

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 will study the urban metabolism of Delhi city, after presenting Delhi as a living-breathing organism. The paper will use interdisciplinary tools from economic, ecology a social sciences to innumerate the urban metabolism of Delhi. The ecological footprint of Delhi city will also be 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 rages) have been the lifelines of Delhi and have made it a perfect location for numerous kingdoms which have flourished in this city, but today we have ignored their importance which has led them 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 the 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 and coming out with 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, WTPs) qualities of different areas in Delhi will be mapped using GIS and color coded according to the level of pollution. This map will be uploaded online for public viewing along with graph representing entire year's data month wise acquired from DPCC compared with standards. This data along with different task specific models will be then used to create different scenarios for Delhi's urban development and its effect on the water and air quality will be obtained. In the end, the city of Delhi will be presented as a living organism and strategy for its healthy growth will be laid out which will aim at the sustainable urban development in the city. The data will be mapped and represented as simple graphs for creating awareness, also different metaphors which are easy to relate for non-scientific audience to will be used to highlight the problems of the city.

Keywords: Delhi, ecological footprint, urban metabolism, urban sustainability.