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Restructuring Road Governance – A case of Jaipur, Rajasthan

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ABSTRACT: Governance has always been an integral part of any city; it promotes confidence among community and leads to better decisions. Plus to this, urban management and planning are also vital elements of prosperity for any city and all these three elements should work hand in hand. The coordinated dynamics of Governance, management and Planning helps local government to meet its legislative responsibilities. This paper highlights the voids among governance, management and planning, highlights the innovative practices done by other internationals and explains how similar strategies can be helpful in Indian scenario. Indian governance system is facing major challenges as the functional area of one agency overlaps that of other agencies. Especially when it comes on to the road and transportation sector it becomes more complicated, thus resulting into less sufficient road network and imbalance between road hierarchies which ultimately results into ill conditioned and congested roads. Jaipur, with its strategic location and proximity to national capital is undergoing through a transformational phase where vehicles on roads have tremendous manifolds in past decades. There is a need for better governance plan for Jaipur which integrates management and planning in its action and resolve the issue highlighted in this paper.

Key words: Governance, Management and Planning

I. INTRODUCTION

Urban development in Jaipur is neither unique nor exclusive but similar to a nationwide phenomenon. Road infrastructure is another infrastructure which was and is neglected by citizens of Jaipur city and no special attentions was given on small network details by the authorities dealing with road infrastructure, which is now resulting into congestion and degraded environmental conditions. The research is carried out in two sections, first, highlighting the issues of governance, management and planning in context with Jaipur and second, taking out examples from best practices from around the world for required recommendations and way forward.

II. JAIPUR CITY PROFILE

Strategically located, with the capital of India, Delhi at 258 kms and Agra at 232 kms, the city forms part of the amous Golden Triangle. It is also located on the golden quadrilateral of NHDP.

NH8 connects Mumbai and Delhi. NH11 connects Agra and Bikaner. NH12 links Jabalpur originating from Jaipur. The transport system of the city is mainly road based.

The road characteristics are very different for the walled city and the areas outside.

Inside the walled city, there is an organized grid pattern of roads and outside, there are ten major arterial spines that criss-cross the entire city e.g. Tonk road, JLN marg, MI road, etc.

The travel needs are fulfilled by a variety of modes of transport like, buses operated by RSRTC, mini buses by private operators, motorized auto rickshaws, non-motorized tricycles, private vehicles such as four-wheelers, two-wheelers and cycles.

III. GOVERNANCE ISSUE

It is seen from above table that various national and state level agencies are involved in one or more functions. An overlap in the responsibilities can be seen e.g. road construction is a responsibility of JDA as well as PWD. A particular stretch of road is constructed by one body, encroachments along it is another's function, tree plantations along the sides, street lighting, etc. are yet others' functions. There is no governing body in transport department regulating the land use and related bye laws along the city roads.

Table 1: Present Institutional Framework at Center and State levels regarding ROAD infrastructure.

Agency	Planning And Design	Governance	Operation And Management
MORTH (center)	Planning, development and maintenance of National Highways in the country, extends technical and financial support to State Governments for the development of state roads and the roads of inter-state connectivity and economic importance, evolves standard specifications for roads and bridges in the country, serves as a repository of technical knowledge on roads and bridges.	Formulation and Implementation of policies for Road Transport, National Highways and Transport Research with a view to increasing the mobility and efficiency of the road transport system in the country	Evolves road safety standards in the form of a National Policy on Road Safety and by preparing and implementing the Annual Road Safety Plan, Collects, compiles and analyses road accident statistics and takes steps for developing a Road Safety Culture in the country by involving the members of public and organizing various awareness campaigns.
NHAI (center)	National Highways, Flyover, Bridges	National Highways, Flyover, Bridges	
JDA (state)	Preparation and implementation of master plan including transport system, development of ring roads, transport facilities like MRTS, etc., street lighting	widening of all main roads, construction of over bridges, under bridges and flyovers, regulation of traffic on roads, removal of encroachments in non JMC but JDA areas	Traffic control and management, minimize pollution, environmental development by planning and implementing roadside plantations,
JMC (state)	Urban Planning including town planning, regulation of land use, Urban amenities like, bus stops.	Solid waste handling, street lights, removal of encroachments in JMC areas	Land use, Maintenance of roads, parking, road lights
RUIDP (state)	strengthening of the roads, construction of ROBs/Flyovers, drainage	Linking investments to ongoing reforms, integrated quality infrastructural facilities	integrated urban infrastructural facilities
PWD (state)	Design and construction of Roads, Bridges	Acts as Technical Advisor to the State Government in these matters, evacuating the encroachments coming along the road sides	Permitting construction of approaches on both sides of roads to private individual, other institutions, factories, Petrol Pumps etc., plantation of trees along both sides of the road.
Transport Department (state)	Policy for traffic control, Vehicle registration, setting standards including safety and environment	Traffic management systems, Fixation of Fares, Vehicle registration, driving Licenses, Special Permit	Road Transport, Inspection and testing of vehicles, Enforcement ofrules
Traffic Police (state)	Traffic plan awareness, Recommends road Engineering changes to PWD, JDA, JMC	Traffic Enforcements for safe and smooth traffic	Road accidents investigation, Enforcement of Traffic Rules
RSRDC (state)	Construction of Roads, Bridges	Construction of privately financed infrastructure projects, mainly Highways, Bridges and ROBs being constructed on BOT/PPP Model.	augment the limited number of specialized & quality construction agencies available in the State & Country so as to reduce the cost/time overruns in the construction of Bridges, Roads

(Data Source: Websites of Ministry Of Road Transport and Highways, National Highway Authority of India, Jaipur Development Authority, Jaipur Municipal Corporation, Rajasthan Urban Infrastructure Development Project, Public Works Department, Transport Department, Traffic Police, Rajasthan State Road Development And Construction Corporation Ltd.)

An apt example is Tonk road's stretch from Tonk Fatak Puliya till Gopalpura flyover where 3-4 storied commercial complexes have come up in recent past leaving no setback from the busy road and having no parking facility within, in spite of the fact that there is no service lane and no provision of on street parking too.

IV. MANAGEMENT ISSUE

According to Jaipur Master Plan 2025, Gopalpura Bypass road has 40 m ROW with 5 m shoulder width but the actual scenario says just 20 m ROW (Fig. 1). Now, this is a management issue within the related responsible governing bodies as either the buildings encroached over the assigned ROW without coming in attention of the responsible agencies or the input data at the very initial stage itself was wrong. There is no shoulder/footpath in actuality and there is no management body to regulate the abutting land use along the road. One can find residences facing the main road, commercial shops and complexes along the road leaving no setbacks, instead encroaching upon the ROW resulting which, pedestrians have no place to walk safely as their footpaths are no more. Increased number of vehicles on roads and vehicles parked on road in front of already encroached houses and shops, due to lack of on street parking facility results in a mess at the junction to an extent of traffic jams up to 200 meters.

The road width – carriage way, should be designed to accommodate the design traffic volume assessed in demand assessment. This is restricted by Right of Way provided in the development plan. Design traffic is arrived at from traffic surveys and socio economic profile of area influenced by the road. A design period of 15-20 years should be adopted for arterials sub-arterial and 10-15 years should be adopted for local and Collector Street. Right of Way recommended for the various categories of urban roads are given in table below.

Fig. 1. Intersection of Gopalpura Bypass road and Tonk road*(Source: Google Earth).*

Classification	Recommended road width in meters
Arterial	50-60
Sub-Arterial	30-40
Collector Streets	20-30
Local Streets	10-20
Source: IRC 86-1983	

Another management issue is bad conditioned road, which is outcome of excessive load given to surface. The vehicles passing through these roads are way beyond the standard capacity preferred by IRC, the following table shows the capacities of Urban Roads between Intersections:

No. of traffic lanes and widths	Traffic Flow	Capacity in PCUs per hour for various traffic conditions		
		Roads with no frontage access, no standing vehicles, very little cross traffic	Roads with frontage access but no standing vehicle and high capacity intersections	Roads with free frontage access, parked vehicles and heavy cross traffic
2 Lane	One way	2400	1500	1200
7-7.5 m	Two way	1500	1200	750
3 Lanes	One way	3600	2500	2000
4 Lanes	One way	4500	3000	2400
14 m	Two way	4000	2500	2000
6 Lane	One way	3600	2500	2200
21 m	Two way	6000	4200	3000
Source: IRC 86-1983				

Beside arterial and sub-arterial roads, local and collector roads face some major issues. These issues are physical and sometimes social, few issues are listed below:

(i) In peak hours commuters picks up local roads as a shorter route option.

(ii) These road categories are more prone to littering and solid waste issues if not maintained properly.

(iii) Local and collector roads are not patrolled by police, which makes them vulnerable for criminal activities.

(iv) These roads hold major construction activities as compared to arterial and sub-arterial roads which sometimes degrades their surfaces.

V. PLANNING ISSUE

Fig. 2 & 3. Road Hierarchy conflicts in Jaipur city area.

In both the above cases, it can be seen that there is a mismatch of road hierarchy i.e. local street ending into sub-arterial and somewhere, even arterial roads instead of collector streets. This mismatch of hierarchy sometimes surprises a slow moving driver on a local street directly onto the very busy and congested arterial roads resulting into further congestion, sometimes fatal accidents and ultimately, a mess. (Here, green circles show the roads in hierarchial order and red ones show the mismatch.)

Fig. 1.2 is a case near Tonk Fatak where apart from the mismatch, there is also a railway crossing further congesting the traffic and delaying the travel time and Fig. 1.3 is a case of Gaurav Nagar where local streets are directly ending into National Highway 11C.

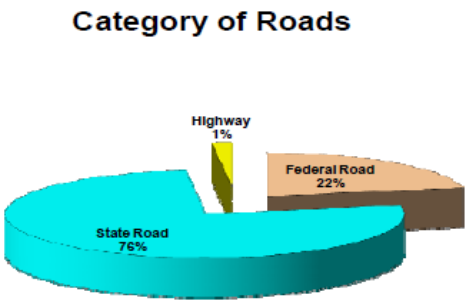
VI. LEARNING FROM INTERNATIONAL BEST PRACTICES

Best Practice of Governance: Malaysia

Malaysia is parliamentary democracy with a bicameral legislative system. In Malaysia, road constructions have begun since before independence. Before 1957, there has been a road system linking Johor Bahru in the south with Kangar in the north and Kota Bharu in the East Coast, connecting main cities with the other cities. After the country gained independence in 1957, efforts to improve the road system has been done properly and through the rapid development planning, especially Malaysia Plan every five years which was launched by the Federal Government.

-Road Network System

*61,420 km State Roads & Municipality Roads
*18,904 km Federal Roads
*1,820 km Toll Highways
*TOTAL = 82,144 km



Road Network: Roads in Malaysia are classified into two broad categories, namely Federal Roads and State Roads.

Federal Roads: Federal roads are all roads declared under the Federal Roads Ordinance (1959) and the major interurban roads joining the state capitals and roads leading to points of entry to and exit from the country.

Road Category	General Description	Responsible Authority
Toll Expressways	Inter-Urban toll expressways	Malaysian Highway Authority (MHA)
National Highways	Inter- Urban Linking Federal Capitals	PWD Malaysia
Regional Road Schemes	Roads Forming network in RDA	PWD Malaysia Regional Units
Minor Roads (access to GOVT. buildings)	Roads lead to within FED. GOVT. institutions	State PWD

ROAD CATEGORY	GENERAL DESCRIPTION	RESPONSIBLE AUTHORITY
Roads within Federal Territory	Roads other than the designated Federal Roads	City Hall of Kuala Lumpur and Municipal Council of Labuan.
Primary Roads	Major roads forming the basic network within a state, linking state capitals and major towns.	State PWDs
Secondary Roads	Roads forming the network within a District.	State PWDs
Minor Roads	Minor roads within a village or rural inhabited area.	District Officers
Urban Collector Roads	Roads serving as collectors and distributors of traffic within a Local Authority area.	Respective Local Authorities (with assistance from state PWDs in most cases)
Local Streets	Basic road network within an urban neighborhood, serving primarily to offer direct access to abutting land.	Respective Local Authorities.

State Roads: State roads generally comprises of the primary roads providing intra-state travel between the district administrative centers. Other roads included in this category are the urban collector roads under the municipalities and other minor roads within the villages and the rural inhabited areas under the Districts Offices.

It can be seen from above tables that, the governance of roads at federal level is majorly done by PWDs and at state level local authority and PWDs take care of road infrastructure administration. Only minor or rural roads are governed by district offices.

(a) Best Practice of Management: Trafikverket (Swedish Transport Administration), Sweden

The Swedish Transport Administration is responsible for the long-term planning of the transport system for road, rail, shipping and aviation. Their task is to develop an efficient and sustainable transport system from a perspective that encompasses all modes of transport. STA works with long-term infrastructure planning in close dialogue with regions and municipalities. STA is also responsible for building, operating and maintaining state roads and railways. In addition, STA is also responsible for ensuring that this infrastructure is used effectively and that it promotes safe and environmentally sound transportation. STA also deals in Planning, Landscaping, ITS, licensing etc.

(b) Best Practice of Planning: Land Use Transport Authority (LTA), Singapore

Four key strategies were identified in the 1996 White Paper on A World Class Land Transport:

-Integrating land use and transport planning

-Expanding the road network and maximizing its capacity

-Managing demand of road usage

-Providing quality public transport choices

At Strategic Level:

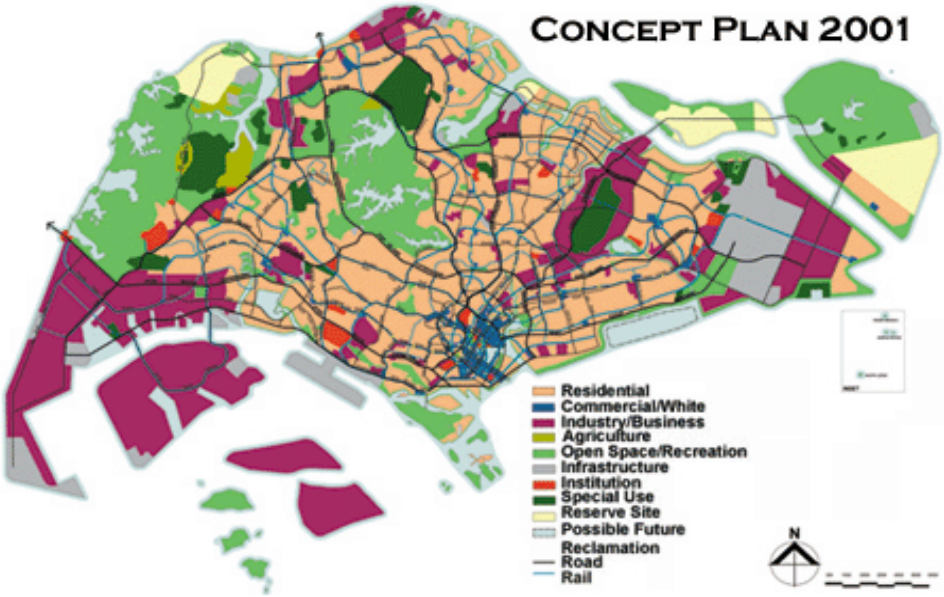
Decentralizing commercial and other economic activities through development of regional centers at MRT stations.

Reducing the need to travel by locating employment centers near residential.

At Micro Level:

Highest density development around MRT.

Proper mix of residential, commercial and even institutional development.

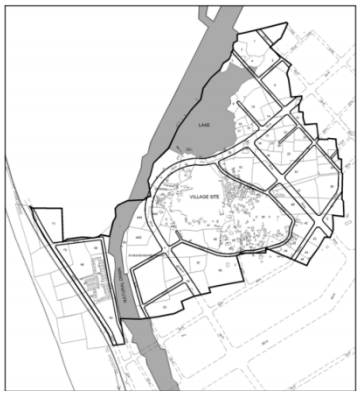


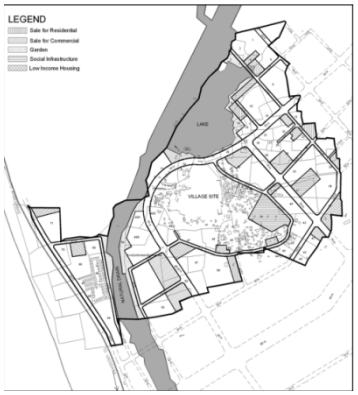
(c) Identifying Land for New Roads: Town Planning Schemes of Gujarat

The GTPUDA enacted in 1976 by the State of Gujarat. It came into force in 1978. It is a far more comprehensive legislative act and responded to the local challenges of growth. The act allows for delineation of a large planning area around the jurisdiction of the local authority and the physical planning proposals and financial proposals in TPSs were unlinked.

The Development Plan (DP) is a macro strategic plan document that defines the direction of growth and envisions the citywide infrastructure for the entire development area. The new areas for growth to be opened up for development are clearly marked and divided into smaller areas of about 100 to 200 hectares. Each such area is called a TPS. The TPS are micro plans prepared for about 100 to 200 hectares typically involving 100 to 250 landowners. The TPS are numbered starting from one, two, three, etc., and are usually named after the "village" they fall in.

A complex system is used to simultaneously reorganize land parcels or plots, provide *access to each land parcel or plot*, set aside land for public uses by taking a portion from each landholding, and appropriate increments in land values for infrastructure development. Detailed infrastructure is designed and cost estimates are prepared.





VII. RECOMMENDATIONS

It can be concluded that there needs to be integration in Governance, Management and Planning of Road infrastructure and to resolve the various issues, they need to be addressed simultaneously on different accounts. The recommendations comprise of policy framework, regulatory measures, control mechanisms, modern technology use, public participation, etc. in order to keep the three in harmony.

(i) A single agency should be responsible for construction and maintenance of roads, preferably the Jaipur Development Authority, effectively incorporating public participation. Use of various modern techniques like GIS and remote sensing should be done for regular monitoring of all city roads.

(ii) There needs to be an integration in the functioning of agencies involved in road infrastructure with all other connected agencies responsible causing road cuts like PHED,RSEB,TELECOM, etc. for providing support infrastructure along roads like storm water drainage, electricity, telecom, etc.

(iii) A mix of traffic on roads congests them, reduces the travel speed and increases the travel time. This calls for a proper analysis of the major traffic generating points and stringent enforcement rules for shifting of certain activities or changes in certain policies wherever required. This can be best applied if management is under the same head agency which is responsible for initial planning and governance.

(iv) Multi-storied parking lots at suitable points need to be constructed on an urgent basis because the already congested roads due to increasing population and vehicle growth but insufficient road widths are getting over congested with the vehicles parked on them.

(v) A proper space needs to be allotted to pavement vendors, squatters, vegetable retail vendors, etc. encroaching on footpaths. Temples situated on main roads should also be relocated.

(vi) Regular traffic surveys at important / congested locations, junctions, railway crossings etc. need to be conducted and in depth analysis of the reasons for system failure needs to be done for better planning and policy making for future projects.

A special body needs to check the abutting land use along the roads depending upon varying ROWs and allow any construction if only, adequate parking facility is available.

VIII. WAY FORWARD

It is seen that issues occur at micro and macro level of the city and conflicts arise when more than one body works on one single job but there are doable measures to combat these issues. Now the Government at Center, State and Local levels need to think if and where, amendments are required. And active people's participation should be used as an important tool as they are the end users of Road.

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