

Land use and regional development in Rio de Janeiro: impacts on the morphology and landscape in the urban periphery

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Major changes have affected Rio de Janeiro's metropolitan periphery in recent years since Brazilian federal programs for the acceleration of growth (PAC 1 e 2) were launched (2007-2011) with large public investments in transportation, energy, urban infrastructure, and social housing. The Metropolitan Ring Road (Arco Metropolitano) inaugurated in 2014 is one of them and connects important future economic growth poles: the petrochemical complex, to the East; and an expanding hub port complex at Sepetiba bay, at the westernmost side. The ring road, supposedly, will bring economic development along its route through the impacted municipalities, cutting through either dense and poor peripheral settlements, or not yet occupied or urbanized areas, including farmland, forested parks and even a conservation unit consisting of a large mangrove swamp preserve in Guanabara Bay called APA Guapimirim.

This article addresses the impacts caused by the ring road and other public and private investments and how they influence land use and occupation of the urban and peri-urban open space systems of Rio's metro region in its westernmost side, encompassing the Sepetiba sedimentary basin, with more than 85% of the territory consisting of land not yet occupied or urbanized. The pressure of global interests are forcing the once rural character of the territory to transition into a block of land for speculation and profit, due to the increase in land values and its likelihood for urbanization, a situation that is occurring across the metro region as a whole.

This academic research is based theoretically on concepts of landscape morphology, road ecology, open spaces systems and social cartography within a socio-environmental framework. Methodologically, it applies qualitative and multiple

scales analysis, and considers both spatial and temporal dimensions. In addition, participatory instruments and actions are applied in workshops – that bring together scholars, students, government agents and community groups – to define and categorize morpho-territorial units, and to identify and discuss collectively the strengths and fragilities in order to build prospective scenarios for regional growth within a future landscape that includes socio-spatial conflict nodes, urban and peri-urban growth vectors, and areas to be preserved or protected for specific farmland, aesthetic and touristic resource uses. The results indicate the importance of the region in terms of its mineral and hydrological resources that provide much of the supply to the metropolitan region. The research also identifies major gaps and issues from social housing, basic sanitation, and reduction of water sources, to green area destruction and lack of public spaces and cultural activities.

The study and comparative analysis of the Municipal Master Plan (Plano Diretor) and the Ring Road Master Plan at regional and local scales are essential to carry out socio-spatial studies in terms of zoning, land uses, and occupation. Preliminary results point out that management and planning agencies, at the municipal level, have had little input in guiding an appropriate locally based sustainable development strategy, especially because of the many gaps in planning and regulation. Planning is neither coordinated nor discussed among neighboring jurisdictions, causing incompatibilities, incongruences, and lack of continuity. Meanwhile, land becomes easy prey for major global investors who will not hesitate to degrade natural, social or environmental resources for their own private interest, as opposed to the larger public or community good. In addition, public governance and social participation are not articulated, and inhabitants are left outside of the main decision-making processes. This points out the dire need for equitable planning, and a municipal administration that can respond to community needs and promote good planning practices.

The research emphasizes the need for public engagement and knowledge of the region among its dwellers, as well as empowering and strengthening community groups, particularly at a local level, for example using focus groups working with women and youth. In fact, the research group has made an effort to promote activities

and workshops to inform and engage focus groups on specific themes: water issues, public spaces, cultural and artistic venues. This allows the project to learn about the needs and expectations of the population.

This paper addresses regional planning with an inside-out approach that builds on the importance of understanding landscape and the territory's physical and social aspects. Our main goal is the definition of guidelines and planning instruments to be appropriated and applied in the municipality of Seropédica, one of the most vulnerable communities, currently threatened by large-scale economic investment, not necessarily in the interests of sustaining the region or its inhabitants. Our project, in the end, envisions a more equitable, balanced and sustainable urban and peri-urban environment.