Building Healthy and Sustainable Territories from Green Infrastructure

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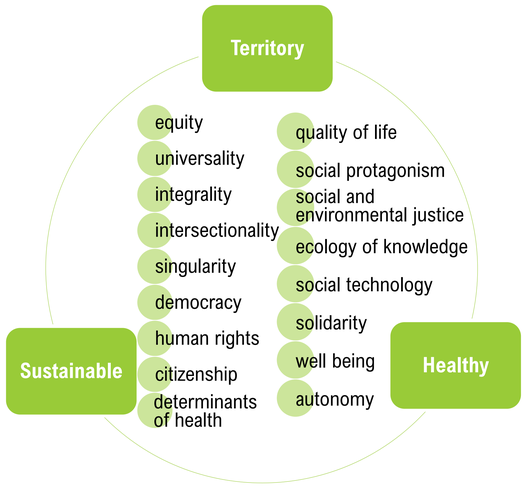
What are healthy and sustainable territories?

The approach of healthy and sustainable territories considers the territory as the object of analysis and social and environmental transformation, being the basis for acting on the social and environmental determinants of health and producing transforming effects for human and environmental health and for sustainability in all its dimensions: environmental, social, economic and cultural.

The Rio+20 outcome document defines “health as a precondition, an outcome and an indicator of all three dimensions of sustainable development”.

The theoretical-methodological organization of sustainable and healthy territories dialogues with a theoretical-conceptual set of assumptions for the construction of sustainable and healthy territories:



For a territory to be healthy and sustainable, the recognition of the specificities that characterize each territory in its various dimensions and the understanding of the social dynamics in the territorialization processes are assumed, that is, who the local actors are, how the relationships occur between them and with the environment (habitat) and how flows are defined and socially constructed networks are recognized.

The construction of sustainable and healthy territories implies knowing and acting, in a contextualized way, on the socio-environmental determinants of health to protect life and the environment and presuppose the relationship between environment and health and, consequently, between sustainable development and health promotion.

Social and environmental determinants of health

Health determinants is a public health concept that refers to a set of factors that positively or negatively affect the health of individuals, populations or territories. Social determinants of health relate to social, economic, cultural, ethnic/racial, psychological and behavioral factors that influence people's living conditions. And the environmental determinants of health are the external physical, chemical and biological factors of the environment (natural or built) that affect human and environmental health.

What is Green Infrastructure?

It is an ecological structure in a strategically planned network of interconnected natural areas (green and blue), which conserves and promotes the functioning of ecological processes and flows (biotic and abiotic) in the landscape that sustain life and can be complementary to other infrastructures.

Many of the elements of green infrastructure are already in place and can also function as multifunctional landscapes, such as: parks, squares, gardens, bike paths, vegetable gardens, mangroves, rivers, lakes, among others.

The greater the connectivity between the elements, the greater the efficiency of the green infrastructure network. The connectivity of natural systems is an important indicator of the health of the landscape, as connections are fundamental for the maintenance of ecological processes.

Green infrastructure brings benefits to the environment and the population, as it identifies and directs areas conducive to various human activities, based on the prior identification of areas that are important for preservation and management, so that they do not interfere with landscape dynamics or occupy areas whose capacity support is incompatible, as well as mitigating and adapting areas already occupied, reducing environmental vulnerabilities, such as disaster risks, and contributing to human and environmental health.

Green infrastructure permeates the right to the city and the right to life, as it acts to protect life and the environment and can be applied at different scales and with numerous typologies, including: ecological corridors; urban agriculture; multifunctional urban parks; green roof and facades in buildings; rainwater capture, retention, filtration and reuse systems, such as rain gardens and filtering systems, bio-valleys, retention basins, constructed wetlands and rainwater beds; ecological sewage treatments; CO2 capture systems; rehabilitation and renaturalization of rivers; among others.

Green infrastructure as a strategy for healthy and sustainable territories

Green infrastructure represents a very useful instrument for territorial planning and action in defining the spatial structure of safe, healthy and environmentally adequate territories. It is a territorial solution that acts on the socio-environmental determinants of health, based on its socio-behavioral ecosystem services and that regulate the physical, chemical and biological factors of the environment.

Among the health benefits, the following stand out: availability of free areas for physical activities and social interaction activities, increased contact with nature; improved quality of life and physical, mental and social well-being; reduction of respiratory, cardiovascular, infectious and waterborne diseases.

In turn, the multifunctional typologies of green infrastructure are generally applied at the territorial-local scale so that each solution effectively integrates a green infrastructure network, favoring the functionality of ecological processes, through the mitigation of interference and the promotion and maintenance of biotic and abiotic flows, promoting health and sustainability to the territory.

From the perspective of climate extremes and hydrological disasters, green infrastructure plays a fundamental role as a solution for the sustainable management of rainwater and, consequently, for the reduction of water-related diseases.

Main water-related diseases:

- **Acute diarrheal:** caused by different etiological agents (bacteria, viruses and parasites), contagion through the oral or fecal-oral routes.
- **Leptospirosis:** febrile infectious disease of bacterial origin, resulting from direct or indirect exposure to the urine of infected animals.
- **Hepatitis A:** acute viral disease, of fecal-oral transmission.
- **Schistosomiasis:** parasitic disease caused by *Schistosoma mansoni* (in Brazil) whose intermediate host in Brazil is snails.

Floods cause the overflow of eventually contaminated water that may come into contact with other water sources, increasing the possibility of human contact with the etiological agents of these diseases.

In addition to diseases related to water supply, hydrological disasters also cause psychosocial disorders and an increase in chronic diseases, such as hypertension, in addition to death, drowning, injuries and trauma depending on the severity of the event.

The sustainable management of rainwater seeks to rescue the natural characteristics of the hydrological cycle, respecting the natural functioning of the hydrographic basin, minimize the impacts of urbanization and reduce the impacts of rainfall (floods, floods and landslides) locally and downstream, reducing surface runoff in impermeable areas, increasing the infiltration of rainwater into the soil, reusing water, stopping, reducing and/or slowing the runoff and, consequently, decreasing the amount of water in galleries and rivers during the heavier rains and increasing the control over disaster risks.

Finally, for green infrastructure to truly be a strategy for healthy and sustainable territories, its solutions must be developed together with the local community, incorporating their local knowledge and practices and the singularities of each territory, working with the ecology of knowledge and intersectoriality, promoting and strengthening the development of social technologies, territorialized socio-technical networks and social protagonism.