

**Urban Expansion and the environmental problem: A landscape approach in Rio De Janeiro City, Brazil**

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Landscape approach can be an effective tool for dealing with issues of sustainable development of land use (LU). It focuses on the spatial and temporal scales, important for LU planners and managers. Understanding LU change patterns, their drivers and socio-environmental impacts, should improve the ability to predict future land use dynamics and help to establish LU guidelines and to guide local management decisions. Multitemporal LANDSAT5-TM images were used to identify different patterns of LU classification along the Campo Grande and Santa Cruz Districts<sup>0</sup>, both in Rio de Janeiro City, Brazil. The study area consists of a land cover mosaic, with native covers like forest and mangrove, as well as agricultural and urban areas. For this reason, this area is strategic for research on modelling aiming at predicting, testing, and choosing between different urban growth scenarios. Eight land cover classes were defined: Forest, Shrub, Mangrove, Flooding Area, Agriculture, Exposed Soil, Anthropogenic Areas and Urban Zone. The results point to a landscape dynamics with an expressive expansion of the urban areas and a decrease in the shrub and agriculture areas. The maps show, besides the urban expansion processes, the direction of these changes, which occur mainly in the direction of the slopes, which represents risks for the environment and for the

population, and in the direction of the main highways, such as Avenida Brasil. The methodological approach was helpful to enable an understanding of the landscape dynamics of the region. The use of GIS and modelling techniques allowed the integration of data and information to better characterize landscape dynamics. The landscape characterization enabled to identify different units, each with their own potentialities and limitations. It can be an effective tool to the desing of management guidelines and for LU planning and territorial ordinance, integrating concepts of urban development and environmental preservation.

Keywords: Landscape, GIS, Environmental planning, Urban areas, Rio de Janeiro