STRATEGIES FOR A HOLISTIC RESPONSE TO OZONE DEPLETION AND CLIMATE CHANGE

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I. ABSTRACT

This paper considers the possibility of elaborating an environmental policy which is effective in combating both ozone depletion and the increase of climate change. With the purpose of presenting this topic in a comprehensive way, the paper will be divided in three parts. In the first, it will be introduced the scientific connection which might be established between the problems at issue. To that extent, it will be emphasized the mechanisms through which the reduction of the ozone layer contributes to global warming and vice-versa.

The scientific connection between these environmental problems corroborates the need to adopt a holistic measure against them. Only this way it is possible to offer an effective response against both and avoid that the combat of one of them results in the intensification of the other. In order to achieve success in such enterprise, it is important to analyze the experiences of different States and organs in this respect. Therefore, the second part of the paper will present national policies aimed at addressing both ozone depletion and the increase of climate change. It will also be discussed the role that international funds – and particularly the Global Environmental Facility – might play to assist States.

Finally, in the third part of the paper, it will be considered the manner through which the United Nations Commission on Sustainable Development has been dealing with the connection between the environmental issues concerning the ozone layer and the climatic system. It will be shown that the Commission focuses on one of the fundamental principles of International Environmental Law – Sustainable Development.

KEYWORDS: Climate Change; Ozone Depletion; Holistic Response.

II. The Scientific Connection between Ozone Depletion and Climate Change

The Intergovernmental Panel on Climate Change (IPCC)[1] and the Technology and Economic Assessment Panel (TEAP)[2] elaborated, in 2005, a special report regarding the

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[1] The Intergovernmental Panel on Climate Change was established in 1988 by the United Nations Environmental Programme (UNEP) and the World Meteorological Organization (WMO), being open to all the members of the latter and of the United Nations. The objective of the Panel is "to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation". See: About IPCC. Available at http://www.ipcc.ch/about/about.htm, accessed on July 16 2007.

[2] The Technology and Economic Assessment Panel was created in 1990, as a result of the merge of the Technology Assessment Panel and the Economic Assessment Panel, established by UNEP and approved by the First Meeting of the Parties to the Montreal Protocol, in 1989. Its function is to provide – at the request of the Parties to the Montreal Protocol – "technical information related to the alternative technologies that have been investigated and employed to make it possible to virtually eliminate use of Ozone Depleting Substances (CFCs, Halons etc), that harm the ozone layer". See http://ozone.unep.org/Assessment_Panels/TEAP/index.shtml, accessed on July 16 2007.

safeguard of the ozone layer and the climate system[3]. According to it, these Global Commons may be interconnected in two different and independent ways.

First, ozone depletion tends to be followed by climatic changes. This is because, ultraviolet radiation intensified by ozone depletion contributes to global warming by affecting marine species, such as plants and phyto-plankton, which play a decisive role as greenhouse gases (GHGs) sinks[4]

Furthermore, some ozone depleting substances (ODSs), like chlorofluorocarbons (CFCs), halons and hydrochlorofluorocarbons (HCFCs), are also GHGs[5], being responsible for "increases in global average surface temperature"[6]. Consequently, the Montreal Protocol on Substances that Deplete the Ozone Layer[7] (Montreal Protocol) has highly contributed to the efforts to deter anthropogenic greenhouse effect[8]. Some even claim[9] that, in this matter, it has been even more successful than the Kyoto Protocol[10].

The HCFCs, for having – in comparison with CFCs – lower ozone depletion and global warming potentials, were conceived to temporally substitute other ODSs. Originally, Montreal Protocol schedule foresaw their phase-out by 2040 in Parties operating under article 5 (developing countries) and, by 2030, in the other Parties

[3] IPCC/TEAP. Special Report on Safeguarding the Ozone Layer and the Global Climate System: Issues Related to Hydrofluorocarbons and Perfluorocarbons. Bonn, 2005.
[4] OBERTHÜR, Sebastian. Linkages between the Montreal and Kyoto Protocols. Prepared for: Inter-Linkages – International Conference on Synergies and Coordination between Multilateral Environmental Agreements. The United Nations University, 14, 15 and 16 July, 1999. Available at http://www.geic.or.jp/interlinkages/docs/Oberthur.pdf, accessed on July 24th 2007, p.2.
[5] Subsidiary Body for Scientific and Technological Advice (SBSCTA) of the United Nations Framework Convention on Climate Change on the work of its sixteenth session. Bonn, 5 - 14 June 2002. Item 6 of the provisional agenda: Relationship between Efforts to Protect the Stratospheric Ozone Layer and Efforts to Safeguard the Global Climate System: Issues Relating to Hydrofluorocarbons and Perfluorocarbons. Paper No. 3: Spain, 9-12, p.10;
[6] IPCC/TEAP. Special Report on Safeguarding the Ozone Layer and the Global Climate System: Issues Related to Hydrofluorocarbons and Perfluorocarbons. Summary for Policymakers. Available at http://www.ipcc.ch/press/SPM.pdf, accessed on July 16 2007, p.3.
[7] The Montreal Protocol on Substances that Deplete the Ozone Layer is an international treaty which establishes a specific schedule, as well, as targets for the phase-out of substances associated with ozone depletion. It was opened for signature in 1987 and entered into force in 1989. It is important to stress its success. Indeed, Kofi Annan, former Secretary General to the United Nations has stated that it is "Perhaps the single most successful international agreement to date...". Similarly, the heads of the World Meteorological Organization (WMO) and UNEP defined the Protocol as " one of the great international achievements of the century."
[8] United Nations Environmental Programme. Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer on the work of its twenty-seventh meeting. Nairobi, 2007. UNEP/OzL.Pro.WG.1/27/8/Rev.2. Discussion of any proposed adjustments to the Montreal Protocol. Annex V: Proposal by Argentina and Brazil, 16-18, p.17.
[9] KANIARU, Donald; SHENDE, Rajendra; STONE, Scott; ZAELKE, Durwood. Strengthening the Montreal Protocol: Insurance against Abrupt Climate Change. *Sustainable Development Law & Policy*, v. VII, issue 2, Washington DC, Winter 2007, pp. 3-10, p.3.
[10] Protocol to the United Nations Framework Convention on Climate Change, 11 Dec. 1997, in force 16 Feb. 2005. 37 ILM 22 (1998).

(developed countries)[11]. Nonetheless, as will be demonstrated, proposals for the acceleration of HCFCs phase-out have been presented before the Meeting of the Parties to the Montreal Protocol. They are based on the information that the continued use of HCFCs, mainly HCFC-22, has been causing adverse effects over the ozone layer and climate system.

There are also substances, mainly fluorinated gases, *e.g.* hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), which affect solely the climate system and are regarded as possible alternatives to ODSs[12]. However, any solution to ozone depletion should also take the diminishment of such compounds into account.

The second framework in which a scientific linkage may be established between the atmosphere and the climate system concerns the cooling indirectly provoked by ozone depletion. The reduction of the ozone layer favors the penetration of solar radiation, making the troposphere get warmer than the stratosphere. Consequently, it is possible to observe the diminishment in long-wave radiation to the troposphere, which causes, by its turn, a cooling effect. However, according to IPCC and TEAP, it is very likely that the increase in the surface's temperature solely attributed to ODSs overcomes the cooling for which ozone depletion is responsible[13]. In fact, such cooling is expected to offset less than half of the warming effect directly arising from the release of ODSs[14].

Conclusively, mechanisms aimed at adequately addressing problems affecting a Global Common without jeopardizing the other must adopt a holistic approach. The following sessions will analyze strategies for making this approach possible.

III. Strategies Adopted by States to Address Ozone Depletion and Climate Change in a Coordinated Way

States, with the purpose of reducing ODSs and GHGs emissions, have adopted policies which address both targets in an interconnected way. The fundamental basis of

[11] Protocol on Substances that Deplete the Ozone Layer, 16 sept. 1987, in force 1 jan. 1989. 26 ILM 154 (1987), art. 2F (6): "Each Party shall ensure that for the twelve-month period commencing on 1 January 2030, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex C does not exceed zero" and art. 5 (8 *Ter*) (b): "Each Party operating under paragraph 1 of this Article shall ensure that for the twelve-month period commencing on 1 January 2040, and in each twelvemonth period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex C does not exceed zero".
[12] IPCC/TEAP. Summary for Policymakers, *supra* note 6, p.1.
[13] *Ibidem*, p.4.
[14] IPCC. Climate Change 1995. The Science of Climate Change. Contribution by Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change, 1996.

these policies lies on the attempt to reduce the emissions of, *inter alia*, HFCs and PFCs, used as ODSs substitutes,[15] without affecting the achievement of Montreal Protocol's goals. This would be in accordance with decision 17/CP.5 entitled "Relationship between efforts to protect the stratospheric ozone layer and efforts to safeguard the global climate system", adopted by the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC[16])[17].

The article will present *infra* (i) some features which are common to national policies; (ii) specific policies adopted by States from each of the continents, in order to provide a comprehensive idea on the progress reached, all over the world, regarding the curbing of the destruction of the ozone layer and the increase of climate change; and, finally, (iii) the contributions of the Global Environmental Facility (GEF) in this field.

A. Features Generally Observed in Multiple National Policies

a) The Life Cycle Climate Performance

States resort to the concept of Life Cycle Climate Performance (LCCP) to receive feedback and guidelines on the mechanisms for the mitigation of ozone depletion and climate change. This is a submethod of the Life Cycle Analysis, an inventory which evaluates all the environmental impacts of a technology, product or chemical from its creation until the moment its use is interrupted.

The success of LCCP among policymakers may be explained by the fact that it focuses, specifically, on the effects, over climate system, of ODSs use in equipment systems. In the words of the TEAP, LCCP "calculates the cradle-to-grave climate impact of direct and indirect greenhouse gas emissions including inadvertent emissions from chemical manufacture, energy embodied in components, operating energy and emissions at the time of disposal or recycle"[18].

b) The Responsible Use Principle

[15] OBERTHÜR, *supra* note 4, p.4.
[16] United Nations Framework Convention on Climate Change, 9 May 1992, in force 24 Mar. 1994. 31 ILM 849 (1992).
[17] Conference of The Parties to the United Nations Framework Convention on Climate Change on the Work of its Fifth Session. Bonn, 1999. FCCC/CP/1999/6/Add.1. Decision 17/CP.5: Relationship between efforts to protect the stratospheric ozone layer and efforts to safeguard the global climate system. FCCC/CP/1999/6/Add.1.
[18] United Nations Environmental Programme. HFC and PFC Task Force of the Technology and Economic Assessment Panel: The Implications to the Montreal Protocol of inclusion of HFCs and PFCs in the Kyoto Protocol, 1999. Available at http://hq.unep.org/ozone/HFC-PFC-Rep.1999/HFC-PFC-Rep.pdf, accessed on July 16 2007, p.37.

A holistic response to the problems affecting the ozone and climate systems necessarily involves the simultaneous curbing of HFCs and PFCs emissions and the avoidance of ODSs use. To accomplish this challenge, countries have resorted to the responsible use principle. It has been defined by Australia as the stipulation that these fluorinated gases should only be used "where the activity is necessary and where they are needed to cost-effectively meet specific requirements for technical feasibility and reliability, health and safety, or reducing overall greenhouse gas emissions"[19]. This line of reasoning is also supported by the European Union (EU), when it suggests that IPCC and TEAP "carry out integrated and independent assessments of relevant technologies in order to facilitate a comparison between the feasibility and environmental impact of using fluorinated gases and alternatives"[20].

The application of the principle by the Japanese Government, by its turn, is reflected in three directives: first, HFCs and PFCs should be used in a process only if "they provide safety, energy efficiency and benefit in view of environment, economy and health"; second, when these gases are needed for the operation of a certain equipment, their emissions should be minimized throughout its life cycle; third, substances with lower global warming potential (GWP) should be preferred[21].

The same understanding is verified in United States of America's (U.S.) policies. They add, however, other requirements for the application of the principle. Examples are proper training of technicians operating equipments using HFCs and PFCs; the observance of regulatory standards in the installation and maintenance of such equipments, as well as in the transport and storage of these gases; and, the conduction of an inventory on the production of the latter[22].

B. Specific Policies

a) Japan

The Japanese Government elaborated the "Guideline for Measures to Prevent Global Warming", in order to accomplish the commitments for GHG reduction assumed under the Kyoto Protocol. One of the goals set in the document is the decrease of HFCs,

[19] SBSTA. Sixteenth session, *supra* note 5. Paper No. 1: Australia, 3-7, p.5.
[20] Submission from Spain, *supra* note 5, p.11.
[21] SBSTA. Sixteenth session, *supra* note 5. Submission from Japan, 1-5, p.3.
[22] *Ibidem*. Paper No. 4: United States of America, 14-19, pp.17-18.

PFCs and sulphur hexafluoride (SF6) emissions. In order to fulfill its duties under the Montreal Protocol, while combating global warming, the Japanese Government adopted a national plan to foster research and development of alternatives to HFCs, PFCs and SF6. For that, the Ministry of Economy, Trade and Industry (METI) encourages the establishment of partnerships between Japanese enterprises and those from other countries, in addition to conducting research in cooperation with the industry. Moreover, the Government promotes "public awareness of products using alternative substances or products using HFCs, PFCs or SF6 compound with less impact on global warming". Finally, legislation made the recovery and recycle of these fluorinated gases confined in refrigerators, air-conditioners and chillers mandatory[23].

b) Australia

Australia proposes the enhancement of international cooperation so States can reduce their emissions of HFCs and PFCs, protecting, simultaneously, the atmosphere and the climate system. Cooperation would be conducted in two main areas. The first concerns the establishment of a global "toolbox", composed of technical and political information to which policymakers could resort for guidelines and feedback on mitigation projects.

The second area refers to capacity building and technology transfer to developing countries which would enable them to establish transition techniques from ODSs and reduce, at the same time, release of HFCs and PFCs. Accordingly, Australia encourages the enhancement of the role played by international funds – like the Multilateral Fund for the Implementation of the Montreal Protocol (MFI) and the GEF – as well as the integration between them.

Besides the coordination between States, Australia suggests that the Secretariats created under the Montreal Protocol and the UNFCCC work in a more integrated way. Finally, in the internal level, pursuant to the National Greenhouse Strategy (NGS), Australia encourages the constitution of partnerships between the Government and the private sector, in order "to deliver flexible, cost-effective abatement action"[24].

c) United States

[23] Submission from Japan, *supra* note 21.
[24] Submission from Australia, *supra* note 19.

The U.S. policy is composed of regulatory and voluntary measures and summarizes the common foundation of different national policies. Indeed, in its submission to the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA), U.S. affirmed to recognize "the nexus of ozone depletion and climate change" and to undertake efforts "intended to facilitate a smooth transition out of ozone depleting substances without creating new environmental issues".

Amongst the regulatory measures implemented in the internal level, is the enactment of legislation prohibiting the ventilation of refrigerant into the atmosphere while the air-conditioning or refrigeration equipment is undergoing a process of disposal, maintenance, service or repair. Equally relevant is the Significant New Alternatives Policy (SNAP) program, through which the Environmental Protection Agency (EPA) inspects the use of ODSs in various sectors – mainly in the insulation foam, solvent and refrigeration ones. If the EPA finds that there were alternatives which would offer lower risks to the environment and the human health, it imposes limits on the use of ODSs.

As to the voluntary program, it concerns the development of initiatives towards the decrease of gases with GWP, for example, in the sectors of production of aluminum, magnesium, semiconductor and HCFC-22 and in the field of electric power transmission and distribution. Such initiatives also improved the inventory of GHG emissions caused by these activities[25].

d) Colombia

Colombia added the perspective of an Article 5 Party to the Montreal Protocol, emphasizing that the curbing of HFCs should be harmonized with the development and economic needs of developing countries. It suggests the conduction of meetings between the technical organs of Montreal and Kyoto Protocols, to discuss: (i) the improvement of techniques concerning the management of equipment containing HFCs; (ii) search for technology allowing the decrease of HFCs emissions and promote energy efficiency; (iii) conduction of intermediate and long term projections on developing countries' needs regarding the supply of HFCs, in order to ensure that the control measures set in the Kyoto Protocol are conciliated with such needs[26].

[25] Submission from the United States of America, *supra* note 22.
[26] SBSTA. Sixteenth session, *supra* note 5. Paper No. 2: Colombia, p.8.

e) Kenya

The importance to conciliate the economic needs of developing countries with the mitigation of climate change and ozone depletion is also stressed by Kenya. In this respect, besides suggesting a broader exchange of information and technology on substitutes to HFCs and PFCs, it encourages the use of hydrocarbons (HC). The latter do not affect the ozone layer and the climate system and are also more competitive than other substances due to their availability and low cost.

Kenya also recommends that "the Technical Options Committee of the Montreal Protocol and the SBSTA of the UNFCCC form a joint working group or task force to establish ways and means of limiting emissions of these ODSs with GWPs"[27].

f) European Union

The position of the European Union (EU) is reflected in the submission presented before the SBSTA by Spain. As the U.S., the EU resorted to a response approach based on regulatory and voluntary measures. A fundamental step for the success of such approach was taken during the European Climate Change Programme, when it was announced the establishment of the Framework Directive on Fluorinated gases. The document foresees, for example, the containment of fluorinated gases emissions from mobile and stationary market; the monitoring of the quantities of gases placed in the market and restrictions upon the use of substances to which there are more environmental friendly substitutes.

The EU also stresses the importance of the adoption of similar measures in developing countries. In fact, it supports the strengthening of the coordination between multilateral funds and suggests that the Conference of the Parties to the UNFCCC and the Meeting of the Parties to the Montreal Protocol jointly finance projects from MFI and the Clean Development Mechanisms.

[27] Subsidiary Body for Scientific and Technological Advice of the United nations Framework Convention on Climate Change on the work of its eleventh session. Bonn, 25 October - 5 November 1999. Item 10 (b) of the provisional agenda: Development and Transfer of Technology Ways and Means of Limiting Emissions for Hydrofluorocarbons and Perfluorocarbons. Paper No. 3: Kenya, p.27.

Finally, observing the decisive role played by public awareness in any effective response to environmental problems, the EU proposed the realization of events – like workshops – in which the various sectors of society would be involved[28].

g) Conclusion on the Specific Policies enacted in Different Parts of the World

Before analyzing the progress achieved by Brazil, which deserves longer considerations, it is of paramount importance to register the common features observed in the policies presented so far. At the outset, all of them, in a greater or smaller degree, seek to conciliate mandatory requirements imposed by the government with the encouragement of the development of private initiatives. Another interesting point of convergence is the fostering of cooperation, between private and public subjects, within and outside national boundaries. In this respect, it is specifically stressed the need to enhance the participation of developing countries and to conduct a broader exchange of information, technology and capacity building.

h) Brazil

i. The acceleration of HCFCs phase-out

A significant initiative attributed to Brazil refers to the efforts towards the curbing of HCFCs emissions, which – as showed above – have ozone depletion and global warming potentials. Indeed, it presented, in conjunction with Argentina, before the Open-Ended Working Group of the Parties to the Montreal Protocol, a proposal on the acceleration of the schedule for the phase-out of these gases. Its ultimate purpose is to guarantee "that the Montreal Protocol is able to continue to provide support for reducing emissions of ODS to protect the ozone layer and, as an additional benefit, further contribute in avoiding dangerous climate change".

The proposal congregates the interests of developed and developing countries. It would accelerate the fulfillment of the commitments undertaken not only by the Parties which do not operate under Article 5 of the Montreal Protocol, but also of those which do. The former would, however, be demanded to anticipate HCFCs phase-out from 2030 to 2020, whereas the latter – despite having the additional obligations to freeze the

[28] Submission from Spain, *supra* note 5.

production and consumption of these gases by 2012 and implement intermediate reduction steps – would still have the duty to accomplish such phase-out by 2040.

Brazil and Argentina stress that the new requirements could only be imposed over developing countries if they counted on the support of MFI and, thus, received appropriate resources to finance projects which would enable them to comply with these requirements. To that extent, in the introduction of the proposal, it is stated that the actions thereinafter suggested should be followed by "cost-effective availability of environment-friendly substitutes for HCFCs and access to technology and funding to facilitate transition without undue burden on the economic health of the country and on consumers and industry"[29].

ii. The development of renewable sources of energy

The development of renewable energy sources contributes to the reduction of air pollution and, consequently, to the combat of problems affecting the Global Commons of the atmosphere and climate system. Under this standard, in its fourteenth session, the Commission on Sustainable Development (CSD) added to the list of responses to these problems, the "development, use and transfer of cleaner energy technologies, including renewable energy and advanced energy technologies, including cleaner fossil fuel technologies, supported by stable, predictable regulatory frameworks"[30].

In this respect, Brazil has taken important steps. Its energy sector has had an insignificant influence over the amount of GHGs emissions which rendered it the position of eighth world's largest emitter[31], third largest emitter among developing countries[32] and Latin America largest emitter[33]. Despite counting on one of the 15 biggest fleets in the world, composed of approximately 20 million vehicles, Brazil is responsible for only 1%

[29] Proposal by Argentina and Brazil, *supra* note 8.
[30] Commission on Sustainable Development on the work of its fourteenth session. New York, 22 April 2005 and 1-12 May 2006. E/CN.17/2006/15(SUPP), p.56.
[31] TENNESEN, Michael. Black Gold of the Amazon, *Discover Maganize*, 30 april 2007. Available at http://discovermagazine.com/2007/apr/black-gold-of-the-amazon/article_view?b_start:int=4&-C=, accessed on July 18 2007.
[32] ROVERE, Emilio Lèbre La; PEREIRA, André Santos. Brazil & climate change: a country profile. Nov. 2005. Available at http://www.scidev.net/dossiers/index.cfm?fuseaction=policybrief&dossier=4&policy=88, accessed on July 18 2007.
[33] Population Resource Center. A Demographic Profile of Brazil. Available at http://www.prcdc.org/summaries/brazil/brazil.html, accessed on July 18 2007.

of the total emissions derived from the burning of fossil fuel[34]. The greatest contribution is attributed to the U.S. (24%), followed by China (13%)[35].

According to data from the latest National Energetic Balance, corroborated by the International Energy Agency[36], in 2006, 45% of Brazilian energy needs were supplied by renewable sources. The global average amounted to 13,2% and, in countries from OECD (Organization for Economic Co-operation and Development), to 6%[37]. The CSD has stressed the increase of the use of biofuels[38] in Brazil, where about 50% of the automobiles sold are flex-fuel cars.

Following this trend, the country is currently exporting technology on ethanol production to more than a dozen developing countries[39]. This explains CSD's statement that "the Brazilian experience with clean fuels could help significantly in demonstrating that ethanol is a real possibility to supply a large part of the world market, since it is a reliable product"[40].

This success is due to the enactment of numerous domestic programs. One of the most renowned of them is the Program on Incentives for Alternative Sources of Electrical Energy (PROINFA in Portuguese). Established in 2002, by Law # 10.438, it reserves a bigger share of electricity supply in the national grid for independent power producers resorting to renewable energy sources[41]. The program was included by CSD among

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[34] The main route of Brazilian's high pollution rates are unsustainable use of the land and deforestation: A country profile, *supra* note 32.
[35] Associação Nacional dos Fabricantes de Veículos Automotores (2003) Anuário Estatístico da Indústria Brasileira Automotiva 1957-2002 e Fórum Brasileiro De Mudanças Climáticas. Mudanças Climáticas – Guia de Informação – Brasília, 2002 *apud* SCANDIFFIO, Mirna Ivonne Gaya; FURTADO, André Tosi. A Liderança do Brasil em Fontes Energéticas Renováveis: uma Visão de Longo Prazo. Available at http://www.anppas.org.br/encontro_anual/encontro2/GT/GT06/mirna_andre.pdf, accessed on July 18 2007.
[36] International Energy Agency. The Energy Situation in Brazil: an Overview. May 2006. Available at http://www.iea.org/textbase/papers/2006/brazil.pdf, accessed on July 18 2007.
[37] Brasil. Ministério de Minas e Energia. Empresa de Pesquisa Energética. Balanço Energético Nacional 2007: Ano base 2006: Resultados Preliminares / Ministério de Minas e Energia. Empresa de Pesquisa Energética. – Rio de Janeiro : EPE, 2007, 48 p., pp.25-26.
[38] Commission on Sustainable Development on the work of its fourteenth session. Note by the Secretariat. New York, 1-12 May 2006. Item 3 of the provisional agenda: Thematic cluster for the implementation cycle 2006-2007 – Summary by the Chairman of the Regional Implementation Forum on Sustainable Development in Latin America and the Caribbean, p.4.
[39] Commission on Sustainable Development on the work of its fourteenth session. Report of the Secretary-General. New York, 1-12 May 2006. Item 3 of the provisional agenda: Thematic cluster for the implementation cycle 2006-2007 — review session Energy for sustainable development, industrial development, air pollution/atmosphere and climate change: integrated review of progress in meeting the goals, targets and commitments of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the Plan of Implementation of the World Summit on Sustainable Development, p.22.
[40] Regional Implementation Forum in Latin America, *supra* note 38, p.4.
[41] Ministério de Minas e Energia. PROINFA – Caminho Limpo para o Desenvolvimento. Available at http://www.mme.gov.br/programs_display.do?chn=877, accessed on July 18 2007.

"some best practices in the promotion of renewable energies"[42]. Equally relevant is the Program on the Combat to the Waste of Electrical Energy (PROCEL in Portuguese), intended to curb waste of electricity by suppliers and consumers[43].

Additionally, Brazil created the National Program of Biodiesel Production and Use (PNPB in Portuguese), an "interministerial program of the Federal Government aimed at implementing, in a sustainable manner, both technically and economically, the production and use of Biodiesel" (unofficial translation)[44]. This fuel offers many advantages. It is biodegradable and can be made from animal fat or vegetable oils extracted from species of plants which easily grow in Brazil. Examples are dendê palm, sunflower, soybean and babaçu[45]. Furthermore, Biodiesel enables the promotion of sustainable development in a broader way, by congregating environmental protection with the improvement of social conditions. Indeed, it permits an increasing participation of rural areas in the country's economy, "generating jobs and income (...), reducing regional inequalities and contributing to foreign-exchange savings and to the improvement of environmental conditions"[46].

The Government's incentives are accompanied by regulatory measures. Under Law # 11.097/2005, from January 2008, the mix composed of 98% diesel and 2% Biodiesel will be obligatory. Later, on January 2013, this amount will raise to 5%[47].

Finally, Brazil launched in the 1970's, Proálcool, its internationally recognized program on the use of ethanol as fuel. Ethanol emits less polluting gases, as corroborates the study according to which, solely by avoiding the burn of gasoline, it prevented the annual release of 5.86 megatonnes of carbon between 1980 and 1990[48].

Conclusively, Brazil is ahead of many other States with respect to cleaner energy sources. However, much has yet to be done. For example, improving monitoring systems;

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[42] Regional Implementation Forum in Latin America, *supra* note 38, p.4.
[43] Avança Brasil. Programa Combate ao Desperdício de Energia Elétrica – PROCEL. Available at http://www.abrasil.gov.br/nivel3/index.asp?id=147&cod=BUSCA, accessed on July 18 2007.
[44] Governo Federal. Biodiesel: o Novo Combustível do Brasil. Available at http://www.biodiesel.gov.br/, accessed on July 18 2007 (hereinafter Biodiesel a).
[45] Biodiesel a, *supra* note 44.
[46] Biodiesel: the New Fuel from Brazil - National Program Of Biodiesel Production And Use (PNPB). Available at http://www.biodiesel.gov.br/docs/Folder_biodiesel_ingles_paginado, accessed on July 18 2007.
[47] BRAZIL. Law # 11.097, 13 January 2005. Regulates the introduction of Biodiesel in Brazilian Energy Matrix; alters Laws # 9.478, 6 August 1997; # 9.847, 26 October 1999 and 10.636, 30 December 2002 and give other provisions. Official Diary of the Federal Republic of Brazil. Brasília, 13 January 2005.
[48] A country profile, *supra* nota 32.

intensifying incentives for the research of new technologies; strengthening the support of initiatives undertaken by the private sector and ensuring the continuity and efficacy of the programs created so far. By overcoming such challenges, Brazil would achieve the fourth objective of its National Agenda 21: Renewable Energy and Biomass[49]. Such accomplishment requires, according to the Minister for the Environment, the conscience that "it is not enough to increase the energy supply. It is necessary to increase the efficiency in both its use and conservation"[50].

C. Contributions of the Global Environmental Facility

Conscious that the combat of ozone depletion might enhance global warming, due to the use of ODSs substitutes with a high GWP, the GEF Council, in a clear application of the "responsible use principle", stressed in the Operational Strategy for the fund that the latter would "fund the conversion to the technology with the least impact on global warming that is the technically feasible, environmentally sound, and economically acceptable"[51]. Although significant results were not achieved through the imposition of such requirement, it constitutes an initial step which may be improved and implemented by other funds. For example, the MFI could resort to it and also establish concrete criteria for determining whether a project is "technically feasible, environmentally sound, and economically acceptable"[52].

IV. How the Commission on Sustainable Development has dealt with the coordination between Ozone Depletion and Climate Change

In order to understand the coordinated response to ozone depletion and climate change proposed by CSD, it is essential to understand its background and the principles which fundament its activities, as well as the context in which theses topics were introduced in its Agenda. For that, the article will briefly address the Commission's mandate and history and, then, introduce the sustainable development principle on which

[49] The Brazilian Agenda 21: Priority actions. Objective 4: Renewable Energy and Biomass. Available at http://www.mma.gov.br/index.php?ido=conteudo.monta&idEstrutura=18&idConteudo=805, accessed on August 22 2007.
[50] Minister for the Environment. The Brazilian Agenda 21: Priority actions – Platform for the twenty-one priority actions – The Savings Economy in the Society of Knowledge. Objective 4: Renewable Energy and Biomass. Available at http://www.mma.gov.br/index.php?ido=conteudo.monta&idEstrutura=18&idConteudo=805, accessed on July 18 2007.
[51] Global Environmental Facility. *Operational Strategy of the Global Environment Facility*. Washington, D.C.: GEF, 1996. Chapter 5, p.69.
[52] OBERTHÜR, *supra* note 4, pp.7, 11.

all its work is founded. Finally, the last review and policy sessions will be considered with the purpose of assessing CSD's conclusions on the environmental problems at issue.

A. The Mandate and History of the Commission on Sustainable Development

The CSD was established by the United Nations in the beginning of the 1990's. In Resolution 47/191 – "Institutional arrangements to follow up the United Nations Conference on Environment and Development" – the General Assembly urged "the Economic and Social Council, at its organizational session for 1993, to set up a high-level Commission on Sustainable Development as a functional commission of the Council"[53]. This appeal was satisfied in 1993, through Council's Resolution 1993/207[54].

The Commission would be responsible for continuing the work started at the United Nations Conference on Environment and Development (UNCED)[55], by encouraging States to cooperate in the international level and adopt internal measures towards the integrated promotion of environmental protection and development. The CSD was, thus, originally conceived to monitor the compliance with Agenda 21[56] and the Rio Declaration[57], both adopted during the Conference[58]. However, after the 2002 World Summit, the CSD was also incumbent of following-up the Johannesburg Plan of Implementation[59], therein adopted[60].

It is important to emphasize that the Commission does not have enforcement powers and conducts its activities based on reports submitted by its members. It has 53

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[53] UNGA Res. 47/191. Institutional Arrangements to Follow Up the United Nations Conference on Environment and Development. A/47/719, 29 Jan. 1993.
[54] Economic and Social Council (ECOSOC) Resolution 1993/207. Establishment of the Commission on Sustainable Development. E/1993/207, 12 Feb. 1993.
[55] The United Nations Conference on Environment and Development (UNCED) was convened by General Assembly Resolution 44/228, to "elaborate strategies and measures to halt and reverse the effects of environmental degradation in the context of strengthened national and international efforts to promote sustainable and environmentally sound development in all countries" (UNGA Res. 44/228. United Nations Conference on Environment and Development. A/RES/44/228, 22 Dec. 1989). The Conference, held in Rio de Janeiro (Brazil), on 3-14 June 1992, resulted in the adoption of the Rio Declaration on Environment and Development; Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forest; and Agent 21. The Convention on Biological Diversity and the UNFCCC were also opened for signature.
[56] "Agenda 21 is a non-binding blueprint and action plan for a global partnership for sustainable development. It was conceived as a plan of action by and for the whole international community, designed to integrate environment and development concerns for the fulfillment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer and prosperous future. Agenda 21 comprises forty chapters and hundreds of programme areas (...)". SANDS, P. *Principles of International Environmental Law*. 2 ed. Cambridge: Cambridge University Press, 2003, 1254 p. (hereinafter SANDS a), p.57.
[57] Rio Declaration on Environment and Development, 1992. 31 ILM 874, UNCED Doc.A/Conf.151/5/Rev.1.
[58] UNGA Res. 47/191, *supra* note 53.
[59] Plan of Implementation of the World Summit on Sustainable Development, 2002. A/CONF.165/14, chap. I, resolution 1, annex II.
[60] About CSD. Available at http://www.un.org/esa/sustdev/csd/aboutCsd.htm, accessed on July 18 2007.

members and convenes annually in New York. Currently, its work has been developed during two-year cycles meetings which focus on specific thematic clusters and cross-cutting issues. This strategy was adopted in 2003, at its 11th session[61]. The First Implementation Cycle started in 2004 and was concluded in 2005, whereas the Second took place from 2006 until 2007. The Third is scheduled to begin in 2008.

B. The Concept of Sustainable Development

As stated above, CSD's mandate is directly associated with the objective to follow-up UNCED. Since the latter "committed the international community to the objective of achieving sustainable development"[62], one may conclude that such objective also guides CSD's efforts. Therefore, a deep study of sustainable development is of paramount importance to understand CSD itself and its initiatives with respect to the safeguard of the Global Commons.

The concept represents a principle of International Law described by the highly-qualified publicist Philippe SANDS (1999, p. 91), as "a broad umbrella accommodating the specialized fields of international law which aim to promote economic development, environmental protection and respect for civil and political rights"[63]. Similarly, according to Léger – in its opinion as Advocate General to the *case R. v. Secretary of State for the Environment, Transport and the Regions* – the principle "emphasizes the necessary balance between various interests which sometimes clash, but which must be reconciled"[64].

Sustainable Development has also acceded to the status of Customary International Law[65], being enshrined in international instruments[66] and recognized by international case-law. Indeed, the World Trade Organization Appellate Body concluded, in the *Shrimp*

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[61] *Ibidem*.
[62] SANDS, P. Treaty, Custom and the Cross-fertilization of International Law. *Yale Human Rights & Development Law Journal*, vol. 1, [s.l], 1999, pp.85-106. Available at http://islandia.law.yale.edu/yhrdlj/pdf/Vol%201/Philippe_Sands_YHRDLJ.pdf, accessed on July 19 2007 (hereinafter SANDS b), p.91.
[63] SANDS b, *supra* note 62, p.91; SANDS, P. International Courts and the Application of the Concept of "Sustainable Development". *Max Plant UNYB 3*, [s.l], 1999, pp.389-405, p.390.
[64] *R. v. Secretary of State for the Environment, Transport and the Regions, ex parte First Corporate Shipping Ltd.* European Court of Justice. **Case C-371/98**. [2000] ECJ I-9235. Opinion of Advocate General Léger.
[65] SANDS a, *supra* note 56, p.254.
[66] Rio Declaration, *supra* note 57; Report of the World Commission on Environment and Development (the Brundtland Report). Our Common Future, 1987; Partnership Agreement between the Members of the African, Caribbean and Pacific Group of States of the One Part, and The European Community and its Member States, of the Other Part, 2002. ACP/CE/en 123, art.32;

Turtle case, that sustainable development "has been generally accepted as integrating economic and social development and environmental protection"[67]. Likewise, the International Court of Justice recognized, in *Gabcikovo-Nagymaros* case, that new norms have emerged requiring States "to reconcile economic development with protection of the environment"[68].

According to SANDS (2003, p. 253), sustainable development has four subprinciples[69]. First, intergenerational equity, which reflects the idea that "as members of the present generation, we hold the earth in trust for future generations"[70], based on "the imperative of balancing the needs of the present generation with those of posterity"[71]. Second, sustainable use, according to which the natural resources must be exploited in a rational and prudent manner. Third, equitable use or intragenerational equity, which stipulates that, when exploiting natural resources, a State must consider the needs of others. Finally, integration, which requires that economic and development plans take environmental concerns into consideration.

C. The Conclusions of the Commission on Sustainable Development regarding Ozone Depletion and Climate Change

The problems involving the atmosphere and the climate system were systematically integrated to the Commission's Agenda during the Second Implementation Cycle. Although climate change was expressly included among the thematic clusters under the Commission's appreciation, the same did not occur with ozone depletion. However, one might apply, to the latter, the considerations made under the broader topic of air pollution/atmosphere.

The Commission examined these issues within the wider perspective of sustainable development, emphasizing that both are deeply interconnected with the other subjects under its analysis: (i) enhancement of energy access and the creation, improvement and diffusion of cleaner sources and (ii) the promotion of industrial development which

[67] *US-Import Prohibition of Certain Shrimp and Shrimp Products*, World Trade Organization, **38 ILM 121 (1999)**, 1998, para.129;
[68] *Case Concening Gabcikovo-Nagymaros Project*, Hungria/ Eslováquia, International Court of Justice, **ICJ Reports** (1997), para.140.
[69] SANDS a, *supra* note 56, p.253.
[70] WEISS, Edith Brown. Our Rights and Obligations to Future Generations for the Environment. *84 American Journal of International Law 198*, [s.l], 1990, p.199.
[71] *Gabicikovo-Nagymaros*, *supra* note 68. Separate Opinion of Vice-President Weeramantry, p.107.

satisfies both economic and social requirements[72]. This assertion may be confirmed by the following passage from the report to the fourteenth session: "Effective policies to address air pollution have built on the interlinkages between air pollution, climate change, industrial development and energy for sustainable development"[73].

The Second Cycle was comprised of a Review Session – held in 2006 to evaluate Members' progress in the fulfillment of their commitments related to the thematic clusters – and a Policy Session – which occurred in 2007 and established measures for these commitments to be accomplished and, challenges, overcome.

During the Review Session, the Commission evaluated, *inter alia*, (i) the problems its members had been facing with respect to the thematic clusters under its appreciation and (ii) strategies which had had effective results in the combat of the environmental problems at issue.

Regarding the problems faced by the countries, the Commission identified three which are common to both air pollution/atmosphere and climate change. First, their combat was jeopardized by the inadequacy of financial resources, which explains States' failure to control illegal trade of ODSs and the lack of support to projects dedicated to the mitigation and adaptation of climate change.

Second, there has not been sufficient diffusion of technologies which minimize release of both ODSs and GHGs. Emissions from small and medium-size enterprises have widely contributed to the deleterious impacts over the atmosphere and the climate system. Finally, one must consider difficulties regarding data gathering and the monitoring of such emissions.[74]

As to the strategies enacted by its members, the Commission observed that some had been efficient in addressing both of them. An example is the development of renewable energy sources, a field in which Brazil has been playing a fundamental role as indicated above.

Initiatives concerning education of society also had positive effects. This is because they "can help to influence personal behavior as well as build support for public

[72] CSD 14th Session, *supra* note 30, pp.22-24.
[73] *Ibidem*, p.31.
[74] *Ibidem*, pp.26-28.

measures"[75]. Additionally, pursuant to the underlying logic of the sustainable development principle, actions against Poverty were described as a core element of any policies pretending to effectively tackle environmental problems. Finally, establishment of partnerships in the internal and international levels, the fostering of research and the improvement of capacity building were regarded as having equal importance[76].

Taking such results into account, the Commission, encouraged, in its Policy Session, the adoption of these strategies as an important part of the coordinated efforts against problems affecting the atmosphere and the climate system[77].

V. Conclusion

Ozone depletion and climate change may be connected through various and different links. These might have, for example, a scientific character, once as indicated by IPCC and the TEAP, the release of ODSs tend to affect the climate system and, thus, be accompanied by an increase in the temperature of the Earth surface. However, these links may reach more complex dimensions. To that extent, the CSD has already concluded that strategies elaborated to tackle each of these problems usually face the same challenges. In other words, situations which undermine progress in actions against global warming may also compromise ozone depletion responses.

Therefore, any policy enacted to effectively address such environmental problems must resort to an holistic approach. This should reject any strategy which, despite bringing positive results with respect to one of them, aggravates the other. We believe that such approach should be based on the broader concept of sustainable development and, consequently, rely on coordinated actions which take into consideration economic, social and environmental aspects. As to economic actions, they include the enhancement of the role played by international funds. Social actions, by their turn, are reflected in the combat of poverty and in the promotion of public awareness on the adverse effects of

[75] *Ibidem*, p.39.
[76] *Ibidem*, pp.31-32.
[77] Commission on Sustainable Development on the work of its fifteenth session. Report of the Secretary-General. New York, 30 April-11 May 2007. Item 3 of the provisional agenda: Thematic cluster for the implementation cycle 2006-2007 — policy session. Policy options and possible actions to expedite implementation: air pollution/atmosphere. E/CN.17/2007/4; Commission on Sustainable Development on the work of its fifteenth session. Report of the Secretary-General. New York, 30 April-11 May 2007. Item 3 of the provisional agenda: Thematic cluster for the implementation cycle 2006-2007 — policy session. Policy options and possible actions to expedite implementation: climate change. E/CN.17/2007/5.

ozone depletion and climate change. Regarding environmental actions, they comprehend the development of renewable energy sources and the fostering of research for ODSs and GHGs substitutes.

Conclusively, since climate change and ozone depletion affect Global Commons and have transboundary consequences, they might only be tackled through a net of international and internal cooperation.

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