Sustainable urban development. Cuban challenges

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ABSTRACT
This contribution starts with the evolution of the main theoretical approaches through the last thirty years and some key principles for urban sustainability, followed by reflections about sustainable development in Cuba as well as challenges to improve it in urban areas, and closing with some final reflections. Approaches about the sustainable city have been changing during the last three decades, but to be sustainable, a city should be holistically planned in a participatory way, taking as much advantage as possible of the urban land and guaranteeing appropriate domestic environment, by passive energy means. Advanced concepts of integral and sustainable development are not yet applied to the city in Cuba, as there is not enough awareness about its importance for economic and social development. Priorities focus on social services and not enough on housing and habitat. Changing these approaches is one of the first challenges.

Introduction
Having spent several decades researching and campaigning for a more sustainable urban habitat, this contribution to the journal is structured in five parts, starting with the evolution of the main theoretical approaches through the last thirty years and some key principles for urban sustainability, followed by reflections about sustainable development in Cuba as well as challenges to improve it in urban areas, and closing with some final reflections.

Evolution of the main approaches
Approaches about the sustainable city have been changing over the last three decades, from intentions to avoid the urbanisation process, towards recognising the important role of cities in economic, social and cultural development. This changed from seeing cities as a problem to considering them as part of the solution. In fact, changing problems into solutions in an endogenous way can be considered an essential principle of sustainability.

The first Habitat Conference (Vancouver 1976) recognised the urbanisation process as a problem, which could be solved based on improving the quality of life in rural areas to avoid migration to the cities. In contrast, Habitat II (Istanbul 1996) admitted the unavoidability and irreversibility of the urbanisation process, proposing the generation of sustainable urban settlements in an urbanising world, as a goal.

The Sustainable Development Goals approved in 2015 to replace the unfulfilled Millennium Development Goals, including SDG 11, is dedicated to cities and human settlements in order to make them more inclusive, safe, resilient and sustainable. Habitat III (Quito 2016) changed the approach to the city as the centre of its territory, ending the traditional contradiction between the city and the countryside, or between rural and urban developments. The question to be clarified was ‘the city we want’, as expressed in The New Urban Agenda.

Thus, the concept of the ‘sustainable city’ has evolved from an organic ecological approach based on a low land coverage index, to the compact and
vertical green city. It generates some contradiction to be solved: between optimising land use and guaranteeing appropriate natural indoor environment and privacy, as well as between the compact, dense city and sometimes predominant personal preferences for individual housing.

Approaches and concepts about the informal city have also changed, from a ‘cancer’ to be extirpated and eradicated, at the beginning, through diverse participative upgrading programmes, up to the ‘social production of habitat’ as a valid process, also related to the right to the city. Despite the positive aspects of this change, from the social point of view, neoliberal economic policies have taken advantage of it in order to reduce the role of the State and to maximise individual solutions to the housing problem.

**Principles for urban sustainability**

To be sustainable, a city, as well as its transformation, should be holistically planned in a truly participatory way, taking as much advantage as possible of the urban land, as a non-renewable resource, and guaranteeing, at the same time, appropriate privacy for the domestic environment, by passive energy means.

In order to minimise the use of resources and generation of wastes, lineal flows should be changed into circular ones, taking advantage of natural resources (at a lower rate than their regeneration), preferable locally available, recyclable and recycled, as well as renewable sources of energy.

Vegetation is a key element, not only in open public spaces but also integrated with buildings, in order to absorb CO₂, reduce flooding, increase rainfall, project shadow and diminish the urban heat island effect. A more sustainable form of urban greenery could include multiple functions, solving different problems at the same time, even constituting an edible landscape.

Big cities need to be subdivided into smaller autonomous multi-functional urban units, which, as the cells in all living organisms, develop a wide range of functions. This can be achieved by mixed land use and should stimulate the integration of different social strata in order to achieve more inclusive and safer cities. These autonomous units should be interconnected inside the city, as well as between cities, constituting territorial networks for specialisation and complementarity.

Such a decentralised urban structure would reduce the need to travel long commutes, and intermodal mobility systems should be articulated, facilitating pedestrian routes and cycle lanes, complemented by an efficient public transportation system, discouraging the use of private cars.

Plans should be managed in an intelligent, decentralised, democratic and participative way, while architectural solutions should be specific and diverse, adequate to the context and the environment, taking into account historical knowledge and traditions. Heritage should be preserved as part of the cultural identity and a green endogenous economy promoted through social organisation, which are crucial for a resilient city.

**Sustainable development in Cuba**

The social revolution, carried out in Cuba from 1959, defended from the very beginning, the ideal to reduce differences between cities and the countryside, as well as between manual and intellectual work, looking for social equity and opportunities for all. These intentions generated an intense exchange of people between the cities and the countryside, materialised through the literacy campaign; mobilisation of urban population for the sugar harvest and other agricultural works; rural students were awarded scholarships to study in the city; the school in the countryside, combining studying and working, among other experiences.

To achieve this goal, many new rural settlements were created in order to improve the living conditions of the farmers, but according to the ideals of modern life. However, the rural population were accommodated in multi-family, multi-storey concrete buildings, losing their connection with the land, animals and nature. At the same time, they lacked the benefits of urban services and facilities, so experienced the negative aspects of both urban and rural life. The inflexible design of the multi-family housing also prevented new households being accommodated, so the young left for the urban areas, leaving the older residents who eventually became too old to farm the land and produce food.

The concentration of former farmers in these new settlements corresponded to the centralisation of agricultural production, at a great scale, using equipment and fertilisers, considered a more advanced and productive way with respect to the traditional small scale and organic agriculture. Some interesting experiences, such as the Havana Green Belt developed during the 1960s, and even, the schools in the countryside since the 70s, focused on education instead of food production.
Opportunities for all to study and to be a professional generated the lack of a specialised labour force in some economic activities, such as agriculture and construction, and impacted the quantity and quality of production. However, the early organisation of the national system of settlements contributed to reduce migration to the capital city, maintaining a demographic equilibrium nationally. In the same way, the centrally planned economy has supported social development by subsidising priority areas for equity and justice, but decentralised development has been limited.

Important achievements have been realised related to the environmental dimension of sustainable development. Recovering raw materials to reuse and recycle was promoted from the 1960s; the use of renewable energies has been encouraged since the 1970’s; the environmental impact law was approved in the 1990s, when urban agriculture was also stimulated. The crisis of the 1990s also favoured some sustainable practices, such as the extensive use of bikes and alternative building materials, but not being the result of conscious decisions, these were not continued as soon as conditions changed. Related to the building materials, there was no transfer of appropriate technology. Unfortunately, until today, the same architectural projects are repeated in different locations instead of making specific designs appropriate to their site in order to take as much advantage as possible of local and natural resources by passive solutions to ensure that available resources were put to the most efficient use in creating good-quality housing.

Resilience is one of the main strengths of Cuban society, demonstrated during more than six decades resisting the US embargo and aggressions, the economic crisis and extreme meteorological events. The population is organised in order to resist and to continue developing, despite any difficulties, based on solidarity, collaboration, participation, mutual aid and continuous learning.

Challenges for sustainable urban development

Thanks to the scarcity of investment in urban areas during the first decades of the revolutionary process, Cuba possesses a highly valuable heritage to be preserved, including four World Heritage cities. One of the main current challenges is the conservation of the city centres including maintaining the current population and improving their quality of life.

New architectural and urban development should maintain the historical quality, since they are part of the legacy for future generations. For that, housing must be seen as an integral social issue, and not only as something to be built, as it is today. Integrated urban regeneration of the whole urban fabric is needed. This integrated approach should be supported by the institutional structure. A new Ministry of Housing and Urbanism is needed, with an integral policy for habitat development, as well as more horizontal integration for decision-making at different levels, which could be stronger than the current vertical and sectoral structure.

Final remarks

Advanced concepts of integral and sustainable development have not yet been applied to the city in Cuba, as there is not enough awareness about its importance for economic and social development. Priorities focus on social services and not enough on housing and habitat. Changing these approaches is one of the first challenges.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes on contributor

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