

# CARTOGRAPHIC TECHNIQUES FOR LAND USE PLANNING FOR COMMUNITY IN A METROPOLIS – A CASE STUDY OF K WARD IN MUMBAI

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As we approach the twenty-first century, the environmental concerns and values that began to take root in the sixties have brought into sharp focus an acute awareness of the earth's fragility as a natural system. The exponential growth of population has been responsible for large-scale environmental degradation. The world population has already crossed 6 billion and is projected to reach 10 billion by 2025. The serious repercussions that the growing impacts of human activities can have on the world's ecosystems can well be visualized. Cities are nodes of man's greatest impact on nature where he has altered the essential resources of land, air, organisms and water. A city is a quintessence of man's capacity to inaugurate the control changes in his habitat. In the newly created ecosystems the interactions of man, his works and nature are complex. The complexity grows as cities burgeon in the modern world. Already 4.5 billion people in developing countries were living in urban areas by the end of the century and the influx into urban areas is expected to continue at an accelerated pace.

Mumbai, the Urbs Prima of India has grown from a number of small, dispersed fishing hamlets to the largest metropolis in the country in the span of about three hundred years. The rapid growth of population has been accompanied by radical changes in its physical attributes. Density of population is highest in the world, and there is an acute shortage of space. Development plans are regularly drawn up to give direction to the use of land resource to cope up with the space crunch. However noble the plans are in intention, laxity in implementation renders them ineffective and this leads to haphazard development of areas.

To understand the existing mosaic of land use, particularly open spaces, green zones and belts, their adequacy/inadequacy, a detailed micro-level analysis of the land use for a part of Mumbai has been attempted. Open Spaces, green zones and belts satisfy man's innate and intangible psychological needs. They provide enclosures for privacy and recreation. They play a crucial role in the physical and mental well being of the inhabitants. This need has been reflected in the process of sub-urbanization. Urban society takes refuge in the countryside in search of fresh air and natural surroundings that are denied in a congested environment. Various categories of open spaces have been identified on the basis of their land use/ land cover and functions.

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The base map used for the analysis is the Draft Development Plan for Mumbai, 1981-2001. However the grouping of different categories of land use has been done keeping in view the objective of the study. Some physical attributes have been taken into consideration especially along the coastal tracts e.g. beaches, mangroves and marshes. Mapping the land use of the study area was done using the Satellite Imagery i.e. PAN data of December 1999. The software used was Idrisi 32. Initially a contrast stretch was done by histogram equalization, which is available through the STRETCH module of Idrisi there by creating new image files with altered data values in order to assign the same number of pixels to each data level in the output image. The advantage was that the image carried more information since it contained the greatest variation for the given number of classes.

An attempt was made to identify the various land uses in the area through supervised classification. This was not successful as the spectral response of each land use category was not unique. Therefore the land use was identified on the basis of spectral signatures along with the ground truth and the Draft Development Plan.

The different categories of land use were digitized in the vector layer in Idrisi. The digitized land use map was exported to Map Info for further analysis.

It is strongly felt that care must be taken while planning amenities for the society. Services often display concentration tendencies and are not evenly distributed. Therefore a micro level analysis reveals area that are lacking in certain facilities and proper prioritization for provision can be undertaken.

The paper attempts to probe into this aspect for future planning exercises.