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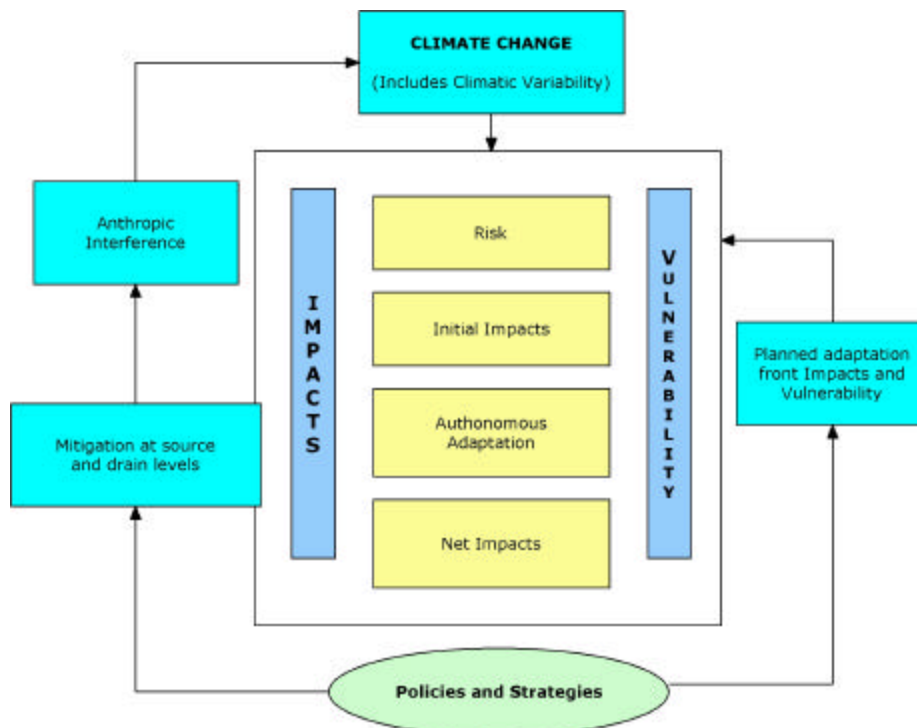
# **Climate Change in Latin America and the Caribbean: current state and opportunities**

This information package on *"Climate Change in Latin America and the Caribbean: current status and opportunities"* is a contribution of the Inter-Agency Technical Committee (ITC) to the Fourteenth Meeting of the Forum of Ministers of the Environment of Latin America and the Caribbean (Panama, Panama; 20 to 25 November 2003).

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## I. Introductory Considerations

1. This report is based on the agreements reached at the ITC meeting held in Brasilia on 17 and 18 July 2003, where each of the participating ITC agencies promised to compile collective efforts in the various thematic areas of priority to the Latin American and the Caribbean Initiative for Sustainable Development (LACI).
2. In this report the activities on climate change that have been carried out in the region are detailed. It also notes the region's opportunities for implementing the Framework Convention on Climate Change. It should be noted that the inputs for this paper have been provided by the ITC agencies, that has been structured according to the activities and lines of work considered as important and strategic by the agencies.
3. From the structure of this report, each agency's approach in its activities on climate change is evident. UNDP's approach to climate change, for example, is integral; that is, it serves as a component in the countries' sustainable development strategies. In this context, measures related to climate change adaptation and mitigation are considered in the framework of reducing the vulnerability of the poor to maintain sustainable living standards, on the one hand, and within national priorities to eradicate poverty and encourage economic growth and development, on the other.
4. Climate change is widely recognized as one of the world's most complex global problems and most daunting challenges facing the scientific-technological community, policy decision-makers, and society as a whole. The greenhouse effect (a natural and benign phenomenon that allows life to exist on the planet as we know it) is being adversely affected by anthropic activities which, through emissions of CO<sub>2</sub> and other greenhouse gasses, is altering the concentration level of these gasses in the atmosphere and, as a result, is producing effects on the climate.



5. While the essential objective of the United Nations Framework Convention on Climate Change is to reduce GHG emissions and to achieve stabilization in the concentration of greenhouse gasses in the atmosphere at a level which prevents dangerous anthropogenic interference with the climate system (Art. 2), in addition to GHG mitigation actions, there is a growing need to go forward with policies and programmes of adaptation to climate change in light of the growing idea that this phenomenon will be produced regardless. Despite the fact that the most strenuous efforts undertaken during the nineties were focused on actions of mitigation, indicators that this phenomenon is already generating effects have increased concerns and endeavours toward activities relating to vulnerability and adaptation. In Latin America and the Caribbean, vulnerability and adaptation to climate change are activities of ever-increasing priority on policy agendas.

6. In addition and despite the absence of mandatory commitments to the reduction of emissions, many developing countries are making efforts to implement actions to reduce GHG emissions which, additionally, have positive impacts on national economic structures. In other words, it is considered that even the smallest steps in the right direction are extremely valuable in seeking the right path to future development.

## **II. Climate Change in the Latin America and the Caribbean Agenda**

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7. The wealth and diversity of the natural resources of Latin America and the Caribbean are the mainstay of the economies of many of this region's countries. Aware that climate change will directly affect the main foundations of their economic development, the policy response of the countries of the region is being centred on adopting measures conducive to both the inclusion of the environment in development policies as well as preservation of the quality of life of future generations, in line with the objectives of sustainable development.

8. While there are other essential priorities such as poverty eradication, education, hygiene, housing, and the management of access to energy, Climate Change is acquiring ever-greater importance in Latin America and the Caribbean on the development agenda of governmental meetings in the region and many countries have taken initiatives to combat it. This posture is a response not only to growing awareness, but also, in part, to the Convention and the Kyoto Protocol, which need international efforts to overcome climate change, and the opportunities that flexibility mechanisms offer our countries.

9. In terms of climate change, the main characteristics of the region can be summed up as follows:

- a) LAC accounts for a lesser amount of the world's Greenhouse Gas (GHG) emissions;
- b) Despite being non-Annex I Parties to the Convention, all countries in the region have already ratified it;
- c) LAC has been and continues to be very active in the Convention and its actions – borne out by the fact that 50% of the Clean Development Mechanism (CDM) projects identified throughout the world are found in LAC and not only have the majority of LAC countries implemented their Climate Change Units but they also have CDM Offices in operation (13 countries in 2002);

- d) While emphasis in the past was placed on Renewable (Mitigation) projects, recent extreme events have resulted in the fact that the development of heightened awareness of vulnerability and of the need to implement policies of adaptation is spreading rapidly throughout the region;
- e) The majority of LAC countries are members of the G-77 and China (currently composed of 133 developing countries) and the countries of the Caribbean are part of the Alliance of Small Island States.

**10.** Not all of the region's countries hold the same stance on Climate Change, rather, they actually hold different points of view, particularly owing to their geographical and economic differences, their vulnerability to the phenomenon, their economic dependence upon fossil-fuel energy resources, or the fragility of their ecosystems. Notwithstanding and despite the aforementioned differences, LAC is constantly striving to consolidate its position and establish an agreed and common strategy. Clear consensus can be seen on the need to seek technical and economic assistance for coordinated programs of mitigation and adaptation. Furthermore, the region has shown considerable progress in implementation of the Convention and Kyoto Protocol.

**11.** In an effort to establish a common regional position for global negotiations and to take advantage of regional cooperation, the Forum of Environment Ministers has been dealing with the theme at its meetings, particularly since its Eleventh Meeting (Lima, Peru; 1998).

**12.** Given their particular conditions of vulnerability influenced by geographic location, a land chain bordered by the Atlantic and Pacific Oceans in the convergence of two major ecosystems with many micro-climates and fragile tropical systems, and their dependence on water resources to generate electricity, the countries of Central America have created the Central American Council on Climate Change (CCCC) as a part of a regional programme to protect the climate system. The region also has the Regional Committee for Water Resources and the Central American Commission for Environment and Development/CCAD.

**13.** The Caribbean region has created the Caribbean Planning for Adaptation to Climate Change whose main objective is to support the Caribbean countries in preparing to deal with the adverse effects of Climate Change.

**14.** Multilateral entities have likewise been created and there are several non-governmental organizations in the region for cooperation between agencies and countries aimed at developing effective strategies.

**15.** Other regional organizations such as the Latin American Energy Organization (OLADE), the Economic Commission for Latin America and the Caribbean (ECLAC) and the United Nations Environment Programme (UNEP) have set up special programmes to study options relating to Climate Change, as well as to coordinate actions and cooperation on CDM implementation. In addition, the Andean Corporation for Promotion of Development has created the Latin American Carbon Programme to support the implementation and development of a carbon market in the region.

**16.** Other noteworthy points referring to the region and related to Climate Change are:

- a) for the majority of the countries, energy consumption is the greatest source of GHG emissions, followed by transport and agriculture, whose emissions are compensated for by the carbon sinks, within the sector Land-Use Change and Forestry, as a whole;

- b) in many cases, the reports include the identification of programmes as well as measures that can contribute to limiting emissions or increasing the sequestration capacity. The identification of possibilities of mitigation have been focused on Fuel Burning and Fugitive Emissions, in other words; energy. These options are the ones most studied and several of them have shown to be highly cost-effective. Nevertheless, several countries have solid confidence in the development of their forest areas, namely, they raise their capacity for the development of carbon sinks. To date, these options are the ones least studied;
- c) all of the region's countries are vulnerable to weather variability and climate change and agriculture, particularly, can be very badly affected. The coastal areas would be severely threatened by rising sea levels and the small islands, especially, could suffer devastating impacts on their infrastructure. In general, scant availability of water, health problems, degradation of land-based ecosystems, adverse effects on fishing, and damage to infrastructure, energy systems, and tourism are the most common problems shared by the Latin American and Caribbean countries;
- d) options, measures, and strategies of adaptation to the adverse effects of climate change have been identified. However and in general, suggestions point to the need for more in-depth vulnerability studies in order to propose actions of adaptation and to identify the growing needs for technical and financial assistance. A common point is the showcasing of the necessity for the integrated management of vulnerable areas and improved coordination and cooperation among the pertinent institutions and agencies as a factor paramount to facilitating the inclusion of climate change in the process of defining public policies;
- e) there is ever-growing consensus on recognition of the need to incorporate climate change into plans for sustainable development. Despite efforts made toward institutional development and environmental legislation designed for that purpose, there is a dearth of concrete activities as regards the formulation of climate-change plans of action or policies. Nevertheless, the need has been stressed to develop integrated actions for dealing with environmental issues;
- f) efforts have been made to coordinate climate-change activities in response to the Convention. The need has been established to continue with activities already begun during the preparation of National Communications so as to maintain the availability of inventories and to strengthen capacities in an ongoing fashion;
- g) the need is recognized to implement or improve education, training, and public-awareness programmes for all sectors, including all of the general public to the fullest extent. Some countries have taken initiatives such as including climate-change issues in educational curricula and others have stressed the importance of incorporating the theme into formal as well as non-formal education, these actions are considered to be insufficient yet;
- h) instrumentation and institutional strengthening for the development and construction of national capacities and the regional reinforcement of research into vulnerability and adaptation, systematic observation, monitoring, and the gathering of data have been and continue to be a priority for the region. The need for financial resources and technical support has been recognized as having fundamental importance for implementing the Convention and for continuing with long-term action.

17. The compilation and synthesis of National Communications on the part of the Convention Secretariat<sup>1</sup> shows that these are an excellent source of information on the needs and priorities of developing countries as regards climate change and efforts to deal with it. The Secretariat likewise stresses that the ongoing preparation of inventories is an important factor when it comes to maintaining and improving the quality of these inventories.

### III. The Role of Energy in GHG emissions in the Region<sup>(2)</sup>

18. Owing to recessive processes in recent years, LAC's share of the world's total energy production and consumption has dropped marginally, after reaching a high of 9.1% in 2000. In 1992, the region's share of total world energy production was 7.5% and rose to 8.9% in 2001. The region accounted for 5.9% of total world energy consumption in 1992 and this figure went up to 6.7% in 2001.

Table I. Total CO<sub>2</sub> emissions in Latin America and the Caribbean (Gg)

| Activities                    | 1980   | 1992   | 2001    | Rates (%) |           | Participation (%) 2001 |
|-------------------------------|--------|--------|---------|-----------|-----------|------------------------|
|                               |        |        |         | 1980-1992 | 1992-2001 |                        |
| <i>Production</i>             | 15662  | 26127  | 33274   | 2,5       | 3,2       | 2,8                    |
| <i>Generation of EE</i>       | 115625 | 153468 | 244700  | 2,4       | 9,3       | 20,5                   |
| <i>Refineries</i>             | 2131   | 6282   | 6456    | 9,4       | 0,3       | 0,5                    |
| <i>Own Consumption</i>        | 64855  | 57248  | 52050   | 2,6       | -0,7      | 6,9                    |
| <i>Transport</i>              | 270329 | 345042 | 452991  | 2,1       | 3,1       | 38,0                   |
| <i>Industry</i>               | 160022 | 194907 | 202316  | 1,7       | 0,4       | 17,0                   |
| <i>Residential</i>            | 18007  | 54121  | 74927   | 2,4       | 1,8       | 6,3                    |
| <i>Comercial and Public</i>   | 9500   | 16319  | 17828   | 4,6       | 1,0       | 1,5                    |
| <i>Agriculture and others</i> | 31725  | 30695  | 42979   | -0,3      | 3,8       | 3,5                    |
| <i>Construction</i>           | 3353   | 1755   | 2641    | -5,3      | 4,6       | 0,2                    |
| <i>Non-Energy</i>             | 15625  | 21344  | 33526   | 2,1       | 5,1       | 2,8                    |
| <b>Total</b>                  | 740838 | 946280 | 1193697 | 2,1       | 2,6       | 100                    |

Source OLADE-SIEE

19. The growth rate in fuel-burning and fugitive emissions has shown a continuous decline since 1970 when it fell from 5.8% between 1970 and 1980 to 2.6% between 1992 and 2001. The onerous process of substitution between sources with a continued decline in the share of the stronger emitting sources – together with the growth in production efficiency and supply, for example, thermally-generated electricity – constitute the most important reasons. The energy balances of several

<sup>(1)</sup> See: [http://unfccc.int/cop8/latest/3\\_sbi.pdf](http://unfccc.int/cop8/latest/3_sbi.pdf)

<sup>(2)</sup> Information taken from LAC Energy Outlook 2001.

countries of the region show an ongoing penetration of hydro energy, nuclear energy, and natural gas <sup>(3)</sup>.

**20.** The transport sector continues to be the main GHG emitter and accounts for almost 36% of total emissions, followed by electricity generation, with just over 20%, and industry, with almost 17%.

**21.** Albeit for non-environment-related reasons and particularly those pertaining to Climate Change, the public policies of various countries have entailed the development of programmes and actions with high positive impact on GHG emissions. There are numerous examples: the Ethanol Programme in Brazil, which began in the seventies; the CNG (Compressed Natural Gas) Programme in Argentina, which has grown steadily since the eighties and so the country currently boasts the world's highest number (1,200,000) of CNG-operated vehicles; the hydroelectric plants which make this the subcontinent with the lowest CO<sub>2</sub> emissions per unit of EE generated; the strong penetration of Natural Gas in substitution for liquid and solid fossil fuels and which in some countries accounts for over 40% of the energy matrix; and the reforms undertaken that led to improvements in the production efficiency of supply constitute some of the actions that have had and continue to have positive impacts on the mitigation of climate change.

**22.** Notwithstanding, the fact is that despite the considerable potential offered by other renewable energy sources, their development is still limited. The same super-abundance and enormous extent of conventional energy sources (fossil fuels, hydro energy, etc) might have posed a barrier in the way of greater exploitation of wind, solar, geothermal, or biomass energy sources, to mention just a few. The added costs of these alternative sources vis-à-vis the easy access to and low cost of the conventional or commercial energy sources leads us to suppose that only strong promotion based on concessional or non-refundable financing and considerable ease of access to the transfer of the aforementioned technologies could break the barrier to the enormous abundance of alternative energy resources.

**23.** It is clear that the Energy System of Latin America and the Caribbean offers huge possibilities for contributing to the mitigation of climate change. The region's significant wealth of primary-energy reserves of low or zero emission offers opportunities not only to reduce the domestic emissions of its own countries but also to contribute to a reduction of emissions in other countries outside the region through the exportation of cleaner energy.

**24.** Just like the conventional energy sources, alternative energy sources likewise offer considerable potential. The region has two factors which complement each other: the available natural resources and the technical capacity to absorb the technologies capable of exploiting them. In effect, the abundant hydro, wind, geothermal, solar, and biomass resources – properly leveraged by soft financing – could exploit the existing technical capacity in the region to absorb the technology transferred and adapted by the industrialized countries.

**25.** Recent ECLAC studies<sup>(4)</sup> reveal the important role of renewable energy sources in many countries of the region, above all, wood energy sources in the countries of Central America and the Caribbean. This situation offers significant opportunities for other new renewable energy sources that will allow a reduction in the pressure on

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<sup>(3)</sup> For example, the carbonisation index in Argentina dropped from almost 70 GgCO<sub>2</sub>/PJ in the decade of the 70s to just over 30 GgCO<sub>2</sub>/PJ in the nineties. Mexico shows a reduction of 2% in carbon intensity in the 90s, compared to that of the 80s.

<sup>(4)</sup> Version revised on 29 October 2003.



wood energy sources, an improvement in the quality of life and access to cleaner and more modern energy sources.

**26.** This is an area in which effective international assistance can contribute to promoting the development of such resources and where national public policies should incorporate actions and programmes that, based on the opportunities offered in an international context, lend sustenance to win-win objectives: contributing to the global environment, and, to local sustainability.

**27.** Consequently, the existing abundant and diversified energy resources and the development and support of the technical capacity for the implementation and operation of sustainable clean options offer ample amicable space for environmental actions. The already-mentioned strong participation of LAC in the Clean Development Mechanism (CDM) is a good indicator of the region's potential<sup>(5)</sup>.

**28.** A broad concept of energy efficiency (including efficiency in production as well as assignation) shows that the region could reduce the carbon intensity of its growth, provided that adequate programmes are implemented and receive expeditious international support.

## **IV. Mitigación: key elements in key areas**

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**29.** The possibilities of mitigation are multi-dimensional:

- a) they are associated with the reduction of emissions or the increase in their sequestration;
- b) they can be implemented in both energy supply as well as consumption;
- c) they are applicable to both fuel-burning as well as fugitive emissions;
- d) they are possible in all categories or sectors recognized as emitters (Energy, Industrial Processes, Land-Use Change and Forestry, Agriculture, Sanitary Landfills, etc.);

**30.** Within this broad spectrum, in LAC, actions have been concentrated on certain categories. While the reasons are not clear, it is possible that said concentration may be due to the opportunities those categories offer, or, to the fact there is greater experience in certain themes (energy, for example), or to the supplies generated by service providers.

**31.** The activities to which the most strenuous efforts have been devoted are closely linked to energy issues and within the latter, to certain topics in particular.

### **A. Energy efficiency**

**32.** Broadly defined, energy efficiency offers very significant opportunities. The reduction in net-energy consumption without affecting energy services and substitution of fuels are two areas of abundant possibilities in the region.

**33.** Potential energy-efficiency projects are associated with:

- a) development of demonstration projects using efficient technologies;

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<sup>(5)</sup> A recent report from ECLAC("The Carbon Market in LAC: Balance and Prospects – L.Eguren C." – August 2003), shows that approximately 50% of the CDM projects presented are found in LAC. The same source shows that 50% of these projects are hydraulic, 15% wind, 13% biomass, 9% energy efficiency, 9% management of sanitary landfills, 2% geothermal, and 2% N2O reductions.

- b) removing barriers to the large-scale application and replication of efficient technologies;
- c) ensuring the sustainability of win-win projects;
- d) facilitating learning processes;
- e) developing information campaigns on the benefits of efficient energy use;
- f) electricity Demand-Side Management (DSM) projects;
- g) viability of the creation of "energy efficiency" markets;
- h) Development of ESCOs (Energy Service Companies);
- i) development of new institutional and regulatory frameworks and economic and fiscal incentives for efficient use;
- j) strengthening the testing, certification, and labelling of devices;
- k) identification of financing mechanisms for investment in energy efficiency.

**34.** Despite efforts undertaken, the results are modest, for different reasons which, among others, include the following:

- a) these have been isolated efforts, not integrated with sectorial policies, and not coordinated with other actions whereby synergies could be taken advantage of;
- b) in several countries, support has not been forthcoming from the energy supply sectors who, following a process of reforms, tend toward a rationality aimed at maximizing profitability and sales;
- c) this has not been one of the region's priority objectives in energy policy since the overriding concerns have been for raising economic efficiency, guaranteeing access, ensuring long-term expansion, and attracting private investment so as to transfer the responsibility for the supply of energy services from the State to the private sector;
- d) the institutional approach has had limitations and the role assigned to different actors has not always been clear.

**35.** In general terms, the reforms to energy policy that have been implemented – privatisation, vertical disintegration, reduced prices and rates resulting from greater competition and efficiency, etc. – have acted as a significant barrier to energy efficiency. In fact, the aforementioned situation could explain the relatively low number of energy efficiency projects existing in the region.

**36.** Consequently, what are the factors to highlight and take into consideration in the quest for opportunities in this specific field? The areas shown as being the most attractive are as follows:

- a) certification and labelling of equipment;
- b) street lighting;
- c) efficient energy use in public buildings (administration offices, hospitals, schools, etc);
- d) co-generation of heat and electricity;
- e) improved efficiency, particularly in small industrial activities;
- f) incorporation of efficient devices into the residential sector;
- g) implementation of economic and fiscal incentives.

**37.** Mechanisms that should be strengthened to achieve results:

- a) institutional and regulatory instruments to create energy-efficiency markets;
- b) creation of conditions for the development of energy-efficient companies;
- c) development of institutional and financing mechanisms to facilitate the process of initial investment;
- d) identification of fiscal, economic, or other types of incentives to promote the substitution of equipment;
- e) development of information and public-awareness campaigns for changing use and habits;
- f) development and strengthening of capacities for understanding, incorporating, and disseminating actions of efficient energy use.

**38.** Of those already mentioned, a key action – which has proved to have very significant impacts in energy consumption while simultaneously reaping economic and social benefits – is labelling and the fixing of standards. This particularly targets electricity and the most commonly used devices. With highly cost-effective action, a country or region can witness swift market transformations as a result of the introduction of a successful labelling and standards programme. Savings of over 10% have been proven with the substitution of devices or equipment in the residential, commerce, and industrial sectors. In LAC, this could additionally be an action of considerable social impact, given the importance of the energy bill in the lower-income sectors.

**39.** Relating to those listed earlier, there are multiple mechanisms to promote energy efficiency:

| Mechanism   | Description  |
|---|--|
| Planning and Strategies – regional, national, and local | Development of guided investment, pricing, institutional, and regulatory policies.   |
| Development of sectorial policies                       | Sectorial policies in housing, industry, commerce, etc., aimed at promoting efficient energy use.  |
| ESCOS   | Companies that provide information, training, and technical, economic, and financing consultancy, etc.   |
| DSM   | Efficiency actions implemented through networked energy suppliers, particularly electricity, with mutual benefits.   |
| Market reforms for determined technologies              | Creation of information, publicity, and other conditions to promote the efficient equipment market.  |
| Designing of products and equipment                     | Transfer of technology to incorporate more efficient equipment.  |
| Standardization and labelling                           | Aimed at transforming the market through push-pull action. Raise barriers to block the entry into the market of less efficient devices and furnish broader information to promote the use of more efficient devices. |
| Provision of information                                | Compilation of information, through audits and technical assistance, to identify actions for efficient energy use.   |
| Innovative financing methods                            | Provision of information and guided financing design. Achieve a multiplier effect from limited funds.  |

| Mechanism                       | Description   |
|---------------------------------|---|
| Information and service centres | Creation of centres that provide information to key actors.                               |
| Awareness campaigns             | Process using different mechanisms  |
| Training programmes             | Development of capacities in technical, economic, regulatory, and financing matters, etc. |

## B. Renewable Energies

**40.** This is about the category where the highest number of projects have been developed and in which international funds could be channelled toward identification of the “economic niche”, namely, what the options are that – contributing to global objectives – can easily penetrate local markets.

**41.** There are particular aspects of renewable energy sources which should be pointed out:

- a) some are restricted to specific places, which limits their role (hydro energy or geothermal energy, for example);
- b) their potential is contingent upon the characteristics of the natural resource;
- c) their capacity is limited by the level of technological development
- d) their competitiveness depends on the level of advancement attained by the associated technology

**42.** The applications for renewable energy sources are numerous and include:

- a) electricity supply in isolated areas, for individual users or small dwellings;
- b) provision of electricity to interconnected networks;
- c) water supply for residential or agricultural use;
- d) bio-fuels for transport;
- e) biomass for heating; i.e., water heating for buildings;
- f) biogas digestors for generating electricity.

**43.** Just as in the case of energy efficiency, the opportunities offered by renewable energy sources are likewise hindered by barriers of all kinds – generally related to the market (absence thereof, and defects or flaws).

**44.** In general, the barriers are known, but overcoming them requires decisive and consistent policies. In general, they entail specific times and places and are complicated to detail in their entirety, however, the most common ones are related to: imperfect financial markets; institutional problems; cultural or social non-acceptance; technological risks; financial risks; uncertainties; high transaction costs; or the lack of qualified personnel to maintain and operate them.

**45.** The mechanisms for promoting the use of renewable energy sources can be associated with:

| Mechanism   | Description  |
|---|--|
| Planning and Strategies – regional, national, and local           | Development of guided investment, pricing, institutional, and regulatory policies.                               |
| Regulatory reforms in public service electricity                  | Aimed at promoting connection to the network of technologies associated with renewable energy sources.           |
| Codification and standardization                                  | Codes and standards to reduce risks and uncertainty  |
| Assessment of resources and generation of open-access information | Generation of information on resources so as to reduce risks and uncertainties                                   |
| Market reforms for determined technologies                        | Creation of information, publicity, and other conditions to promote the efficient equipment market.              |
| Designing of products and equipment                               | Transfer of technology to incorporate more efficient equipment.  |
| Standardization and labelling                                     | Aimed at providing broader information to guarantee the quality of equipment.                                    |
| Local development and community organization                      | Decentralized institutional development to promote and guarantee the growth and use of renewable energy sources. |
| Innovative financing mechanisms                                   | Provision of information and guided financing design.  |
| Information and service centres                                   | Creation of centres that provide information to key actors.  |
| Awareness campaigns   | Process using different mechanisms.  |
| Training programmes   | Development of capacities in technical, economic, regulatory, and financing matters, etc.                        |

46. The fact has already been mentioned that in many cases, energy reforms have not incorporated mechanisms to facilitate access to energy and the contribution to environmental objectives. International support could be aimed at and be very useful in redefining second-generation reforms, in order to incorporate social and environmental dimensions and provide an additional cap on renewable resources that have been given special emphasis in the Johannesburg Plan of Implementation and will be followed up on at the Bonn World Conference in June 2004, where there will be input from the Regional Preparatory Conference held in Brazil during the week of 27 October of 2003.

### C. Transport

47. As can be seen, the Transport sector accounts for the highest rates of GHG emissions in the region and it is likewise the sector in which even more far-reaching actions are needed, including change of social values and habits, land use, and the introduction of efficient technologies, etc.

48. The region is capable of demonstrating successful actions on this issue such as the combination and changes after the fashion of Curitiba, the penetration of CNG in Argentina, and the exclusive thoroughfares for public transport in Bogota or Quito. Furthermore, expanding automotive industry exports to Europe will require meeting Euro Standard II.

**49.** The possibilities in LAC are numerous: the list of GEF projects that include the use of hydrogen in Brazil and Mexico and promotion of the use of bicycles in El Salvador can be enhanced by multiple other options, which include the following:

- a) changes in modes of public transport service: trains and underground rail systems instead of buses;
- b) fuel substitution in public and private transport: hybrid automobiles; the use of hydrogen; substitution of petroleum-derived liquid fuels;
- c) mode substitution between private and public transport: raising the quantity and quality of public transport and promoting its use;
- d) development of exclusive thoroughfares for public transport;
- e) training for efficient management

**50.** Many of these options encounter considerable barriers, such as:

- a) capital-intensive activities or options;
- b) behaviour: aspects of culture and tradition on the social significance of the automobile;
- c) atomisation of the actors involved in decision-making;
- d) strategies of the automobile industry;
- e) land use – particularly important where demand-derived transport is involved.

**51.** The quest for international funds should be particularly focused on identification of these barriers and on the analysis of policies and strategies for overcoming them.

**52.** There are many programmes which afford opportunities for synergies – including the “Clean Air Programme” – that additionally offer important social benefits as regards health, social, economic, and environmental questions, and quality of life, etc.

## **V. Vulnerability and Adaptation: a Growing Challenge**

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**53.** The assessment of vulnerability and identification of possibilities of adaptation have become one of the priority objectives of LAC. Water Resources, Agriculture, and Health have been identified as key human systems in Phase I (National Communications) and are stipulated as relevant areas in regional-scope scientific-technical analyses.

**54.** Obviously, the island States of the Caribbean – as well as Chile, Ecuador, and Uruguay – have identified their coastal zones as priority systems in their analyses of vulnerability to climate risk. Nevertheless, vulnerability to climate change is intimately linked with levels of development, social and economic conditions, cultural questions, institutional organization, and, particularly, with poverty levels. The conditions which generate and increase vulnerability to climate change – as well as the analysis of other indirect causal factors such as predicted changes in international markets, reduced opportunities associated with the advantages of the extent of resources or existing infrastructure, and the behaviour of the actors involved as a reaction to climate change – are not often addressed in vulnerability analyses. Generally speaking, these are focused on biophysical and geographical factors, omitting or minimizing economic analyses and changes in conditions in a

global context as a result of expected changes in climate (climate change and weather variability).

**55.** The region is already suffering from the effects of climate change. The El Niño, La Niña, and other more frequently-occurring extreme events have raised awareness as to confronting the phenomenon with actions which make it possible to ensure that the systems remain strong against new climate conditions.

**56.** It is obvious that vulnerability and the consequent need for adaptation, is a challenge for Latin America and the Caribbean in the very short term. Opportunities to develop mitigation projects whose effects on the climate are for the longer term will be more attractive from the regional viewpoint if, while contributing to global objectives, the projects make the sustainability of development viable by reducing vulnerability to climate variability and change

**57.** The identification and prioritization of projects to strengthen and tap synergies between adaptation and mitigation should be a key objective in the region's development policies and an important requirement in assessing the sustainability of mitigation projects. Greenhouse gas mitigation projects that encourage production conversion to less vulnerable and stronger alternatives in relation to climate variability and changes would have an "additional value-added" that would improve their cost-effectiveness ratio and would be measures of broader scope.

**58.** The first projects on vulnerability and adaptation, with funding from international agencies, are already being developed. They will provide valuable experience and an opportunity to test the application of proposed methods, methodologies and models being designed to facilitate the implementation of public policies to obtain strong projects in both dimensions: adaptation and mitigation.

## **VI. Development of Capacity: a Cross-Cutting Theme**

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**59.** The development and building of capacities is included in different kinds of activities. The establishment of National Communications of the Convention has been one of the primary instruments for the development of capacities at national level.

**60.** There are many activities that require – and at the same time generate – adequate capacity in the countries. In general, these relate to commitments assumed by the non-Annex I Parties to the Convention, commitments which include:

- a) preparation and implementation of plans to reduce emissions;
- b) integration of the issue of Climate Change in the design or development of environmental, social, and economic policies;
- c) promotion of the sustainable management of GHG carbon sinks and reservoirs;
- d) promotion of research and cooperation in the exchange of information;
- e) development of programmes for education, training, and public awareness;
- f) preparation of regular reports and communications to the Convention;
- g) Promotion and development of systematic monitoring.

**61.** These activities relate to: the search for and processing of information; the building of long-term scenarios; identification and assessment of mitigation options and the identification of policies and strategies to implement them; assessment of vulnerability and identification of options for adaptation to the most likely scenarios;

assessment of the economic and social impacts of the activities to be implemented in response to climate change; and the inclusion of the latter in aggregate and sectorial policies.<sup>(6)</sup>

**62.** The development and strengthening of capacities is implemented individually, as well as institutionally and systematically. It is a process that includes the acquisition of knowledge, and the development of the skills and capacity to implement it at the three aforementioned levels.

**63.** UNDP experience in strengthening shows that it is a long-term process that requires dedication and ongoing support.

**64.** The strengthening and development of the capacity to confront climate change and weather variability both in the aforementioned aspects of mitigation as well as adaptation is a priority identified in all of the countries of the region. In addition, the need is recognized to seek synergies between actions, at times isolated and supplementary ones.

## VII. Project Portfolio

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**65.** A considerable number of initiatives have been conducted to deal with the problems of climate change at regional as well as national and local levels. Many of these initiatives are financed, at least partially, by the GEF as an instrument of the UNCCC and pursuant to the following principal programmes:

- a) overcoming Barriers to Energy Efficiency and Energy Conservation;
- b) promoting the Adoption of Renewable Energy Sources, Removing Barriers, and Reducing Implementation Costs.
- c) reducing Long-term Costs of Lower Greenhouse Gas-Emission Technologies;
- d) promoting Environmentally Sustainable Transport.

**66.** In addition, "actions of enablement provide support for the planning and creation of endogenous capacities, including institutional strengthening, training, research, and education, which will facilitate the effective implementation of measures for responding to climate change, in accordance with the UNCCC"<sup>(7)</sup>

**67.** The agencies involved in implementation and execution have been and continue to be very active in the region. The IDB, UNEP, World Bank, and UNDP have developed projects on the issue of Climate Change.

### General Panorama

**68.** The projects of the Inter-American Development Bank (20) are projects focusing on Renewable Energy Sources (12), Sustainable Energy (3), Rural Energy (2), Expansion of Electricity Supply (2), and Energy Efficiency (1). There are seven Regional projects. Of the remainder, 6 are in Latin America and the Caribbean, 5 in Large Developing Countries (4 in Brazil and 1 in Mexico), and lastly, 1 in Chile.

**69.** These projects show a considerable concentration in rural zones and Central America and the Caribbean appear as a priority area. In the framework of rapid change in the energy sector in Latin America, the IDB developed a new strategy aimed at financing renewable energy projects, principally small-scale geothermal and

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<sup>(6)</sup> GEF-UNDP – Capacity Development Initiative – A synthesis – September 2000.

<sup>(7)</sup> GEF – Results of the Climate Change Program - 2001



hydropower plants. The IDB is providing technical assistance for the preparation and implementation of environmental-energy regulations to adapt the necessary regulatory frameworks to the development of new markets for cleaner types of energy, and to strengthen the capacity of the State aimed at drawing up environmental policies, as well developing and implementing market instruments which complement regulations to encourage the use of renewable energy sources<sup>(8)</sup>.

**70.** Starting from the premise that the development of renewable energy sources has been established as a priority in the region, the UNDP focused its activities on Renewable Energy Projects by way of 14 projects in different stages of development, including 3 regional projects. For its part, UNEP usually carries out projects of a global nature, LAC included.

**71.** World Bank projects show a significant concentration both in countries as well as sectors. The majority of these are concentrated in 6 LAC countries, mostly the larger ones. There are some regional projects but practically none of them correspond to the Caribbean.

**72.** The UNDP and the World Bank are the main project-implementing agencies and the former accounts for the largest number of projects.

**73.** Some points that should be mentioned:

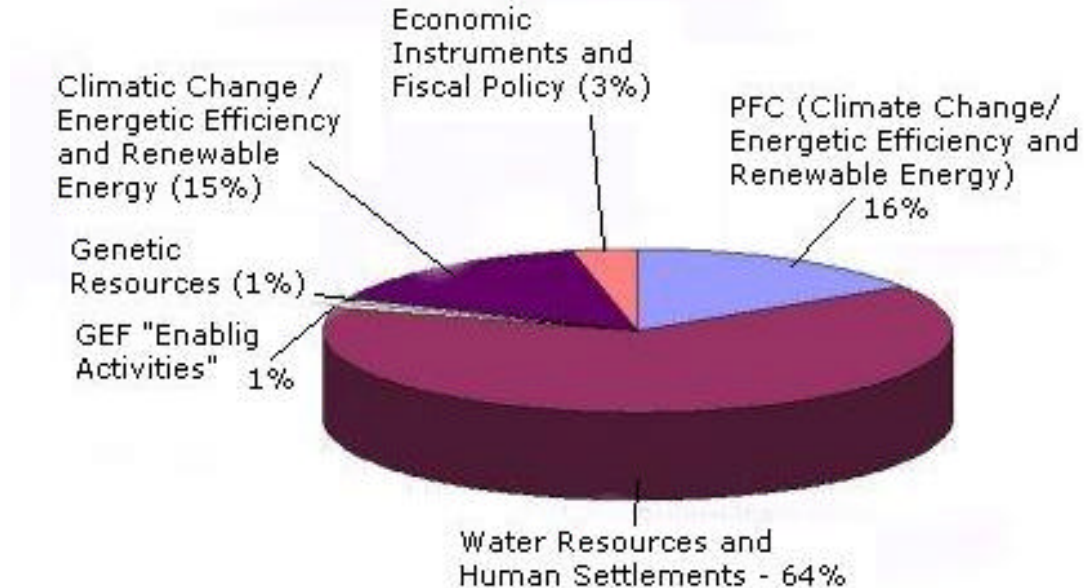
- a) in general, a strong concentration can be seen of projects identified, classified by country. Out of a total of 186 projects, Brazil accounts for 21.4% of them while Mexico accounts for 13.7%. The first countries on the list (Brazil, Mexico, Colombia, Peru, and Chile) account for 56% of the total and the first three account for 43%. There is no information as to the amounts involved in many projects, therefore, it is impossible to determine whether a similar concentration exists in relation to these amounts;
- b) except for two projects (in Brazil), all the projects carried out by UNEP are of a regional nature, namely, they take in several countries;
- c) not counting PCF Projects, the World Bank has 97 projects, 28% of which are concentrated in Brazil and 18% in Mexico, showing a higher per-country concentration compared with other sources of financing. The IDB reports 20 projects, 20% of which are concentrated in Brazil;
- d) The list of UNDP-GEF projects shows a smaller concentration than those financed by the Banks.

**74.** The total number of projects comes to 186, the vast majority of which correspond to the UNDP and the World Bank. For the period 2000-2003, the total amount of project investment is in excess of US\$1 billion dollars and GEF funds amount to roughly US\$470 million dollars. In the case of the UNDP projects, the amount comes to US\$213 million dollars, of which US\$69 million dollars corresponds to the GEF.

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<sup>(8)</sup> Renewable Energy Projects and Activities at the IDB. Background Package of Information.

Chart 1. Portfolio of Projects, classified by Type of Project



**a) UNDP – Support to Climate and the Environment**

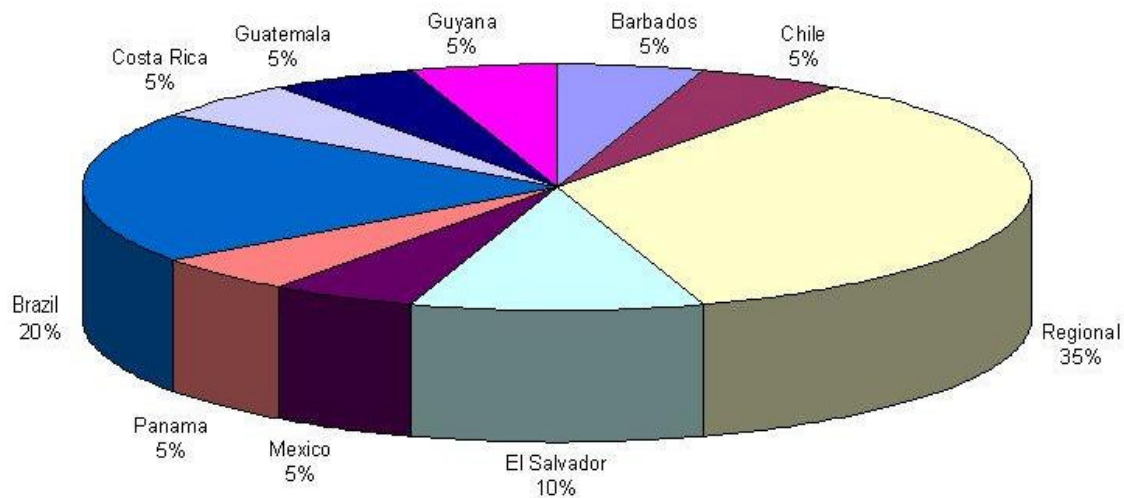
**75.** Latin American and the Caribbean countries are playing an important role in the world environment scene, with the support of the UNDP. In addition to the projects that have GEF funding for a total of US\$213 million dollars, the UNDP is playing an important role at both policy as well as capacity-development levels so as to take advantage of international initiatives.

**76.** Some important points worthy of mention:

- a) Argentina hosted the Conference of the Parties in 1998, thus becoming the first developing country to propose joint-implementation initiatives;
- b) Brazil contributed many of the ideas that led to the Clean Development Mechanism;
- c) the UNDP's regional strategy on the environment promotes investment in new areas and includes such issues as the impacts of macroeconomic policies, the relationships between environmental management and crisis management, and "green" investments. There are also plans for a periodic report on sustainable development and a sustainable-development index;
- d) the National Communication Support Activity Program (NCSP) involves the UCCEE in an initiative of two years of collaboration between the UNDP and UNEP designed to provide assistance to non-Annex I Parties in the preparation of their National Communications to the UNCCC;
- e) leadership in the development of synergies among different international conventions supporting the process of the National Capacity Self-Assessment (NCSA) in order to prioritise future actions in capacity development;
- f) support for the countries of the region in CDM-related processes of certification focusing on transparency and governance.
- g) UNDP supports the LAC sub-regional initiatives:

- i. It is assisting governments of the Mesoamerican region (the area covered by seven Central American countries, Panama, and the five southernmost States of Mexico) in the design and implementation of a "biological corridor", providing the strategy framework for investment and technical assistance. Mesoamerica shows rapid degradation of its existing natural resources, reduced production, increased poverty, and greater vulnerability to hurricanes and other extreme weather events;
  - ii. It is currently assisting 31 of the 33 countries of the region in the preparation of their First and Second National Communications, as required by the Parties to the UNCCC. Of these, 91% have already presented their First National Communication and the UNDP is assisting in the preparation of the Second National Communication;
  - iii. it undertook the initiative of capacity-development support to national negotiators to enable these to play a role of leadership in the international conferences where global policy is designed and discussed. At national level, it helps the countries to put into practice the proper legislation needed to protect the environment while at the same time promoting the exchange of environmental products, for example: initiatives for reducing the use of carbon-dioxide-intense energy and for the sustainable use of forests and ecosystems;
  - iv. it supports programmes designed to reduce emissions and that likewise allow access for the poor and less fortunate groups to renewable and economically-affordable energy sources. In addition, it provides support to governments in programmes aimed at the mitigation of and adaptation to climate change, including risk management and the prevention and moderation of disasters.
  - v. a clean development mechanism (CDM) pilot project is being conducted jointly in Nicaragua, Trinidad and Tobago and Peru. It is a project to validate the UNDP manual for the CDM project cycle. In this process, the entrepreneurs interested in developing a CDM project obtain training in each of the steps in the manual through concrete proposal;
  - vi. the UNDP is currently directing a process of participation for the development of the Adaptation Policy Framework (APF) in order to help countries better prepare for climate change. The countries of Central America, as well as Cuba and Mexico, are implementing a pilot project for the creation of capacities in Vulnerability and Adaptation, likewise taking into account criteria and measures of adaptation for vulnerable population groups.
- h) in each one of these areas, the UNDP contributes to the creation of national capacities for programme management by helping to establish the accurate definition of problems, identification of the necessary materials for this purpose, and other steps leading toward documentation of the lessons learned;
  - i) it also incorporates information and communications technology so that users can have access to and develop the knowledge they need, even beyond the duration of the individual programmes.

Pie 2. UNDP: Portfolio of Climate Change Projects, classified by Country



**b) Inter-American Development Bank. Projects and Activities pertaining to Renewable Energy Sources**

**77.** During the 1980s, the IDB began implementing a new approach, with emphasis on the financing of Renewable Energy projects. Between 1975 and 1998, the IDB financed close to 50 small and medium-scale energy projects which received a total of US\$600 million dollars in financing (with amounts of between 5 and 10% of total energy-sector loans). The first projects were mainly focused on small-scale geothermal and hydroelectric plants.

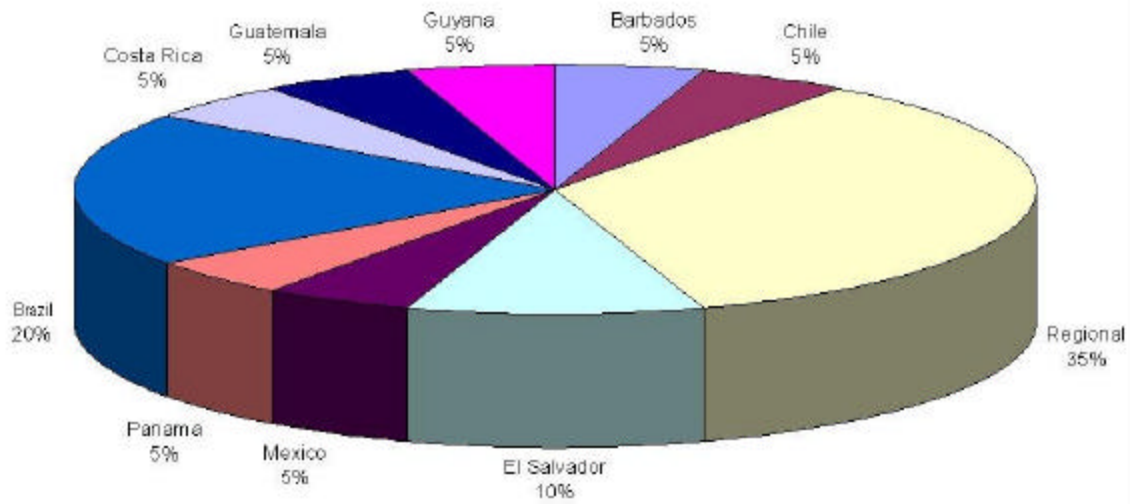
**78.** The most recent initiatives broadened the range of the IDB project portfolio pertaining to Renewable Energy Sources placing greater emphasis on other small-scale energy sources such as wind, solar, and biomass. In the case of many of these projects, the energy sources are being used to supply rural electricity, principally in providing electricity services to isolated users. Similar initiatives are being prepared for other regional technical-cooperation projects in countries like Brazil and Costa Rica.

**79.** The IDB is currently in the process of establishing a “Fund for Clean Technology” that proposes equitable financing investment in small businesses which use clean technologies to produce energy, reducing the consumption of fossil fuels in their production processes. The amount of this fund is estimated to be between US\$25 and US\$30 million dollars.

**80.** Some of the noteworthy elements of the IDB project portfolio are:

- a) they are focused on Rural Energy and on Renewable Energy Sources
- b) some large projects account for a considerable portion of the total funds available;
- c) many projects have regional scope.

Chart 3. IADB: Portfolio of Renewable Energy Projects, classified by Country

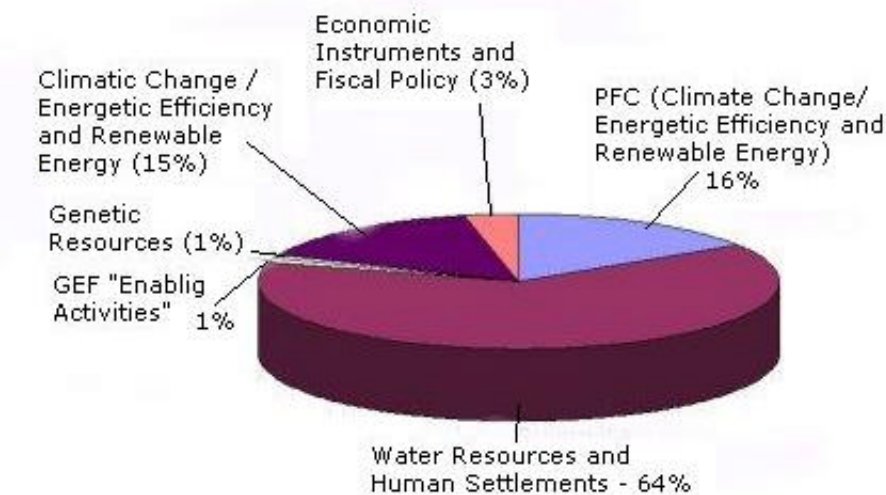


### ***c) The World Bank and Climate Change***

**81.** The World Bank has a sizeable portfolio of specific climate-change projects in LAC. A total of 119 such projects have been identified (included those presented in the PCF). Some examples of these are as follows:

- a) the Mexico High-Efficiency Lighting Pilot Project, which is designed to replace approximately 1.7 million incandescent bulbs with fluorescent bulbs in street lighting in Guadalajara and Monterrey;
- b) the Biomass Power Commercial Demonstration Project in Brazil was designed to demonstrate the commercial viability of using firewood to generate electricity through the use of Biomass Integrated Gasification/Gas Turbines (BIG/GT);
- c) the Renewable Energy in Rural Markets Project (PERMER) in Argentina was designed to provide rural areas with sustainable energy;
- d) the Demand-side Management (DSM) Project in Jamaica helps toward the development of sustainable programmes for removing barriers to energy conservation;
- e) the Caribbean Planning for Adaptation to Climate Change (CPACC) Project helps the countries of the area to confront the adverse effects of climate change, particularly rising sea levels;
- f) the World Bank continues to be involved in specific climate-change projects in LAC. The Global Carbon Initiative (GCI) and the projects financed by the GEF are expected to receive additional funding through Activities Implemented Jointly (AIJ) and Joint Implementation;
- g) In collaboration with bilateral partners, the World Bank is exploring the possibilities of launching Strategic National Studies of Activities Implemented Jointly in LAC countries conducive to producing a series of GCI projects that may be identified in said studies.

Chart 4. World Bank: Project Portfolio classified by Project Type



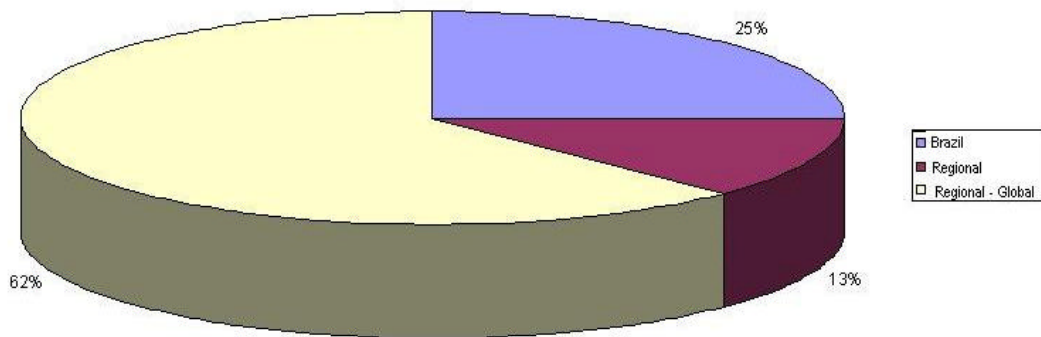
**d) UNEP - Projects pertaining to Renewable Energy Sources**

82. The main projects and activities conducted by UNEP in the region, in conjunction with different participants, pertain to raising public awareness, the development of tools for decision-making, improvements to analytic and policy knowledge and the provision of technical-assistance projects through pilot or demonstration programmes. In addition, UNEP/GEF financed projects in the Region have focused mainly on assessments enabling activities and pilot demonstration projects. The main ones are as follows:

- a) BREED, the Development of Initiatives for the Creation of Rural Energy Companies in Brazil attempts to attract the private sector to provide affordable energy services based on the supply of energy through the use of clean technologies and renewable energy sources in North-eastern Brazil;
- b) Renewable Energy Technologies/Investment Advisory Facility (IAF), which helps financial institutions to assess potential investments in renewable-energy technologies or energy efficiency in DC/EIT countries;
- c) the Energy Efficiency Financing Mechanism in Brazil, China, and India (an initiative in conjunction with the World Bank) is devoted to increasing the sum total of investment in Energy Efficiency in the three countries;
- d) Studies on Energy Reform. Workshops on reforms to the energy and sustainable-development subsidy system;
- e) Economics of Greenhouse Gas Limitations, the purpose of which is to provide a methodology, a framework of implementation, and a reporting system to enable the countries to continue complying with their mandatory reporting obligations, pursuant to the UNCCC.
- f) Energy Policy making for Sustainable Development in the Caribbean is a project aimed at assisting decision-makers in the preparation and assessment of their energy policies devoted to attainment of the objectives of sustainable development;
- g) the Sustainable Energy Advisory Facility (SEAF) is a pilot initiative for the provision of information and technical assistance for sustainable-energy activities in certain selected DC countries;

- h) the Solar and Wind Energy Resource Assessment (SWERA) provides information on these energy resources in 13 developing countries;
- i) the Global Network on Energy for Sustainable Development (GNESD) provides and supports a framework of collaboration among several actors interested in energy matters, in the context of sustainable development. LAC participates with centres in Argentina and Brazil.
- j) the Eastern Caribbean Geothermal Energy Project.
- k) An agreement of collaboration was forged between UNEP, FAO and IUCN with respect to the project titled "Forests, Environment and Climate Change". These three organizations collaborated to promote the exchange of information among negotiators of the Clean Development Mechanism (CDM) on land use, land use change and forestry under the CDM.

Chart 4. UNEP: Project Portfolio, classified by Country



## VII. Reflections on the future of Climate Change in Latin America and the Caribbean

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83. Latin America and the Caribbean, as few other regions on the planet, face a situation in which climate change brings together a symbiosis of threats, risks, challenges and opportunities. The region is undergoing changes in climate, and it urgently needs to address the challenge of adapting to them. It must reverse a situation that is no longer a threat or risk, since it has become the reality of increasing vulnerability that requires immediate action. Its endowment of resources and its human capacity offer an opportunity to implement mitigation operations, which, however, should guarantee the sustainability of development, one of whose conditions depends on reducing or eliminating vulnerability to climate. The region can contribute to mitigating climate change; its contribution requires appropriate balance in its adaptation activities:

- a) in the process of drawing up national policies and strategies, it is important to take into account the mechanisms pertaining to climate change, in their specificities. In particular, while the GEF supports the removal of barriers to create favourable conditions and adequate frameworks for the implementation of projects of lower global impact, the CDM provides annual financial support for individual investment projects. It would be expedient to define the best option and to make a choice between these two different tools;
- b) it is important to reinforce coordination among agencies and institutions in the region (both within and among the countries). LAC offers great possibilities for cooperation on Climate Change. Many countries have

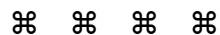
developed knowledge and capacity *par excellence* that they can share with and transmit to lesser developed countries. Some of the instruments that could foster the aforementioned objective are: the development of in-country projects which generate the need for the active participation of different entities of national Government; projects specifically directed toward institutional reinforcement; and the development of institutional mechanisms which guarantee, promote, and effectively make for coordination of joint activities and the development of regional projects (inter-linked among several countries;

- c) the study of vulnerability and the identification of policies for adaptation are an ever-growing priority. The authorities should reinforce activities aimed at planning adaptation and have broader knowledge about the so-called "autonomous adaptation". Proper exploitation of the existing technical capacities of the countries and their incorporation into the policy decision-making process should be a paramount objective;
- d) the new global and regional context requires the identification, design, and development of new policies and strategies both for combating climate change as well as adapting to it. This new context entails more indirect and complex intervention based on the combination of different instruments, tools, measures, and actions. There is a need to recognize the complexity and broader technical scope that public policies require and, a need for the implementation of the necessary measures to strengthen this field of knowledge;
- e) *governance* has become a keynote word. The effective participation of the leading actors in the processes of identifying and assessing measures and options, the identification of same, the determination of roles and functions, and the "right moments" for their intervention, can constitute the difference between the implementation or failure of a given policy. The viability and applicability of policy strategies requires the implementation of the proper institutional framework, as well as the mechanisms of participation and consultation that guarantee the validation of that framework and facilitate its implementation – projects conducive to the institutionalisation of climate change management and the role that should be played by local authorities, civil society, private production sectors, and NGOs, etc.,
- f) there is a need to develop a comprehensive approach to sectorial policies, taking into account the dimensions of the decision-making processes. Actions undertaken in Renewable Energy Sources or the environmental implications of energy-related decisions are good examples of actions that remain isolated or excluded from the core of energy debate and ministerial plans in many countries. Coordination on the issue of Climate Change in the definition of sectorial and aggregate public policies is paramount if we are to prevent identified projects from falling into a quagmire – without connection to or integration in the rest of the socio-economic system and from becoming untenable in the long term;
- g) the region – with a deep-rooted tradition in the development of fossil-fuel-based energy sources – likewise offers opportunities for mitigation in this area. The sequestration and reinjection of methane fugitive emissions is an excellent example, with a scant number of projects developed in the region;
- h) The success of renewable energy sources requires consideration of the following:



- i. the promotion of renewable energy sources cannot be limited to merely a role as viewed from a social perspective. The possibility of gaining access to production-related clean energy should be a key element in the promotion of these energy sources and technologies and should likewise be considered as a vital element for guaranteeing the sustainability of projects in this field;
  - ii. analysis should be born of the necessity to satisfy and identify the proper "niche" for these energy sources as the best option for meeting the identified need. From the technological viewpoint, the approach has been the culprit of many failures in this area. Many of the proposed renewable energy sources are focused solely on uses for electricity supply whereas in many cases, the most pressing needs of the potential consumption sectors are their use for heating purposes;
  - iii. the possibilities offered by renewable energy sources would be further boosted if knowledge about them were more widely disseminated through the strengthening of I&D Service groups, regional education, and mutual collaboration and interaction. The foregoing constitutes fertile ground for horizontal cooperation where international organizations can be an instrument used to reinforce South-South cooperation, as well as to develop training and education adapted to the region's situation;
  - iv. Biomass and bio energy offer considerable opportunities. Relatively simple and standardized technologies would make it possible to develop energy sources to substitute fossil fuels within a short time and at affordable costs. This is an area that requires greater endeavours. As regards activities merited by these energy sources, the guarantee of sustainability is by no means discarded, as shown by demonstration projects. This should be supplemented by reforms to the corresponding frameworks, by the necessary regulatory amendments, and by the institutionalisation required for long-term viability, among many other factors;
  - v. the endowment of renewable resources constitutes a favourable and effective base for developing an energy vector such as hydrogen. Although it is an intermediate option in terms of time, the region should remain alert to tapping the relative advantages that would result from the generation of this environment-friendly fuel and monitor technological development that brings this option closer to market conditions;
  - vi. the absence of an appropriate and "friendly" context for the new technologies – without entailing an immediate barrier and without being a sufficing condition – constitutes an additional condition for the technical-economic viability for them to become a real alternative.
- i) Equally as important as the development and strengthening of individual, institutional, and system capacities is the clear identification of the kind of capacities needed by each institution or organization – depending on their

- roles and functions – and where to place the basic technical capacity so as to guarantee its sustainability and availability in the long term;
- j) the transfer, adaptation, and internalisation of technologies and technical knowledge is generally more complicated than project proponents estimate. A very often naive vision of technology transfer results in disappointment. In the formulation of projects, it is not common to encounter the means to guarantee the transfer of neither technology nor the conditions under which it will come about. This is a keystone issue for ensuring project sustainability, as well as a factor which very often constitutes a pivotal argument for implementing actions;
  - k) the Brasilia Conference on Renewable Energy is an excellent framework for the discussion and proposal of initiatives. It will certainly offer a platform of agreements for the development of numerous activities in the region. As a meeting preparatory to the International Conference on Renewable Energies in Bonn, it is an opportunity for declarations of intent and political positions to be accompanied by concrete project proposals ready to be negotiated in Bonn and implemented as soon as possible in the region;
  - l) strenuous efforts should be undertaken toward training in the financing entities so they may achieve better understanding of the opportunities offered, of the role of leverage that can be provided by proper financing, and of the viability of many environmental projects;
  - m) factor such as the wider development of actions pertaining to policy recommendations<sup>(9)</sup> entail, for example:
    - i. the development of models for sustainable businesses;
    - ii. promoting reforms aimed at expanding markets for efficient equipment and devices;
    - iii. developing new legal and regulatory frameworks to promote renewable energy sources and energy efficiency;
    - iv. developing mechanisms to overcome adverse or negative results from energy reforms;
    - v. identifying and creating conditions for the sustainability of long-term environmentally clean projects.
  - n) Organizations in the region have made wealthy contributions to the preparation of methodological approaches and manuals that provide conceptual frameworks and indicators for “measuring” and “assessing” the sustainability, for example, of energy policies<sup>(10)</sup>. This is about new approaches that have elicited scant response from many of the region’s countries and that constitute an interesting tool for the design and implementation of public policies aimed at sustainability. This is likewise about a tool – complemented by others – that can help policy decision-makers to achieve practical and viable solutions to energy problems



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<sup>(9)</sup> Results from the GEF Climate Change Program

<sup>(10)</sup> OLADE-ECLAC-GTZ – Guide for the defining of Sustainable Energy Policies, – Quito 2000.

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