After the revolution, sustainable development – Las Terrazas, Cuba

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Abstract

West of Havana, in the heart of the Rosario Mountain Chain, this natural complex covers more than 5,000 hectares. Ecology-oriented, the Las Terrazas complex is associated with the Ecological Research Center for Sierra del Rosario Reserve, responsible for monitoring and studying the mountain chain's different ecosystems. The humid tropical climate results in the area's predominance of evergreen forests and abundant array of wildlife. Many beautiful bird species inhabit this area, including sparrows, nightingales and the Cuban trogon. Located in the heart of the Mountain range of the Rosary, declared by UNESCO a Reserve of the Biosphere, 50 km to the West of Havana, is the tourist complex "the Terraces". It is an experience of sustainable development, in a natural space of 5 000 hectares, with a laborious community of 1,000 inhabitants, where they harmonize natural and the moderate action of man, with an aesthetic sense, in a conservacionista scope with more than 30 years of experience. Las Terrazas sets an example of Cuba's concern with sustainability to include: (1) Raising the standard of living through satisfying in an integral manner the material and social needs of the population with emphasis on raising the educational and cultural level and including the environmental dimension in the economic and social development of the country, (2) Integration of economic, fiscal, commercial, energy, agriculture and industry policies to protect the environment and guarantee the sustainable use of natural resources in a framework of justice and equity, (3) Preserving for the next millennium the social achievements of the revolutionary process, (4) Defending collective access to the fundamental social services which are the guarantee of equity supporting sustainability, (5) Searching for greater efficiency in the productive processes, alternative sources of energy and sustainable agriculture practices, (6) Better education and dissemination processes aimed at increasing environmental awareness, and (7) Finding solutions to key environmental problems in the country such as land degradation, water contamination, sewage and environmental conditions in human settlements, deforestation, and loss of biological diversity.
Keywords: sustainable environments, conservation, environmental politics.

1 Introduction

According to the legend and lore of the revolution Che and his band of guerillas would retreat into the terrain and lush forests of Las Terrazas along the San Jaun River trail to regroup and rejuvenate before they continued their fight against the Batistia regime. Some also believe that these water have they same powers as does the In the early 1500's, Spanish conquistadors mounted expeditions to find the legendary spring whose magic waters could rejuvenate the elderly and heal the sick. In 1512, Ponce DeLeon failed in his attempt to reach the mysterious hidden valley containing a crystal fountain of healing water known as the "Fountain of Youth". Some forty-four years ago three Marxist Revolutionaries had big plans to change the structure of their country and thought education and land reform was one of the paths, after the machinegun.

Osmany Cienfugoes was the brother of Camille Cienfugoes one of the Marxist trinity together with Che Guevara and the bearded one (barbar). He was the party that led the land reform in 1968 that created *Las* Terrazas. Las Terrazas, a UNESCO world heritage site was an extensive reforestation project that turned what some call a desolate mountain into a beautiful Hawaii-like setting, with forests and a sustainable economy, which allows the residents to live a sustainable lifestyle in harmony with nature containing workshops with entrepreneurs, ecologists and residents who are creating a third way of sustainable development. Just 45 minutes west of Havana, in the heart of the *Rosario Mountain Chain*, you'll discover this natural complex that covers more than 5,000 hectares. A Experience of Sustainable Development, in a natural space of 5 000 hectares, with a laborious community of 1 000 inhabitants, where they harmonize natural and the moderate action of the man, with an aesthetic sense, in a conservacionista scope with more than 30 years of experience. Ecology-oriented, the *Las Terrazas* complex is associated with the *Ecological Research Center for Sierra del Rosario Reserve*, responsible for monitoring and studying the mountain chain different ecosystems. The humid tropical climate results in the area's predominance of evergreen forests and abundant array of wildlife. Many beautiful bird species inhabit this area, including sparrows, nightingales and the Cuban trogon.

2 A description of Las Terrazas

Its importance and interest is stressed by the fact that Las Terrazas is situated in the Sierra del Rosario, one of Cuba's natural strongholds, which was designated a Biosphere Reserve by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1985. This experience was initially aimed at developing tourism in a beautiful mountainous area of high natural and historic values, as a major way to reanimate the zone's economy and improve the people's standard of living. Las Terrazas community was conceived as a miniature city, with basic facilities for its urban functioning and an architectural style whose key element is the harmonization of buildings with the landscape and the relief. The center of the leisure industry in that territory is at the Moka

Hotel, built in the San Juan Valley, at the foot of the Loma del Salón, or Salon Hill, with an architectural style that respects the local flora, which also contributes to embellishing that cozy establishment of 26 rooms (22 doubles, three triples and one suite). The complement to leisure lies in an infrastructure that aims to integrate tourism into the community, like in the case of the "Fonda de las Mercedes", conceived as an attraction that facilitates visitors' interaction with a local family and the rescue of Cuban culinary traditions. This rural community with a population of 850 was founded in 1971, as part of a global, cultural and natural preservation project that included a forest management approach involving terracing. Nestled in a small valley on the shores of San Juan Lake, the most striking aspect of this town is the very unusual and appealing architecture. Las Terrazas also serves as an artist commune with shops such as the craft boutique that uses recycled paper, wood and ceramic, a serigraphy store and a vegetable fiber weaving shop.

3 A socialist perspective on sustainable planning

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4 A capitalist perspective of sustainable planning

What comprises sustainable planning and what does not is of course debatable to a point. Planning naturally is an activity, which incorporates business. The zoning of an area directs the types of development that can or can't happen. As discovered by Hawken and Lovins "the best solutions are based not on tradeoffs or "balance" between these objectives but on design integration achieving all of them together", (Natural Capitalism, p. xi). Sustainable Planning is ultimately about ensuring that development continues to occur in such a way that enables both society and nature to gain in the process. What this means at a practical

level will be highly variable. In some cases this may involve the exclusion of areas from development altogether to ensure the conservation of biodiversity, which simply can't be replaced through re-vegetation programs. In other cases it will require development to observe strict 'sustainability' codes of conduct. Conditions may be placed on a development affecting the materials used, the orientation, the use of water, the sewage treatment, the building design and so on.

5 Green infrastructure: a framework for smart growth

"Green infrastructure" is the network of natural lands, open space, waterways, and smart growth design measures that form the framework for healthy and sustainable communities. With a green infrastructure in place, communities can protect native species and ecological processes, maintain clean air and water, reduce habitat fragmentation, pollution, and other threats to biodiversity, and improve the health and quality of life for people.

5.1 Natural

Natural areas are sites that are largely undisturbed by humans, with native vegetation areas distributed in naturally occurring patterns across the landscape. These patterns change over time under the influence of drought, flooding, fires, and the interactions between plants and wildlife. Among their benefits, natural areas:

- Provide a wide range of ecological services such as efficient nutrient cycling, soil enrichment and flood control.
- Provide valuable habitat for fish, wildlife and plants.
- Increase environmental flexibility in the face of natural disasters such as fire, drought and flooding.

5.2 Open

Open space is undeveloped sites that don't meet the criteria for natural areas because of human disturbance, but still provide habitat, scenery and other benefits. Open spaces can include areas such as farmland, recreational areas and utility corridors. Among its benefits, open space:

- Provide area for restoration to buffer natural areas.
- Provide recreational areas and visual relief in urban areas.
- Create a sense of community identity.

5.3 Greenways

Greenways are continuous or patchy areas of vegetation that provide corridors for the movement of humans and wildlife. They often follow natural waterways

or land features, and may connect natural areas and open space. Highest quality greenways provide habitat and allow for the movement of wildlife, plants and water from one area to another. Greenways:

- Function as linkages and increase habitat connectivity and availability.
- Provide alternative transportation options (walking and cycling).
- Stimulate business development focused around recreation and tourism.

By prioritizing the protection of critical habitat and ecosystems, green infrastructure provides a link between the concentration of development in settled areas and the protection of rural and undeveloped areas, which are the two main elements of smart growth. When green infrastructure considerations are included in land use and transportation planning, biodiversity is protected, undeveloped areas are preserved, and corridors between natural areas are established, thus increasing the habitat value of protected areas in and around developed areas. Additionally, the increased natural vitality makes urban areas more attractive to residents, which is good for the economic health of communities.

6 Principles of green infrastructure

Green infrastructure adds a new set of tools and solutions to aid the fight against sprawl, including watershed management, the incorporation of biodiversity planning, and increasing public access to open spaces. There are several basic principles:

1. Protect, restore and maintain natural resources and ecosystem function, both in developed and undeveloped areas.
2. Use best available science to assess natural resources and determine areas of environmental vitality as the first step to land use planning.
3. Target for conservation areas of important ecological function, critical habitat, and corridors to connect such areas with already protected land.
4. Reduce the need for expensive storm-water management, flood control and restoration projects by protecting water resources, flood plains, wetlands and other buffers.
5. Limit the negative effects of development on habitat, air and water quality by ensuring decent vegetation cover and reducing paved surfaces.
6. Enhance stewardship of open space and natural areas by increasing environmental educational opportunities.
7. Engage citizens, organizations and agencies of the region to conserve biodiversity, and foster a sustainable relationship between society and nature in the region.
8. Enrich the quality of life for the region's citizenry, and support tourist and natural resource-based industries through increased access to open space.
9. Protect environmental quality by integrating green infrastructure with land use, transportation and water/sewer planning.

10. Create wildlife-friendly and environmentally sensitive regulations and incentive programs.

- awareness, training and education
- Local Government resourcing
- regional partnerships and planning
- legislative frameworks, and
- information and monitoring.

7 "Smart" development-guidelines and practices

Concentrate development in compact town centers. Town centers are developed at a higher density than surrounding land and defined by clear boundaries & identifiable hubs of activity.

- Site new development in or adjacent to existing settlements consistent with historic densities and patterns.
- Maximize average site density; minimize average lot area.
- Maximize floor area to site coverage ratio-build multi-story buildings.
- Site buildings close to street and close to each other-minimize setbacks and lot frontage.
- Minimize on-site parking-incorporate shared access, shared and on-street parking.
- Incorporate mixed uses into town centers to provide choices for all community members to meet their needs for housing, employment, goods, services, recreation, & social interaction.
- Promote projects that mix residential, commercial, and office uses.
- Site new housing within walking distance of commercial and employment centers.
- Provide a mix of housing types-single and multi-family, low and high income.

- Orient buildings to the street; break up the mass and facades of larger buildings.
- Screen and landscape parking areas; break-up large parking areas.
- Site parking under, to the rear, or to the side of buildings.
- Incorporate an internal network of paths, parks & commons for neighbourhood use.

- Organize streets in a coherent network-relate street design to the land use they serve.
- Maintain street connectivity (avoid dead ends) and integrate new roads within the existing street network-maintain variations on a traditional girded street pattern.

- Incorporate pedestrian circulation into street design-including sidewalks on at least one side of the street, well-defined pedestrian crossings.
- Provide internal network of pathways-incorporate off-street shortcuts for walkers and cyclists. Connect to regional path systems where possible.
- Design streets in central districts and neighbourhood for slow vehicle speeds.
- Maximize density and mix of development near transit and other transportation nodes.
- Maintain an overall low density by promoting projects that cluster small-lot developments and protect large tracts of continuous open land.
- Incorporate buffers between developed and resource land.

- Incorporate "green infrastructure" including natural features, drainage ways, floodplains and other functional open space.
- Define development and building envelopes to exclude environmentally sensitive areas.
- Minimize clearing & grading by using existing contours and vegetation in site design.
- Protect undisturbed vegetated stream buffers of sufficient width to protect water resources and wildlife habitat.
- Minimize fragmentation of wildlife habitats-core areas as well as connecting corridors.
- Incorporate non-structural and structural storm water treatment practices.

8 The Cuban position

Cuba has endured through the pre-Revolutionary stage, characterized by exploitation and depletion of the natural riches since the discovery (1492) up to the revolutionary triumph (1959), four centuries that include the neocolonial exploitation carried out by the United States of America. Among the aggressions carried out on the environment during the colonial as well as during the neocolonial stage stand out the depletion of large forest areas and the irrational use of land for agriculture and cattle, which resulted in degradation and erosion of soil, waters, relief and vegetation. To these can be added the deplorable conditions of health in the population due to the poor condition of services in this area and the serious social problems associated to extreme poverty, racial and sex discrimination, social inequality, illiteracy and exploitation in general. This panorama was inherited by the Revolution when it seized power in 1959, and because of its humanist character, it made its main principle the increase of the level and quality of life of its people in it's widest sense, principles upon which today the sustainability of development is argued. The most outstanding achievements during the first years of the creation of a new society are, in brief: Eradication of extreme poverty.

- Total transformation of the agricultural structure.
- Eradication of illiteracy, schooling of all the children and the creation of a significant autochthonous scientifical-technical capacity.
- Infant mortality rate was reduced from more than 60 to 9.4 per thousand and life expectancy rose from 61 to more than 75 years.
- Health programs against infectious diseases and health services were established, so today there is a doctor for every 203 persons.
- The population with access to piped water and sanitation facilities increased from 50% to 89.1% and 91.5% respectively.
- The population with electricity services increased from 56% to 94%
- Forest area in the country increased from 14% to 19.5%
- A process of territorial planning was developed, which allowed the introduction of an environmental element in most investment projects with a socioeconomic character.

Relevant moments of the Cuban environmental policy such as the creation of the National Commission for the Protection of the Environment and Conservation of Natural Resources, and in that same year, the inclusion in the Constitution of Article 27, which represented the reflection of the environmental protection in the Fundamental Law of the country, and how Law 33 of January 10 1981 -one of the pioneer laws in Latin America regarding the establishment a global protection of natural resources- established the basic tenets for conservation, protection and improvement and transformation of the environment and the rational use of natural resources, according to the integral policy for the development of Cuba. During the 1997 Rio Summit of Environment and Development Fidel Castro acknowledged the signing of the Convention on Biological Diversity and Framework Convention of the United Nations on Climate Change. It was a short time after the Summit Meeting, in Article 27 of the Constitution of the Cuban Republic; the concept of sustainable development was introduced. That same year, The Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol regarding substances that deplete the ozone layer were put into effect. In 1993 the National Program for Environment and Development was created and approved, which is the Cuban adaptation of Agenda 21 and includes additional topics in the interest of the developmental strategy of the country (Annex II). From this program spring the Territorial Program in order to adapt it to local demands and priorities. The paper remarks the creation in 1994 of the Ministry of Science, Technology and Environment as the ministry that will rule establishing the environmental policy of the country, with an adequate structure for carrying out this important task. Within the improvement of the legal framework, during 1995 and 1996 several legal bodies that reinforce environmental protection in different economical sectors were approved. It is worth mentioning those regarding Environmental Impact Assessment and Environmental State Inspection, Mine Law and the Tributary System. Likewise Cuban activity in the international environmental field is strengthened through concrete actions in several Conventions, which the country has signed. In 1995 activities dealing with environmental management

were consolidated and strengthened in the country. With the IX Meeting of Latin American and Caribbean Ministers, with representatives from governments of 25 countries in the region and 26 international, regional and sub-regional organizations, NGOs and other sectors. As a colophon to the activities Cuba has carried out during these 5 years in the environmental sphere, there was the confection of the National Environmental Strategy and the Project for the Law for the Environment. That strategy offered a wide general conceptual frame for the National Program for Environment and Development, updating its scope and reach in according with the years that have passed since its creation in 1993. Project for the Law, took into consideration the economical, social and institutional changes that took place in the country, as well as the evolution of the international situation. It should be recognized that the difficult economic situation that has affected Cuba during the last years has affected the exploitation of the natural resources and has limited the actions for their conservation, but a search for a higher efficiency in production processes, the development of education and divulgence to achieve a higher environmental conscience, the search for alternative energy sources, the use of biological products in agriculture, will without doubt be essential actions for its recovery. Cuba with its entire struggle, to include the 1991 Russian collapse and the 40 plus years of embargo/blockade remains strong in their position on the environment.

9 Conclusion

J.R. McNeill (2000), in his work An Environmental History of the Twentieth-Century World, something new under the sun contents that "the Green Revolution was a child of the Cold War." This green revolution was a technical and managerial package exported from the First World to the Third beginning in the 1940s and making it greatest strides in the 1960s and 1970s. The new zeitgeist of sustainable/green-design and living that is heralded in today's agora is, as Solomon noted "nothing new under the sun". It is part and parcel a sleeping giant both in societies acts of omission and commission. To ignore the possible solutions of sustainable planning/development/living is due course for disaster, to embrace it as the "new solution" is to create a false representation one that does not acknowledge a rich past. A past and a present such as Las Terrazas.

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