



**United Nations Environment Programme
Regional Office for Latin America and the Caribbean**

PROGRAMA DE LAS NACIONES UNIDAS PARA EL MEDIO AMBIENTE
PROGRAMME DES NATIONS UNIES POUR L'ENVIRONNEMENT
PROGRAMA DAS NAÇÕES UNIDAS PARA O MEIO AMBIENTE

**Fourteenth Meeting of the Forum of Ministers of
the Environment of Latin America and the Caribbean**

**Panama City, Panama
20 to 25 November 2003**

**A. PREPARATORY MEETING OF EXPERTS
20TH TO 22TH NOVEMBER 2003**

Distribution:

Limited

UNEP/LAC-IGWG.XIV/Inf.7

Tuesday 7, October 2003

Original: English

Renewable Energies

This information package on "*Renewable Energies*" 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, to be held in Panama City from the 20th to the 25th November 2003.

Brazil has coordinated the activities of preparation of this document. Inputs has been received from the Governments of Honduras, Mexico and Saint Lucia, as well as of the World Bank (WB); the Inter-American Development Bank (IADB); the Economic Commission for Latin America and the Caribbean (ECLAC) and the United Nations Environment Programme (UNEP).

I. Background

1. The issue of the sustainable generation of energy and the expansion of the share of renewable sources has been included in several technical and political discussions in the context of the Latin American and Caribbean countries.
2. The background of how the issue has been regionally developed can be summarized as follows:
 - a) At the Thirteenth Meeting of Ministers of Environment of Latin America and the Caribbean, in October 2001, participants expressed the *"need to diversify energy supply and to foster energy efficiency, assessing the potential of conventional sources and increasing the share of renewable sources, where it is expected that financing organisms will provide a broader support in accordance with the needs of each country"*;
 - b) In early 2002, within the preparatory process for the World Summit on Sustainable Development, in Johannesburg, the Brazilian Energy Initiative (BEI) was put forward, suggesting that countries commit themselves to achieving a goal of 10% of renewable energy sources in their total energy supply mix by the year 2010.
 - c) In May 2002, at a meeting held in São Paulo, the Forum of Ministers of Environment of Latin America and the Caribbean approved the document on the Latin American and Caribbean Initiative for Sustainable Development (ILAC), including the goals proposed by the Brazilian Energy Initiative.
 - d) During the Johannesburg Summit, in spite of the support of the European Union, the strong resistance of some industrialized and oil-producing countries prevented the goals of the Brazilian Energy Initiative from being globally approved. ILAC, however, was incorporated into the Johannesburg Plan of Implementation with its goals for expanding the use of renewable energies in the region's energy supply mix.
 - e) Still further in regard to the Johannesburg Conference, and given the impossibility of approving the Brazilian Energy Initiative, the United Kingdom and Germany proposed initiatives that are providing needed and significant dimensions to the issue, translated, in the case of the UK, in a proposal for the Renewable Energy and Energy Efficiency Partnership – REEEP, and in the case of Germany, in a proposal for holding an International Conference for Renewable Energies, in Bonn, in June 2004;
 - f) In April 2003, the United Nations Commission on Sustainable Development adopted, in its Eleventh Session, a program that provides for dealing with the issue of energy for sustainable development in its second work cycle – 2006/2007, reinforcing the importance of the debate and including the issue in national, regional and global spheres; and
 - g) The UK and German initiatives were welcomed by the region, and the Brazilian Government offered to hold the preparatory regional conferences for both proposals. Thus, in August 2002, a Latin American and Caribbean regional meeting for the REEEP Initiative was held in the town of Campos do Jordão, in São Paulo.

- h) The preparatory meeting for the International Conference for Renewable Energies will also be held by the Brazilian Government, on October 29 – 30, 2003, with the support of ECLAC and UNEP Regional Office for Latin America and the Caribbean. The main expected outputs of this regional conference are: i) a regional project on renewable energies, which summarizes the major needs and objectives of the continent's countries; and ii) the launching of a Latin American and Caribbean Platform on Renewable Energies, to be presented as the contribution of the region during the International Conference in Bonn, Germany, in June 2004.

II. Challenges for the Region

3. Although the Energy Initiative was not approved during the Johannesburg Conference, this does not mean that there is global indifference to the issue. In fact, the great majority of countries supported the initiative, particularly as it is closely related to the Millennium Development Goals, as highlighted in its basic document. Furthermore, although the Johannesburg Plan of Implementation did not include the goals proposed by Brazil, it included, in several of its provisions, guidelines for increasing the share of renewable energies in the global energy supply mix.

4. In the regional context, at the Latin American and Caribbean REEEP Meeting, held in Brazil, in August 2003, experiences in renewable energies were presented by Brazil, Argentina, Chile and Mexico, as were regional experiences from Central America and the Caribbean. In sum, the contributions presented showed that in Argentina there are several initiatives related to the efficient use of energy, with emphasis on public energy supply, steel production and cogeneration. In Central America, where there is a large potential for developing the sector, the energy supply mix is already quite diversified, making use of both hydropower and geothermal energy. Brazil, which seeks electrification of the entire country, priority is being given to wind energy, small hydropower plants (less than 30MW) and biomass. The Caribbean community is seeking to establish a financial structure to expand the renewable energy market. Chile presented initiatives that favor a greater share of renewable energy sources using carbon credits and decontamination bonds as a way of promoting energy efficiency in accordance with pollution reduction goals. Mexico suggested that energy transmission and distribution should be ensured through independent generation systems and informed that it only uses 10% of the wind energy potential because of the limited infrastructure available.

5. The main recommendations put forward at the meeting point to assigning priority to a regional approach in the issue of renewable energies, possibly with the creation of a Regional REEEP Office, which would coordinate an information network on the state of the art, information exchange and institutional and legal aspects. The meeting confirmed the difficulty in access to financing sources, in spite of specific initiatives of some countries. The search for financial support mechanisms was recommended in order to implement renewable energy and energy efficiency projects.

6. In a more specific scenario, restricted to the small island developing states (SIDS), the Johannesburg Plan of Implementation mentions the need to "support the availability of adequate, affordable and environmentally sound energy services for the sustainable development of small island developing states (SIDS), by, inter alia (a) strengthening ongoing and supporting new efforts on energy supply and services, by 2004, including through the system and partnership initiatives; and (b) developing and promoting efficient use of sources of energy, including indigenous sources and renewable energy,

and building the capacities of small island developing States for training, technical know-how and strengthening national institutions in the area of energy management”.

7. Some of the main international commitments on the issue of renewable energies are summarized in Table 1 below. We should highlight that the large-scale adoption of renewable energy sources is essential for meeting the provisions of the United Nations Framework Convention on Climate Change and the Kyoto Protocol, in so far as the introduction of renewable energies in the supply mix of each country reduces carbon emissions.

Table 1. Millennium Development Goals (United Nations), Johannesburg Plan of Implementation, and Environmental, Social and Economic Impacts of these Measures

United Nations Millennium Development Goals	Johannesburg Plan of Implementation	Environmental, social and economic impacts of the measures ¹
<p>Eradicate extreme poverty and hunger</p> <p>Achieve universal primary education Promote gender equality and empower women</p> <p>Reduce child mortality. Improve maternal health. Combat malaria and other diseases</p> <p>Ensure environmental sustainability. Reverse the losses of environmental resources. Halve the proportion of people without sustainable access to safe drinking water</p> <p>Develop a global partnership for development. Includes the commitment to good governance, development and poverty reduction – both nationally and internationally. Address the special needs of the least developed countries. More generous ODA for countries committed to poverty reduction</p>	<p>Improve access to reliable and affordable energy services to achieve sustainable development and to facilitate the achievement of the Millennium Development Goals, including the goal of halving the proportion of people living in poverty by 2015</p> <p>Promote education to provide information for both men and women on available energy sources and technologies</p> <p>Facilitate, with the financial and technical assistance of developed countries, the access of the poor to reliable energy services to improve the standards of living of their populations</p> <p>Develop and disseminate alternative technologies with the aim of giving a greater share of the energy mix to renewable energies</p> <p>Utilize financial instruments and mechanisms to provide financial resources to developing countries to meet their capacity needs for training and technical know-how, including promoting energy efficiency and conservation, renewable energies and clean technologies</p>	<p>Renewable energies provide a substantial amount of local jobs</p> <p>Indirect impacts, such as providing evening courses in small villages due to the availability of local electricity</p> <p>Health benefits reflected in well being and a cleaner atmosphere</p> <p>Cleaner, more sustainable and long term energy; well-being provided by access electricity services</p> <p>Energy self-sufficient countries; meeting the special needs of isolated communities; shared global responsibility</p>

8. It can be seen from **Table I**, how the issue of sustainable energy generation and the increase of the share of renewable energies in the environmental agenda of Latin America and the Caribbean is directly related to two other regional priorities: poverty reduction and the pursuit of sustainable development alternatives. The Energy and Social issue has become part of the development agendas of developing countries and is being translated into assigning priorities to topics like poverty alleviation, population growth, education, urbanization, health and living conditions and the lack of opportunities for women.

⁽¹⁾ Contained in the Brazilian Energy Initiative, 2002.

9. In spite of the priority expressed in political discussions among Latin American and Caribbean countries, we nevertheless see a dispersed effort in the search for new sources of renewable energies, among which are the small hydropower plants, biomass, wind energy, solar energy (including photovoltaic), geothermal energy and marine energy.

10. Experiences that have already been implemented, even though at an initial stage, have shown that renewable energies obviously cause much less local, regional and global environmental impacts than conventional sources, which are directly related to environmental degradation and human health problems.

11. On a global scale, the energy systems are responsible for two-thirds of the increase in greenhouse gas emissions generated by mankind, which is linked to a possible climate change. These environmental, social and economic approaches should be considered and quantified in future actions on the impact of using renewable energy sources and, it is hoped, that they will be a priority when immediate actions are defined in the Regional Plan of Action of the Forum of Ministers of Environment.

III. Options for Action

12. Comparison of available experiences and ongoing actions with planned initiatives in Latin American and Caribbean countries shows an obvious deficit in implementation deriving from low priority attached to this issue by some countries. In others cases, fragile institutional installed capacity is identified as the main cause for the sector constraints. Notwithstanding, institutional arrangements prevailing in the region place the environmental and energy sectors on opposite sides, making it difficult to carry out harmonized action and negotiations that this issue requires.

13. The inputs provided by the ITC (Inter-Agency Technical Committee) agencies also indicate that the ongoing or planned activities in the area of renewable energies are, for the most part, very punctual although some are of sub-regional scope. There are no projects at regional level that adequately addresses the real needs and capacities of countries. In this regard, the development of a Regional Strategic Plan of Action for 2004-2005 is a major opportunity.

14. At global level, there are promising opportunities that could contribute to mainstream regional focus. Among these are:

- a) The REEEP Initiative (to be officially launched this October but currently entering into initial implementation stage);
- b) The Global Sustainable Energy Forum, to be held in Vienna, in February 2004;
- c) The International Conference for Renewable Energies, to be held in June 2004, in Bonn, Germany (in which the above mentioned regional platform on the use of renewable energies will be presented);
- d) The forthcoming meetings of the United Nations Commission on Sustainable Development (although energy is to be only for the second cycle (2006-2007)).

15. As a result, the following options for action were identified for consideration and possible incorporation into the Regional Plan of Action for 2004-2005:

- a) The Regional Latin American and Caribbean Conference on Renewable Energies (Brasilia on 29-30 October) may provide key inputs for building regional consensus to be taken to the International Conference for Renewable Energies, in Germany in 2004.
- b) The XIV Forum is expected to revise and endorse recommendations from the Regional Conference on Renewable Energies (Brasilia, October 2003), to mobilize political support and provide guidelines for the future implementation of the Regional Platform on Renewable Energies. It should include analysis and consideration of issues such as energy policies, options for mitigating climate change, power industry reform, and industrial energy efficiency, among others.
- c) ILAC has been endorsed by Ministries of Environment of all countries of the region and was incorporated to the Johannesburg Plan of Implementation among other regional initiatives. However, it is crucial that the proposals contained in that document leave the environmental arena and are introduced into other government areas. Renewable energies are to be dealt with by both energy and environmental sectors and the insertion of the environmental dimension in the decisions of the power industry must also be promoted as a strategic objective;
- d) Latin America and the Caribbean committed themselves to achieve the goal of 10% of renewable energies in the total energy supply mix by the year 2010. To meet this target, each country is to prepare an assessment of their real perspectives of achieving this goal and to define, if appropriate, their priority needs and the required external support
- e) The development of decision making instruments are vital for achieving practical solutions for energy problems and to foster introduction of clean technologies. It also recommended the promotion and dissemination of methodologies and instruments on sustainable production and consumption among governments, private sector and civil society;
- f) Building on the activities planned and carried out in the region by the ITC agencies, it is recommended to carry out a study on successful experiences and to disseminate and replicate lessons learned to all countries of the region.

Annexes

Annex I Inventory

This annex presents an update of activities planned or underway, as reported by the respective agencies of the Inter-Agency Technical Committee, in response to requests of countries of the region. It aims at indicating trends, main lines of work or gaps to be taken into consideration by the Forum of Ministers during the formulation process of its Regional Plan of Action 2004-2005.

Economic Commission for Latin America and the Caribbean (ECLAC)



- a) **Lines of Work:** Efficiency and competitiveness of the energy sector; private participation and regulation of public services based on natural resources; international and regional legal aspects of natural resources management.
- b) **Priority Issues:** efficient use of energy to increase international competitiveness and to ensure environmental protection; access to less polluting energy sources and fostering of renewable energies; improving the quality of energy consumption and social equity in the access to energy sources.
- c) **Energy and Sustainable Development Initiative in Latin America and the Caribbean:** studies carried out with the aim of examining the contribution of energy policies for improving the conditions of development sustainability. Main activities: size of the countries' economies and their development level, amount of natural energy resources available and the progress achieved in the carrying out reforms; and regulatory framework; energy sustainability indicators, among others.

United Nations Environment Programme



Some Main Initiatives:

- a) Three renewable energy center of the region are connected to the UNEP Global Network on Energy for Sustainable Development: (Bariloche, Sao Paulo and Rio de Janeiro)
- b) BREED – Brazil Rural Energy Enterprise Development Initiatives (3 Northeastern States)
- c) Energy Efficiency Financial Mechanisms in Brazil, China and India
- d) Energy Policy Making for Sustainable Development in the Caribbean (Jamaica and Dominican Republic)
- e) SWERA – Solar and Wind Energy Resource Assessment (Brazil, Cuba, El Salvador, Guatemala, Honduras and Nicaragua)
- f) Capacity Development for the Clean Development Mechanism (Bolivia, Ecuador and Guatemala)

- g) Eastern Caribbean Geothermal Energy Project (Santa Lucia, Martinique, Guadalupe, St Kitts and Nevis)
- h) Generation and Delivery of Renewable Energy Based Modern Energy Services in Cuba



Some Main Initiatives:

Projects being prepared – Prototype Carbon Fund (PCF):

- Brazil Nova Gerar Landfill Gas Generation PCF
- Brazil PCF Umbrella Project
- Chile Guardiã Vieja Hydro Project PCF
- Ecuador Umbrella Hydro PCF
- El Salvador Bagasse Cogeneration Project PCF
- El Salvador Geothermal PCF
- Guatemala Rio Hondo Hydro PCF
- México – Transport Corridors PCF
- México Bagasse Project PCF
- México INELEC Hydro Project PCF
- México Pemex Gas Flare Reduction PCF
- México Wind Umbrella Project PCF
- Peru Andina Hydro Umbrella PCF Project
- Peru Tarucani Hydro PCF

Projects being prepared – Others:

- Brazil Biomass Pilot Power
- Colombia Amoya Environmental Services
- ESMAP LFG to Energy in Latin America and the Caribbean
- Mexico Hybrid Solar-Thermal
- Mexico Strategic Partnership on Renewables
- Uruguay Energy Efficiency
- PROJECTS UNDER EXECUTION
- Brazil GEF Energy Efficiency Project (FY00)
- Chile Chacabuquito PCF (FY02)
- Colombia Jepirachi Wind Farm PCF (FY03)
- Costa Rica Ecomarkets (FY03)
- Costa Rica Umbrella Project PCF (FY02)
- Ecuador PROMEC (FY02)
- México Climate Measures in Transport (GEF) (FY03)
- Mexico GEF Alternative Energy
- Mexico GEF Methane Capture and Use at Landfill (FY01)
- Nicaragua Rural Electrification (FY03)



Projects under negotiation

- Non-Conventional Energy Sources – Barbados
- Rural Electrification Program– Chile
- Feasibility Study: Platanares Geothermal Project – Regional
- Renewable Energy in Latin America - Regional

Projects under execution

- Program for Expanding the Energy Sector – El Salvador
- Energy Efficiency – Mexico
- Pre-Feasibility Study, Geothermal Complex – Panama
- Clean Technology Fund – Regional
- Sustainable Energy in Mexico, Central America Central and Brazil – Regional
- Sustainable Energy for Latin America – Regional
- Promote the Dissemination of Sustainable Energy Projects in Latin America – Regional
- Creation of a Biomass Based Cogeneration Market – Brazil
- Amazon – Renewable Rural Energy – Brazil
- Miravalles III Geothermal Plant – Costa Rica
- Development of Renewable Energy Market – Brazil
- Sustainable Market for Clean Rural Energy Services – El Salvador
- Renewable Energy Supply – Brazil
- Development of Geothermal Resources for Electricity Generation Projects – Guatemala
- Electrification of Areas with no Services - Guyana

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