

# **ENERGY SUSTAINABILITY IN LATIN AMERICA AND THE CARIBBEAN: THE SHARE OF RENEWABLE SOURCES**



UNITED NATIONS

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## SUMMARY

By 2010, the countries of the region are to modify their energy structure so that at least 10% of their Total Primary Energy Supply (TPES) comes from renewable sources. This target is laid down in the Latin American and Caribbean Initiative for Sustainable Development, which was introduced and adopted at the first special meeting of the Forum of Ministers of the Environment of Latin America and the Caribbean, held in Johannesburg, South Africa, in August 2002.

The aim of the Initiative is not to penalize countries whose natural conditions are less conducive to energy sustainability, but rather to bring about an increase in the share of renewable sources at the regional and global levels.

To this end, in addition to the efforts made by each country, progress could be made at the regional and subregional levels through joint activities in areas such as: (i) technology exchange; (ii) cooperation to assist isolated communities; (iii) training; (iv) integration of energy networks in order to achieve minimum targets; and (v) development of accounting methods and mechanisms for the exchange of renewable energy certificates.

The concepts of energy “renewability” and “sustainability” have been a subject of intense debate. In this document, **renewability** is defined as an attribute of the source and **sustainability**, as an attribute of the way the source is used. Accordingly, to determine the share of renewable sources in the region’s TPES in 2000, it was necessary to establish uniform criteria for the countries considered, while attempting to exclude from the category of “renewable” sources the unsustainable portion of biomass energy that comes from forest resources whose extraction rate exceeds the rate of natural regeneration, giving rise to deforestation processes.

The results of this study show that the share of renewable energy varies widely from one country to another, almost irrespective of their relative levels of development and, to a lesser extent, of their non-renewable energy resource endowment. The situation of the TPES and of energy problems in countries such as Argentina, which is self-supplying and a minor exporter in terms of hydrocarbons, is very similar to that found in major exporters such as Mexico and Venezuela. Obviously, these situations, in turn, are diametrically opposed to the one in countries that import hydrocarbons. Even within the latter group, however, the situation in Haiti, Honduras and Guatemala is surprisingly different from the one in Uruguay and Costa Rica, for example.

The calculation of the TPES renewability index shows that some countries, such as Argentina and the group of Caribbean countries referred to here as subregion 1 (Barbados, Suriname, Guyana, Grenada and Trinidad and Tobago), fell short of the 10% target in 2000. Other countries need to make strenuous efforts if they are to maintain the target level set out in the Initiative. Countries in the 10%-to-20% range, such as Chile, Ecuador, Mexico and Venezuela, must take decisive action to maintain the current share of renewable energy in their TPES. A third group of countries, for which the risk is lower, consists of Bolivia, Colombia, Guatemala and Panama.

In El Salvador, Guatemala, Haiti, Honduras and Nicaragua, wood energy plays a crucial role in the TPES. While this is undoubtedly positive in terms of sustainable development, since it indicates that the use of fossil fuels is limited, it is clearly negative in terms of the dramatic impact on national forest resources and on the quality of life of the users.

Conversely, in countries where the use of biomass as an energy source is almost negligible, such as Argentina, Ecuador, Mexico and Venezuela, sustainability problems may arise owing to the heavy use of fossil fuels for final industrial and household consumption and for intermediate consumption in electric power generation. In these countries, hydrocarbons account for 80% to 90% of the TPES.

Lastly, there is a category of countries that have a combination of problems. For example, Cuba uses many renewable energy sources, but in inefficient combustion processes; the Dominican Republic and Panama show inefficiencies in the thermal transformation of imported fossil fuels; and Chile and Uruguay are almost wholly dependent on petroleum and hydroelectric power.

There are only two countries that do not fall into any of these categories, since their TPES consists of over 90% renewable sources not related to wood fuels and less than 2% petroleum: these are Paraguay, on the basis of its hydroelectric resources, and Costa Rica, which has the most complete and balanced renewable energy mix in the entire region.

Much of Costa Rica's TPES comes from geothermal and hydroelectric power, sugar cane products and wood and wind energy. An important piece of background information for understanding Costa Rica's results is that its dependence on hydrocarbons is apparent from its imports of derivatives, owing to the temporary closure of its refinery operations, but these imports are not considered in its TPES.

Apart from this general evaluation and ranking of the countries in relation to the Initiative, which is merely a snapshot of their situation in 2000, there are other areas of analysis that should be explored with respect to both their medium-term implications for this ranking and the composition and sustainability structure of the TPES.

The household sustainability index measures the importance of fuelwood in meeting

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