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Ecological area: An elastic space for urban-rural interaction

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ABSTRACT

The present report is based on a consideration of the environmental, economic, and social challenges facing urban and rural areas in Latin America, many of which are the result of structural changes experienced by the region in recent decades. The main purpose of this document is to demonstrate the urgent need to link urban and rural spaces to meet the challenges that will move the Latin American region towards sustainable development. Focus on ecological areas, such as resilient urban-rural systems that interact in a sustainable manner. This is reflected in the author's experience and the cases recorded in the literature. To this end, an integrated approach is proposed between natural (ecosystems) and socio-economic components (communities) in rural and urban areas and between them, characterized by semi-rural and semi-urban arrangements. As a conclusion, a reform is proposed to overcome the adaptive sectoral actions in the current development model, which is characterized by exclusivity, inefficiency, and unsustainability.

Keywords: agriculture; climate change; cities; inclusive development; resilience

1. Introduction

Since 2007, we have begun to live on a planet with more urban residents than rural residents. This trend is more evident in our Latin American region. At present, 81% of our more than 600 million residents tend to live in or around cities[1]. This process has accelerated in the past few decades, especially since 1980. The phenomenon of globalization has created a series of economic opportunities and led to rural migration. However, the original design of cities is not the best way to adapt to rapid migration and subsequent population growth, the economic and psychosocial needs of residents, and the earth's restrictions on the use of natural resources. In contrast, many of our cities face negative externalities in terms of social security, health, and transportation[2,3], where sovereignty over employment, housing, and especially time is greatly challenged and restricted. On the other hand, rural areas are increasingly socially and environmentally exploited or simply abandoned because the new capitalist model has exhausted their potential.

However, as Mebratu[4] suggested, sustainability is not just a conceptual mix or balance between economic, social, and environmental dimensions; economic viability depends on social justice, which in turn depends on environmental quality. Therefore, the establishment of ecological areas, understood as a sustainable and interactive elastic urban-rural system, first means recognizing the close relationship between the two spaces, not only through the food chain

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but also through a variety of ecosystem services. Secondly, for Latin America in particular, comprehensive management of these two spaces is needed to support more fragile and resilient systems. Not only are we forced to adapt due to the changing effects of climate or geopolitics, but we also need to change exclusive, abusive, and unsustainable patterns, making us increasingly inelastic, with fewer people, and a wider planet.

The main purpose of this paper is to emphasize the urgent need to link urban and rural areas to meet the challenges of putting the Latin American region on the path of sustainable development. It is based on the author's experience and the cases recorded in the literature.

2. Recognize the link between urban and rural space

Rural migrants in Latin America mainly come from the economic commitments generated by the process of globalization. Limited opportunities and conditions for rural residents in the region are exacerbated by armed conflict and political instability, extreme weather events, and limited access to infrastructure and basic services[5,6].

The main reason why such migration affects agricultural and rural development is the decline of the labor force and productivity, which is caused by poor infrastructure and technical conditions, soil degradation, and the increase in villagers' age. For example, in Costa Rica, the average age of agricultural producers is about 54 years[7]. This has created a vicious circle, and the deterioration of these conditions has led to more rural migrants. Unfortunately, the consequences are multifaceted.

The most prominent is the loss of identity or connection to land, as rural migrants and a new generation believe that working and living on land is an unattractive or even marginalized activity[8,9]. Most rural residents are small producers, immersed in the informal economy and forgotten in public policy and investment.

Another negative consequence is the sale of small land and the consolidation of land into more industrialized and intensive production arrangements but with poor biodiversity and resilience. These new arrangements are often owned by companies that have a short-term, expansionary, and exploitative view of natural and human resources, as exemplified by Alban in Colombia and Garcia[10] in Ecuador. In this regard, greater efforts are needed to integrate urban and rural production processes through the inclusive participation of small producers in the value chain. Unfortunately, barriers to financing, transport, and product storage infrastructure, as well as the cost of difficult access to quality assurance and certification, continue to seriously limit this inclusive ecological regional integration.

Another consequence of this rural migration is the formation of poverty circles in urban centers that are not structurally ready to accommodate these new populations. For example, in Mexico, the number of cities is expected to reach 961 by 2030, twice as many as in 2010, concentrating more than 83% of the population[1]. The ability of cities to absorb such migrants will depend on factors such as effective and transparent governance structures and the availability of infrastructure and services, which tend to be of lower quality and scarcer in small urban centers due to public policy and investment biases. Without the resolution of these factors, our cities will continue to face economic, social, and cultural problems, such as violence, lack of effective transportation, general health, housing, and decent employment.

Today, people are deeply concerned about the food supply of the growing world population. It is believed that by 2050, more than 70% of food will be needed compared with 2005[11]. This recognition has led us to revisit rural areas, which are estimated to provide 80% of food in developing countries, triggering a review of potential production patterns. The expansionist growth model characterized by single planting seems to be the most effective. However, many examples show that in different agroecosystems, food production is a model in the context of the energy cycle, closed commodities, controlled use of

agrochemicals, and high biodiversity. It seems like not enough in the short term, but in the long run, it will not only provide the food the world needs, but also promote the provision of a variety of ecosystem services, such as high-quality water, climate and nutrient cycle regulation, disease control, storm protection, and many other ecosystem services that are increasingly valued and recognized[12,13].

Considering resilience as a system's ability to recover, restructure, and evolve in response to external disturbances[14–17], then the rural part of the ecological area will maintain its productivity despite extreme events. Biodiversity is a key aspect of ecosystem operations and the provision of goods and services[18]. However, as I will explain in the next section, resilience must also be built in the social sphere in order for ecosystems and their relationships to function optimally.

3. From adaptation to processing

As I explained in another contribution[18], the challenges we face today in terms of sustainability, such as population growth, environmental degradation, and climate change, may bias us towards sectoral adaptation actions and miss the opportunity to transform our development model into an ecologically efficient, inclusive, and resilient model.

The resilience of ecological areas has proved to be an operable factor in the analysis. It is the best case in the territory that restitution is not necessary after the event or phenomenon that caused the disaster. For example, in an unsatisfactory scenario "A" **(Figure 1**), we can adapt after a phenomenon, but maintain the same inequality and structural problems as before the activity. The marginalized population in urban centers and rural communities limits their development opportunities. In this regard, resilience cannot solve the current challenges faced by these populations. It needs to be considered and analyzed from the perspective that resilience is not an incremental resilience proposed by political economics and included in the framework of ecological economics, but a transformative resilience. In this case, it is not only functional but also a state of transcendence. However, another objective consistent with the sustainable development goals is to promote ecological regions (Programme B). The focus will not be on economic growth or good production practices, including climate intelligence, as proposed in the linear economy, but on creating inclusive and equitable opportunities to enable Latin American societies to develop, that is, to change and be more resilient not only to climate events but also to geopolitical and economic events that often hurt us. With limited consideration of the ACA aspects discussed, programme "C" will inevitably lead to a poorer system, although this is often characteristic of the current situation in many Latin American territories.

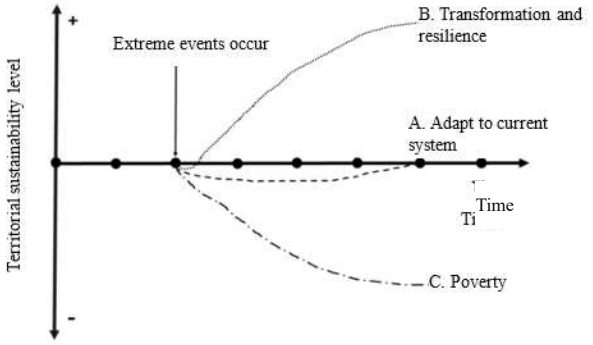

Figure 1. Scenario of territorial sustainability level after extreme events.

4. Conclusions

Ecological zones are resilient urban and rural systems that interact in a sustainable manner. Developing local capacities will help reduce vulnerability to new, more frequent, or more serious climate, geopolitical, or economic events. To this end, an integrated approach is needed to the natural components (ecosystems) and socio-economic components (communities) of rural and urban areas and the continuity between them characterized by semi-rural and semi-urban arrangements. From a more urban perspective, structural, institutional, and policy capacities must be strengthened to provide basic infrastructure and services in an effective and inclusive manner. From a more rural perspective, small producers must be encouraged to participate fairly in the market by establishing production chains and significantly improving rural living conditions, including technological and commercial options, so that their residents want to stay on their land. Urban-rural interaction in ecologi-

cal zones must have a clear understanding and intention to strengthen linkages beyond food-related linkages, but inclusive, fair, and transparent spatial and social arrangements must be made to provide economic and social services on the basis of ensuring ecosystems.

Conflict of interest

The author declares no conflict of interest.

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