

LAND USE AND NATURAL RESOURCES RELATED TO LANDSCAPE DYNAMICS AND INDICATORS TO SUPPORT THE AGRO-ENVIRONMENTAL PLANNING IN THE ATLANTIC FOREST IN RIO DE JANEIRO - BRAZIL

Ricardo Trippia dos Guimarães Peixoto¹

¹Embrapa Solos, Rua Jardim Botânico, 1024 - 22460-000, Rio de Janeiro, RJ, Brazil
E-mail: rtrippia@cnps.embrapa.br

The Brazilian Atlantic Forest is one of the most important ecosystems, while one of the most endangered of the world. On one side presents a diversity of flora, fauna and extraordinary structural and a high rate of endemism in different groups of organisms, and the other side has suffered since the beginning of the colonization of South America a strong reduction and fragmentation.

The reduction, degradation and fragmentation of natural ecosystems due to anthropogenic impacts threaten not only biodiversity, but also the physical and chemical qualities of the landscape. This means that for rural areas inadequate management of agroecosystems promotes the degradation of the environment, with a loss in productive capacity of soils, biodiversity reduction and decrease in quality and quantity of water resources. Therefore, the negative effects of habitat destruction by man are damaging, at least in the long run, also the productivity of land use systems. Nevertheless, the importance of ecosystem services is not sufficiently recognized or appreciated by society.

The model of sustainable development agreed by the international community in 1992 in Rio de Janeiro, aims at reconciliation between economic growth, improvement of social conditions of life and conservation of natural resources. This is the only way to ensure adequate opportunities for development for future generations.

Especially ecosystems characterized by strong agricultural production, as the Atlantic Forest, require the preparation and establishment of systems of land use ecologically and socioeconomically sustainable. But environmental and agricultural systems are extremely complex and any of its fundamental processes can be treated separately. Therefore, the goal of sustainable management of environmental and agricultural systems requires an integrated interdisciplinary research and to develop indicators, and flexible and integrated models, able to describe and simulate the important environmental, economic and social aspects with a high degree of certainty.

In the historical process of land occupation of the highlands and lowlands east of the Bay of Guanabara, in Rio de Janeiro, farming activities take place without the necessary conservation concern for the sustainability of ventures, and even today many agricultural activities do not pay attention sufficient in natural resources conservation.

Concluding and summarizing the known facts and briefly described above, the following issues and needs relevant to the project and the project area can be defined:

- Ecosystem degradation and unsustainable use of natural resources increases the vulnerability and ecological risks, economic and social.
- The land-use practices often ignore the vulnerabilities and susceptibilities, and even more its dynamics.
- Ecosystem services are not sufficiently known by the society neither properly included in the calculations of costs and benefits.
- Potential of sustainable land use are not sufficiently recognized and used.
- Factors such as urbanization of rural areas, reduced productivity and incomes in the agricultural enterprises, especially for the family farmer, as well as limited access to credit, are pointed out as factors responsible for the rural exodus, including youth, and degradation of soil and water in the state Rio de Janeiro.
- The establishment of alternatives for sustainable use of natural resources, planning and management of land use are particularly important to reverse this common situation in agricultural areas.
- The concept of sustainability requires interdisciplinary approaches.
- To date, indicators, strategies and integrated and flexible tools for analyzing and responding appropriately the dynamic vulnerabilities are rare or missing.
- The development of indicators, models, strategies and instruments for sustainable land use