Curtis Horton, "Protecting Biodiversity and Cultural Diversity under Intellectual Property Law: Toward a New International System" (1995) 10 *Journal of Environmental Law and Litigation* 1.

88 Articles 10, 16, 8(j), and 15 and 17 of the CBD.

89 Darrell Posey, *Traditional Resource Rights-International Instruments for Protection and Compensation for Indigenous Peoples and Local Communities* (IUCN, 1996).

90 Elias Carreno Peralta, "A Call for Intellectual Property Rights to Recognize Indigenous People's Knowledge of Genetic and Cultural Resources" in Anatole Krattiger, (ed.,) *Widening Perspectives on Biodiversity* (Gland, Switzerland: IUCN, 1994) at 288. See also, Dan Perlman & Glenn Adelson, *Biological Diversity: Exploring Values and Priorities in Conservation* (Mass: Blackwell Inc., 1997).

91 John Young, *Sustaining the Earth* (Mass: Harvard University Press, 1990).

92 Erich Isaac, *Geography of Domestication* (New Jersey: Prentice-Hall, 1970).

93 Friends of the Earth, *Intellectual Property Rights and the Biodiversity Convention: The Impact*

For instance, Indian farmers have grown over 30,000 different varieties of rice during the past century. The native Andeans have developed hundreds of species of tomatoes, potato, maize and beans. As a matter of fact, scientists reckon that the "the total genetic changes achieved by farmers over the millennia was [is]far greater than that achieved by the last hundred or two years of more systematic science-based efforts."[94]

Apart from developing new varieties, the knowledge of plant resources-related knowledge by local farmers is often phenomenal and pragmatic. For example, in Sierra Leone, local farmers can differentiate between 70 different varieties of rice based on several criteria including: length to maturity, ease of husking, proportion of husk to grain size and weight, susceptibility to insect attack, behaviour in different soils and moisture levels, cooking time and qualities.[95]

This knowledge is not merely of academic or theoretical importance; it serves practical ends. For instance, in Rwanda, farmers have cultivated mixtures of beans that perform better in their poor soil conditions.[96] The Aguarana Jivaro community in the Peruvian Amazon has developed 61 distinct cultivars of cassava and in the Philippines 123 rice varieties have been found at just five sites.[97] In both cases, the varieties are designed to suit certain specific requirements and local needs. Thus, the abundance of multitudinous varieties and species of plant resources and the knowledge of the uses thereof among the so-called traditional societies is not a mere function of a geographical quirk but partly a result of deliberate and cumulative efforts spanning thousands of years.

Modern international law has equally come to terms with the reality of traditional input into the improvement, conservation and diversification of plant resources.[98] The preamble of the CBD recognizes the "close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources."[99] Article 10 (c) of the CBD obliges Contracting Parties to "protect and encourage customary use of biological resources in accordance with cultural practices that are compatible with conservation or sustainable use requirements."[100]

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of GATT (Bedfordshire, 1995) at 2. Traditional ecological knowledge may be defined as "a body of knowledge built by a group of people through generations living in close contact with nature. It includes a system of classification, as set of empirical observations about the local environment, and as a system of self-management that governs resource use." See, Martha Johnson, "Research on Traditional Environmental Knowledge: Its Development and its Role" in M. Johnson, (ed.,) *Lore: Capturing Traditional Environmental Knowledge* (Ottawa: IDRC, 1992) at 2.

94 Shiva, *supra* note 76 at 259.

95 Cited in, Gurdial Singh Nijar, "Towards a Legal Framework for Protecting Biological Diversity and Community Intellectual Rights – A Third World Perspective" Third World Network Discussion Paper, Penang, Malaysia (On file with the author) at 17. [Hereinafter, Gurdial Nijar]

96 *Friends of the Earth, supra* note 93.

97 *Friends of the Earth, supra.*

98 Hence, the importance attached to *in-situ* conservation of plant resources and a holistic approach to biological diversity. The preamble to the CBD notes that the fundamental requirement for the conservation of biological diversity is the *in-situ* conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings. See Preamble, CBD, *supra*.

99 CBD, *supra*.

100 CBD, *supra*.

Recognition of the mutually reinforcing nature of human culture with biological diversity is expressed in Article 8 (j) of the CBD which obliges Contracting Parties to:

> [R]espect, 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 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.[101]

The salient points from the above analyses are that the links between rational human impact on and mutual interaction with plant resources is enormous and profound. Second, the notion that plant resources in the gene-rich countries are resources of a "wild" character is often generalized and exaggerated. A considerable portion of the so-called wild plant resources and ecosystems are in fact products of centuries of human impact on the ecosystem and particularly, plants.[102]

Thus, to determine the boundary, if any, between the so-called wild plant species or "unknown" varieties thereof and the "domesticated" versions and the uses thereof requires a substantial degree of circumspection and open-mindedness. The ideological or perhaps philosophical issue is that a conception of all PRRK as "raw materials" for Western biotechnology denies and delegitimizes the enormous intellectual contributions made over the centuries by the so-called informal breeders, farmers and other practitioners of PRRK. The other implication is that the extermination or even loss by acculturalization or "civilization" of a local community may probably result in the loss of immense knowledge of PRRK.[103]

Question (b)

If the answer to (a) is in the affirmative, do some of those rational human intervention rise to the level of legally remunerable and protectable innovations or inventions?

Given the preceding conclusions on the human impact on the improvement and sustenance of PRRK, the next pertinent issue is whether those innovations and inventions rise to the level of patentable PRRK. For the purposes of securing patent protection on PRRK, it is not enough that an innovation has been wrought. The threshold for legal protection as a patent, at least in theory, is whether the invention has surpassed obvious or prior art in the field of that invention.[104] In attempting to apply patent-like protections to PRRK, perhaps, the better approach is to ask: when does PRRK innovations, private or collective, surpass obvious knowledge or prior art?[105]

In addressing this question, two misconceptions on the "traditionality" of traditional knowledge and "naturalness" of PRRK should be dealt with. First, references to the innovations and

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101 Article 8 (j) of the CBD, *supra*.

102 John Young, *supra* note 91; Michael Hochberg, (ed.,) *Aspects of the Genesis and Maintenance of Biological Diversity* (Oxford: Oxford University Press, 1996); Les Kaufman & Kenneth Mallory (eds.,) *The Last Extinction* (Cambridge, Mass: MIT Press, 1993).

103 *IUCN: Inter-Commission Task Force on Indigenous Peoples and Sustainability, Cases and Actions* (IUCN & International Books, Utrecht, 1997). The dangers of cultural/biodiversity extinction by "civilization" has not been adequately examined by scholars.

104 Tamsen de Valoir, "The Obviousness of Cloning" (1995) 9 *Intellectual Property Journal* 349; Nicholas Seay, *supra* note 59.

105 Jorge Caillaux, "Biological Resources and the Convention on Biological Resources" (1994) 1 *Journal of Environmental Law and Policy in Latin America and the Caribbean* 9 at 10.

knowledge of traditional societies, especially on the issue of PRRK as "traditional" are often misconstrued to imply or mean that PRRK is static, antiquated, historical and time-honoured. That is to say, intellectual relics of a by-gone era handed down to modern successors as a legacy or heritage. Of course, there exists "traditional knowledge" elements both in the Western and non-Western paradigms that are long-known. However, the notion of antiquity associated with traditional knowledge, especially, on PRRK is a misapprehension of the nature of PRRK. As the Four Directions Council points out,

> [W]hat is 'traditional' about traditional knowledge is not its antiquity but *the way it is acquired and used*. In other words, the *social process of learning and acquiring which is unique to each indigenous group, lies at the heart of its 'traditionality*.' Much of this knowledge is actually quite new, but it has a social meaning and legal character, entirely unlike the knowledge indigenous people acquire from settlers and industrialized societies.[106]

Article 8 (j) of the CBD also recognizes the dynamic and living character of traditional knowledge.[107] The second common misconception about traditional knowledge is the notion that PRRK innovations are mere discoveries of "natural phenomena" waiting for the fortunate discoverer. As Gurdial Nijar has observed,

> [T]traditional uses, although based on natural products, are not 'found in nature' as such. They are products of human knowledge. To transform a plant into a medicine, for example, one has to know the correct species, its location, the proper time of collection (some plants are poisonous in certain seasons), the part to be used, how to prepare it (fresh, dried, cut in small pieces, alcohol, the addition of salt, etc.), the way to prepare it (time and conditions to be left in the solvent). And finally the posology (route of administration and dosage).[108]

Put simply, it would be erroneous and too sweeping to characterize all traditional PRRK as mere "raw materials" for the biotechnology industry or as fortunate revelations of the workings of nature. The mere fact that PRRK is natural does not necessarily mean that there is an absence of human intellectual input in the improvement and modification of its economic utility. Further, assuming but not conceding that traditional PRRK are mere products of nature, (which is not necessarily true as already argued) patent law and procedure, both in United States and the European Union[109] do not prohibit patents on natural plant resources *per se*; provided the resource in question rises to a certain level of human mediation such as purification or isolation.[110]

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106 Graham Dutfield, "The Public and Private Domains: Intellectual Property Rights in Traditional Ecological Knowledge" *Oxford Electronic Journal of Intellectual Property Rights* <http//users.ox.ac.uk/~mast. Accessed on 9/21/99. (Emphasis added). Alternatively, see Russell Barsh, "Forests, Indigenous Peoples and Biodiversity: Contribution of the Four Directions Council" Submission to the Secretariat of the Convention on Biological Diversity (1996).

107 CBD, *supra*.

108 Gurdial Nijar, *TRIPS and Biodiversity: The Threat and Responses – A Third World View* (Malaysia: Third World Network, 1996) at 16.

109 Article 2 of the EU Patent Directive states that "biological material which is isolated from its natural environment or processed by means of a technical process may be the subject of an invention even if it already occurred in nature." See *Seedling*, October 1997, Vol. 14, No. 3 at 2.

110 Carlos Correa, "Biological Resources and Intellectual Property Rights" (1992) 14 *European Journal of Intellectual Property Review* 154.

Furthermore, as the Sierra Leonean example indicates, PRRK innovation systems, particularly, in plant breeding, can be quite complex and is not a process of mere conservation or knowledge of gene pools. It is in fact a mechanism for enhancement of natural genetic resources, albeit slow and laborious.

In order to achieve this, traditional farmers:

> [E]mploy taxonomic systems, encourage introgression, use selection, make efforts to see that varieties are adopted, multiply seeds, field test, record data and name varieties [and in fact]… do what many Northern plant breeders do.[111]

It is this intricate innovation system and processes that often yield the stupendous varieties and holistic knowledge of PRRK which traditional farmers and healers have been reputed for. According to a World Resources Institute report,

> [I]ndians dwelling in the Amazon River make use of some 1300 medicinal plants, including antibiotics, abortifacients, contraceptives, anti-diarrheal agents, fungicides, anesthetics, muscle-relaxants, and many others most of which has not been investigated by researchers.[112]

Indeed, 74 per cent of the pharmacologically active trees reported by an indigenous group correlated with laboratory tests whereas in contrast only 8 per cent of random samplings showed any activity.[113] In short, absent "the aid of indigenous groups, it is estimated that for every commercially-successful drug, at least five thousand species must be tested."[114] Michael Balick of the New York Botanical Gardens found that using traditional knowledge increased the efficiency of screening plants for medicinal properties by more than 400%.[115] It is therefore no coincidence that a decisive number of drugs derived from plant resources have been with the help of local

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111 *Friends of the Earth, supra* note 93 at 4. As this report notes, a new variety of rice known as "mashuri", which was rejected by official researchers on research stations, somehow found its way to farmers in the Indian state of Andhra Pradesh. Local farmers experimented with it, and finding its performance well suited to local conditions, facilitated its spread to others. It is now reported to be the third most popular variety in India. See, Friends of the Earth, *supra*.

112 Quoted in, Ranee Panjabi, "International Law and the Preservation of Species: An Analysis of the Convention on Biological Diversity Signed at the Rio Earth Summit" (1993) *11 Dickinson Journal of International Law* 187. But see, David Scalise & Daniel Nugent, "International Intellectual Protection for Living Matter: Biotechnology, Multinational Conventions and the Exception for Agriculture" (1995) *Case Western Reserve Journal of International Law* 83; Robert Merges, "Intellectual Property in Higher Life Forms: The Patent System and Controversial Technologies" (1988) 47 *Maryland Law Review* 1051. These writers opine that non-Western innovations of genetic characteristics are comparatively inferior to Western innovations because in their view, the former lacks exactitude and has a tendency to lose those cherished characteristics of new varieties after some time.

113 Curtis Horton, note 87, *supra*.

114 Daniel Jenks, "The Convention on Biological Diversity-An Efficient Framework for the Preservation of Life on Earth?" (1995) 15 *Northwestern Journal of International Law and Business* 636 at 646.

115 Cited in Gurdial Singh Nijar, "Towards a Legal Framework for Protecting Biological Diversity and Community Intellectual Rights- A Third World Perspective" Third World Network Discussion Paper, Penang, Malaysia (On file with the author) at 3.

peoples operating outside the dominant Western framework of what constitutes "scientific knowledge."[116]

It therefore seems that part of the opposition by the "scientific and industrial" community to the patentability of PRRK have nothing to do with the innate inferiority of such inventions but a socially constructed relegated status of traditional PRRK. According to environmental activist Pat Mooney, "the argument that intellectual property is only recognizable when performed in laboratories with white lab coats is fundamentally a racist view of scientific development."[117] Every PRRK and invention, regardless of the cultural framework from which it springs from deserves to be judged on its own merits and not to be peremptorily categorized as "raw material" or automatically elevated to the status of an invention merely because of the respective cultural setting in which it is made or derived.

Part Four deals with two related sets of issues on the question of patentability of PRRK and inventions; namely, the purported individual character of the inventive step or process, and the question of novelty or lack thereof of innovations or inventions related to PRRK.

IV. Patentability of biological inventions by local groups/traditional healers and farmers: beyond the myth

There is a common notion that the patent concept is *inter alia*, incompatible with the inventive process in traditional communities.[118] Another commonly held notion is the alleged absence of novelty in traditional PRRK. These notions rest on two faulty assumptions; to wit,

a. individual character of the inventive process,
b. absolute and global criterion of novelty and prior art.

An evaluation of these assumptions as the following pages will demonstrate, reveals a misapprehension about the modern character and dynamics of the contemporary patent system.

1. Invention Inc., and the myth of the individual inventor

The communal/collective nature of the development and improvement of PRRK in traditional social structures and units has been posited as one of the grounds why such units of legal *persona* may not secure patent protection for their intellectual contributions to PRRK.[119] In contrast, this

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[116] See note 106, *supra;* Kadidal, *supra* note 70; Naomi Roht-Arrioza, "Of Seeds and Shamans: The Appropriateness of the Scientific and Technical Knowledge of Indigenous and Local Communities" (1996) 17 *Michigan Journal of International Law* 940.

[117] Shiva, *The Violence of the Green Revolution*, *supra* note 76, at 259.

[118] Shiva, *ibid.* See also, Ruth Gana, "Has Creativity Died in the Third World? Some Implications of the Internationalization of Intellectual Property" (1995) 24 *Denver Journal of International Law and Policy* 109.

[119] Ruth Gana, "Has Creativity Died in the Third World? Some Implications of the Internationalization of Intellectual Property" (1995) 24 *Denver Journal of International Law and Policy* 109; Curtis Horton, *supra* note 87.

school of thought points to the individualistic structure of Western societies. The contention is that the patent system is partly predicated on the concept of the inventor as an individual and the inventive process itself, as an exercise in solitude.[120] Neither of these assumptions can hold water. In addition to the obvious generalization inherent in this categorization of the inventive process in non-Western societies,[121] there are problems of misapprehension of the modern social structure of the inventive process in Western societies.

First, the picture created by the notion of an individualized inventive process in the Western world is that of an inventor working alone and the invention, a product of *his* own genius. Without this individual inventor, the invention would probably never materialize. The invention is thus the "sweat of the inventor's own genius." The theory is that the patent grant is designed to compensate *him*-the individual inventor. This idealized, in fact, antiquated conception of the character of the inventive process, albeit heroic, is a fiction; indeed, a myth.

The individualism in Western societies is probably a social fact but to suppose that the social structure of the inventive process has remained static since the days of Benjamin Franklin and James Watt is erroneous. The notion of the solitary Western scientist and inventor in his isolated basement or garage has become an anachronism. The contemporary reality is that since the legal fiction of an employer's ownership in the employee's invention,[122] and the economics-of-scale of group research, a community of scientists working away in huge laboratory complexes has driven the concept of the solitary inventor to virtual extinction.

Were Leonardo Da Vinci, Thomas Edison, James Watt and Benjamin Franklin alive today, they would in all probability be working in commercial/multinational or public-funded laboratories, bouncing ideas off one another and seeking solutions to complex problems. As Alfred Kuhn has noted,

> [T]he transformation of technology and of economic society during the last century negates completely the patent law assumption as to the nature of the inventive process…In the modern research laboratories, tens, hundreds of men focus, upon single, often minute problems; inventions become increasingly inevitable.[123]

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[120] Kirsten Petersen, "Recent Intellectual Property Trends in Developing Countries" (1992) 33 *Harvard International Law* 277; Mark Hannig, "An Examination of the Possibility to Secure Intellectual Property Rights for Plant Genetic Resources Developed by Indigenous People's of the NAFTA States: Domestic Legislation Under the International Convention for New Plant Varieties" (1996) 13 *Arizona Journal of International and Comparative Law* 175. [Hereinafter, Hannig]

[121] It would be inconceivable to imagine a situation whereby each and every biological invention in traditional societies was a direct product of an unexplained instantaneous and collective inspiration or "flash of genius", as it were.

[122] In virtually every patent jurisdiction in the world, an employer owns the patent right to an employee's invention if the employer is hired to invent or the invention is made in the course of the employment using his employers' tools. However, under some narrow circumstances, the employee may own the invention. Similarly, governments and its research institutions can own acquire the inventions of its employees. See, David Vaver, *Intellectual Property* (Concord, Ont.: Irwin Law, 1997) 147-149.

[123] Machlup, *supra* note 28 at 78.

According to David Safran,

> [I]n this age, most inventions result from corporate research efforts…a growing number of these research efforts are the result of the work of several research and development teams that are located in different countries.[124]

As this army of inventors are put to work,[125] it is no coincidence that an overwhelming proportion of global patents on inventions are owned by corporate institutions and public-funded research institutions including universities, where researchers and inventors routinely work in groups.[126]

Assuming that the hypothesis of a collective inventive process in traditional societies holds, the transformation of the inventive process in Western societies is in several material respects similar to the inventive process in the so-called informal sector. As Stephen Brush notes, "collective invention is a common and determinant force in both local economies and the world economy."[127] Interestingly, it has not been suggested that such collectively invented products in Western societies cannot be patented because of a perceived inability of the Patent Examiner to identify precisely the individual in the team whose critical "flash of genius" was responsible for the invention.

Rather, the patent law was adjusted to create a convenient legal fiction of an employer's ownership in the employees' invention with the attendant consequence of not only reducing the individual inventor to a paid worker but also shrinking the public domain. The inescapable conclusion is that like the "scientists" in the laboratories of the industrialized states who exchange information, collective groups of traditional knowledge holders and practitioners also exchange ideas to resolve and find solutions to deep and complex PRRK problems. As the Crucible Group recently observed, "farmer's fields and forests are laboratories. Farmers and healers are researchers. Every season is an experiment."[128] If corporate inventors are honoured with patents, a *fortiori*, their "informal" counterparts deserve the same privileges.

Further, just like the modern patent law created the fiction of corporate "creative or inventive" genius to serve social and economic imperatives, non-Western jurisprudence has legal personalities serving same or similar ends. These artificial legal personas or juridical entities are usually designed for the regulation of diverse functions including land ownership, succession, inheritance, *et cetera*. Indeed, the category of legal persons is not closed. In sum, the communal and

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[124] David Safran, "Protection of Inventions in the Multinational Marketplace: Problems and Pitfalls in Obtaining and Using Patents" (1983) 9 *North Carolina Journal of International Law and Commercial Regulation* 117.

[125] Penrose, *supra* note 12; Machlup, note 28, *supra*; J. Schmookler, *Invention and Economic Growth* (Cambridge, Mass: 1972).

[126] It is doubtful whether this radical transformation of the patent concept serves the interest of the inventor as an individual. As Soltysinski has argued, "the patent system has largely lost its original purpose which consisted in providing incentives to individual inventors. The recognition of the employer's right to inventions made by his employee has resulted in depriving the latter of all benefits associated with a patent." See, S.J. Soltysinski, "New Forms of Protection for Intellectual Property in the Soviet Union and Czechoslovakia" (1969) 32 *The Modern Law Review* 408.

[127] Stephen Brush, *supra* note 18, at 145.

[128] The Crucible Group, *supra* note 15, at xviii.

collective[129] nature of the inventive process in the informal sector is not inherently inconsistent with modern patent premise.

Furthermore, the alleged boundary between individual and collective creativity is a conflation of communalism with the notion of collective inventions. Often, an individual in the community of persons may derive inspiration from pre-existing knowledge, (just like his Western counterpart), and from thence, invent something "of intricate detail and complexity, reflecting great skill and originality."[130] In short, "gross generalizations about the irreconcilability of collective and individual"[131] rights or contributions towards inventiveness cannot be maintained.

There is also the issue of public domain and PRRK. The argument of opponents of communal patents on PRRK is to the effect that PRRK is a matter of common knowledge and resides in the public domain. This argument is flawed on at least, three grounds. First, not all traditional or informal PRRK is in the public domain. For instance, native healers, in particular, hardly reveal the secrets of their medicinal PRRK and herbal remedies. Secrecy of their knowledge ensures their power and influence in the community. Indeed, the rituals, magic and spirituality which often surrounds the practice of traditional healing is, in addition to their other myriad societal functions, a critical aspect of the "secrecy regimes"[132] imposed on PRRK and herbal remedies by herbalists and healers.

Second, assuming, but not conceding that all PRRK is in the public domain, unconsented placement of knowledge in the public domain, does not *ipso facto*, extinguish a right of ownership to intellectual property,[133] hence the regime of prior informed consent (PIC) at modern international law on access to traditional PRRK.[134] Ironically, it is often the same information or knowledge construed to be in the "public domain" in traditional societies, which affords the basis for some PRRK patents in some other countries, particularly, Japan and the United States.[135] Third, the concept of public domain is an occidental legal principle which has little or no relevance under most customary law in the jurisprudence of traditional societies.

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129 Ronald Ganet, "Communality and Existence: The Rights of Groups" (1983) 56 *Southern California Law Review* 1001.

130 See Justice Von Doussa, in *Milpurrurru v. Indofurn (Pty) Ltd* (1995) 30 IPR 209 at 216. In the preparation of this paper, Tomme Rosanne-Young opined that corporate inventions are put into use when such inventions are completely invented whereas, (as she argues) traditional knowledge inventions seem to come into existence after being in use. Second, that corporate membership, unlike traditional societies is fixed and determinate. With due deference, the suggested distinctions, if at all they exist, are not insurmountable problems capable of defeating the concept of community patents. Rules of membership of a corporate organization, like traditional societies are not necessarily uniform but a prerogative of national laws and the internal constitution of that corporate body or traditional society.

131 Leighton McDonald, "Can Collective and Individuals Rights Coexist?" (1998) 22 *Melbourne University Law Review* 310.

132 WIPO Report, *supra* note 2 at 69. Furthermore, in traditional healing with biological resources, healers often maintain a monopoly of their knowledge by "tying" their biological remedies to requirements for physical objects which the inventor can monopolize "or elaborate procedures that are hard to copy without selective initiation.

133 Dutfield, note 106, *supra*.

134 Article 15 of CBD, *supra*.

135 Emily Marden, note 87 *supra;* Shayana Kadidal, "Subject-Matter Imperialism", *supra* note 67.

2. Absolute and global novelty of the invention

The second common notion underpinning opposition to patents on traditional PRRK pertains to the assumption that there is a universal consensus on the concept of novelty as a criterion in granting patents. A careful analysis of international patent law and practice does not support the notion of absolute global novelty in the determination of what constitutes a patentable invention. The criterion of novelty is regrettably, geographically relative and arbitrary. While this situation is to be decried and needs to be changed, it remains the *lex lata*.

Neither the TRIPs Agreement, nor any other relevant international legal instrument contains any definition of the concept of novelty. As the United Nations Conference on Trade and Development (UNCTAD) recently observed, "there is no agreed international standard of absolute novelty and, *within limits*, member countries may apply the different approaches recognized in domestic patent laws."[136] The problem is that no binding international custom or legislative instrument has yet demarcated the boundaries of the acceptable "limits" of domestic jurisdictional prerogative in defining novelty and prior art. As Richard Gardiner has lamented,

> [I]n the light of uncertainty as what it is that is protected by patent law (both in the case of what required element of inventiveness is central to patentability and the extent of what the patent actually protects), readers of the Reports of Patent cases might well reach the conclusion that the state of the law in this field depends on how key concepts strike the judge hearing a cause or fit the line of reasoning …invention…idea..ingenuity.. and discovery are used by the courts in conjunction with novelty and the notion of what is inventive or not obvious in unpredictable ways.[137]

In addition to the definitional anarchy on novelty at the domestic level and a total absence of a global standard on novelty, an international juridical bifurcation arising from the United States and European patent law jurisprudence on novelty and prior art has not yet been bridged. For example, the United States Supreme Court held in *Gayler v. Wilder*, that:

> [I]f the foreign invention had been printed or patented, it was already given to the world and open to the people of this country as well as of others, upon reasonable inquiry…*but if the foreign discovery is not patented, nor described in any printed*[138] *publication, it might be known and used in remote places for ages, and the people of this country be unable to profit by it. The means of obtaining knowledge would not be within their reach; and as far as their interest is concerned, it would be the same thing as if the improvement had never been discovered.*[139]

This technical and geographically-relative approach to construing the concept of novelty and prior art is hardly dissimilar to the medieval regime of invention by importation; yet it has

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136 *The TRIPs Agreement and Developing Countries* (Geneva: UNCTAD, 1996) at 32. [Emphasis added]

137 Richard Gardiner, "Language and the Law of Patents" (1994) 47 *Current Legal Problems* 255 at 256.

138 In addition, the question of what constitutes printed matter may produce curious judicial decisions. For instance, in *Carter Prods, Inc., v. Colgate-Palmolive Co.*, 130 F. Supp 557, 104 U.S.P.Q. (BNA) 314 (D. Md. 1955) it was held that that a typewritten patent document from Argentina was not a printed matter and therefore could not debar a patent application and grant in America for an invention already patented in Argentina.

139 51 U.S. (10 How.) 477 (1850). [Emphasis mine]

legislative force by virtue of section 102 of the United States Patent Act.[140] The trouble with Section 102 of Title 35 of the United States Code and similar provisions elsewhere is that it confers juridical sanctity on the phenomenon of bio-piracy by legalizing the process by which PRRK may be appropriated from one country by another state through the patent system. The existence of a dual regime on novelty is therefore a blemish on the international patent system. Commenting on this, Meetali Jain notes that:

> [P]articularly worrisome are the ramifications of Section 102 of the United States Patent Act. Under this provision, whereas prior knowledge, use or invention in the United States can be used as an evidence to invalidate a US patent for lack of novelty, similar foreign activity can not be used against a US patent. The only foreign evidence which qualifies to invalidate US patents is an actual patent, a known or used invention or an invention that was described in a printed publication. This technically narrow interpretation of 'novelty' remains wedded to the concept of tangibility and blind to the oral traditions and knowledge of genetic resources, resources which largely flourish in biodiversity-rich areas.[141]

In effect, for the purposes of determining novelty of invention, there are parallel regimes on publication, that is, *de facto* publication and *de jure* publication.[142] Given that innovations in the informal paradigm are largely conducted in oral traditions, the triteness of the PRRK in such societies would not debar such PRRK from being construed as "novel" in another country like the United States.[143]

Hence, what is an obvious invention or prior art in India, as the controversy over *Neem* derivatives and *Turmeric* patents demonstrate,[144] may be construed as a novel art in the United States of America for the purposes of obtaining a patent grant. Consequently, the blurring of the law on novelty permits, or even encourages some biotechnology and pharmaceutical firms to appropriate PRRK through a cosmetic re-packaging of those resources and knowledge.[145]

Needless to say, a world standard of novelty is a necessity if the patent system is to acquire a measure of credibility as regards its role in PRRK.[146] Remarkably, the United States' President's

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140 35 U.S.C. 1982. See also, Stephen Gratwick, "Having Regard to What Was Known and Used" (1972) 88 *The Law Quarterly Review* 341. Further to the WTO, the United States has amended this section but the amendment limits it only to WTO Member states!

141 Meetali Jain, "Global Trade and the New Millennium: Defining the Scope of Intellectual Property Protection of Plant Genetic Resources and Traditional Knowledge in India" (1999) 22 *Hastings International and Comparative Law Review* 777 at 781.

142 There is a commonly held view that all traditional knowledge is uncodified. This is far from the truth. In addition to the Ayurvedic System which is codified in 54 authoritative texts, the Siddha System is codified in 29 authoritative texts and the Unani Tibb tradition in 13. In India, the First Schedule of the Drugs and Cosmetics Act, No. 23 of 1940, as amended by the Drugs and Cosmetics (Amendment) Act No. 71 of 1986, specifies the authoritative books of the three systems. See, The WIPO Report, *supra* note 2 at 73. Similarly, many traditions of traditional healing in Southern Nigeria are codified in signs and symbols known only to the initiates.

143 Samuel Oddi, "Beyond Obviousness: Invention Protection in the Twenty-First Century" (1989) 38 *The American University Law Review* 1097.

144 Shayana Kadidal, "Subject-Matter Imperialism?", *supra* note 60; Emily Marden, *supra* note 87.

145 Kadidal, *supra* note 70.

146 David Harbutt, "Fixing the Biodiversity Convention: Toward a Special Protocol for Related Intellectual Property" (1994) Vol. 34 No. 2 *Natural Resources Journal* 379.

Commission on the Patent System issued a report in 1966 strongly recommending that Section 102's arbitrary geographical distinction on novelty be abolished.[147]

V. Conclusion: A Conceptual framework for community patents

Having demonstrated the patentability of communally generated PRRK, this section examines options for addressing intellectual property rights protection for such inventions and innovations. It considers two of the frequently referenced alternatives – (a) community registration and (b), "*sui generis*" systems and then resolves in favour of utilization of a community patents.[148] These two options have assumed a measure of frequency in recent scholarship and in some national instruments on the issues already discussed.

1. Register of traditional knowledge

One of the major suggestions and trends in this regard has been the establishment of a so-called Register of Uses.[149] This body of documented knowledge is designed to form the basis of contracts for the commercial exploitation of PRRK and inventions.[150] This concept has found root in India,[151] Uganda, Peru, and South Africa.[152] Unless States are willing to invalidate patents on PRRK obtained in any manner inconsistent with the letter and spirit of the CBD[153] on Prior-Informed-Consent and equitable sharing of benefits derived from PRRK, there are some difficulties associated with a mere registration of traditional PRRK. First, the documentation of PRRK implies that such resources are an ancient and static phenomenon. Traditional knowledge as already pointed out is an evolving and living experience. Save perhaps for the cases of genocide and extermination of some distinct traditional societies, especially indigenous peoples,[154] the ideal focus ought to be on maintaining the ecosystem and lifestyles of traditional PRRK practitioners.

Second, in the absence of what the Crucible Group has termed convincing "Global Morality",[155] it is doubtful whether such documentation would escape the reach of some bio-prospectors who may not have much regard for the emerging norms on the need for the Prior Informed Consent

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148 Articles 16 (5) & 8 (j) of the CBD.

149 William Lesser, *Sustainable Use of Genetic Resources Under the Convention on Biological Diversity: Exploring Access and Benefit Sharing Issues* (Oxford: CAB International, 1997) at 129. The register is to constitute a body of knowledge of the occurrence, practices, propagation, and varied uses of biological resources in local communities.

150 R. V. Anuradha, "In Search of Knowledge and Resources: Who Sows? Who Reaps?" (1997) 6 *Review of European Community and International Law* 263.

151 Lyle Glowka, *A Guide to Designing Legal Frameworks to Determine Access to Genetic Resources* (IUCN, 1998).

152 WIPO Report, *supra* note 1 at 102.

153 Article 75 of Decision 486 of the Andean Community on a Common Industrial Regime which entered into force on 1 December 2000 nullifies any such patents. See, Manuel Ruiz, "The Andean Community's New Industrial Regime: Creating Synergies Between the CBD and Intellectual Property Rights" 2000 *Bridges* 12.

154 *IUCN Report*, *supra* note 103.

155 The Crucible Group, *supra* note 14 at 2.

(PIC) of traditional PRRK holders and practitioners. As the cases of patents from *Neem* Tree, *Turmeric*, and other controversial PRRK patents indicate, mere publication may not debar the emergence of such patents. Accordingly, what is needed is a combined regime of (a) globally binding legal consensus prescribing a uniform standard of novelty and "prior art" for the purposes of patents on PRRK,[156] and (b) a certification of lawful acquisition of any patented PRRK.

Third, the Registry-of-Uses approach, unless it specifically details the level of traditional innovation involved, is an implicit acceptance of the mistaken notion or generalization that all PRRK is raw material; without sufficient intellectual input by traditional or informal innovator and inventors.[157] This attitude denies the intellectual effort and input by traditional knowledge practitioners in the PRRK; a position inconsistent with modern international law.[158] The case of traditional PRRK practitioners is not merely a claim for monetary profits; it also encompasses a claim for global recognition of their contributions, both historical and modern in the realm of PRRK.[159] As the recent WIPO report notes, "they (PRRK practitioners) do not wish to be confined to the role of mere purveyors of resources and know-how for the benefit of commercial interests in which they would have no participation."[160]

Fourth, registration of traditional PRRK for bio-prospecting contracts may open the way for the exploitation of unwary traditional PRRK practitioners and even when the situation is sought to be avoided the result may well be emergence of a paternalistic bureaucracy to oversee the transactions. The problems of the immense bargaining advantages possessed by influential bio-prospectors and the undesirability of a distant bureaucracy deserve serious consideration.[161] Fifth, contracts, which are based upon the Register-of-Uses, may raise problems of privity as disgruntled members of the local community may raise legal objections to frustrate the contract.[162]

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156 *The Relationship Between Intellectual Property Rights and the Relevant Provisions of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) and the Convention on Biological Diversity*, UNEP/CBD/ISOC/5, 11 May 1999 at 2. The proposed global standard of novelty should operate on the basis that the alleged invention is new in relation to global prior art on the subject as against the national standard which is unduly parochial in a globalized world.

157 Daniel Putterman, "Model Material Transfer Agreements for Equitable Biodiversity Prospecting" (1995) 7 *Colorado Journal of International Environmental Law and Policy* 149.

158 Articles 10, 8, 15, and the Preamble of the CBD.

159 *The Declaration of Belem*, Brazil, 1988. Available <http://users.ox.ac.uk/~wgtrr. belem.htm. Accessed on 9/2/99.

160 *WIPO Report, supra* note 1 at 165.

161 Negotiations between highly unequal negotiators can often yield strange results. Perhaps, the most sensational instance of such bargains for knowledge of PRRK occurred in the Ecuadorian Amazon. According to Vogel, "In May 1986, a chief from the Secoya community of Ecuador exchanged some *Banisteriopsis caapi* ("yage" in the local language) for two packs of Marlboro cigarettes to a person whom he would later describe simply as a "gringo." That 'gringo' was Loren Miller of the International Plant Medicine Corporation who was interested in *Baristeriopsis caapi* for its known psychoactive properties as an hallucinogenic. Miller applied for a plant patent from the U.S Patent and Trademark Office and was subsequently granted Plant Patent no. 5,751." See, Vogel, *supra* note 85 at 11. But see, *Edmonds Institute, et al., v. Bruce Babbit, In His Official capacity as Secretary of the Department of the Interior, et al*. 42F. Supp. 2d 1. Compare with the Merck/Inbio Agreement.

162 *Supra* note 156 at 2. On draft contracts, see, Alan Putterman, *supra* note 157.

2. The *sui generis* option under article 27 (3) of TRIPS

The question of a *sui generis* intellectual property regime, especially, for plant varieties as contemplated by Article 27 (3) of the TRIPs Agreement must be addressed in any treatment of this issue. The phrase "*sui generis* intellectual property regimes" has achieved remarkable popularity in academic writings[163] and legislative initiatives in some developing countries.[164] However, a careful reading of the text of the TRIPs Agreement within the context of global politics and economics of the struggle for PRRK may dampen any enthusiasm in this regard because it would be difficult to achieve a global consensus on a new protective framework for PRRK, especially, for plants, different from the UPOV system.[165] Some factors enumerated below yield this conclusion.[166]

First, it is significant that neither the word "effective" nor the term "*sui generis*" is defined in the TRIPs Agreement. Ashish Kothari and Anuradha have rightly noted that the minimum requirements for any "effective *sui generis*" as contemplated by Article 27 (3) of the TRIPs Agreement would include the following:

a. an intellectual property right,
b. national treatment as established by the Paris Convention,
c. a grant of Most Favoured Nation (MFN) advantage to all WTO Member states,
d. cover plant varieties of all species,
e. be more than a registration of a trademark/name,
f. permit actions against infringement,
g. be more than a geographical denomination, and
h. provide more than protection against unfair competition

In other words, the proposed effective *sui generis* model would be a plant patent by another name.[167] In effect, the terms of the UPOV convention, as amended, would probably be the parameter for assessing the "effectiveness" of any *sui generis* model. In fact, the Director-General of the GATT in 1994 lent credence to this surmise when in reference to Article 27 (3) he confirmed that "…in practice, many countries will, nonetheless, wish to profit from the experience that has been gained under the UPOV and tailor their systems to it."[168] Clearly, there is nothing currently

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163 Ashish Kothari & R. V. Anuradha, "Biodiversity and Intellectual Property Rights: Can the Two Co-exist?" (1999) Vol. 2, No. 2. *Journal of International Wildlife Law and Policy* 204; Gurdial Singh Nijar, *In Defence of Local Community and Biodiversity – A Conceptual Framework and the Essential Elements of a Rights Regime* (Penang, Malaysia: TWN Paper 1, 1996); Jacoby & Weiss, *supra* note 87; Emily Marden, *supra* note 87, Curtis Horton, *supra* note 87; Tomme Young, "Plant Breeders' Rights in Tanzania – Legislative Proposals Regarding the Protection of the Rights of Private Institutional Researchers Regarding the Creation of New Varieties and Hybrids of Commercial or Other Value" (on file with the author).

164 African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources, Organization of African Unity, Algeria 2000 – Rights of Communities, Farmers, Breeders and Access to Biological Resources.

165 *International Convention for the Protection of New Plant Varieties*, 815 U.N.T.S. 89. [Hereinafter, UPOV Convention]

166 Meetali Jain, *supra* note 141 at 777.

167 Ashish Kothari & R. V. Anuradha, *supra* note 162.

168 P. Sutherland, "Seeds of Doubt: Assurance on "Farmer's Privilege" *Times of India*, 15 March 1994 at 4.

proposed that would be so "*sui generis*," as to escape the elements of a patent system. Accordingly, we are left with the patent system to tinker.

3. Outlines of a community patent

From the preceding pages it is clear that a patent-like system may be the only possible approach to a generally acceptable solution. As Hannig has noted, "until an alternative is found and accepted by the nations that have created IPR within their jurisdictions, we must mold and expand existing regime to the needs of indigenous peoples"[169] and traditional PRRK practitioners. Perhaps, given that patent systems are matters of national jurisdiction and that the CBD has recognized the historical and on-going intellectual contributions of farmers in the informal sector on PRRK, a system of communal patents, may be preferable and feasible. The concluding part of this paper aims to demonstrate how, at least in the *interim*, traditional PRRK practitioners may build on the FAO Undertaking and CBD reaffirmation of the sovereignty of states in designing laws on access to and exploitation of PRRK within their jurisdiction.

Indeed, such legislative steps have already been taken in Brazil. As Eugenio de Silva notes, "the law (the Brazilian law) also adopts a new concept for the application and patentability of indigenous industrial property rights, when it establishes a principle for the protectability of indigenous traditional knowledge."[170] Towards this end, some observations on the features of the proposed community patents are called for.

3.1 Legal personhood, patents and communal membership

With regard to the issue of legal persons who may be granted community patents as proposed in this paper, it is suggested that the solution lies in consummating and giving juridical effect to the already existing forms and types of legal personalities under customary law jurisprudence of traditional communities. The relevant legal personalities often include families, villages, clans, and/or any other recognized legal personas under the jurisprudence of traditional communities. Unfortunately, traditional societies have hardly been allowed to define for themselves and grant formal legal efficacy thereto, of those myriad forms of legal personalities, which their societies recognize. Rather, Western jurisprudence has always insisted on defining for them conceptions of legal personality moulded in the social crucibles of Europe.

Hence, such legal persons as "stools, "families", "kindreds", "clans", "age-grades", the "spirits of the unborn", "ancestral spirits", and other forms and categories of legal personality; instead of their time-proven legal efficacy in traditional societies, have become mere exotic curiosities or examples of social anarchy or savage superstition in the eyes of Western jurisprudence. It is significant that some countries such as the Philippines[171] and Brazil have taken steps towards affirming that categories of legal persons are not limited to Euro-centric preoccupation with living individuals, corporations and registered unions.

In Brazil, for instance, pursuant to a proposed bill, PL[172] N. 2.057, of 23 October 1991, indigenous peoples have legal personality and their legal existence would not depend upon any type

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169 Hannig, *supra* note 120 at 197.

170 Eugenio da Costa e Silva, *Biodiversity-Related Aspects of Intellectual Property Rights* (IPRs) (UNU/IAS Working Paper No. 17, July 1996) at 41.

171 *Community Intellectual Rights Protection Act of 1994*, S. 1841, 9th Congress of the Republic of Philippines. [As cited in Jacoby & Weiss, *supra*]

172 PL is the acronym for "projeto de Lei", in English legislative bill.

of registration or any act of government.[173] Under the proposed legislation, "indigenous communities, or any of their members, have the right to apply for a patent of invention, utility model, industrial model or industrial design which has been developed utilizing their traditional collective knowledge."[174]

A concern often expressed by traditional peoples and critics of communal patents is that local communities are in the position of custodians of knowledge. This is hardly dissimilar to the revolving door of bundled interests in inventions arising from corporate institutions in which capacity to enjoy those benefits is not limited to those who were members of the corporate institution at the time the successful invention was made by employees of that company.

In any event, patents granted in the name of the respective indigenous community or other units of legal persona may be administratively rectified or corrected as the case may be, with respect to co-ownership rights of the invention or innovation in question. Under the Brazilian legislation for instance, indigenous communities may apply administratively for the cancellation or nullification of any patent obtained contrary to this law.

Critics of community patents often query that given the mostly oral basis of traditional societies, how would disputes of competing claims to a biological invention be resolved? This line of questioning pretends that ownership or priority over inventions in Western societies never arise and have never been judicially or administratively resolved even in the absence of documentary evidence. In any case, joint or multiple ownership of an invention is a legal fact and what is needed for community disputes on PRRK inventions is flexibility and adaptation. In this regard it deserves to be noted that a major policy thrust of the CBD is to enshrine an equitable regime on exploitation and conservation of PRRK resources. There is thus the need for certain flexibility in designing regimes of access to the benefits of any communally generated PRRK.

3.2 Industrialization of sacred biological inventions

Of serious concern to the sensibilities and culture of many traditional knowledge practitioners and communities is that much of their PRRK and innovations have spiritual significance and should not be "commodified" through the industrial and market process.[175] This is a legitimate concern but a misapprehension of the nature and operation of the modern patent system. For the purposes of obtaining a patent, whether collectively or individually, what international patent law requires is *inter alia*, the *capability* or *potential* of the invention in question to be industrialized.[176] The problem is that *capability* is conflated with *actual obligation* to industrialize the PRRK. Both are separate and distinct.

There are hundreds of thousands of patented inventions which have never been put to any industrial use. In fact, a considerable number of modern inventions spent many decades on the shelves before being actually put to industrial use. The most well known examples include the Television and the Fax machine which spent over 40 and 70 years respectively on the shelves before being "industrialized."[177] Indeed, given the global trend towards the abolition of compulsory

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[173] Silva, *supra* note 170 at 42.

[174] Art. 19 of PL 2057/91 (As cited in Silva, *supra*).

[175] Gurdial Singh Nijar, *In Defence of Local Community and Biodiversity – A Conceptual Framework and the Essential Elements of a Rights Regime* (Penang, Malaysia: TWN Paper 1, 1996) at 25.

[176] Article 27 (1) TRIPS, *supra*.

[177] Oddi, *supra* note 143.

working of patents, the fears of an industrial "commoditization"[178] of sacred community biological resources or inventions may be exaggerated.

3.3 Specification

Specification of inventions is the detailed description of the proposed invention which enables a person skilled in the art of that particular type of invention to replicate same. However, as already noted, given the peculiar difficulties in describing with completeness the workings of a living organism, specification of such inventions is no longer a strict requirement in patent law. As already noted, economic forces have made special allowance in modern times to lower the threshold in order to grant the same incentive to biotechnology and pharmaceutical industries as obtainable in the mechanical realm, hitherto, the domain of patents. There is no compelling reason why a similar approach would be inapposite for traditional PRRK.

3.4 Patent duration and custodianship

Regarding duration of such patents, international patent law under the TRIPS Agreement only sets a lower limit of 20 years. There is no upper limit and thus a substantially enhanced duration or even a perpetual patent of sorts would not fly in the face of contemporary international patent law. Indeed, patent terms have never been constant but a refection of perceived socio-economic need.[179] Given that some of the PRRK have religious and spiritual significance and may not be limited to monopoly use for 20 years, the duration of such communal patents may alternatively be renewed as often as the need warrants.

3.5 Defining novelty in communal biological inventions

On the issue of novelty of invention, the dichotomy on prior art as established by section 102 of Title 35 of the United States Code and similar legislation compels the need for a global agreement on a uniform standard of novelty. Domestically, the definition of novelty may be liberally construed to protect the evolving character of traditional PRRK. The Farmer's Right concept developed by the Food and Agriculture Organization is also an implicit endorsement of this approach as it recognizes the past, present and future intellectual contributions of farmers and PRRK practitioners.[180] It is in probable recognition of the above factors that The Third Word Network in Malaysia has made the following suggestions on the definition of novelty and innovation in the realm of PRRK:

> [A]ny collective and cumulative knowledge or technology of the use, properties, values and processes of any biological material or any part thereof rendered of any, or enhanced, use or value as a result of the said cumulative or technology whether documented, recorded, oral, written or howsoever otherwise existing including any

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178 Singh, *supra* note 163.

179 Lise Osterborg, "Patent Term a la Carte?" (1986) 17 *International Review of Industrial Property and Copyright Law* 60.

180 As defined in the 1989 undertaking, Farmer's Rights means "rights arising from the past, present and future contributions of farmers in conserving, improving and making available plant genetic resources, particularly those in the centres of organ/diversity." See *International Undertaking on Plant Genetic Resources, Resolution 8/83 of the Twenty-second Session of the FAO Conference*, 1983; and *Agreed Interpretation of the International Undertaking Resolution 4/89 and Farmers Righ*t, Resolution 5/89, of Twenty-fifth session, 1989. 102 countries have adhered to the Undertaking which is a non-binding instrument.

> alteration, modification, improvement thereof and shall also include derivatives which utilise the knowledge of local communities in the commercialisation of any products as well as to a more sophisticated process for extracting, isolating, or sythesizing the active chemicals in the composition of biological extracts used by the local communities.[181]

3.6 Grace period for filing patents

Generally speaking, international patent law provides for a minimum grace period of one year for the filing of patents after invention.[182] As WIPO Report suggest, "an extended grace period for traditional knowledge holders …would give informal innovators additional time to research possibilities of commercialization."[183] Given that patents are matters of national legislative competence, such grace period should be fixed by the legislature taking due regard of the peculiar social realities of traditional PRRK practitioners. Further, non-registration of such PRRK should not defeat necessarily defeat a future right to a community patent.

3.7 Application costs and fees

Procedurally, since the transaction costs of patents are often high, the formal fees related to the patent application and maintenance of the right should not apply to traditional PRRK practitioners.[184] In the alternative, a percentage of the money earned by the community patents should be devoted towards the administrative expenses of the community patent system.

3.8 Examination

Such community patents may be issued or granted without prior examinations for novelty. The system of granting patents without prior examinations is not novel. In fact, that is the practice in France and in some other countries. Moreover, the system of non-examination saves money usually spent on patent examiners. The proposed community patents may also be designed like the so-called petty-patents.

Finally, it is suggested that gene-rich States which have their PRRK obtained and exploited in a manner contrary to the letter and spirit of the CBD on Prior-Informed-Consent to access to PRRK may enact laws invalidating the domestic efficacy of any patents or intellectual property rights on those PRRK. During the negotiation of the CBD, the government of Ethiopia made a similar suggestion. According to the statement by the Government of Ethiopia:

> We express dissatisfaction with the provisions protecting patents and other intellectual property rights without commensurate regard for informal innovations, especially in Article 16, paragraph 2, which opens the way for use by countries with the technological know-how of genetic resources and innovations from countries without the know-how in patents and other intellectual property rights and for taking them out of the reach of even those countries which created the very genetic resources and innovations.[185]

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[181] Singh, *supra* note 163 at 56-7.

[182] Paris Convention, *supra* note 51.

[183] The *WIPO Report, supra* note 2 at 125.

[184] De Silva, *supra* note 170 at 43.

[185] Report of the Intergovernmental Committee for a Convention on Biological Diversity, U.N. Environmental Programme, 7th Negotiating Sess., 5th Session of the International Negotiating Committee, UNEP/Bio.Div/N7-INC.5/4 (1992).

The government of Ethiopia thus suggested that at a later date, the following paragraph be added to Article 16 of the CBD:

> Where a technology, an organism or genetic material which is patented or legally protected in any other way as an intellectual property has incorporated an organism or organisms, a genetic material or materials, a technology or technologies or any other traditional practice or practices originating in another country or countries, the patent or other intellectual property right shall not be valid in the country or countries of origin of any of its component parts; and the benefits accruing from the application of the patent or other intellectual property right in other countries shall be equitably shared between the holder or holders of the protected right and the country or countries of origin.[186]

Article 21 of the Brazilian bill earlier referred to, provides that the indigenous communities will be deemed automatically co-proprietors of any invention, utility model, industrial model or industrial design which has utilized, directly or indirectly, their traditional knowledge or models.[187] While it is not possible for a State to make extra-territorial legislation, the point here is that any patent obtained in contravention of this law would have no effect in the domestic forum of Brazil.

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[186] *Ibid.*

[187] The obvious implication is that anyone applying for a patent based on traditional knowledge must mention which indigenous community shall be included as co-proprietor of the patent.

Summary

The fundamental character of the patent system is that it is an economic tool. This character has shaped the debate on the role of patents, even with regard to the conservation and sustainable use of biological diversity. In addition, patents have an inescapable hold on PRRK which will be difficult to undo. Three methods may be adopted to mitigate the dangers of unregulated patents on PRRK. First, a global agreement on a uniform standard of novelty and prior art is imperative. Second, raising the threshold of the standard of inventiveness in PRRK to the same standard as in mechanical inventions is equally necessary. Third, a form of community patents as detailed above should be adopted, at least as a defensive measure.

Unless the gene-rich developing countries are content with pious but ineffective declarations of outrage and indignation at the phenomenon of "biopiracy,"[188] academic support for their arguments would largely remain a pathetic sideshow to the appropriation of PRRK through a lax and permissive patent system. The inescapable conclusion is that developing nations must seize the initiative in enacting and implementing national legislation which would enable them to realize the objectives of the CBD. In addition, they should also unify in the face of international agreements and proposals which may frustrate the objectives of the CBD. Absent these responses, traditional PRRK practitioners will always leave the global market place short-changed and PRRK as a whole would be the worse for it.

Finally, the question of patent protection for traditional PRRK practitioners may not be successfully dealt with, without adequate reference to and resolution of claims to political and environmental self-determination of traditional and indigenous peoples.[189] Until those who are excluded from the framework of the international patent system have a credible and effective podium to articulate their aspirations and effectively implement them, it would be difficult to translate words into action.

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[188] *The Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples* <http://users.ox.ac.uk/~wgtrr/mataatua.htm accessed on 9/199; *The COICA Statement, supra* note 64; *The Declaration of Belem* <http://users.ox.ac.uk/~wgtrr/belem.htm accessed on 9/2/99; *The Bellagio Declaration* <http://users.ox.ac.uk/~wgtrr/bellagio.htm accessed on 9/9/99.

[189] Nihal Jayawickrama, "The Right of Self – Determination – A Time for Reinvention and Renewal" (1993) 57 *Saskatchewan Law Review* 1.

Law and Policy of the European Union on Greenhouse Gas Emissions Reduction and their Methodological Significance to China

Dr. Wang Xi

I. Introduction

At the COP 3 of the United Nations Framework Convention on Climate Change (UNFCCC) held in Kyoto, Japan, 199r7, the European Union (EU) and its Member States were very active in promoting a high target for reduction of levels of greenhouse gas emissions of Member States, prompting the questions – How do the EU law and policy support their advanced targets on greenhouse gas emissions reduction? What could China learn from the experience of the EU and its Member States in this area?

The answers to the questions are particularly relevant to China and its decision-makers on policy of climate change because China's greenhouse gas emissions levels are among the highest in the world, and because China is currently working hard to improve its energy efficiency and reduce its greenhouse gas emissions. The experience of the EU would appear relevant and useful to the formulation and improvement of the Chinese strategy on greenhouse gas emissions reduction.

Europe's law and policy experience regarding greenhouse gas emissions reduction (GGER) exists both at the EU and Member-State levels, creating a volume of documents and experience that would be difficult to cover in one paper. Hence, this paper focuses only on the law and policy regarding greenhouse gas emissions reduction at the EU level. The paper consists of four parts. The first part provides the readers with some background information about the GGER obligations which will be shouldered by the EU and its Member States once the Kyoto Protocol enters into force. The second part presents a comprehensive survey on the law and policy of the EU regarding GGER, emphasizing their methodological significance to China. The third part contains some of my preliminary reflections about the law and policy of the EU regarding GGER and what China could learn from them, concentrating more on substantive value and methodology than on empirical evaluations. The fourth part sums up the paper by providing some conclusions. It is hoped that this paper, and the research it memorializes may contribute to the formulation and improvement of the Chinese strategy on greenhouse gas emission reduction.

II. The greenhouse gas emissions reduction targets for the EU and its Member States under the Kyoto Protocol

The European Union brought to Kyoto a proposal for a 15% cut (compared to 1990 levels) in a "basket" of three greenhouse gases (carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O)) by year 2010. The EU believed that this target is "technically feasible and economically manageable in the EU."[1] Ultimately, the Kyoto Protocol adopted a target much lower than the EU proposal, but added three more gases. By the year 2010, the Kyoto target aims to reduce the average level of six greenhouse gases[2] for all Annex I countries by 5.2% below the 1990 level. Further reductions may then apply after 2012. All Annex I parties must make "demonstrable progress" in reduction of greenhouse gases by 2005.

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1 European Commission, Communication on Climate Change – The EU Approach to Kyoto, COM(97) 481, final of 01.10.1997; Europe Environment, Europe Information Service, Document, No. 509, October 28, 1997, p. 19. It is noted that the EU position is based on the condition that "only if all industrialized countries made comparable reduction efforts".

2 Carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), hydrofluorcarbons (HFCs), perfluorcarbons (PFCs) and sulphur hexafluoride (SF_6).

By contrast, the EU's collective target for GGER is a reduction of 8% (below 1990 levels) by 2010. This is clearly an advanced target compared with those of other Annex I countries.[3] The target is equivalent to around 550 to 600 million tons (Mtons) of CO_2-equivalent reduction.[4]

In principle, all EU Member States share the same 8% reduction target; however, at the national level, the actual reduction of greenhouse gases varies from country to country. In 1998, the EU Member States adopted a burden-sharing agreement regarding the 8% target, which is known as the "EC Bubble." This agreement allows a differentiation of reduction targets among Member States, based upon their different situations with regard to current emissions of greenhouse gases, economic conditions and energy compositions.

The EU, while recognizing that the Kyoto greenhouse gas emissions reduction target is "technologically feasible and economically manageable," also clearly believes that more needs to be done in order to control or minimize the negative atmospheric impacts of greenhouse gases. The European Commission predicted that without any additional policy measures, the total EU greenhouse gas emissions in 2010 could have been expected to increase by some 6% from 1990 level.[5] Without substantial reduction of greenhouse gases, the global climate trend will not change its direction. As a result of these concerns, the EU set its stricter (8%) target to serve as a call for a reinforcement of policy efforts in order to reverse the upward trend of greenhouse gas emissions.

III. A Survey on law and policy of the EU related to greenhouse gas emissions reduction

The European Union is a unique regional organization for integration of economy and other public affairs. As such, its law and policy on greenhouse gas emissions reduction are the expression of the political will of the entire union on climate change and its mitigation.

The regime of greenhouse gas emissions reduction of the EU must operate under the legal framework of the EU and its Member States. The sources of EU law are Regulations, Directives and Council Decisions (which are adopted by the Council of the European Union, in cooperation with the European Parliament and the European Commission). Regulations are directly applicable and binding in all Member States; and there is no need for any further domestic legislation. Although Directives are also binding, they are binding only as to the result to be achieved. They must be implemented through national legislation. Council Decisions are binding in their entirety on those to whom they are addressed. Regulations and Directives on important matters such as finance and energy supply require unanimous action of the Council. Under the EU treaties, the Member States have limited powers in adopting environmental policies and legislation that diverge from those adopted at the EU level. The Member States are obliged to follow the EU environmental regulations and to implement environmental directives adopted at the EU level.

In the past, the European Commission made great effort to develop common and coordinated policies and measures for implementing a unified climate change strategy. As early as in 1986, the Council of Ministers adopted a resolution which set new Community energy policy objectives for

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3 For example, the target for United States is to cut 7% below the 1990 level; and for Canada, Hungary, Japan, Poland, Russia, New Zealand, the target is to cut 6% below the 1990 level.

4 European Commission, Commission Communication to the Council and the Parliament: "Preparing for Implementation of the Kyoto Protocol," COM (1999) 230, 19 May, 1999, p. 8.

5 European Commission, Commission Communication to the Council and the Parliament: "Preparing for Implementation of the Kyoto Protocol," COM (1999) 230, 19 May, 1999, p. 3.

up to 1995. In October 1990, the Council of Environment and Energy Ministers of the EU agreed that the Community and the Member States will take actions aimed at reaching stabilization of the total carbon dioxide emissions in the Community as a whole at the 1990 level, assuming that other leading countries would undertake similar commitments and acknowledge the targets identified for stabilizing or reducing emissions by specified dates. The ministers also agreed that Member States which start from relatively low levels of energy consumption and therefore low emissions measures on a per capita or other appropriate basis are entitled to have carbon dioxide targets and/or strategies correspondent to their economic and social development, while improving the energy efficiency of their economic activities. Since then, many initiatives on law and policy concerning climate change and greenhouse gas emissions reduction were proposed by the Commission to the Council and Parliament. Those initiatives have resulted in some EU legislation, policies and programs.

1. EU law related to greenhouse gas emissions reduction

1.1 EU programs fostering EU law on energy efficiency and greenhouse gas emissions reduction

The programs of the European Community play an important role in promoting greenhouse gas emissions reduction within the EU, providing for norms and standards for the implementing legislation of the Member States. In particular, there are two major EEC programs that have fostered the development of the Union's legal framework in the field of energy efficiency and greenhouse gas emissions reduction.

The first major program is the "Program of Specific Action for Vigorous Energy Efficiency" (SAVE Program).[6] SAVE was a four-year, 35 Million ECU program that ran from 1 January 1991 to 31 December 1995. It consists of four parts:

(i) the development of Council Directives and standards for energy efficiency;
(ii) the provision of financial support for the creation of energy efficiency infrastructures in Member States;
(iii) information exchange network for energy efficiency matters;
(iv) a sub-program called PACE for developing energy efficiency standards.[7]

The first part (energy standards) fostered a number of important Community legislation on energy efficiency and related matters (discussed by Section III.1.2 of this paper.)

Because of the success of the SAVE Program and the importance of the issues of energy efficiency and greenhouse gas emissions reduction, the Community decided to continue the effort, initiating a "SAVE II Program."[8] SAVE II is focused on the preparation and implementation of cost-effective measures and actions to promote energy efficiency within the Community. The general objectives of SAVE II include, a) to stimulate energy efficiency measures in all sectors; b) to encourage investment in energy conservation by private and public consumers and by industry; c) to create the conditions for improving the energy intensity of final consumption. It is estimated that the implementation of SAVE II Program will result in a decrease of energy intensity, because

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6 Council Decision 91/565/EEC in October 1991.

7 EC Communication under the UN Framework Convention on Climate Change, Brussels, 30 March 1995, SEC (95) 451 final, p. 9.

8 Council decision 96/737/EC of 16 December 1996 concerning a multi-annual program for the promotion of energy efficiency in the Community in 1996.

there is a cost effective efficiency potential around 20% of total current energy consumption using current technologies.[9]

The second major program is the "Program for the Promotion of Renewable Energy Sources" (ALTENER).[10] Like SAVE, the ALTENER Program began long before the Kyoto negotiations and, because of the success of the program, in 1998 the Council decided to continue the program.[11] The ALTENER and ALTENER II Programs will be further discussed by Section III.1.3 of this paper.

Methodologically, the SAVE and ALTENER Programs are important for two reasons. First, they implement and materialize the general EU policy on greenhouse gas emissions reduction, providing frameworks of practically meaningful and operational options for achieving greenhouse gas reduction through energy efficiency and renewable energy sources. Second, they have fostered the creation of specific legal and policy measures for achieving greenhouse gas emissions reduction and the development of renewable energy sources. In essence, they function as a bridge connecting the general goal and policy of the EU at one end and the concrete implementing measures of the EU and its Member States at other.

1.2 Legislation on improving energy efficiency

Based upon the SAVE Programs and ALTERNER Programs, the EU developed a number of legislative documents on energy efficiency and renewable energy sources.

Council Directive 92/42/EC on the energy efficiency of boilers[12] requires the Member States to ensure that boilers cannot be put into service unless they satisfy the efficiency requirements set out by the Directive. Member States are required to appoint bodies to examine all boilers, to ascertain and attest to compliance with these measures. The Directive provides a standardized set of procedures for the energy efficiency examination. Boilers passing examination shall be labeled with the EC uniform conformity mark "CE" so that they can be moved freely in the EC Member States. In addition, boilers passing the examination must be labeled with one or more energy performance marks according to their energy efficiency levels.

Council Directive 96/57/EC concerning energy efficiency of household electric appliances[13] is directly related to greenhouse gas emissions reduction. It points out in its preamble that electricity generation and consumption account for 30% of man-made CO_2 emissions and about 35% of primary energy consumption in the Community, and that these percentages are increasing and notes that stronger measures are required for achieving that Council objective of stabilizing CO_2 emissions in the Community at 1990 level by the year 2000.

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9 European Commission, Commission Communication to the Council and the Parliament: "Preparing for Implementation of the Kyoto Protocol," COM (1999) 230, 19 May, 1999, Annex 3, Common and Co-ordinated Polices and Measures, p. 1-2.

10 Council Decision 93/500/EEC of 13 September 1993 concerning the promotion of renewable energy sources in the community (ALTENER Program).

11 Council Decision of 18 May 1998 concerning a multi-annual program for the promotion of renewable energy sources in the Community (ALTENER II) (98/352/EC).

12 Council Directive 92/42/EC of 21 May 1992 on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels, Official Journal of the European Community, No. L. 167, 22 June 1992, p. 17-28.

13 Directive 96/57/EC of the European Parliament and of the Council of 3 September 1996 on energy efficiency requirements for household electric refrigerator, freezers and combinations thereof, Official Journal of the European Community, No. L. 236, 18 September 1996, p. 36-43.

The Directive applies to new electrical household refrigerators, frozen food storage cabinets, food freezers and combinations of these appliances. It requires Member States to take all necessary measures to ensure that refrigeration appliances covered by this Directive can be placed on the Community market only if the electricity consumption of the appliance in question is less than or equal to the maximum allowable electricity consumption value for its category as provided by this Directive.[14] The manufacturer of a refrigeration appliance is specifically declared to be responsible for ensuring compliance. The Directive sets forth the method for calculating the maximum allowable electricity consumption and the conformity assessment procedures. All such appliances must be in conformance with the maximum allowable electricity consumption to bear the CE mark. In its provisions on enforcement, the Directive requires Member States to take all necessary measures to restrict or prohibit the placing on the market of the products that do not meet its requirements or to ensure that they are withdrawn from the market.[15] It is expected that similar energy efficiency standards are going to be expanded to cover other household electrical equipment and appliances, such as washing machines, TVs and VCRs. It is estimated that the market transformation of all such equipment will result in 10% saving of electricity.[16]

Council Directive 93/76/EEC,[17] is perhaps the earliest EC legislation directly relating energy efficiency to the climate change problem. The purpose of the Directive is to limit carbon dioxide emissions by improving energy efficiency of buildings. The preamble of the Directive explicitly acknowledges the objective of stabilizing total carbon dioxide emissions by the year 2000 at the 1990 level, as agreed by the Council of Environment and Energy Ministers of the EEC Member States in 1990. It points out that residential and tertiary sectors account for nearly 40% of final energy consumption in the Community and that growth of these sectors is bound to increase energy consumption and hence also to increase carbon dioxide emissions.[18] Therefore, a collective effort by all Member States, to enhance the energy efficiency of buildings and equipment is necessary in order to limit carbon dioxide emissions and promote the rational use of energy. To this end, Member States should draw up and implement programs in the following fields: 1) energy certification of buildings; 2) billing heating, air-conditioning and hot water costs on the basis of actual consumption; 3) third-party financing for energy efficiency investments in the public sector; 4) thermal insulation of new buildings; 5) regular inspection of boilers; and 6) energy audits of undertakings with high energy consumption.[19] These programs must include laws, regulations, economic and administrative instruments, information, education and voluntary agreements whose impact can be objectively assessed.[20]

The Council Directive 96/61/EC concerning integrated pollution prevention and control[21] requires that the Member States must take energy efficiency into account when they decide the best available techniques (BAT) for pollution control. This will result in energy saving from the

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14 Article 2, 1, of the Directive.

15 Article 6, 2, of the Directive.

16 European Commission, Commission Communication to the Council and the Parliament: "Preparing for Implementation of the Kyoto Protocol," COM (1999) 230, 19 May, 1999, Annex 3, Common and Coordinated Policies and Measures, p. 2.

17 Council Directive 93/76/EEC of 13 September 93 to limit carbon dioxide emission by improving energy efficiency, Official Journal, No. L 237, 22 September 1993, p. 28-30.

18 Preamble of the Directive, Official Journal, No. L 237, 22 September 1993, p. 28.

19 Article 1 of the Directive, Official Journal, No. L 237, 22 September 1993, p. 29.

20 Article 1 of the Directive, Official Journal, No. L 237, 22 September 1993, p. 29.

21 Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control, Official Journal of the European Communities, 10 October, 1996.

application of BAT in pollution prevention and control. Member States must take necessary measures to ensure that "energy is used efficiently" in the operations of all stationary industrial installations.[22] The operators must report to the competent authorities of the Member States about the energy used or generated by their installations when they apply for permits.[23] Because of this Directive, energy efficiency becomes a factor that the government must consider when it sets emission limit values based on BAT and issuing operating permits for emission sources.

Council Directive 79/530/EEC,[24] Council Directive 79/531/EEC,[25] and Council Directive 92/75/EEC address issues of energy labeling. Council Directive 92/75/EEC[26] replaced the Directive 79/530/EEC and revised the Directive 79/531/EEC. It greatly enlarged the coverage of the energy labeling requirement. It applies to refrigerators, freezers and their combinations; washing machines, dryers and their combinations; dishwashers; ovens; water heaters and hot-water storage appliances; lighting sources and air-conditioning appliances.[27] The coverage of the new Directive can be enlarged to cover more household appliances.[28] Therefore, the new Directive provides a new legal framework for the energy labeling scheme of the EU. All suppliers of household appliances covered by the Directive shall supply a label and a product fiche on the consumption of energy and be responsible for the accuracy of the label and fiche. All dealers who sell such appliances must attach this label in the clearly visible position according to the specifications of relevant implementing directives and in the relevant language version.

Council Directive 92/75/EEC has far reaching implications in terms of energy labeling legislation in the EU. The Council believes that the provision of accurate, relevant and comparable information on the specific energy consumption of household appliances may influence the public's choice in favor of these appliances which consume less energy, thus prompting manufacturers to take steps to reduce the consumption of the appliances which they manufacture. Recognizing that information plays a key role in the operation of market forces, the Council believes that it is necessary to introduce a uniform label for all appliances of the same type, to provide potential purchasers with standardized information on energy efficiency. In order to implement this Council Directive, the Commission has adopted seven Commission Directives,[29]

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22 Article 3, (d), Official Journal of the European Communities, 10 October, 1996, p. 29.

23 Article 6, 1, Official Journal of the European Communities, 10 October, 1996, p. 30.

24 OJ No L 145, 13 June 1979, p. 1.

25 OJ No L 145, 13 June 1979, p. 7. It applies to household electrical ovens.

26 Council Directive 92/75/EEC on the indication by labeling and standard product information of the consumption of energy and other resources by household appliance on 22 September 1992.

27 Article 1, (1), Council Directive 92/75/EEC of 22 September 1992 on the indication by labeling and standard product information of the consumption of energy and other resources by household appliances, OJ No L 297, 13 October 1992, p. 16.

28 Article 1, (2), Council Directive 92/75/EEC of 22 September 1992 on the indication by labeling and standard product information of the consumption of energy and other resources by household appliances, OJ No L 297, 13 October 1992, p. 17.

29 The Commission Directive 94/2/EC of 21 January 1994 implementing Council Directive 92/75/EEC with regard to energy labeling of household electric refrigerators, freezers and their combination; Commission Directive 95/12/EC of 23 May 1995 implementing Council Directive 92/75/EEC with regard to energy labeling of household washing machines; Commission Directive 95/13/EC of 23 May 1995 implementing Council Directive 92/75/EEC with regard to energy labeling of household electric tumble driers; Commission Directive 96/60/EC of 19 September 1996 implementing Council Directive 92/75/EEC with regard to energy

covering household ovens; household electric refrigerators, freezers and their combination; household washing machines; household electric tumble dryers; household combined washer-dryers; household dishwashers and household lamps. In 1998, a study financed by the SAVE Program evaluated the energy labeling scheme and found that the level of compliance was comparatively low.[30] But the Commission pointed out that "in spite of this, the label, when applied, was shown to have a substantial impact, with a third of purchasers saying that the label had influenced their choice of refrigerator or freezer".[31]

Methodologically, these Directives represent three very different approaches for greenhouse gas emissions reduction. The first three Directives are targeted at specific energy consuming commodities such as boilers, home electrical appliances and buildings. They set technical energy efficiency standards for them, and place the responsibility for compliance on the manufacturers or builders of those commodities. They represent the approach of governmental "command and control". The last two of the above mentioned Council Directives are methodologically different. Rather than targeting certain commodities, they directly impose upon governmental agencies (in case of BAT technology identification) and manufacturers/dealers (in case of energy efficiency labeling) certain obligations related to energy conservation and greenhouse gas emissions reduction. Both are focused on the role of information in greenhouse gas emissions reduction. In the case of BAT identification, governmental agencies are required to take into account of the factor or information on energy efficiency of the technologies under review. In this way, it too represents a "command and control" approach. The energy labeling requirements also operate on a command and control level with regard to manufacturers and dealers in energy consuming commodities (who are required to disclose the energy efficiency information of the commodities to consumers). But when those labeled products are release to the market, the force of market comes into play. The regulation assumes that consumers will choose to buy the commodities with higher energy efficiency. It represents the approach of economic incentive and market force. Thus, energy efficiency information is used as a tool to change both the governmental decision-making and the consuming behavior of the general public as mechanisms for achieving energy conservation and greenhouse gas emissions reduction.

1.3 Legislation on promoting renewable energy sources

With Decision 93/500/EEC[32] the European Economic Community launched the "ALTENER Program", addressing renewable energy sources such as biomass, small scale hydro-power (under 10 MW), wind energy, solar thermal and solar photovoltaics, geothermal energy, and tidal, wave

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labeling of household combined washer-driers; Commission Directive 97/17/EC of 16 April 1997 implementing Council Directive 92/75/EEC with regard to energy labeling of household dishwashers; Commission Directive 98/11/EC of 27 January 1998 implementing Council Directive 92/75/EEC with regard to energy labeling of household lamps; and Commission Directive 1999/9/EC of 26 February 1999 amending Directive 97/17/EC implementing Council Directive 92/75/EEC with regard to energy labeling of household dishwashers.

30 EU Commission, Communication to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, Action Plan to Improve Energy Efficiency in the European Community, Brussels, 26 April 2000, COM (2000) 247 final, p. 9.

31 EU Commission, Communication to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, Action Plan to Improve Energy Efficiency in the European Community, Brussels, 26 April 2000, COM (2000) 247 final, p. 9.

32 Council Decision 93/500/EEC of 13 September 1993 concerning the promotion of renewable energy sources in the community (ALTENER Program), OJ No. L 235, 18 September 1993, p. 41.

and other ocean energies. The overall purpose of the program is to establish a framework for specific actions to promote renewable energy sources in the community. The original ALTENER Program set forth three specific objectives for the development of renewable energy sources in EC: 1) increasing the market share of renewable energy sources from 4% in 1991 to 8% in 2005 (equivalent to a 180.00 Gg reduction of CO_2 by the year 2005); 2) tripling the production of electricity from renewable energies; and 3) securing a 5% market share of biofuels in motor vehicle consumption.[33] The program ran from 1993 to 1997 and had a budget of 40 Million ECU.[34]

In 1998, the Council decided to continue the ALTENER I, approving a new ALTENER II Program[35] and allocating ECU 30 million for its implementation in the year 1998-99.[36] The ALTENER II will run for four years, from 1998 to 2002. It provides funding for five categories of actions and measures relating to renewable energy sources: 1) studies and other actions intended to implement and complement Community and Member States measures taken to develop the potential of renewable energy sources; 2) pilot actions aimed at creating or extending structures and instruments for the development of renewable energy sources; 3) measures intended to develop information, education and training structures for the development of renewable energy sources; 4) targeted actions facilitating the market penetration of renewable energy sources and relevant know-how; and 5) monitoring and evaluation actions for the development of renewable energy sources.[37] The European Commission had declared a new target on the share of renewable energies in the total energy consumption, doubling from 6% to 12% the share of renewable energies in the total energy gross inland consumption of the EU.[38] Through ALTENER II, the use of renewable energy could reduce CO_2 emissions by 16% (compared with 1990 levels) by 2020.[39]

The ALTENER Programs represent a different methodology for greenhouse gas emission reduction. While the Directives on energy efficiency as mention in 1.2 aimed at conservation of conventional energy sources such as gas and oil, the legislation on ALTENER Programs is focused on development of new sources of energy such as biomass, wind and solar power. While the former seeks to decrease traditional energy consumption, the latter looks instead towards increasing new sources of clean energy.

2. EU policy initiatives related to greenhouse gas emissions reduction

In addition to the EU programs and legislation, there are a number of important policy initiatives related to greenhouse gas emissions reduction. To a large extent, those policy initiatives give direction to the development of the EU law and policy in this area.

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33 Commission of the European Commission, the EC Communication under the UN Framework Convention on Climate Change, Brussels, 30 March 1995, SEC (95) 451 final, p. 10.

34 Commission of the European Commission, the EC Communication under the UN Framework Convention on Climate Change, Brussels, 30 March 1995, SEC (95) 451 final, p. 9.

35 Council Decision of 18 May 1998 concerning a multi-annual program for the promotion of renewable energy sources in the Community (ALTENER II) (98/352/EC).

36 EU, Second Communication under the UN Framework Convention on Climate Change, p. 37.

37 Article 2, Council Decision 98/352/EC, Official Journal of the European Communities, L 159, 3 June 1998, p. 53.

38 EU, Second Communication under the UN Framework Convention on Climate Change, p. 37.

39 EU, Second Communication under the UN Framework Convention on Climate Change, p. 37.

2.1 European Program on Climate Change (EPCC) – an institutional framework

The European Commission launched a European Program on Climate Change (EPCC) in June 2000,[40] in responding to the European Council's request, for a list of priority actions and policy measures that could reinforce existing actions to reduce greenhouse gas emissions.[41] The overall objective of the EPCC is to identify and develop all those elements of a European Climate Change strategy that are necessary for the implementation of the Kyoto Protocol. The program will bring together all relevant stakeholders, including representatives from the Commission's different departments, the Member States, industry and environmental groups, to co-operate in the preparatory work of common and coordinated policies and measures to reduce greenhouse gas emissions. Under this program, the Commission takes a "twin track" approach to the issue of greenhouse gas emissions reduction. On one hand, the Commission proposed a series of new policies and measures, as listed in the Annex 3 of the Communication (COM (2000) 88/7). It lists 8 categories (and 32 items) of such policies and measures: 1) energy supply, 2) industrial sector, 3) energy consumption in the domestic and tertiary sector, 4) energy consumption in the transport sector, 5) transportation policy and infrastructure, 6) waste, 7) research, 8) international cooperation.[42] The EU is preparing an EU-wide emissions trading scheme which will put into operation by 2005.

EPCC provides an institutional framework for the development of all the relevant common and coordinated policies and measures. A Steering Committee was established for the overall management and coordination of the EPCC both in terms of policy approach and organization. Comprised of representatives of all the Commission services involved, the Steering Committee can create working groups to address specific issues and decide their terms of reference and timetable. Each working group has a specific 'set of stakeholders' representing a European rather than a national or regional clientele. Thus far, the Steering Committee has set up six working groups working in areas of flexible mechanisms (emission trading, joint implementation and clean development mechanism), energy supply, energy consumption, transport, industry and research respectively since its establishment. It is expected that the number of working groups will increase in the future in order to cover more related areas such as agriculture, forestry and waste.

2.2 Policy initiatives on introducing a tax on carbon dioxide emissions and energy

The Commission believes that the introduction of a carbon dioxide/energy tax is an essential element of an overall strategy for energy efficiency, essential in bringing about changes in the use

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40 European Commission, Communication on Policies and Measures proposed by the EU to Reduce Greenhouse Gas Emissions: Towards a European Program on Climate Change (EPCC), (COM) (2000) 88/7), Europe Information Service, Europe Environment, Document, supplement to Europe Environment, No. 566, April 18, 2000. The program is called European Climate Change Program (ECCP) also.

41 Council Conclusions on a Community strategy on Climate Change, Doc. 11654/99, Luxemburg 12 October 1999.

42 European Commission, Communication on Policies and Measures proposed by the EU to Reduce Greenhouse Gas Emissions: Towards a European Program on Climate Change (EPCC), (COM) (2000) 88/7), Europe Information Service, Europe Environment, Document, supplement to Europe Environment, No. 566, April 18, 2000, p. 11-12.

43 EC Commission, Amended proposal for a Council Directive introducing a tax on carbon dioxide emissions and energy, Brussels, 10 May 1995, COM (95) 172 final, Preamble, p. 3.

of less-polluting energy sources.[43] Since 1992, the Commission has submitted three proposals to the European Council on this subject. Neither of the first two received unanimous support from the Council. The last one is still pending in the Council, according to the information from the Second Communication of the European Community under the UN Framework Convention on Climate Change.

The third proposal was submitted by the Commission in 1997. It recommends that the Council adopt a Directive restructuring the Community framework for the taxation of energy products (COM (97) 30). It would enlarge the scope of the Community minimum tax rate system beyond mineral oils to cover all energy products, including mineral oils, natural gas and solid fuels (coal, peat, lignite) when used as heating or motor fuel or to generate electricity. According to the Commission, "the main objective behind the proposed Directive is to strengthen the internal market by eliminating economic distortions among the different types of fuels. It would, in addition, give Member States the opportunities to shift the burden of taxation away from employed labor and towards users of natural resources which damage the environment."[44] This expansion of scope will widen the application of Community provisions taxing CO_2 emitting products from 40% to nearly 90%.[45] Community minimum levels of taxation on mineral oils will be up-rated and minimum levels of taxation will be introduced for products other than mineral oils. The proposal provides Member States with a number of options enabling them to pursue more ambitious environmental policies, by specifying a minimum level of taxation on all energy products.

It is said that, compared to a "business-as-usual" scenario, the proposal will result in a reduction in CO_2 emission between 0.5 and 1.7% from the year 2005 onwards – equivalent to a reduction of between 20 and 60 Million tons of CO_2.[46] The Commission claimed that "estimates of the macro-economic costs of the proposed Directive made by using three separate models confirm that when the tax revenues are used in a budget-neutral way to reduce employers' non-wage costs, the proposal will have positive impacts on GDP and employment. Compared to economic projections for 2005 with the existing tax system, GDP under the proposed directive is estimated to increase by between 0.02% and 0.24%. Overall employment in the EC is expected to be 150,000 to 450,000 persons higher in the same period."[47] The proposal is pending, because of strong opposition from a number of Member States and industrial sectors involved, as well as the lack of support from the USA and Japan – the EU's main competitors on international markets. In a recent communication, the European Commission has called for the Council and Parliament to take action on this proposal.[48]

2.3 Policy initiatives related to transportation

Transportation sector has very large potential for greenhouse gas emissions reduction. The European Commission pointed out in a Communication in 1998 that transport accounted for around 20% of total EU emissions in 1990[49] and that, in the absence of new policy measures, it is the

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44 EU, Second Communication under the UN Framework Convention on Climate Change, p. 33.

45 EU, Second Communication under the UN Framework Convention on Climate Change, p. 33.

46 EU, Second Communication under the UN Framework Convention on Climate Change, p. 34.

47 EU, Second Communication under the UN Framework Convention on Climate Change, p. 34.

48 European Commission, Commission Communication to the Council and the Parliament: "Preparing for Implementation of the Kyoto Protocol," COM (1999) 230, 19 May, 1999, p. 3.

49 European Commission, Communication from the Commission to the Council and the European Parliament, Climate Change – Towards an EU Post – Kyoto Strategy, Brussels, 3 June 1998, COM (1998) 353 final, p. 11.

transport sector which has the greatest potential for growth in CO_2 emissions up to 2010.[50] The transport sector is, therefore, one of the EU's top priorities for greenhouse gas emissions reduction. In this area, policy initiatives focus on passenger cars, fuel quality, transportation price, public transportation, rail transport and aviation.

2.3.1 Passenger cars

According to the European Commission's Second Communication under the UN Framework Convention on Climate Change, road traffic accounts for about 85% of overall transportation CO_2 emission and shows a strong CO_2 emission growth. Passenger car transportation is expected to grow by 30% over 1990 levels by the year 2005, and freight transport shows a forecast increase of 25% per year up to 2003.[51] In 1995, to deal with the passenger car CO_2 emission problem, the European Commission adopted a "Community strategy to reduce CO_2 emissions from passenger cars and improve fuel economy,"[52] which was accepted by the Council on 25 June 1996. The objective of the strategy for newly registered cars is to achieve average CO_2 emissions of 120g/km (measured on the European test cycle according to Directive 93/116/EC) by 2005, and at the latest by 2010.

The strategy consists of three "pillars." The first (and key) pillar, is an agreement between the European Commission and the European Automobile Manufacturers Association (ACEA) for reduction of CO_2 emissions from passenger cars through technological improvement. Under this agreement, ACEA made the following commitments, a) to achieve an average CO_2 emission figure of 140 g/km by 2008 for all its new cars sold in the EU, as measured according to the EU test procedure; b) to bring to the market individual car models with CO_2 emissions of 120 g/km of less by 2000; c) to set an indicative intermediate target of 165-170 g/km in 2003 as the basis for monitoring progress; and d) to review the potential for additional improvements with a view to moving the new car fleet average further towards 120 g/km by 2012. This latter review will be undertaken in 2003.[53] Soon after the agreement between EC and ACEA, Japanese and Korean automobile companies joined in and the Commission reached similar agreements with Japan Automobile Manufactures Association (JAMA) and Korea Automobile Manufacture Association (KAMA) in 1999. The Commission and the three automobile associations decided to jointly monitor and report the progress made in CO_2 emission reduction.

The second "pillar" is a legislative proposal on fuel-economy labeling for cars. In February 1999, the Council had reached a Common Position which included the text of a proposed Council Directive relating to the availability of consumer information of fuel economy and CO_2 emission in respect of the marketing of new passenger cars.[54] The Common Position recognizes the close

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50 European Commission, Communication from the Commission to the Council and the European Parliament, Climate Change – Towards an EU Post – Kyoto Strategy, Brussels, 3 June 1998, COM (1998) 353 final, p. 11.

51 EU, Second Communication under the UN Framework Convention on Climate Change, p. 41.

52 European Commission, Communication from the Commission to the Council and the European Parliament – "A Community strategy to reduce CO_2 emissions from passenger cars and improve fuel economy" of 20 December 1995 (COM (95) 689 final).

53 European Commission and European Automobile Manufacturers Association, CO_2 Emissions from Cars: the EU Implementing the Kyoto Protocol, Office for Official Publications of the European Communities, p. 7.

54 Council of European Union, Common position (EC) No. 17/1999 adopted by the Council on 23 February 1999 with a view to adopting Council Directive 1999/…/EC of …relating to the availability of consumer information on fuel economy and CO_2 emissions in respect of the marketing of new passenger cars, (1999/C 123/01).

relation between providing consumer information on fuel economy and the CO_2 reduction target of the EU. The Council believes that "information plays a key role in the operation of market forces; … the provision of accurate, relevant and comparable information on the specific fuel consumption and CO_2 emissions of passenger cars may influence consumer choice in favor of those cars which use less fuel and thereby emit less CO_2, thereby encouraging manufacturers to take steps to reduce the fuel consumption of the cars that they manufacture."[55] Therefore, the Council believes that it is necessary to develop a fuel economy label for all new passenger cars displayed at the point of sale allowing potential customers to identify the most fuel efficiency passenger car models available through that point of sale.[56]

As adopted, the Directive declares that its purpose is to ensure that information relating to the fuel economy and CO_2 emissions of new passenger cars offered for sale or lease in the Community is made available to consumers in order to enable consumers to make an informed choice.[57] Member States must take measures to ensure that the a label on fuel economy and CO_2 emissions, in accordance with the requirements described in the Annex 1 of the Directive, is attached to or displayed in a clearly visible manner near each new passenger car model at the point of sale.[58] Member States must also produce a portable, compact guide on fuel economy and CO_2 emissions in consultation with the manufacturer on at least an annual basis and make it available free of charge to consumers on request both at the point of sale and from a designated body within each Member State.[59] All promotional literature must contain the fuel economy and CO_2 emission data.[60] Finally, Member States must determine the "effective, proportionate and dissuasive" penalties applicable to breaches of the national provisions adopted pursuant to this Directive.[61]

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55 Preamble, Council of the European Union, Common position (EC) No. 17/1999 adopted by the Council on 23 February 1999 with a view to adopting Council Directive 1999/…/EC of … relating to the availability of consumer information on fuel economy and CO_2 emissions in respect of the marketing of new passenger cars, (1999/C 123/01), p. 1.

56 Preamble, Council of the European Union, Common position (EC) No. 17/1999 adopted by the Council on 23 February 1999 with a view to adopting Council Directive 1999/…/EC of … relating to the availability of consumer information on fuel economy and CO_2 emissions in respect of the marketing of new passenger cars, (1999/C 123/01), p. 2.

57 Article 1, Council of the European Union, Common position (EC) No. 17/1999 adopted by the Council on 23 February 1999 with a view to adopting Council Directive 1999/…/EC of … relating to the availability of consumer information on fuel economy and CO_2 emissions in respect of the marketing of new passenger cars, (1999/C 123/01), p. 2.

58 Article 3, Council of the European Union, Common position (EC) No. 17/1999 adopted by the Council on 23 February 1999 with a view to adopting Council Directive 1999/…/EC of … relating to the availability of consumer information on fuel economy and CO_2 emissions in respect of the marketing of new passenger cars, (1999/C 123/01), p. 3.

59 Article 4, Council of the European Union, Common position (EC) No. 17/1999 adopted by the Council on 23 February 1999 with a view to adopting Council Directive 1999/…/EC of … relating to the availability of consumer information on fuel economy and CO_2 emissions in respect of the marketing of new passenger cars, (1999/C 123/01), p. 3.

60 Article 6, Council of the European Union, Common position (EC) No. 17/1999 adopted by the Council on 23 February 1999 with a view to adopting Council Directive 1999/…/EC of … relating to the availability of consumer information on fuel economy and CO_2 emissions in respect of the marketing of new passenger cars, (1999/C 123/01), p. 3.

61 Article 11, Council of the European Union, Common position (EC) No. 17/1999 adopted by the Council on 23 February 1999 with a view to adopting Council Directive 1999/…/EC of … relating to the availability of consumer information on fuel economy and CO_2 emissions in respect of the marketing of new passenger cars, (1999/C 123/01), p. 4.

The third "pillar" is the promotion of car fuel efficiency by fiscal measures. According to the First report of the Commission on the effectiveness of the strategy, intensive work on the fiscal measures is underway currently.[62]

The Commission is, reportedly, quite satisfied with the progress they made. In its First Annual Report on implementing the Community Strategy to Reduce CO_2 Emissions from Cars, the Commission concluded that "the implementation of the Community's strategy to reduce CO_2 emissions from passenger cars and improve fuel economy shows significant progress. Two of the three main pillars (commitments of the car industry and fuel-economy labeling of cars) are in place, intensive work on the third (fiscal measures) is underway." The first set of "Joint Report " shows that the ACEA and JAMA are on the way to match the interim targets. Based on those reports the Commission feels that it "has no particular reasons to believe that any of the associations would not live up to its commitment."[63] Meanwhile, the Commission suggests the Community to continue its work in developing and implementing the two pillars for consumer information and fiscal measures.

2.3.2 Aviation

Although currently the contribution of air transportation to total CO_2 emission is relatively minor, current and forecast air traffic growth is causing concern from a climate change perspective as a growth of 5.2% per year up to 2003 is forecast.[64] A recent report of Intergovernmental Panel on Climate Change (IPCC) estimates that carbon dioxide emission will grow at 3% annually over the period from 1999 to 2015.[65] Air transportation is growing faster than the development of environmentally sound technologies for air transportation.

In order to make air transportation environmentally sustainable, the European Commission suggested a strategy in its Communication entitled "Air Transport and the Environment: Towards meeting the Challenges of Sustainable Development in 1999."[66] The ultimate purpose of the strategy is to integrate environmental concerns into sectoral policies on air transportation. The strategy includes: 1) improvement of technical environmental standards on noise and gaseous emissions; 2) strengthening of economic and regulatory market incentives; 3) assisting airports in

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62 European Commission, Communication to the Council and the European Parliament on Implementing the Community Strategy to Reduce CO_2 Emissions from Cars, First annual report on the effectiveness of the strategy, Brussels, 4 October 2000, COM (2000) 615 final, p. 7.

63 European Commission, Communication to the Council and the European Parliament on Implementing the Community Strategy to Reduce CO_2 Emissions from Cars, First annual report on the effectiveness of the strategy, Brussels, 4 October 2000, COM (2000) 615 final, p. 7.

64 EU, Second Communication under the UN Framework Convention on Climate Change, p. 41.

65 IPCC report 'Aviation and the Global Atmosphere', Cambridge University Press, 1999, Summary for policy makers: www.ipcc.ch. Cited from European Commission, Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, Air Transport and the Environment: Towards meeting the Challenge of Sustainable Development, Brussels, 1 December 1999, COM (1999) 640 final, p. 5.

66 European Commission, Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, Air Transport and the Environment: Towards meeting the Challenge of Sustainable Development, Brussels, 1 December 1999, COM (1999) 640 final.

their environmental endeavors; and 4) advancing long-term technology improvements.[67] Concrete actions are proposed and carried out in the each of the four areas.

2.3.3 Other related initiatives

There are some other areas that can make important contributions to the reduction of greenhouse gases in the transportation sector, for example, improvement of public passenger transport systems, restructuring of the transportation price system, reform of the rail transport system, and improvement of fuel quality. The Commission has adopted policy initiatives to deal with each of these issues. For example, a Commission Green Paper on Citizens' Network suggests ways to making public passenger transport more attractive and usable.[68] The Green Paper proposes an integrated transportation system called "Citizens' Network". It suggests three effective "integrations": 1) integration of individual modes of transportation (including walking and cycling) and public transportation operations; 2) integration of different modes of public transportation (including bus, tram, metro and rail operations); 3) integration with other policy areas such as charge and fee systems of public transportation and land-use planning. A Commission Green Paper on reform of pricing in transport suggests to internalize the externalities of transport such as costs of environmental pollution, congestion and traffic accidents.[69]

2.4 Policy initiatives related to methane emission reduction

Methane (CH_4) is the second most common gas in the basket of six greenhouse gases controlled by the Kyoto Protocol. The main sources of methane emissions in the EU are agriculture, waste and energy.

In the agricultural sector, the Commission suggested that the most promising area for reducing methane emission is animal manure management (Communication COM (96) 557). Anaerobic digesters or simple covered lagoons provide effective means to limit and to reduce methane emission. The Communication suggested a two-stage strategy in 1996.[70] In the first stage, there shall be demonstration programs on digesters and covered lagoons at the EU, national, regional and local levels and show their possibility and feasibility in methane emission reduction. In the second stage, an EU legal obligation to install recovery systems should be implemented at a later stage.

In the waste sector, the Commission suggested that there is a need to distinguish specific measures addressing new and existing landfills, with regard to general measures aimed at reducing organic wastes in landfills. For new landfills, EU legislation should require, in the absence of other methane reduction alternatives, that new anaerobic landfills be equipped with methane recovery and use systems. For existing landfills, legislation should require retrofitting in order to collect and to use the methane wherever possible. Where using is not feasible, it should encourage the use of

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67 European Commission, Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, Air Transport and the Environment: Towards meeting the Challenge of Sustainable Development, Brussels, 1 December 1999, COM (1999) 640 final, p. 6.

68 European Commission, Green Paper, The Citizens' Network: Fulfilling the Potential of Public Passenger Transport in Europe, COM (95) 601 final 29 November 1995.

69 European Commission, Green Paper, Towards Fair and Efficient Pricing in Transportation: Policy Options for Internalizing the External Costs of Transport in the European Union, COM (95) 691, final of 20 December 1995.

70 European Commission, Communication to the Council and the European Parliament on a "strategy paper for reducing methane emissions," 19 November 1996, COM (96) 557, p. 5.

flaring. The Second Communication under the UN Framework Convention on Climate Change reported that a proposal for the Council Directive on the landfill of waste is currently under discussion.[71]

In the energy sector, because coal industry continues to decline in the EU, it is expected that methane emissions from coal mining will continue to decline. The European Commission suggested that Member States promote the application of BAT technologies for those coal mines that will still be in operation beyond a certain time frame (10 years for instance).[72] In addition, the Commission suggested to set-up an EU minimum leakage standard for natural gas pipeline and to increase control frequency of pipelines at national level.

2.5 Policy initiatives on energy efficiency

The Commission adopted a comprehensive strategy for the rational use of energy in April 1998.[73] The strategy proposed an indicative target for the Community as a whole of a one percentage point per year improvement in energy intensity to the year 2010 over and above that which would otherwise be attained.[74] The Council of the European Union supported the strategy by adopting a Resolution on energy efficiency in December 1998[75] and requested the Commission to come forward as soon as possible with a proposal for a prioritized Community action plan for energy efficiency. The Commission proposed its Action Plan to Improve Energy Efficiency in the European Community in April 2000.[76]

The underlying assumption behind the Action Plan is that there still remains a large economic potential for further improvement of energy efficiency, possibly as much as 18% of present energy consumption.[77] Many barriers still exist, however, including:

- the fact that low energy prices do not accurately reflect energy costs and externalities;
- the lack of complete information on cost-effective and energy-efficient technology;
- the presence of institutional and legal barriers such as the continued practice of selling energy by kilowatt/hour (kWh), rather than in the form of efficient heating and cooling, lighting and power, which is what the energy consumer actually wants;
- the lack of harmonized and standardized components (and other technical barriers); and

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71 EU, Second Communication under to the UN Framework Convention on Climate Change, 1998, p. 35.

72 European Commission, Communication to the Council and the European Parliament on a "strategy paper for reducing methane emissions", 19 November 1996, COM (96) 557, p. 5.

73 Energy Efficiency in the European Community – Towards a Strategy for the Rational Use of Energy, COM (1998) 246 final, 29 April 1998.

74 EU Commission, Communication to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, Action Plan to Improve Energy Efficiency in the European Community, Brussels, 26 April 2000, COM (2000) 247 final, p. 3.

75 Official Journal C 394/01, 17 December 1998.

76 EU Commission, Communication to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, Action Plan to Improve Energy Efficiency in the European Community, Brussels, 26 April 2000, COM (2000) 247 final.

77 EU Commission, Communication to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, Action Plan to Improve Energy Efficiency in the European Community, Brussels, 26 April 2000, COM (2000) 247 final, p. 4.

- financial barriers such as unduly short pay-back periods required for demand-side investments, as compared with those for energy production.[78]

In order to overcome those barriers and to further improve energy efficiency in the European Community, the Action Plan puts forward three groups of mechanisms: 1) measures to enhance the integration of energy efficiency into other Community non-energy policy and program areas; 2) measures for re-focusing and reinforcing existing successful Community energy-efficiency measures; and 3) new common and coordinated policies and measures.[79] The SAVE Program[80] will be used as the principal coordinating arm of the Action Plan.

2.5.1 Measures to enhance the integration of energy efficiency into non-energy policy and programs of the Community

The Action Plan proposes measures to integrate energy efficiency into non-energy policies and programs where there are cost-effective advantages and where it is possible to do so without significantly altering the original intent of the policy or program in question. These mechanisms reflect the suggestions of the Commission Communication on Strengthening Environmental Integration.[81] There are six policy areas being identified as the priority areas by the Action Plan for strengthening the integration. They are areas of transport policy, enterprise policy, regional and urban policy and programs, taxation and tariff policy, international cooperation and pre-accession activities, and the Member States policies and measures.

2.5.2 Measures for re-focusing and reinforcing existing successful Community energy-efficiency measures

The Action Plan recommends measures to further improve energy efficiency in the areas of:

- transport efficiency;
- household appliance, commercial and other end-use equipment;
- industry;
- combined heat and power (CHP);
- electricity and gas industries;
- building energy efficiency;
- measures on research and technological development of building energy efficiency;
- measures to encourage and organize the local and regional participation, such as to set up local energy management agencies in regions, islands and cities and to set up information network for transnational cooperation and transfer of know-how;
- the practice of Third-Party Financing and model contracts;[82]
- dissemination of information and training; and
- monitoring and evaluation.

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78 EU Commission, Communication to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, Action Plan to Improve Energy Efficiency in the European Community, Brussels, 26 April 2000, COM (2000) 247 final, p. 4.

79 EU Commission, Communication to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, Action Plan to Improve Energy Efficiency in the European Community, Brussels, 26 April 2000, COM (2000) 247 final, p. 2.

80 See Section III.1.1.

81 Commission Communication on Strengthening Environmental Integration, COM (1998) 571 of 14 October 1998.

82 See Section III.1.2.

2.5.3 New common and coordinated policies and measures

The Action Plan outlines a number of new policies and measures that have already been applied on a limited scale in a number of Member States. It suggests that there is a need to develop larger, EU-wide initiatives based on the successful experience of those policies and measures. The Action Plan suggested four policies or measures in the areas of public procurement of the energy-efficient end-use technology; cooperative technology procurement; energy audits in industry and the tertiary sector; and a best practice initiative.

2.6 Policy initiatives on renewable energy sources

Renewable energy sources are addressed in two specific Council Directives,[83] as well as in the 1997 Commission strategy. This strategy is contained in a White Paper entitled Energy for the Future: Renewable Sources of Energy.[84]

The White Paper proposed a Community-wide strategy and an action plan for the promotion of renewable energy sources, recognizing that significant further development of renewable energy sources in the EU not only is necessary for purposes of GGER, but also represents an important development opportunity for the EU and its Member States.[85] The Commission points out that renewable energy sources are indigenous and can reduce dependency on energy imports (and increase security of the energy supply). In addition, the development of renewable energy sources can actively contribute to job creation, especially for small- and medium-sized enterprises that are central to the Community economic fabric. Renewable energy sources can thus be a key feature in regional development, promoting greater social and economic cohesion within the Community. To meet its greenhouse gas emissions reduction target, the Community as a whole needs to reduce energy and carbon intensity. Accelerating the penetration of renewable energy sources is very important for reducing carbon intensity and CO_2 emissions in the EU.

The White Paper sets forth a strategic objective of doubling the current 6% share of renewable energy sources to 12% in the Community's energy mix by 2010.[86] The Commission believes that the target is ambitious but realistic.

According to the White Paper, two major obstacles currently prevent the further development of the renewable energy sources in the Community. The first is the higher initial investment costs for certain renewable energy sources such as solar energy. The second is the lack of confidence on the part of investors, governments and users, caused by lack of familiarity with the technical and economic potential of renewable energy and a general resistance to change and new ideas.

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83 Council Decision 93/500/EEC of 13 September 1993 concerning the promotion of renewable energy sources in the community (ALTENER Program) and Council Decision of 18 May 1998 concerning a multi-annual program for the promotion of renewable energy sources in the Community (ALTENER II) (98/352/EC), see *supra* Section III.1.3.

84 EC, Communication from the Commission, Energy for the Future: Renewable Source of Energy, White Paper for a Community Strategy and Action Plan, COM (97) 599 final, 26 November 1997.

85 EC, Communication from the Commission, Energy for the Future: Renewable Source of Energy, White Paper for a Community Strategy and Action Plan, COM (97) 599 final, 26 November 1997.

86 EC, Communication from the Commission, Energy for the Future: Renewable Source of Energy, White Paper for a Community Strategy and Action Plan, COM (97) 599 final, 26 November 1997.

To overcome these obstacles and to further promote the development of renewable energy sources through close cooperation between the Member States and the Commission, the White Paper proposes a number of interrelated and complementary measures. The identified measures are aimed at providing fair market opportunities for renewable energies without excessive financial burdens:

1) internal market measures, such as fair access to the electricity market for renewable energy providers; fiscal and finance measures; a new bio-energy initiative for transport, heat and electricity; and improvements to building regulations;
2) reinforcement of Community policies, including policies in the areas of environment protection; growth, competitiveness and employment; competition and state aid; research, technology, development and demonstration; regional policy; common agricultural policy and rural development policy; and external relations;
3) strengthening cooperation between Member States;
4) supporting measures such as targeted promotion; market acceptability and consumer protection; better positioning for renewable energy sources on the institutional and commercial finance market; and renewable energy networking; and
5) a campaign to give a strong start to renewable energy development activities. The campaign proposes the development of 1,000,000 photovoltaic systems, 10.000 MW of large wind farms, and 10,000 MWth of biomass installations, as well as the integration of renewable energies in 100 communities.

Although the doubling of the share of renewable energy sources may require an increase of approximately 30% in the total energy sector investment, the Commission believes that by 2010 it could create and estimated gross figure of 500,00 – 900,000 new jobs, save 3 billion ECU in fuel costs annually (a total of 21 billion ECU for the period 1997-2010), reduce the use of imported fuels by 17.4% and the cut CO_2 emissions by 402 million tons/year.[87]

The strategy and action plan proposed in the White Paper gained strong support from other institutions of the Union. For example the Council held an open debate on renewable sources of energy and agreed to adopt the strategy and action plan proposed by the Commission. It went on to adopt a Resolution on renewable sources of energy on 8 June 1998. The Resolution "welcomed the general trust of the White Paper on a Community strategy and action plan as a basis for the development of actions at Community level complementary to actions at national level",[88] and noted that "the White Paper's indicative target of 12% [of total energy from renewable sources] for the Community as a whole by 2010 provides useful guidance for increased efforts at Community level as well as in Member States".[89] The Council welcomed the idea of a campaign for the launching the further development of renewable energy sources proposed by the Community.[90] The European Parliament even suggested an objective of "at least" 15% share of renewable energy sources in its Resolution on a Green Paper for the same matter proposed by the Commission.[91]

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87 EC, Communication from the Commission, Energy for the Future: Renewable Source of Energy, White Paper for a Community Strategy and Action Plan, COM (97) 599 final, 26 November 1997.

88 Council Resolution on 8 June 1998 on renewable sources of energy, Official Journal C 198, 24/06/1998, Paragraph 2.

89 Council Resolution on 8 June 1998 on renewable sources of energy, Official Journal C 198, 24/06/1998, Paragraph 4.

90 Council Resolution on 8 June 1998 on renewable sources of energy, Official Journal C 198, 24/06/1998, Paragraph 20.

91 European Parliament, Resolution on the communication from the Commission on Energy fro the Future: Renewable Sources of Energy – Green Paper for a Community Strategy (COM (96)0576 – C4-0623/96, Article 2, (a).

2.7 Policy initiatives on greenhouse gas emissions trading within the EU

The Kyoto Protocol introduced three new international mechanisms by which Annex I countries can attempt to achieve their greenhouse gas emissions reduction targets. They are called "flexible mechanisms" altogether. They consist of "international trading of greenhouse emissions (emissions trading)", which will became operational from the year 2008, "Joint Implementation (JI)" and "Clean Development Mechanism (CDM)". Emissions trading is applicable only within Annex B countries. Joint Implementation is applicable only within Annex I countries. CDM is applicable between developed countries and developing countries.

The European Commission explored the issue of greenhouse gas emissions trading within the EU by its Green Paper COM (00) 87.[92] The Commission believes that greenhouse gas emissions trading within the EU is an integral and major part of the EU implementation strategy. The Green Paper discusses several basic questions related to emissions trading and invites debate about how the mechanism shall be applied in the EU.

The Green Paper defines the concept of emissions trading as "a scheme whereby companies are allocated allowances for their emissions of greenhouse gases according to the overall environmental ambitions of their government, which they can trade subsequently with each other".[93] These allowances are sometimes called "quotas" or "permits." The total of all these allowances allocated to all the companies included in the scheme represents the overall limit on emissions allowed by the scheme. It is this overall limit that provides the environmental benefit of the scheme. One main attraction of emissions trading is that it provides certainty of environmental outcomes.

The Green Paper summarizes the principle and benefits of emissions trading as follows:

> "[E]missions trading allows individual companies to emit more than their allowance on condition that they can find another company that has emitted less than allowed and is willing to transfer its "spare" allowances. The overall environmental outcome is the same as if both companies used their allowances exactly, but with the important difference that both buying and selling companies benefited from the flexibility offered by trading, without disadvantage to the environment. Both companies involved incur lower compliance costs than they would have been able to do without the possibility of trading (the "selling-company" receiving payment for the allowances transferred, and the "buying-company" incurring less costs than would have been implied by adhering to the pre-determined emissions allowance). A transparent price signal would also enable other companies to better judge the business opportunities involved in trading, and their potential benefit in engaging in this market. Furthermore, as emissions trading will induce competition between companies to find cost-effective ways to reduce their emissions, an additional boost will be given to environmentally friendly technologies".[94]

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92 European Commission, Green paper on greenhouse gas emission trading within the European Union, COM (00) 87, 8 March 2000, Europe Environment, No. 565, April 4, 2000, Document.

93 European Commission, Green paper on greenhouse gas emission trading within the European Union, COM (00) 87, 8 March 2000, Europe Environment, No. 565, April 4, 2000, Document, p. 3.

94 European Commission, Green paper on greenhouse gas emission trading within the European Union, COM (00) 87, 8 March 2000, Europe Environment, No. 565, April 4, 2000, Document, p. 3-4.

The Green Paper identifies the key economic rationale behind emissions trading: to use market mechanisms to ensure that the emissions reductions that are required to achieve a pre-determined environmental outcome take place where that cost of reduction is the lowest.[95] Moreover, the benefit of emissions trading can only be realized in practice when there is a robust monitoring and compliance regime at a reasonable cost.[96]

The Commission believes that, any emissions trading organized at Community level would be a domestic measure for the European Community (which is a distinct Party to the Kyoto Protocol, listed in Annex B thereof), and would not be identical to international emissions trading under Article 17 of the Kyoto Protocol.[97] Meanwhile, the Commission points out that it is very important to design such a "domestic" scheme from the outset in such a way as to be open to gradual extension, in terms of geographical, economic sectors, and gas coverage, because it must be compatible with the international emissions trading under the Kyoto Protocol governing six greenhouse gases and sinks after 2008.

The Green Paper discusses the issues of the scope of the emissions trading scheme, the price of trading allowance, relationship with internal market of the Community and the multilateral trade agreements, the roles of the Community and the Member States in the emissions trading scheme.

Other related issues raised in the Green Paper include minimizing distortions of competition within the internal market; maximizing synergy with existing environmental legislation; ensuring compatibility with the Kyoto Protocol's international emissions trading; specifying methods of quota allocation; clarifying the relationship between emissions trading scheme and government command and control provisions relating to pollution; identifying and utilizing the relationship between the emissions trading scheme and the energy taxation; developing compliance provisions and an enforcement regime; and specifying monitoring, tracking and reporting requirements.

2.8 Policy initiatives on reducing emissions of N_2O and F-gases

In addition to the initiatives on common coordinated measures for reducing CO_2 and Methane (CH_4) emissions, the EU has taken some preliminary initiatives on the common and coordinated measures for reducing other greenhouse gases controlled by the Kyoto Protocol.

One of these is N_2O, which has a Global Warning Potential 310 times that of CO_2. Its half-life in the atmosphere is 120 years. The main sources of N_2O emissions are fertilizer applications, agricultural processes and combustion. To reduce these emissions, the Commission suggested in its Communication entitled "Climate Change – Towards an EU Post – Kyoto Strategy": a) reducing the use of fertilizers through the price reduction proposed in Agenda 2000 (a program about the agriculture of the EU); b) increasing support for the agro-environment measures to ensure more efficient use of fertilizers; c) maintaining and enhancing low-input farming systems and other

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95 European Commission, Green paper on greenhouse gas emission trading within the European Union, COM (00) 87, 8 March 2000, Europe Environment, No. 565, April 4, 2000, Document, p. 4.

96 European Commission, Green paper on greenhouse gas emission trading within the European Union, COM (00) 87, 8 March 2000, Europe Environment, No. 565, April 4, 2000, Document, p. 4.

97 European Commission, Green paper on greenhouse gas emission trading within the European Union, COM (00) 87, 8 March 2000, Europe Environment, No. 565, April 4, 2000, Document, p. 5, footnote 12.

sustainable agricultural practices; and, d) (if Member States are willing) direct payments conditional upon compliance with fertilizer use requirements.[98]

HFCs, PFCs and SF_6 are another group of greenhouse gas under the control of Kyoto Protocol, called variously "F-gases," "FCs" or "halogenated gases". Although they comprise only a small portion in the overall greenhouse gases in the atmosphere (compared to CO_2, CH_4 and N_2O) their emissions are increasing quickly, suggesting that levels of F-gases could rise by 150% between 1995 and 2010.[99] Moreover, the F-gases have a very high Global Warming Potential and some of them can last very long in the atmosphere. There is no significant action being taken at the EU level to reduce the F-gases so far.

Regarding the F-gases, the Commission engaged ECOFYS, a Dutch firm to make a preliminary assessment of the options and costs of their control, as well as the barriers for implementing reduction policies. The report of that study was issued in April 1999. It identifies categories of options for F-gases reduction: 1) reduction and prevention of leakage during use (by better installations/materials, preventive maintenance) and during installation, maintenance, refill; 2) recycling/reuse of discarded agents; 3) application of alternative agents; 4) development of modified (components of) installations, using less HFCs, PFCs, and SF_6; and 5) miscellaneous (e.g. incineration).[100] The report estimates that, with maximum application of abatement measures, a reduction of 85% of total emissions in the EU 15 for those three gases together can be achieved at a cost of about 5000 million ECU.[101] The report identifies barriers to the F-gas reduction in the EU and proposes some policy options accordingly. The major barriers are institutional, juridical, financial, commercial (market) and technological. The policy options suggested by the report include legislation (regulations), negotiated agreements, refund systems, taxation, subsidies, bans, research and technology development, and information dissemination.[102]

2.9 Methodological significance of the EU policy initiatives

As above mentioned from Section III.2.1 to III.2.8, the EU proposed a number of policy initiatives related to greenhouse gas emissions reduction. Those initiatives are important not only because they indicate the trend of the EU law and policy, but also because they indicate that the EU is trying to apply as many mechanisms as possible to achieve the necessary reduction. They clearly indicate that the scope of greenhouse gas emission control in the EU is expanding, and advocate putting more greenhouse gases under control (methane and F-gases, for example). They further suggest extending controls to aviation sector, and increasing attention to the areas of passenger cars and transportation systems.

These policy initiatives and the entire EPCC program indicate that the EU is strengthening its institutional arrangements in preparation for further development of its law, policy and programs

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98 European Commission, Communication from the Commission to the Council and the European Parliament, Climate Change – Towards an EU Post – Kyoto Strategy, Brussels, 3 June 1998, COM (1998) 353 final, p. 15.

99 Jason Anderson, Keeping cool without warming the planet: Dutting HFCs, PFCs and SF_6 in Europe, Climate Network Europe, p. 4.

100 ECOFYS, Reduction of the emissions of HFC's, PFC's and SF_6 in the European Union, Final Report, ECOFYS, Netherlands, April 1999, p. vi.

101 ECOFYS, Reduction of the emissions of HFC's, PFC's and SF_6 in the European Union, Final Report, ECOFYS, Netherlands, April 1999, p. vi.

102 ECOFYS, Reduction of the emissions of HFC's, PFC's and SF_6 in the European Union, Final Report, ECOFYS, Netherlands, April 1999, p. 40-42.

on greenhouse gas emissions reduction. The EU and its Member States have a long term perspective on the issue of greenhouse gas reduction. They realized that a strong institutional arrangement for the development of new policies and programs is necessary.

Clearly, the EU is trying to integrate the policy of energy efficiency and greenhouse gas emissions reduction into other non-energy areas and sectors. Such integration involves both taking measures to re-focus and reinforce existing successful energy-efficiency measures, and also taking measures to enhance the integration of energy efficiency into non-energy policies and programs, and developing new common and coordinated policies and measures. One important example is found in the EU's efforts to incorporate the objective of fuel efficiency within its financial policy.

The EU is exerting great effort to utilize market forces for greenhouse gas emission reduction. The three proposals of the European Commission on CO_2 and energy tax are examples of this approach, as is the initiative on fuel economy labeling. The most creative idea is the initiative on the scheme of greenhouse gas emissions trading (explored in detail in the Green Paper (00) 87).

It is also clear from these policy initiatives that many EU efforts focus on encouraging voluntary participation by industries. The voluntary agreement between the European Commission and the ACEA for reduction of CO_2 emissions from passenger cars through technological improvement is a good example.

Finally, the EU has significantly strengthened its efforts to promote renewable energy sources, as evidenced by its comprehensive strategy and an action plan for promoting renewable energy sources.

IV. Some reflections on the law and policy of the EU on greenhouse gas emissions reduction and their methodological significance to China

Over the past two decades, China has made great efforts to upgrade production technologies and improve energy efficiency. A recent study by an economist in The Netherlands pointed out for the first time the fallacy of the criticism of China being a "free-rider", enjoying benefits from other countries' efforts to abate greenhouse gas emissions but not taking responsibilities to abate its own.[103] However, the total volume of greenhouse gases presently emitted coupled with the fast economic growth rate in China suggests that more effort is needed to change the pattern of the growth to the pattern of sustainable development, and to contribute to global efforts to combat global warming. The experiences of other countries could contribute to the formulation and implementation of law and policy on greenhouse gas emissions reduction in China.

This survey shows that methodologically there are many things China can learn from the experience of the EU. There is need for the following: 1) comprehensive coverage of the issues of greenhouse gas emissions reduction by law and policy; 2) integration of the objective of greenhouse gas emissions reduction into other programs and policies addressing the needs for development; 3) adoption of a multi-method approach for achieving the target of greenhouse gas emissions reduction; and, 4) mandating the use of sound decision-making processes in dealing with the issue of greenhouse gas emissions reduction.

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[103] See Zhongxiang Zhang, Can China Afford to Commit itself an Emissions Cap? An Economic and Political Analysis, Energy Economics, Vol. 22, No. 6. pp. 587-614, October 2000.

1. Comprehensive coverage of the issue of greenhouse gas emissions reduction in law and policy

For these purposes, "comprehensive coverage" would require coverage of all the greenhouse gases controlled by the Kyoto Protocol. Such coverage is essential to the achievement of the objectives of the Protocol, and of the UN Framework Convention on Climate Change. Otherwise, the effect of reducing certain greenhouse gases may be off-set by substitution, leading to an increase in emissions of other greenhouse gases. The current law and policy of the EU cover all of the six greenhouse gases, although the degree of control varies, particularly between the first group of gases (CO_2, CH_4 and N_2O) and the second group of gases (HFCs, PFCs and SF_6). While many legislative and policy measures have been adopted for the reduction of the first group of greenhouse gases, the second group of greenhouse gases largely remains in the stage of public debate and study. The survey on the latest policy initiatives described in Section III.2. shows that the EU is trying to strengthen the law and policy for control the second group of gases.

"Comprehensive coverage" also refers to coverage of all the relevant sectors and of stakeholders. The survey shows that the law and policy of the EU concerning greenhouse gas emissions reduction cover a broad array of sectors and stakeholders.

Breadth of coverage of the various industries involved is also important. Industries are the major cause of the greenhouse gas problem, and can be the major source of its final technical solutions. The coverage of industries by law and policy is absolutely necessary, because change of industrial production technologies from traditional environmentally detrimental ones to environmentally friendly ones is essential for GGER. The voluntary agreement between the EU and the automobile industries (as mentioned in Section III.2.3.1) is a good example of successful measures to involve industries in greenhouse gas emissions reduction efforts.

In addition to industries, broad involvement of governmental institutions is indispensable, including both the EU institutions and those of the Member States. For the EU and its Member States, greenhouse gas emissions reduction is a shared task. Without the cooperation between the EU and its Member States and among the Member States, the task will never end. The EU institutions play a central and crucial role in establishing and facilitating this cooperation. It is the EU legislation and policy that provide a Community-wide framework and basis for cooperation. In addition, the EU institutions play important roles in both "command and control" and using market force for greenhouse gas emissions reduction. We have seen Directives on energy efficiency labeling for various kinds of electrical equipment and appliances in Section III.1.2. The labeling requirements of the Directives become compulsory in the Member State once they adopt law to implement them domestically. Then, market force applies when those labeled products are put on market. The labels may drive the consumers to choose the electrical products with a higher level of energy efficiency.

The involvement of the governments of the Member States is also essential, as they are the primary movers in greenhouse gas emissions reduction. The general target of 8% reduction of greenhouse gases from the 1990 level will never be achieved if one Member State should significantly fail to achieve its share of the reduction under the "burden sharing" agreement. The law and policy at the EU level have to be carried out by the Member States.

Another important element of the EU program is the involvement of the European public. A principal purpose of greenhouse gas emissions reduction is to protect human beings and their future generations' health and welfare and the health of the ecosystem. Moreover, the public should be involved because it is part of the cause of climate change problem. As a region concentrated with a large number of developed countries, the pressures of population and societies of the European Community on the global environment are enormous. If they change their lifestyle and consumption patterns to an environmentally friendly way, that would provide great environmental benefits. The various labeling requirements also show how important a role citizens can play in greenhouse

gas emissions reduction. The consumers can influence producers and suppliers by their choices, which graphically demonstrate that they care about the environmental qualities of the commodities they purchase – a process that will ultimately result in environmental improvement.

The dual coverage (the coverage of all greenhouse gases and all stakeholders) of the EU law and policy on greenhouse gas emissions reduction carry important messages for China's greenhouse gas emissions reduction strategy.

The experience of the EU indicates that the coverage and prioritization of the targeted greenhouse gases depends upon many factors, including the requirements of the Kyoto Protocol, the levels of contribution of greenhouse gases to global warming, the impacts upon national economy, the technological feasibility for reducing the emission of a greenhouse gas and the cost of emission reduction. Currently, the EU's efforts focus on the first group of greenhouse gases, especially CO_2. Likewise, China will have to decide its coverage of greenhouse gases according to both its international commitments and its national conditions.

The current energy structure in China presents difficulties for China in attempting to reduce greenhouse gas emissions. The primary source of energy is coal. Although the consumption of coal has increased only 0.9% since 1978, coal still accounted for 71% of the total energy consumption in 1998.[104] The burning of coal is a major source of CO_2 and some other greenhouse gases. In addition, automobile transportation is developing very fast, causing a rapid increase in N_2O emissions. Agriculture is another source of emissions, particularly in southern and eastern China, where rice is the major crop. Rice fields are a major source of CH_4 emission. In addition, because of the rapid urbanization, large areas of land are being converted from rural land into urban areas. The land use change may release into the atmosphere a lot of CO_2 that has been sequestered in soil up to now. Based upon these conditions, it seems that China's greenhouse gas emissions reduction strategy should also focus on reduction of the first group greenhouse gases (CO_2, N_2O and CH_4). This approach is similar with that of the EU. However the experience of the EU suggests that the control of the second group gases – F-Gases – should not be ignored.

As to the coverage of sectors and stakeholders, the experience of the EU indicates that all relevant sectors and stakeholders should be invited and involved. It is the same for China.

The involvement of industries is essential. The challenge is how to get the Chinese industries effectively involved and making substantial contribution to the reduction of greenhouse gases. According to Chinese statistics of 1998, industries (not including sectors of agriculture, forestry, stock raising, water resources, building, transportation, communication, post service, trade, food and drink, material supply, storage and others) are the largest, dominating energy consuming sectors.[105] Industries account for 71.4% of the total energy consumption.[106] So, the first targeted sector for energy conservation must be the various industries.

But just as in other countries, China is facing a dilemma – how to keep its economic development and social welfare improvement, and at the same time to reduce its greenhouse gas emissions? As a developing country, China needs to be industrialized in order to alleviate poverty and give its people a better life. However, development under the current mode of economic growth means more greenhouse gas emissions.

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[104] Energy consumption in total and its composition, http://www.china5e.com/statitic/to-7-2.htm.

[105] The balance sheet of energy, from http://www.china5e.com/statistic/to-7-3.htm.

[106] Http://www.china5e.com/statistic/to-7-3.htm.

If one looks only at the per capita emission of CO_2, China still has room for its greenhouse gas emissions. The per capita greenhouse gas emission of China is very low compared to Annex I countries of the Kyoto Protocol.[107] But on the other hand, the total amount of the CO_2 emissions of China is very large and is rapidly increasing. If one looks only at the total quantity of the greenhouse gases emitted from China, it is obvious that there is no room to contain these emissions in the atmosphere, because the room had been filled a long time ago by the emissions from industrialized countries. The ultimate solution for this dilemma lies in the strategy of sustainable development. Sustainable development requires the "greening" of Chinese industries – upgrading production technologies and re-orienting products, as well as reforming the structure of Chinese industry according to the needs of economic and social development as well as environmental protection. In this regard, China can learn from the experience of the EU and the EU Member States.

The survey shows that there is useful and helpful information in the law and policy of the EU in getting the various industrial sectors involved into the process of greenhouse gas emissions reduction. Energy efficiency legislation, energy products/ CO_2 taxation proposals, industrial voluntary agreements and the emissions trading schemes are some of the examples. As the European experience indicated, the key to a successful and effective involvement of industries is to create a "win-win" situation which benefits both the Earth's climate system and the financial interests of industries – at least over time. By establishing compulsory standards for energy efficiency and greenhouse gas emissions reduction, the government can force industries to be involved. But the "command and control" approach may overburden industries and make it difficult to achieve the government's objectives. The approach of economic incentives or using the market may be more effective and complement "command and control" provisions. That is why the European Community adopted a number of Directives and other legislation to require the Member States to implement measures such as energy efficiency labeling and fuel-economy information disclosure, and that is why the European Commission intends to propose a tax on energy products.

China should use both the approaches to getting the Chinese industries involved. China has established a rather comprehensive ("command and control") legislation framework for environmental protection, including laws on the protection of the atmosphere. For example, the Law on Prevention and Control of Atmospheric Pollution (1987, 1995, 2000) places many regulatory requirements and obligations on industries, including EIA requirements, registration, emission permit, self-monitoring and reporting. The law sets mandatory air pollutant discharge standards for industries, and bans equipment and technologies that cause serious air pollution, as well as forbidding the use of leaded gas in all the major cities.

Similarly, there are many illustrations in China of the use of economic incentives and market forces. For example, the Law on Prevention and Control of Atmospheric Pollution requires payment of a pollutant emission fee[108] by any entity that discharges atmospheric pollutants. The fee is based upon the nature and quantity of the pollutants discharged. The current national policy on the development of industrial technology also focuses on encouraging the conversion to clean technologies and clean production. Guided by this policy, Chinese industries have developed some environmentally sound technologies and products such as non-CFC refrigerators. In support of current discussions on pollutant emission trading among Chinese scholars, experimental approaches are in use in some places.

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[107] According to the data of UNEP, the *per capita* CO_2 emissions of the USA, UK and the world average are 7.8, 6.4 and 1.56 times higher than the Chinese per capita CO^2 emission, respectively. Source: UNEP/GRID-Arendnal, Vital Climate Graphics: Emissions of CO_2-Selected Countries (1995).

[108] Article 14, Law on Prevention and Control of Atmospheric Pollution (2000).

If China applies the two approaches properly, a "win-win" situation can be expected. Although there are so many differences between China and the EU and its Member States, at least methodologically and generally there is something that China can learn from the experience of the EU, because the climate change issue is a common concern of mankind.

As to the involvement of government, a key issue is how to define the role and function of governments at various levels in the process of greenhouse gas emissions reduction. Here also China can learn from the EU and its Member States. The role of the EU is particularly interesting. The EU prepared and proposed many legislation and policy initiatives on different aspects of greenhouse gas emissions reduction, and established various Community-wide programs for the implementation and further development of GGER strategies, with the EU as coordinator for the implementation of such programs. For example, the EU serves as a common forum and information clearing-house on various greenhouse-gas-related issues for Member States; the EU organizes research and technology development programs and allocates funding for them; and the EU provides Community-wide monitoring systems for monitoring the progress made by the Member States in greenhouse gas emissions reduction.

All of those experiences are of useful references for China. One of the important objectives of the economic reform started in 1978 is to decentralize the long-time centrally planned economy and to re-define and distinguish the functions of government and the functions of enterprise. China has made important progress in this regard, and the differences between these functions are now more clearly distinguished. Many of its formerly state-run enterprises have been released by the government and become independent legal entities. The government increasingly concentrates on its role in macro policy guidance and control through law, setting the basic behavior standards for citizens and entities of the society, backed by enforcement measures, and economic instruments such as taxation. But there is still a lot of work to do in this area.

The challenge of greenhouse gas emissions reduction requires China to further define and rationalize the functions of its governments at various levels. From the experience of the EU, we can see that there are some functions at the Community level that are comparable in their substantive values to the functions of government of China at national level. Those functions are generally functions of the government including: 1) preparing and implementing general strategies and legal and policy frameworks; 2) coordinating implementation efforts; 3) organizing research and technology development programs; and 4) supervising, monitoring and evaluating the implementation of strategies and programs. Those substantive values of governmental functions are worthy to be considered when China makes its national greenhouse gas emissions reduction strategy, and defines and distinguishes the roles of the government and enterprises in the process. The role of the Chinese government, especially the Central Government, in the greenhouse gas emissions reduction process should be in many ways the same as that of the EU in terms of those substantive values.

The participation of the general public in the course of greenhouse gas emissions reduction in China has the same importance as that of the EU and its Member States. The consumption pattern of the large Chinese population has important impact on the energy consumption and the volume of greenhouse gas emissions of the world. So, Chinese people can make a great contribution to the reduction of greenhouse gas emission by changing their lifestyle and consuming habits. As the survey indicates, the EU has been successful in reducing greenhouse gases, by changing consumers' purchasing behavior.

One way to invite the involvement of the general public is to supply them the energy-efficiency information to inform their decisions when purchasing energy-consuming commodities. So long as the price is affordable, their consideration for the cost-effectiveness of their investment will drive them to select the commodities with higher energy efficiency and lower negative impact on the environment. Meanwhile, the consumers' choices send a strong signal to manufacturers and dealers, who tend to react to the signal of market by supply more environmentally friendly commodities with more competitive prices. China can do the same thing. There is a large

opportunity for China to improve energy efficiency through the change of consumer habits. Chinese data on total energy consumption of the nation in 1998 shows that household consumption is the second largest. It accounts for 10.8% of the total energy consumption.[109] If China improves its legislation and standards on energy efficiency of energy-consuming commodities such as boilers, electric refrigerators, washing machines, TVs, etc., it should be able to save a large amount of energy, and hopefully to avoid a large amount of greenhouse gas emissions. In addition to market forces, environmental education and legal rights of public participation in GGER decision-making are also essential.

2. Integrating the objective of greenhouse gas emissions reduction with the needs for development

An important pre-condition for the EU law and policy decisions related to greenhouse gas emissions reduction is that the Union should try to ensure that these objectives will not conflict with the objective of social and economic development of the Union. Only on that basis will the EU adopt legislation or policy on energy conservation and greenhouse gas emissions reduction. For example, when the Council created the SAVE I Program in 1991, it believed that the promotion of energy efficiency in the Community would reinforce the economic and social development of the Community as a whole.[110] Another example is the policy on further development of renewable energy sources in the EU.[111] The White Paper on Renewable Sources of Energy issued by the Commission in 1997 justified the policy by noting that a significant further development of renewable energy sources in the EU is necessary not only for meeting its greenhouse gas emissions reduction target, but also for creating an important development opportunity, and that the further development of renewable energy sources will contribute to job creation and the security of energy supply. The Council and the European Parliament in their relevant resolutions and decisions on the policy re-confirmed those reasons.

By contrast, when there is a doubt about the consistency between the objective of greenhouse gas emissions reduction and the objective of social and economic development in a GGER legislative or policy proposal, it is more likely that the proposal will not be adopted. An example is the proposal of the Commission on energy product taxation.[112] In its opinion on the 'Amended proposal for a Council Directive introducing a tax on carbon dioxide emissions and energy', the Economic and Social Committee of the EU expressed serious concerns about the negative impacts of the tax proposal on economic and social development, including increasing personal taxation, possible rise in Community unemployment, inflation, global competitiveness of European industry, and the adverse impacts on the weaker Member States and regions with energy-intensive industries.[113]

One more example is that the acceptance of the Kyoto Protocol greenhouse gases target by EU is based on its judgment that "the conditions laid down in the Kyoto Protocol for its entry into force

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109 Http://www.china5e.com/statistic/to-7-3.htm.

110 Council of the European Communities, Council Decision of 29 October 1991 concerning the promotion of energy efficiency in the Community (SAVE Program), 91/565/EEC, OJ No. L 307/34, 8 November 1991, p. 34.

111 See Section III.2.6.

112 See Section III.2.2.

113 Economic and Social committee on the 'Amended proposal for a Council Directive introducing a tax on carbon dioxide emissions and energy', 96/C 174/15, OJ No. C 174/47, 17 June 1996, p. 49.

will ensure that EU competitiveness is not unduly hampered".[114] Therefore, the EU experience shows that EU decisions on reduction of greenhouse gases are based on a sound justification of the integration of the objectives of greenhouse gas emissions reduction and the objective of economic and social development.

This principle is also important for China. China must keep a proper high rate of economic growth in order to eliminate poverty and meet the basic material needs and the increasing cultural needs of people. Only by keeping the Chinese economy growing by a proper high rate, can China accumulate and invest more of its national income into environmental protection. Therefore, economic development is the key not only for economy itself, but also for the environmental protection in China. But for China, and other developing countries, the integration of environmental objectives with the objectives of economic development is not an easy job. It is more difficult for China to achieve the integration than the EU Member States, owing to China's lower level of economic and social development. The great challenge for China will be to find a way to keep a necessary high rate of economic development and at the same time keep a reasonably low emission of greenhouse gases.

As mentioned before, the EU experience suggests that one important and effective way to achieve this integration is to create a "win-win" condition by attracting the voluntary participation of industries. The EU experience suggests that the most suitable sectors and areas for such a "win-win" situation include automobile industry; energy industry (including renewable energy sources and combined heat and power (CHP) production[115]); energy efficiency (including conservation in buildings, equipment and appliances); and transportation industry. The same is true in China. There are some recent encouraging developments in those sectors and areas.

For example, in the renewable energy sector, China has made considerable progress in developing energy sources of biomass, solar power and wind power. China has promoted the biomass energy in rural areas for many years. In some rural villages, biogas produced from agricultural residues and manure is used as the main energy source for households. Solar power also is developing quickly. The photovoltaic technology has been applied in agriculture, forestry, transportation, communication, weather service, oil pipelines, education and household. In many remote areas, the application of photovoltaic technology provides electricity. The development of wind power is also remarkable. Wind power technology is sound, and its cost has reached an acceptable level in China. The State plans to accelerate the development of wind power.

Another example is the development of CHP. In 1998, the State Development and Planning Commission, the State Economic and Trade Commission, the Ministry of Construction and the State Environmental Protection Administration jointly adopted administrative regulations on development of CHP (amended in August 2000).[116] The amended regulations have detailed provisions on the development of CHP, including financial incentives such us exemption from grid connection fee for CHP plants. However, the scale of renewable energy and CHP is still small and there are many management problems.

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[114] European Commission, Commission Communication to the Council and the Parliament: "Preparing for Implementation of the Kyoto Protocol," COM (1999) 230, 19 May, 1999, p. 1.

[115] Combined heat and power (CHP) is a way to fully use of the heat generated by the electricity generation process. It requires power plants to send the hot water to a neighborhood area for heating purpose during the electricity generating process.

[116] The State Development and Planning Commission, the State Economic and Trade Commission, the Ministry of Construction and the State Environmental Protection Administration, Notice on Issuing the Provisions on the development of Combined Heat and Power Production, 25 August 2000.

The survey shows that the EU approach for promoting renewable energy sources is to identify obstacles and barriers first and then to take measures to overcome those obstacles and barriers. The Chinese experience indicated that China took basically the same approach. The major difference is in the effectiveness of the various measures for promoting renewable energy source. The survey suggests that, for China, factors such as market environment, policy encouragement, policy coordination, financial support, and education on renewable energy may be of greatest importance methodologically.

From the experience of the EU, it seems that the key for the creation of the "win-win" situation lies in the establishment of a market for the participating industries. For the "win" of the industries, there must be a profitable market for their clean technologies or energy efficiency products. The participating industries must actively desire to produce environmentally cleaner products. This desire will not arise automatically. Pressures from the general public and the governments (and governmental organization such as the EU) may serve as the "first push", particularly if supported by pressure from a society or community highly concerned with the environment.

The governments (and the EU) express the political will of the people by adopting law and policy on environmental protection, including law and policy on greenhouse gas emissions reduction and energy conservation. The law and policy "push" the industries to change their production according to the desire of the society. Meanwhile, a society concerned with the environment tends to pursue a new lifestyle caring for environmental sustainability. People in the society tend to choose environmentally friendly commodities, including commodities with higher energy efficiency. That consumption habit helps to develop a new market for environmentally clean products. Environmental education contributes to the environmental awareness of the general public. Therefore, there are many factors related to the creation of the market. Desire of industries, law and policy of the governments, political will of the general public and environmental education are some of the most relevant factors.

The experience of the EU shows that generally all those factors are moving in a direction favorable to the objective of greenhouse gas emissions reduction. In China, by contrast, there is a lot of work to do in all the relevant areas in order to foster a better political condition for the strategy of greenhouse gas emissions reduction. Desire of the Chinese industries for clean production needs to be further raised. Law and policy on climate change issues needs to be improved. The environmental awareness of the Chinese citizens needs to be increased. Environmental education needs to be strengthened.

3. Multi-method approach for achieving the target of greenhouse gas emissions reduction

The survey shows that EU utilizes as many methods as it can in addressing the greenhouse gas emissions reduction issue. I call this a "multi-method" approach. The means that the EU had applied so far can be grouped into three categories: regulation, economic incentives and technological innovations. The various forms of the EU legislation such as regulations, Directives, Decisions establish a regulatory framework for specific matters or areas concerning greenhouse gas emissions reduction. They are backed by enforcement measures of the the EU and domestic law of the Member States. The survey uncovered an array of different economic incentives used by EU for greenhouse gas emissions reduction. The voluntary agreements of automobile industries on reducing CO_2 emissions of automobiles, the energy labeling and fuel-economy requirements and the "Third Party Financing" practice[117] are just a few of those examples. Technology innovation

[117] See Section III.1.2 and III.2.5.2.

is a hard part of the greenhouse gas emissions reduction task. It is not only because the innovation of energy technology usually needs high initial investment, but also that there is a long waiting period for return, and it usually takes some time for a new environmental technology to be invented and become technologically and economically feasible. The survey found that the EU uses the "stick" (regulation or "command and control") as far as it can, and at the same time offers the "carrot" of increasing financial support for technological innovations.

China can and should apply the multi-method approach. As to the "command and control" aspect of the approach, more detailed and operational laws, regulations and standards on energy efficiency and greenhouse gas emissions reduction are needed. Amendments to the existing relevant laws, regulations and standards are needed too. The legislative work should focus on the adoption of implementing regulations for the newly amended Law on Prevention and Control of Atmospheric Pollution (2000) and the amendment of the Energy Conservation Law (1997). Greenhouse gas emissions reduction should be explicitly included in the relevant new legislation and the amendments to the existing law, regulations and standards when it is proper. Just as the EU did, China should make energy efficiency a necessary factor in determining BAT technologies in China. The equipment, appliances, devices and even factories that are listed by Chinese law as backward products or technologies should be strictly phased out. The enforcement of the greenhouse-gas-emissions-reduction-related laws and regulations should be strengthened.

As to the economic incentive aspect of the approach, a lot of things can be done in addition to what China has done in this area. For example, new efforts can be made in the area of energy labeling and fuel-economy information. As the life of Chinese people is improving, energy consumption by household equipment and appliances is increasing rapidly. More and more families have refrigerators, air-conditioners, heating, hot water devices and washing machines. The number of private cars and private homeowners is also increasing. Adequate information on the energy efficiency of those commodities will influence Chinese consumers' behavior and result in energy saving and greenhouse gas emissions reduction. Other measures such as the incentive provided by public procurement and third-party financing can be applied in China too.

As to the technology innovation aspect of the approach, the most important thing for China to do is to increase the public investment for the research and development of new energy technology. The supervision and management of public investment in this area should be strengthened. Private investment and foreign investment for new energy technologies should be encouraged. Measures should be taken to make sure that those investments are cost-effective and contribute to the technological advancement. With the limited public financial investment capacity, the Chinese government will have to give serious attention to development of a method that ensures that the limited investment generates expected technology advancement. China can learn from the experience of the SAVE I and II, the ALTENER I and II as well as other major EU programs aiming at promoting energy technology research and the development. Comparative studies can made between the practices of China and the EU. For example, comparative studies can focus on how those programs are prepared, how their purposes were developed, how priorities were identified and established, what means are available to ensure that the investment is used by the receivers in a cost-effective way, and how to evaluate the results of the sponsored research projects.

It is important that the application of the above mentioned multi-method approach is guided and coordinated by a high level institutional framework. In EU, the various efforts related to the greenhouse gas emissions reduction are currently guided and coordinated by the European Program on Climate Change (EPCC) established in June 2000.[118] China can learn from the experience of EPCC so as to improve its equivalent program in China.

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[118] See *supra* Section III.2.1.

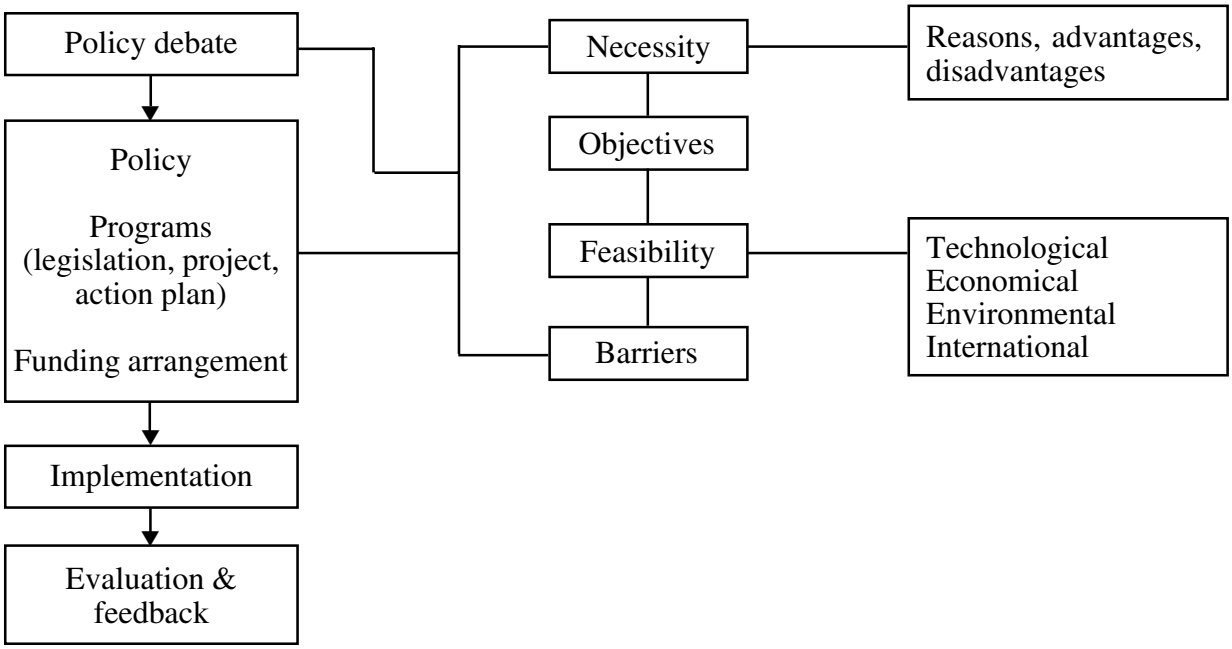
4. Sound decision-making process concerning greenhouse gas emissions reduction

The survey shows that the EU decision-making process concerning greenhouse gas emissions reduction is designed to absorb all kinds of opinions and provide decision-makers with adequate and accurate information as the basis of their decision. Based upon the survey, I tried to generalize the decision-making process and expressed it by Graph 1.

There are many things China can learn from the EU decision-making process. As Graph 1 shows, the first step of the process is the step of "policy debate". The European Commission usually triggers the debate by issuing a Green Paper and inviting all interested parties to openly debate its policy initiative. Any stakeholders can participate. For policies concerning climate change strategy and greenhouse gas emissions reduction, the open debate has many advantages. It can collect opinions from all stakeholders and help the decision-makers to make a well-informed and correct decision.

In China, the Government has decided that one of the major objectives for China's reform is the development of a socialist democratic system in China. The procedure of "policy debate" is good, in that it enhances the ability of decision-makers to make correct decisions and is consistent with the objective of a socialist democratic system. In recent years, China has enlarged the scope of policy debate for some major decisions on policies from the Representatives' Conference of the Communist Party, the People's Congress, the Chinese People's Political Consultative Conference and the Representatives' Conferences of other political parties to all citizens of China. For example, the Central Government published the draft of the Tenth Five-Year Plan for National Economic and Social Development and invited an open and national discussion about it in 2000. The State Development and Planning Commission established a special column on its homepage to invite comments and suggestions openly. Another example is that the National People's Congress published the draft of the Marriage Law Amendment and invited all citizens' comments and suggestions recently. As to the strategy for greenhouse gas emissions reduction, China should do the same, because its success needs the participation of all stakeholders and general public. In this regard, the experience of the EU on policy debate is valuable to China.

Graph 1 The EU decision-making process on greenhouse gas emissions reduction



The second step of the process is the adoption of a policy. The programs usually include proposals on projects or legislation or both. After the open debate, the Commission usually publicizes an adopted strategic policy in the form of a White Paper. I find the way the EU presents and justifies its major policies in the area of greenhouse gas emissions reduction very impressive. As Graph 1 shows, a White Paper usually makes statement on the following five basic questions: 1) the necessity of the proposed policy; 2) the purpose and objective of the proposed policy; 3) the feasibility of the proposed policy, 4) the major obstacles and barriers to the achievement of the objective of the proposed policy, and 5) the measures for overcoming the barriers and achieving the objective of the proposed policy, including proposals for legislation and project. There is a close logical connection between the five questions. More detailed description and justification are usually provided in the parts concerning the necessity and feasibility statement, such as impact statement, cost-effectiveness analysis, and the availability of technology. It is noted that each of the policies is supported by studies and research dealing with specific issues in the policies. Those studies and research provide the Commission with lots of information for the purpose of its justification for the proposals. Table 1 is an example of the information. Because of this kind of close justification, the policies of the EU on greenhouse gas emissions reduction are usually well-grounded.

The preparation of a Chinese policy on greenhouse gas emissions reduction can learn a lot from the way the EU prepares and presents its policies. The recent legislative process of the Amendment of the Air Pollution Prevention and Control Law of the P.R.C. included an economic and environmental impact analysis for the amendment, and the results of the study were included in the Statement on the legislation by the Standing Committee of the People's Congress. This is a new development of methodology of Chinese legislation, which shows that the Chinese legislature wants to improve the quality of its legislation by improving the justification of legislative proposals. In this regard, the EU decision-making process for greenhouse gas emissions reduction is a good example for China. The Chinese policy on greenhouse gas emissions reduction should have an adequate and close justification just like the EU. Each of the five basic questions on the policy proposal shall be well-justified by the results of relevant studies and research.

Another interesting issue is the degree of specification and completeness of some of the EU legislation on various greenhouse gas emissions reduction related issues. The Council Directives are a form of legislation of the EU which the Member States adopt through their national legislation process. In principle, the national legislation of Member States must reflect all the elements of the Directives. So, the detail and completeness of the Directives are important to a national legislation. The Council Directive 92/42/EEC on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels and the Council Directive 96/60/EC on energy labeling of household combined washer-dryers are good examples in this regard. The two Directives not only have the general requirements on the labeling, but also have detailed technical requirements such as specific contents of the labels and the relevant application and review procedures. Each of them has several annexes on technical matters.

In China, law seems to be general and abstract. Detailed matters are left to the regulations and standards. That is why most of the Chinese environmental statutes look like policy documents. For some general matters such as the establishment of national environmental policy, principles and institutional framework, this kind of format is understandable. But for matters of greenhouse gas emissions reduction and energy efficiency, perhaps detailed laws would be more valuable than general laws. A major breakthrough is needed in distinguishing functions of law from the functions of policy in China. Law can be detailed when it deals with detailed matters such as energy efficiency of buildings and energy-consuming equipment and appliances. It is important to recognize that the degree of specification of a law should depend upon the nature and situation of the subject matter that the law is supposed to deal with. When it is necessary, a detailed law on a specific matter should be adopted. This may happen in the area of greenhouse gas emissions reduction in China, as the greenhouse gas emissions reduction involves so many sectors, fields and technical matters. In that case, the detailed EU legislation can be good examples to China.

Table 1 Potential reduction for annual greenhouse gas emissions in the EU (from baseline 2010 projections) and associated with average cost (estimates based on currently available data). Emission reduction in MT CO_2 equivalent

Sector/measures	Low cost (1)	Medium cost (2)	Sum
CO_2			
– Transport	80 (3)	70	150
– Tertiary and households (energy efficiency and insulation)	20	120	140
– Industry (direct energy uses)	5	45	50
– CHP (in industry and district heating)	12	45	57
– Renewables in power generation	20	90	110
– Fuel swithching & efficiency in power generation	30	85	115
EU total CO_2	167	456	622
CH_4			
– Agriculture (improved manure management)	34	20	54
– Waste (landfill gas recovery/flaring)	23	60	83
– Energy (reduction gas leakage)	4	11	15
EU total CH_4	61	91	152
N_2O			
– Agriculture (reduce fertilizer application and improve manure management)	24	0*	24
– Industry (BAT installed in adipic arid nitric acid production)	86	0*	86
– Energy (combustion)	8	0*	8
EU total N_2O	118	0*	118
Halogenated gases			
– HFC: HCFC 22 production	9	0*	9
Others	3	22	25
– PFC (4)		4	4
– SF_6 (4)		7	7
EU total halogenated gases	12	33	45
EU total all greenhouse gases	358	579	937

(1) Low cost: annualised cost of reduction under ·5/ton of CO_2 equivalent (in current prices). The estimate indicates the average cost which would be incurred every year between 1990 and 2010 and is based on engineering and technological alternatives.
(2) Medium cost: idem as footnote 1 for the range between ·5 and ·50/ton of CO_2 equivalent (in current princes).
(3) The figure includes ACEA agreement estimated at 60 Mt.
(4) Very first estimates (to be further verified).
0* Means that at the margin there could be some reduction potential above the low cost threshold.

Source: EC Commission, Communication to the Council and the Parliament "Preparing for Implementation of the Kyoto protocol," 19 May 1999, COM (1999) 230, p. 14.

V. Conclusions

At the beginning of this paper, I mentioned that my purpose was to find answers for the following questions (with the emphasis on the last one): How do the EU law and policy support their advanced targets on greenhouse gas emissions reduction? What could China, as one of the major greenhouse gas emissions countries of the world, learn from the experience of the EU and its Member States in this area?

My survey shows that the EU has undertaken an extensive effort in dealing with the climate change and greenhouse gas emissions reduction issue. This effort can be traced back to the late 1980s before the conclusion of the UN Framework Convention on Climate Change in 1992. This effort resulted in a number of EU laws and policies on or related to greenhouse gas emissions reduction. Those laws and policies provide the EU and its Member States with a sound legal and policy basis and framework for greenhouse gas emissions reduction. Based on those laws and policies, many measures have been taken to overcome the obstacles and barriers for the greenhouse gas emissions reduction objective. Enormous legal and policy efforts have been made in order to reduce the first group of greenhouse gases. The second group of greenhouse gases has caught the attention of the EU recently.

Currently, the EU instruments deal mainly with issues of energy efficiency of electrical equipment and buildings; issues of energy labeling and information on fuel-economy; and issue of promoting renewable energy sources. The EU policies cover almost all of the major areas related to greenhouse gas emissions reduction, including Community institutional framework, taxation proposals, transportation sector, energy efficiency, renewable energy sources and greenhouse gas emissions trading. The Community has strategies, programs and action plans for most of the areas. The EU law and policy on greenhouse gas emissions reduction are well justified and supported by scientific, economic and technical studies and research. The survey shows that in terms of law and policy, the EU and its Member States had done a lot of homework before they went to the Kyoto Conference in 1997 and the Hague Conference in 2000. If these strategies, programs and action plans are vigorously implemented in the EU, they will result in a better integration of the concerns for environment protection (in this paper, the concerns for climate change and greenhouse gas emissions reduction) and the needs of economic development. That will help the EU to hold a leading position in both greenhouse gas emissions reduction and the energy technology and management in the 21st century.

My survey found some things that are at least methodologically important for the formulation of a Chinese strategy on greenhouse gas emissions reduction. Facing the challenge of the greenhouse gas emissions problem, China needs to learn from the experiences of the Annex I countries in greenhouse gas emissions reduction. The EU law and policy on greenhouse gas emissions reduction provide China with a lot of useful and helpful information. By learning from the ways the EU and its Member States handle the greenhouse gas emissions reduction matter, China can improve its own climate change and greenhouse gas emissions reduction strategy.

The lessons from the EU experience suggest that the Chinese strategy on greenhouse gas emissions reduction should cover all greenhouse gases in principle and with priority on reduction of CO_2, CH_4 and N_2O at the first stage. Meanwhile, further measures should be taken to reduce the second group of gases.

The Chinese strategy should effectively invite the participation of all relevant sectors and stakeholders, including governments at various levels, industrial sectors and the general public. China should take measures to identify and overcome the major barriers and obstacles that prevent the effective participation of those sectors and stakeholders.

The lessons referred to above suggest that the effort and the success of the Chinese strategy on greenhouse gas emissions reduction depends upon the integration of the objective of greenhouse

gas emissions reduction with the needs of economic and social development. The EU experience suggests that creating a "win-win" situation for both those objectives is very important and should be the fundamental consideration of the Chinese decision-makers in their decisions on the law and policy on greenhouse gas emissions reduction.

The lessons suggest that the rich experience of the EU in command and control, economic incentives and technological development for greenhouse gas emissions reduction is very valuable and helpful for China. China can and should apply the multi-method approach according to its national conditions. Minimum governmental regulations and standards on energy efficiency of energy consuming products should be established or improved. Enforcement of those regulations and standards should be strengthened. Measures should be taken to encourage the voluntary agreements with relevant industries to improve energy efficiency and reduce greenhouse gas emissions. The various ways of making use of market forces for encouraging energy efficiency and greenhouse gas emissions reduction should be studied and experimented. The successful ones should be broadly implemented at a later stage. The lessons suggest that China needs to further improve its decision making process on law and policy so as to guarantee the decisions on law and policy of Chinese greenhouse gas emissions reduction strategy are based upon adequate information from all sectors and stakeholders and well justified by both the needs of greenhouse gas emissions reduction and the needs of economic and social development.

Summary

This paper focuses on the law and policy regarding greenhouse gas emissions reduction (GGER) at the EU level. The paper consists of five parts. The first part introduces this paper by posing the following questions: How do the EU law and policy support their advanced targets on greenhouse gas emissions reduction? What could China learn from the experience of the EU and its Member States in this area? The second part provides some background information about the GGER obligations which will be shouldered by the EU and its Member States once the Kyoto Protocol enters into force. The third part presents a comprehensive survey on the law and policy of the EU regarding GGER, emphasizing their methodological significance to China. The four part contains some observations about the law and policy of the EU regarding GGER and what China could learn from them, concentrating more on substantive value and methodology than on empirical evaluations. The fifth part sums up the paper by providing some conclusions. It is hoped that this paper, and the research it memorializes may contribute to the formulation and improvement of the Chinese strategy on greenhouse gas emission reduction.