

SUSTAINABLE DEVELOPMENT IN LATIN AMERICA AND THE CARIBBEAN: PERSPECTIVES AND FUTURE

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Summary

It is necessary to have a regional perspective to achieve sustainable development in its ecological, social, economic, and political dimensions. However, sustainable development is not an absolute concept. Therefore, it is necessary to have a conceptual framework for analysis, as well as some indicators and indexes, that will allow each region to know how far it is from attaining the dimensions of sustainable development. The factors that influence sustainability must be analyzed and an index to evaluate these factors must be developed.

The most serious barriers to the attainment of sustainable development are poverty, the mismanagement of natural resources, the existing institutional environment, the need—despite advances toward democratization in Latin America and the Caribbean—for reform to strengthen the civil society, demographics (population growth rates in Latin America in comparison to other countries around the world are still very high), and the absence of social consensus between the population and its leaders regarding the meaning of sustainable development.

Positive factors in the attainment of sustainable development include the increasing

participation of the civil society, advances in environmental institutions, and knowledge of the regional ecology. Considering the problems in the globalization process, the foreign debt, and the large amount of money still used for military expenditures, international cooperation is essential now more than ever.

1. Introduction

Given the current deterioration of the planet from an environmental perspective and in terms of economic, technological, and environmental globalization, consideration of a specific sustainable development model for a given region is not realistic. Nevertheless, there are well-founded elements for a region to have its own sustainable development strategy. The regions have positive aspects that must be recognized and used in order to develop a path to sustainability and any limitations that pose challenges must be overcome by society to attain such an objective. As a result, there is the need to tackle this endeavor with relative criteria since it is not a matter of reaching globally uniform objectives nor an issue of tackling unchanging realities through previously established paths.

During the past 200 years and especially during the second half of the twentieth century, the world has experienced an accelerated modernization process with unsustainable long-term growth. The possibility of reversing this unsustainability depends on several technical, social, economic, and political factors. Strategies to attain sustainable development must include knowledge of the environment, as well as specific cultures, experience in the management of development, and an understanding of the meaning of this new paradigm. In this sense, the conclusions of Stockholm (1972) and Rio de Janeiro (1992) can be of great use.

From the perspective of the human community, development is equivalent to progress in its economic, social, cultural, and political dimensions. The qualification of sustainability is assigned to a development when progress, with its acceptable ups and downs, meets the requirement of realization while preserving or improving the natural environment. Preservation of the natural environment equals development with ecological sustainability.

Sustainable development is not an absolute concept given the different regions of the planet. Although globalization is homogenizing the understanding of sustainable development, there are significant differences in the interpretation of its meaning and in its implementation at the regional level. For example, economic progress means to possess a large amount of material goods. However, the income thresholds above which people from different parts of the world feel comfortable must be considered. Logically, an income threshold that fulfills basic needs is minimally comfortable. However, what constitutes a basic need is a very relative concept and depends on cultural factors as well as the particular economic environment or the progress status of a given society. The basic needs of a person living in New York or Vienna are not the same for a person living in a remote Andean village in South America or in a Yanomami community of the Brazilian Amazon.

The same concept applies to social well-being, which is closely linked to the feeling of safety perceived by a population. For a community in which there is a high sense of family solidarity the need to have a social security regime is mitigated.

Cultural progress can be loosely viewed as time on a road along which we can look ahead to acquire new knowledge and habits or behind to implement traditions and to appreciate history and cultural values.

Progress at this stage of human evolution is identified in terms of freedom and the respect of human rights. These are two concepts offered by democratic government systems and which are perfectible. However, one aspect that differentiates the possibility of attaining a sustainable development between regions is the wealth of natural resources available and the demand placed on those resources through economic and social activities. Regions that have an adequate balance between the availability of natural resources and the demands placed on their ecological environment, as is the case in Latin America and the Caribbean (see Figure 1), are in a more favorable position to become adjusted in time to the demands of sustainable development when compared to other regions whose balances are less advantageous from this perspective. This capacity of maneuvering is being altered due to the occurrence of global environmental problems that alter the fate of the planet as a whole. This is why it is of great importance to regional sustainability to join international forces to overcome such problems.



Figure 1. Latin America and the Caribbean

The purpose of these considerations is to emphasize the need for each region to adapt its vision of sustainable development to its own realities and requirements. In this sense, there cannot be a universal standard. In Latin America and the Caribbean, this adaptation led to the proposal of a regional strategy for sustainable development, called *Our Own Agenda*, during the Conference of the United Nations on Environment and Development held in Rio de Janeiro in 1992. Later, in 1996, all the nations of the region subscribed to the Declaration of Santa Cruz de la Sierra in Bolivia concerning sustainable development and approved an action plan.

The remainder of this article describes the possibility of achieving sustainable development in Latin America and the Caribbean. We establish a conceptual framework for analysis, approaching sustainability from the perspective of its four essential aspects: ecological, social, economical, and political. We explain in detail the factors that differentiate these aspects by comparing them with other regions. We then present a discussion of the most significant regional barriers that interfere with sustainable development and how to overcome these barriers.

2. Approach to a Conceptual Framework for Analysis

It would be very convenient to have some indicators and indexes, which—in the case of each region or country—would allow us to determine the region's ability to reach sustainable development. We are still far from that objective, since we do not have the necessary statistical basis and a thorough understanding of the factors that determine sustainability and its quantitative interrelations. This last factor is especially true when dealing with the social, economic, and political aspects of sustainability, which, since by nature fall into the broad field of social sciences, are the most elusive to mathematical formulas. The sustainability (S) of development can be expressed through a compound index, where:

$$S = aS_a + bS_s + cS_e + dS_p \quad (1)$$

$$a + b + c + d = 1 \quad (2)$$

and S_a , S_s , S_e , and S_p are the indexes of environmental, social, economic, and political sustainability. In this equation, the coefficients of the partial indexes of sustainability (a , b , c , and d) must reflect the weight that a society assigns to each. Such assignment, although subjective in character, may reflect the importance that the regions or countries confer to the different dimensions of a sustainable development at a given time. In other words, S is a relative sustainability index and can be used to evaluate the strengths and weaknesses of the regions and countries in terms of achieving sustainable development. S can also be used to determine the dimension of sustainability that is more vulnerable or that commits to a larger extent the possibility of attaining such an objective over time.

2.1. Ecological Sustainability

Ecological sustainability is the capability of an ecosystem or a group of ecosystems to support the performance of different social and economical activities without undermining the ecosystem's condition over time. Two types of factors determine ecological sustainability: characterization of an ecosystem with concern for biotic and physical aspects such as nature, extension, potentiality, productivity, vulnerability, elasticity, and resilience; and magnitude and intensity of the environmental impacts that may compromise an ecosystem over time, such as the settled population, the way in which natural resources are used, and the patterns of consumption and waste or emission generation. Consumption and waste generation largely determine the magnitude of environmental impacts.

For example, a recent study on the economies of the United States, Japan, Germany, and Holland showed the industrial aspects of these economies require 45 to 85 metric tons of natural resources per person per year. (This total does not include use of air and water). The worldwide environmental impact caused by this industrial production and its subsequent consumption is very severe.

The ecological sustainability index can be expressed as a ratio between ecological

factors and environmental impacts:

$$S_e = \frac{F_e}{I_a} \quad (3)$$

where S_e is the ecological sustainability index, F_e is an index that reflects the physical/natural characteristics of the ecosystems and will always have a positive sign. I_a an index of environmental impacts.

In this sense and based on the known equation of Paul Ehrlich, it can be said that environmental impacts are expressed as: $I_a = PC_p EC_T$, where I_a is the index of environmental impacts, P is the settled population, C_p is the consumption of natural resources per capita; E is the emissions or waste per capita, and C_T is a coefficient that expresses the intensity of environmental impacts according to the used technologies. C_T can then have a positive or negative incidence on the magnitude of environmental impacts. However, it should be noted that when the environmental impact index is determined for each region, it is necessary to consider the demand on its natural resources that can be generated from abroad. These impacts can be very significant as in the case, for example, of the demand of forestry or mining products from the tropical forests of South America by some industrialized countries.

The S_e index could be valued to say that if $S_e > 1$, there is ecological sustainability. If $S_e < 1$, the environmental impacts exceed the ecological capacity and a sustainable development cannot exist.

The ecological sustainability index of Latin America and the Caribbean is one of the highest in the world. It is true that there are ecosystems in the region that are suffering serious and permanent degradation processes, as is the case in the highlands of the Andes, humid tropical forests of Central America, Amazon and Orinoquia, Caribbean Sea, and some important rivers. The region as a whole has a series of attributes—its rich biodiversity, forest availability, fresh water, farming lands, types of minerals, and hydrocarbons—that make the best conditions to face the ecological impacts of the future. On the other hand, the region has a very low population density overall. Furthermore, on average, the consumption patterns of the population and the generation of contaminant waste (i.e., liquids, solids and gases) are much lower than those registered in highly industrialized countries.

2.2. Social Sustainability

From a general standpoint, it can be said that a development is socially sustainable if the strains generated within the society do not constrain the continuous enhancement of the standard of living and if social transformations will occur without major traumas.

The social sustainability index must be associated with income levels, wealth distribution patterns and poverty indexes, equality of opportunities, level of expectations, effectiveness of the social security regime, indexes of education and health services coverage, and personal security. Vital statistics show that there is a

strong correlation between per capita income and life expectation at birth, child mortality, illiteracy, political and civil rights, and some indicators of environmental quality. Likewise, it has been proven that social development generates economic growth.

As an approach to social sustainability (S_s) and as long as there is no other one available index that can better reflect this concept, the Human Development Index (HDI) as defined by UNDP could be adopted.

The HDI includes three components: longevity, knowledge, and income, which are combined to reach an average deprivation index. Longevity is measured based on life expectancy at birth. Knowledge is measured based on two related variables: adult literacy and the average of schooling years. Per capita income is adopted as a starting point and adjusted according to a formula that takes into consideration its decreasing yields.

The sustainability panorama in Latin America and the Caribbean looks less favorable when the social aspect is analyzed. It is threatened due to the poverty levels registered, which reflect an unsustainable pattern of income distribution. This situation has become very serious during the last two decades and, in general, is unfavorable when compared to the remaining regions with the exception of Africa.

In spite of this situation, important advances have been made concerning indexes of health, including life expectancy, child mortality, and nutrition; and in education, including population that is schooled, schooling rate, reduction of illiteracy, and university enrollment. According to the HDI, slightly over half of the countries are ranked in the category of High Human Development. The remaining countries are ranked as Medium Human Development with the exception of Haiti, which is classified as Low Human Development.

2.3. Economic Sustainability

An economic sustainability index must reflect the capacity of development to maintain increasing levels of income over time. The income increase is inevitably linked to production increase. At the same time, production is linked to the use of natural resources, creating a factor that generates ecological impacts due to the depletion of nonrenewable resources and sometimes of natural renewable resources when poorly exploited or by the release of waste to the environment.

The continuous growth of production is advocated by most economists as the objective of development and conspires against ecological sustainability when considering that the natural resources of the planet have finite dimensions.

Continuous growth must be approached with a certain relativity that derives from the economic situation of different regions or countries. Although undefined economic growth collides with the thresholds of ecological sustainability, low income levels and nonequitable distribution become an obstacle for a society to attain social and political

sustainability. This situation characterizes the Latin American and Caribbean countries, where in most cases, incomes are low and nonequitably distributed.

At the region level the sustained economic growth and the enhancement of income distribution patterns constitute a requisite for a sustainable development, at least for several decades, until some levels compatible with an acceptable standard of living can be overcome.

This is why the problem of constant income growth, as a factor contrary to sustainable development must be discretionary approached at the time of considering the different regions and countries.

In the case of Latin America and the Caribbean, S_e could be adopted as an economic sustainability index, a value that could reflect the persistence of positive growth with time. This could be, for example, the average during a five or ten year period of the per capita income growth rate, which would take into account both the sustained expansion of the economies as well as the population growth.

The opposite case is that of highly industrialized countries that have reached high income levels. In their case the approach is how to maintain the already attained levels, with an increasingly lower consumption of natural resources and a decrease of polluting waste or emissions.

For example, in OECD (Organization for Economic Cooperation and Development) countries, it has been estimated that there is an average requirement of 300 kg (not including air and water) per year of natural resources to generate US\$ 100 of GNP, and a proposal has been put forth to reduce this figure during the coming decades down to one tenth, this is 30 kg per US\$ 100 of GNP.

The de-materialization of income will depend to a large extent on the introduction of new technologies that will save natural resources in which recycling, reuse of materials and energy efficiency will play an important role.

At the same time, it is also planned that the highly industrialized economies develop a series of services that will contribute to improve, or at least to maintain, the standard of living, without this necessary leading to an increase in the material consumption of these societies. This is the case of the cultural and recreational services that are increasingly valued by societies as the income levels increase.

Nevertheless, in the region, and after having overcome the so-called “lost decade” of the eighties, the economic sustainability index has been improved. But it cannot be generally said that economic strategies have been implemented that are capable of ensuring a sustained economic growth of income in the medium and long term, as it would be necessary to overcome the levels that are still low in many countries. The variation range of the per capita income levels, among the richer and the less favored countries, is still one to 12.3, which reflects a very heterogeneous income distribution at regional scale.

On the other hand, at the individual level of countries, there are still very pronounced economic ups and downs taking place, mainly depending on the fluctuation of the prices of the produced raw materials and the productive structures that are not sufficiently diversified.

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Biographical Sketch

Engineer ARNOLDO JOSE GABALDON is a member of the Commission on Development and Environment in Latin America and the Caribbean, sponsored by UNDP and IDB, and of the Global Council of the World Resources Institute (WRI). He is also a member of other environment-related bodies, including the Advisory Committee on Protection of the Sea (ACOPS), the international branch of the Environment and Natural Resources Foundation of Argentina, of which he is a member of the Board of Trustees. Engineer Arnoldo José Gabaldón graduated as a civil engineer from the Andrés Bello Catholic University in Caracas, Venezuela, in 1960; obtained an M.Sc. in Hydraulic Resources from the University of Stanford, USA, in 1961 and a Diploma in Economic Development from the University of Manchester, UK, in 1973. He has occupied many posts in Venezuela, including those of Minister of Public Works (1974-1977) and Minister of the Environment and Renewable Natural Resources (1977-1979), President of the National Council on the Environment (1977-1979) and member of parliament (1984-1989, 1989-1994). He also presided the Presidential Commission for State Reform (1986-1989) and headed Venezuela's delegation to the 1992 Earth Summit. He is at present a Senior Advisor to Ecology & Environment, Inc. Arnoldo José Gabaldón has been a professor of the Simón Bolívar University in Venezuela since 1979 and Scientific Adviser to the Polar Foundation of Venezuela, also since 1979. He is author of many works published in technical magazines and of four books: "Essays on National Development", 1974; "Hydraulic Resources and Development" (with P.P. Azpurua), 1975; "Parliamentary Reform" (with L.E. Oberto), 1985; and "Environmental Policy and Society", 1986.