

Urban Metabolism and Ecological Footprint Analysis of Delhi City

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Abstract: Urban growth of Delhi is consuming the natural resources of the city at an alarming rate. The water quality of River Yamuna is completely consumed as it passes through the city while the green spaces are rapidly being converted into concrete jungle. The paper is aimed at studying the urban metabolism of Delhi city, after presenting Delhi as a living-breathing organism. The paper uses interdisciplinary tools from economic, ecology and social sciences to innumerate the urban metabolism of Delhi. The ecological footprint of Delhi city has also been calculated to understand the regional environmental impacts of Delhi's urban growth. Delhi has been a popular choice of habitation since Paleolithic era due to its strategic location. Availability of water, fertile land and geographical protection in the form of Aravalli ranges made it a capital choice for many ages now. River Yamuna and the Delhi Ridge (Aravalli Ridge) have been the lifelines of Delhi and have made it a perfect location for numerous kingdoms which have flourished in this city. However, today, we have ignored their importance which has led to their current dead state. The National Capital Territory (NCT) of Delhi today is witnessing urban population growth at a rate and scale unprecedented in recorded history with a population of 16.7 million (11,297 pers./sq. km). It is today one of the top ten most populated cities, and the second most rapidly growing megacity in the world (after Tokyo). The deteriorating condition of River Yamuna and Delhi Ridge along with the rapidly increasing population calls for a review of Delhi's urban growth policy.

This paper aims to study and model Delhi's urban growth and represent Delhi as a living organism assigning metaphors to different parts of the city. The paper also aims to bring out constructive policies to channelize all the resource for a sustainable urban development of the city thereby treating the 'sick' organism which is Delhi. For this three main aspects of the city have been considered which are air, water and energy. The air and water (river water, ground water) qualities of different areas in Delhi has been mapped using GIS and has been color coded according to the level of pollution. An attempt has been made to use this data along with different task specific models to create different scenarios for Delhi's urban development and its effect on the water and air quality. In the end, the city of Delhi has been presented as a living organism and a strategy for its healthy growth has been laid out which aims at the sustainable urban development of the city. The data will further be mapped and represented as simple graphs for creating awareness and the different metaphors, which are easy to relate for non-scientific audience, can be used to highlight the problems of the city.

Keywords: urban metabolism, Delhi, urban planning, sustainable development

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