

## **Urban Transportation Planning, Challenges And Policy Initiatives Ways For Hyderabad City – A Gis Approach**

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### **Abstract**

Transportation and communication system is recognized as the backbone of the economy of a country and hence its cities. India is emerging as a fast growing economy around the globe. Transportation and communication system has been the key player in trade, domestic or international. Lot has been done in the communication sector to match the international standards but serious and rigorous efforts are required to be made in the transportation sector to match the international standards. Indian cities are facing various transportation challenges in different proportions for which transportation policies have been framed from time to time, National Urban Transport Policy 2006 being the latest. But the results are sluggish and world class transportation system in the cities seems to be still a distant dream. With the efforts of the Government by introducing Jawaharlal Nehru National Urban Renewal Mission and preparation of Urban Mobility Plans in the recent past, attempts have started to improve the transportation systems of the cities. But its fruits will take some time, which are again doubtful keeping note of the present socio-economic, cultural, legal, administrative, financial and technical setup of the country. The present paper is an attempt to understand the severity of the Hyderabad city transportation problems, examine the policy initiatives and suggest directions where efforts need to be taken care of to develop the Hyderabad city as Smart Cities.

**Keywords:** Urban Transportation, Planning, Policy and GIS

## **1. Introduction**

This report outlines a comprehensive traffic and transportation strategy for the city of Hyderabad for the next 20 years. Improvement of Public Transport, to reduce the growth of individual motorized traffic, is one of the highlighted measures when it comes to reduction of negative impacts of traffic and the improvement of the energy-efficiency of a transport system. But what the best public transport supply is, not only in service quality but also costs, to retain existing or even attract new customers is highly depending on framework conditions like urban developments, urban densities, regulatory conditions etc. Hence it is a difficult task to design an optimal public transport network especially under conditions of rapid growth and change as it is the case in Hyderabad. Currently the Public Transport System in Hyderabad is mainly bus based. One rail based system (MMTS) is in place and one more is in the beginning of its realization (MRTS). Nevertheless the future public transport system will still be highly depending on bus services to provide good quality.

Therefore the aim of this case study is to set-up a user-friendly state-of-the-art-planning tool, which supports, the major public transport provider in Hyderabad using GIS for Jambagh And South Abids (Circle 6) which is selected as a study area in this project study.

The various subtasks of this sector are given below.

1. Transportation Network
  - Regional linkages – Road & Rail
  - City road network
2. Public Transportation
  - Bus Transport
  - Rail Transport
  - Intermediate Public Transport (para transit)
3. Freight Transport
4. Review of Earlier Traffic Studies
5. Inventory of
  - Major Transport Corridors with special attention to junctions, flyovers, ROB's, level crossings, over bridges etc
  - Parking facilities available
  - Pedestrian facilities available
6. Existing Traffic Scenario and assessment of the Existing/Future Travel Patterns through primary traffic surveys

## **2. Objectives of the Study**

The main objectives of the transport concept for the city of Hyderabad are as follows:

- To keep the operational functionality of the overall transport system
- To increase safety and efficiency
- To improve the quality of life and environment
- To maintain urbanization

To achieve the above objectives, the following principles of transport planning is given due importance in this study:

- To promote public transport with the objective of encouraging as many private vehicle users as possible to switch to public transport means
- To channel motorized traffic into the main road network in order to bypass residential areas
- To calm and reduce traffic in residential and restricted areas
- To set up park and ride facilities in the periphery of the city accompanied by strict parking rules within the CBD and core areas of the city.

### **3. Scope of the Study**

In order to have strategic planning and policy, to achieve the vision of Hyderabad as a smart city. The scope of work is to

- Prepare a concept plan report and a transportations structure plan.
- Broad uses and intensity of land-use keeping the overall Master Plan exercise in view.
- Transportation system and traffic management plan.
- Structural road network.
- To carry out traffic surveys and other reconnaissance surveys to analyse the existing traffic situation and travel characteristics.

### **4. Methodology**

The methodology and steps involved in the work plan are:

STAGE I: Collection of data / drawings using GIS Softwares

STAGE II: Super-imposition of Survey of India (SOI) maps and Remote Sensing Centre (NRSC) maps

STAGE III: Digitization of infrastructure and roads, utility networks

STAGE IV: Customization of the GIS

### **5. Road Attribute Database**

To collect information regarding the road network. This information is in the form of Maps, showing road network. All the additional information shall be collected by physical survey of the roads.

**(i) Creation of database information, Details to be collected are:**

- Road name
- Road length(Total)
- Road width (Total)
- Carpeted road width
- Un carpeted road width
- Road Surface material
- Central verge detail of roads

- Detail of crust
- Position of catch pit and man holes
- Details of foot path / water table curbs
- Road levels
- Traffic island and signal details
- Bridge details
- Obstructions (e.g. trees – type wise, electric / telephone poles, etc.)
- Encroachment on the road (The consultant shall identify the roads having encroachment)
- Name of the contractor who has laid the road
- Date of carpeting
- Guarantee period of the road surface
- Resurfacing cycle
- Emergent repairs that have been carried out by the contractors.
- Road widening information
- Location and layout of petrol pumps
- Location and layout of bus stops/bays

**(ii) The following are the summarized list of applications developed using GIS**

**Approach:**

1. Road Network (includes road surface type, condition etc...)
2. Street Lights (includes light type, wattage, condition etc...)
3. Location of Transformers and electrical poles
4. Location of Manholes
5. Location of Dustbins
6. Location of Public taps, Hand pumps etc...
7. Drainage and water supply network
8. Location of Important landmarks etc

## **6. Summary and Conclusions**

The heavy concentration of population and consequently increasing activities in urban settlements particularly in larger ones, has strained urban services and severely affected all types of urban environment viz. physical, social, economic and aesthetic, in these settlements. It is experienced in the world over that, this sort of rapid urbanization has resulted in tremendous pressure on urban infrastructure facilities and services, thereby affecting the quality of life in our urban settlements to a great extent. In order to achieve healthy living conditions in our urban areas, it is necessary to resort to innovative and efficient systems of urban transportation planning, challenges and policy initiatives, which have to play an important role not only in fighting the urban growth, but to accept it as an inevitable outcome of economic change and to prevent or minimize many negative effects of urban growth, such as traffic problems, slums and environmental degradation etc.

Thus needed to provide for such an exchange of data that will not only guarantee rapid access to data;

1. Geospatial Technology should form the core of the IT strategy of Urban Local Bodies.
2. The Urban Local Bodies have valuable and large data in the shape of maps, plans, registers, records etc. The computerization of the records and GIS are the solutions to preserve, update, retrieve and analyze the data and helpful for decision-making and advantageous and dependable in crisis management.
3. Remote sensing and GIS help in preparing the correct geo-referenced Base map showing updated Information on plot boundaries and subdivisions.
4. The preparation of Master Plans is a statutory obligation on ULBs. Due to increase of population and physical growth, the preparation of Master Plan is a gigantic task. The use of RS and GIS techniques are useful to do this work more expeditiously and accurately.
5. The map also contains the other features such as roads, streetlights, manholes, dust bins etc which has a lot of utilitarian value in the administration of an ULB.
6. Since the maps are digitized the regular updating of the map will be easy whenever a building permission is given or a road is repaired or re-laid.
7. Due to the usage of the real-time data it saves not only the time and enhances the accuracy but it also avoids the repetition of the same work and increases the confidence of the public in the administration.

## **7. Recommendations**

1. The availability of data and maps are needed in the formation and maintenance of roads. In number of instances the data collection, storing and retrieval of the data of roads are time taking, cumbersome and incomplete. GIS application solves all these problems. The data including maps shall be regularly updated.
2. GIS database for manholes, street lighting, potholes, works done, scheduling, etc has to be built and used. GIS application is of a major help in storing and retrieving the data of details, which are underground such as pipelines, drains with their dimensions.
3. In the formation of new roads and to study their impact can also be done through GIS application.
4. The present grievance redressal mechanism shall be linked to the road inventory and shall be used after analyzing the same on the GIS application. The data shall be accessible to all the staff members so that the redressal mechanism will be instant and monitoring will be simple.
5. The GIS maps help to identify the areas based on the quantity of garbage generated and problem areas can be identified and monitoring can be done effectively.
6. Web based GIS application in urban administration shall be made mandatory for effective governance and shall be a pre-requisite qualification for making the Urban Local Body (ULB) eligible for any financial assistance from the government.

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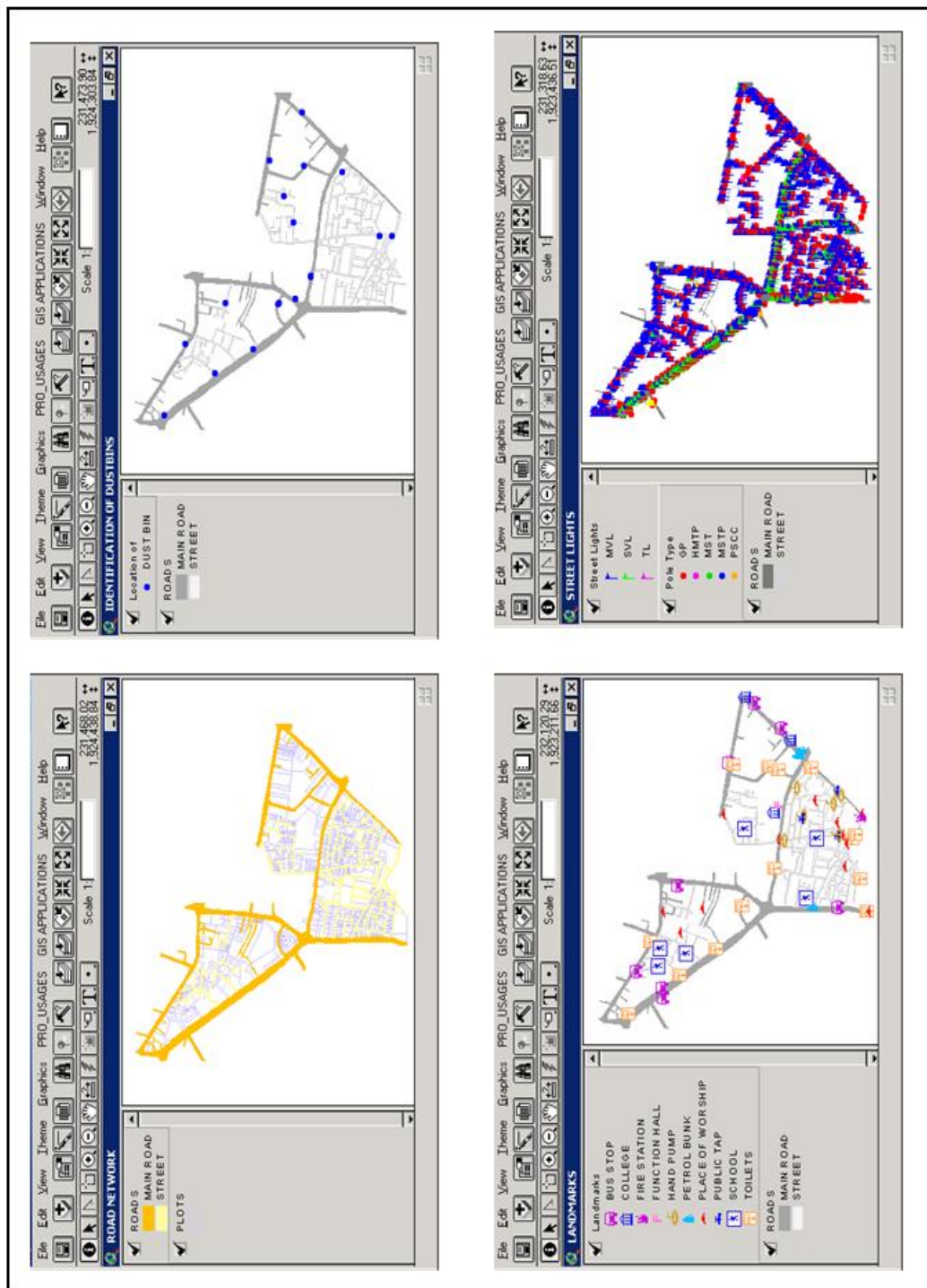


Figure 1. Showing the Urban Transportation Planning Maps of the Study Area

