



AN EVALUATION OF INFRASTRUCTURE DEVELOPMENT AND PLANNING FOR A HIGH GROWTH NUCLEUS OF HINJEWADI IT PARK

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Abstracts

With the advent of globalization the setting up of the IT Parks resulted in the rapid growth in the tertiary sector opening up avenues for high tech services. The high growth nucleus of the IT Park and its less developed fringe resulted in an urban sprawl in the fringe areas of Pune city. The inflow of IT and other multinational companies have boosted its growth and brought changes in the demand for residential and commercial space of Pune.

Historically, the growth of the sprawl in many Indian cities during the decades prior to globalization was a predominantly a result of the development and growth of manufacturing. Many industries had developed in the outskirts of the cities where the taxes were low. This was the case for city of Pune which grew rapidly and the suburban towns of Pimpri and Chinchwad developed.

The global market forces have had an impact and opened opportunities in the high tech rapid growth IT sector. The setting up and rapid expansion of the IT Parks in the fringe areas of Pune made significant changes in the economic landscape of the city.

The sudden spurt in the demand for jobs in the IT Park resulted in migrant population of knowledge workers from different parts of India. This further led to an increase in demand for housing for these migrants. The lack of planned growth of housing in the initial stages of the development of the IT parks resulted in the relocation of the migrant population in different parts of the city. Due to this the growth in numbers of commuters to the IT parks has put a lot of pressure on the given transportation network.

This study entails the evaluation of the transport and commuting on the roads leading to the IT Park at Hinjewadi. The primary and secondary data analysis shows that there is a lot more to be desired in the field of transport infrastructure planning and development of this region.

Key words: urban sprawl, transport network, commuting.

INTRODUCTION:

Transport systems are closely related to socio-economic change. The mobility of people and freight and levels of territorial accessibility are at the core of this relationship. Economic opportunities are likely to arise where transportation infrastructure are able to answer mobility need and insure access to markets and resources. From the industrial revolution in the nineteenth century to globalization and economic integration processes of the last twentieth century, regions of the world have been affected differently by economic development. International, regional and local transportation systems alike have become fundamental components of economic activities. (Jean- Paul Rodrigue 2006)

The urban sprawl in most Indian cities has taken place along the transport arteries. After globalization the introduction on IT parks in many cities created a nucleus to draw the economic activities towards these centres. In Pune the development of the Hinjewadi IT Park has resulted in the rapid expansion of urban areas. Since this nucleus which is located along the fringe has been introduced in 1990s, resultant growth in urban sprawl has taken place over the last decade.

Sprawl generally refers to some type of development with impacts such as loss of agricultural land, open space, and ecologically sensitive habitats. In simpler words, as population increases in an area or a city expands to accommodate the growth; this expansion is considered as sprawl. Usually sprawls take place on the urban fringe, at the edge of an urban area or along the highways.

The primary cause for urban sprawl is the growth or the increase in population of the city which results in the constant search for new areas. This creates a spill over into the surrounding regions. If the city is growing very fast it results in the accentuation of the growth in the surrounding regions of the city where land is available and this creates conditions for sprawl. The dispersed development outside the city usually along the highways is known as sprawl (Agarwal 2001)

The main causes of urban sprawl in the Indian cities is due to certain factors like high rate of urbanization, low prices of land outside the city limits, unplanned development, lower taxes, availability of land which is not cultivated etc. It includes the loss of agricultural land and the change in the land use mainly in the fringe areas. The boundary of a city expands to accommodate the urban growth.

The growth of the sprawl in most Indian cities during the previous decade was a result of the development and growth of manufacturing and consequent urbanization. These industries developed in the outskirts of the cities where the taxes were low. This was also the case for city of Pune which grew rapidly and the suburban towns of Pimpri and Chinchwad developed. The liberalization of the domestic economy and its increasing integration with the global economy led to the rapid growth of the services sector, whose share in the Gross Domestic Product (GDP) of India has surpassed that of agriculture and industry. The software industry has emerged as one of the fastest growing sectors. This industry replaced the public sector as the largest creator of jobs.

The post globalization era experienced the introduction of the IT parks in the fringe areas of Pune. The IT Park is the main human induced activity which has resulted in the growth of residential and commercial areas. This has resulted in urban sprawl.

The growth and development of the urban areas along the outskirts has been experienced in the cities like Hyderabad, Bangalore and Pune. This growth has been triggered mainly as a result of the IT parks. The effects of globalization tend to concentrate more in these regions that are seen by both global and national investment as ideal areas to locate the manufacturing of consumption goods, investment in the built environment and create the landscape of global consumption (McGee 1997). Economic restructuring during recent times got altered after the public sector investments changed from infrastructure to knowledge based and from public to private emphasis for development vehicles. This has developed competitiveness in the application and adoption of labour, capital and technology along the lines of globalization (Daksha Barai 2009). These changes have got incorporated into the Hinjewadi region close to the Pune.

AIMS AND OBJECTIVES:

Aim of the paper is to study the impact of IT Park on commuting patterns. To reach the aim following objectives were used

1. To study transport network in the areas where urban sprawl has taken place in the fringe of the IT park
2. To evaluate the transport and commuting on the roads leading to the IT Park at Hinjewadi.

STUDY AREA:

Hinjewadi (18°35'37.02"N, 73°43'46.79" E) is close to Pune so its climatic conditions, Land use pattern are influenced by Pune city. The elevation of Hinjewadi is about 590 m above mean sea level. This village is situated on north western side of Pune city along the left bank of River Mula. The village is located in the north-west outskirts of Pune is within the commuting distance from the heart of the Pune City. Hinjewadi IT Park is close to Pune-Mumbai Express Highway, and the Mumbai international airport is about 3 – 3.5 hours drive.

The villages which were selected were Hinjewadi, Man, Marunji, Nere, Wakad, Tathwade, Chande, Nande, Sus Jambhe and Kasarsai. These villages are located in Mulshi taluka.

Pune (18° 32' N 73° 51' E / 18° 53' N, 73° 85' E), the cultural capital of Maharashtra is a

rapidly growing urban city. Pune lies on the leeward side of the Sahyadri ranges also known as the Western Ghats at the confluence of Mula and the Mutha rivers, which are tributaries of the Bhima River. The highest point just outside the urban area is Sinhagarh fort (1300m above msl). The climate of Pune is on the whole dry and invigorating. The cold season from December to February is followed by the hot season lasting up to early June. The period from early June to about the beginning of October is constituted to southwest monsoon. The succeeding period up to November is post-monsoon season. The climate of Pune is pleasant and is an asset to its citizen. Pune experiences four district seasons: summer, monsoon, post-monsoon and winter. Tropical summer months are from March to May; with maximum temperature ranging from 35oC to 38oC.).

Location Map

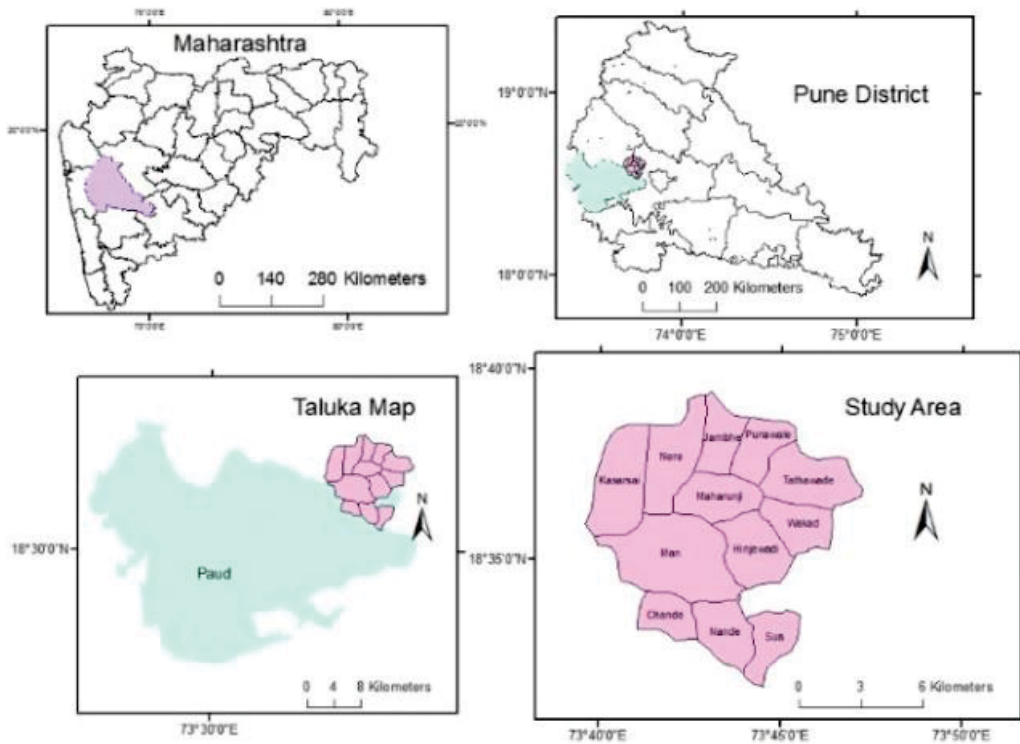


Fig no 1 Location Map of Hinjewadi and Surrounding Villages

DATA AND METHODOLOGY:

The change in urban area for the time period 20 years was analyzed by using satellite images at around 10 year interval 1992, 2000 and 2011. The images were downloaded from internet. After scanning topographical map of study area were georeferenced using Arc GIS 9.3 software.

The satellite images after downloading were used to plan the survey in the study area using FCC (False Colour Composite) format. The villages in the study area were then surveyed and the ground control points for each class were then used for the generation of the training sites and using those classes, the supervised classification was performed and the classified output was derived.

The study area was surveyed and primary data was collected for modes of transport with the help of the questionnaire method. The data then was compiled, tabulated and analysed for

understanding the traffic patterns and changes after the introduction of Wakad underpass.

RESULT AND DISCUSSIONS:

1. Urban Growth:

It can be observed from the figure 2 that land use in Hinjewadi IT Parks and surrounding village has undergone a significant change within a span of two decades. This may be mainly due to the establishment of IT Park in Hinjewadi. The changes can be mainly observed through changes in built up area. The growth of the IT Park demands an increase in the contraction which is reflected in the category of the built up area. It can be seen that there is a phenomenal increase in the built up area and industrial area the time span of two decades.

Built up area in 1992 is 1767.93 hectares and in 2000 increase to 2205.18 hectares. In the year 2011 its further rose to 2620.17 hectares. The total area under Hinjewadi and Surrounding villages is 10033.32. Hence 26% built up area increased in a span of two decades.

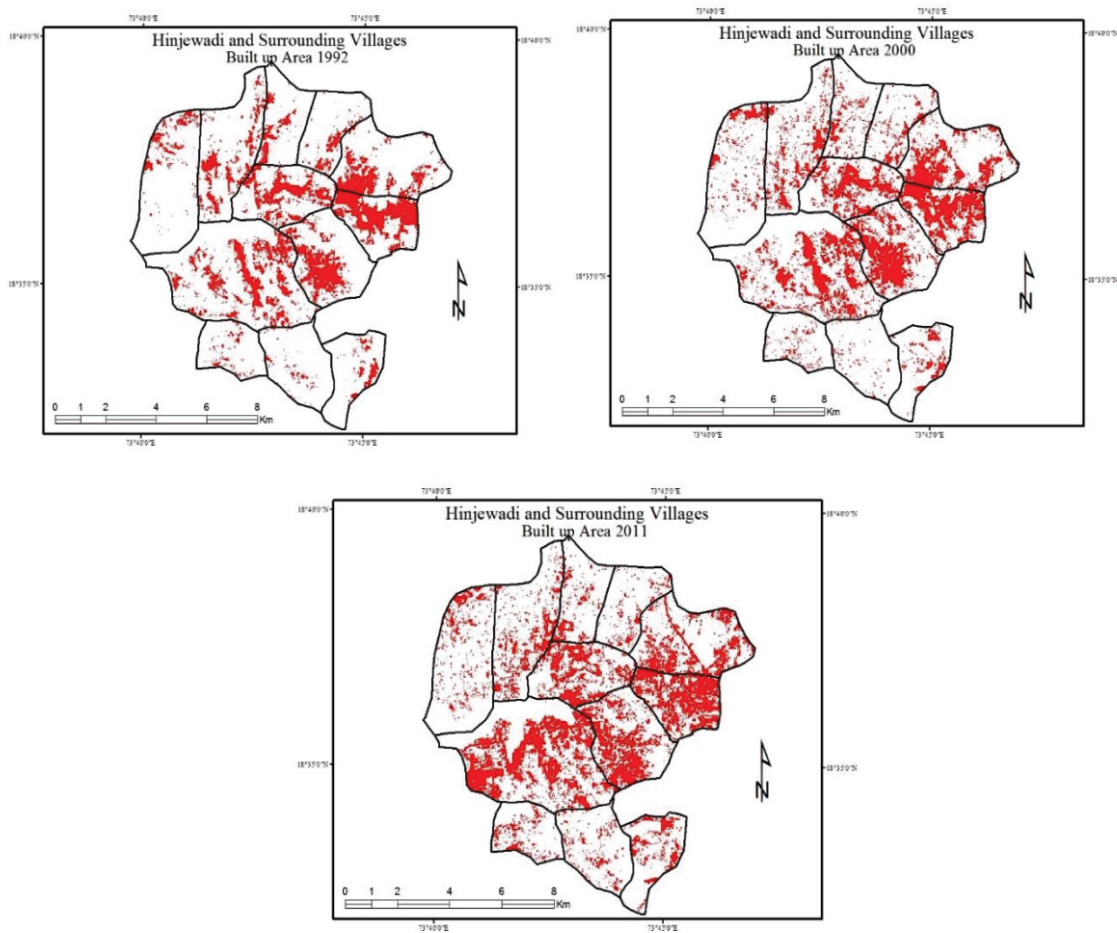


Fig no 2 Change in Built up area

2. Transportation:

The Figure 3 shows the road network of Hinjewadi and surrounding villages. Most of the villages are well connected by road. The IT Park is close to the Mumbai Pune expressway and NH-4.

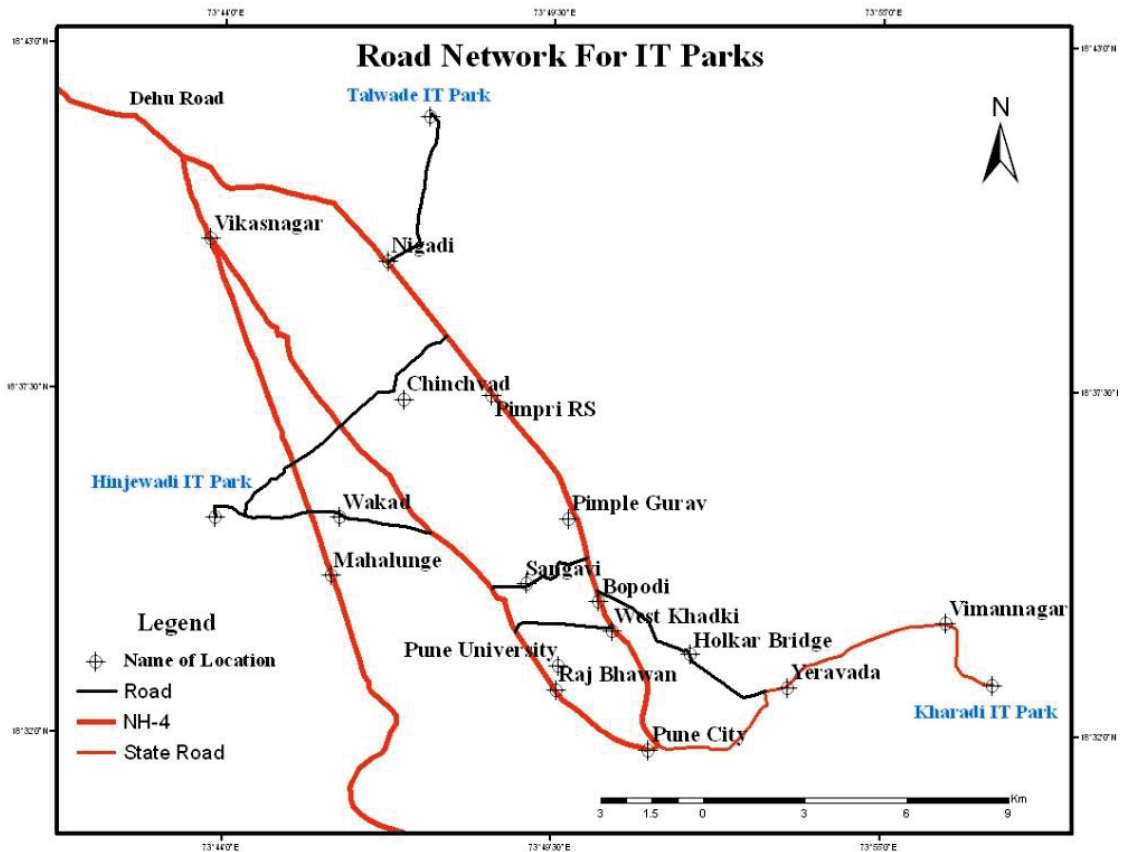
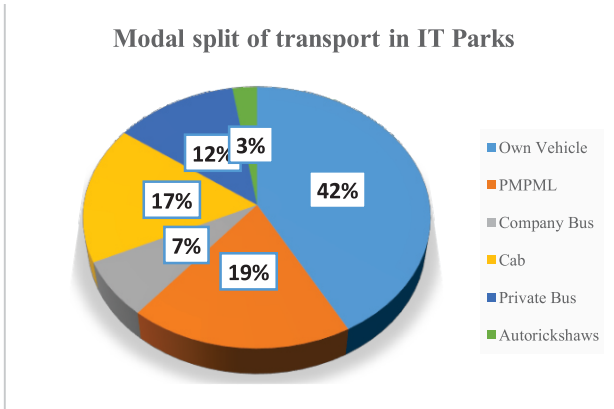


Fig no 3 Road Network
Table No 1- Vehicular type in Pune

Sr. No	Type of vehicle	No of vehicles
Up to march 2011 (Source RTO Pune)		
1	Car	3,86,559
2	Jeep	57,215
3	Two wheeler	17,96,339
4	Auto rickshaw	69,946
5	Bus	10,001

The table 1 reflects the different modes of transport in Pune which shows that the number of two wheelers is the highest. Based on this data a sample survey was taken for understanding the trends of transport used for the employees commuting to the Hinjewadi It parks. This is represented in the diagram below

Table no 2. Modal split of transport in IT Parks



Sr. No	Mode of transport	Number of vehicles
1	Own Vehicle	84
2	PMPML	38
3	Company Bus	14
4	Cab	34
5	Private Bus	25
6	Autorickshaws	5

Fig no 4. Modal split of transport in IT Park

In figure 4 shows only 19% people use the PMPML bus transport. The remaining 80% people refer that other facilities which comprise 42% of the persons using their own vehicles like two wheelers or four wheelers. 24% persons use the company bus or cab or private cabs. The remaining 24% people use Private bus like metrozip or autorickshaws. This indicates that the registration of new vehicles in the Pune is on the rise. The high growth rates in the numbers of two-wheelers and four-wheelers indicate a growing dependence on private and own mode of transport in Pune.

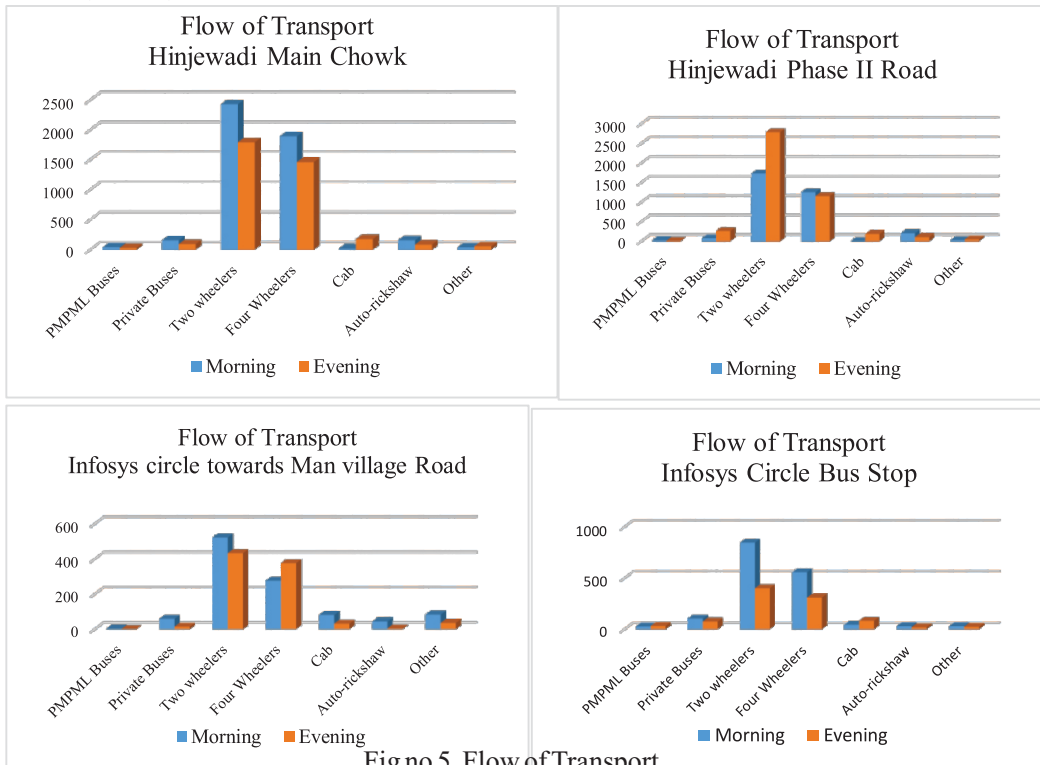


Fig no 5. Flow of Transport

The observations were based on four locations which were surveyed in the from 9.15 to 10.15 a.m. and from 5.30 to 6.30. p.m. These include Hinjewadi main chowk, Hinjewadi phase II road, Infosys circle towards Man village and Infosys bus stop (Phases I). All places recorded a high percentage of the two wheelers and four wheelers. The PMPML frequency is very less due to which many people use the own vehicles or private bus or cabs. It was observed that the number of private vehicles people is growing steadily. This clearly shows the inclination of people towards private transport. The trend is also influenced by the income level and the state of public transport in Pune

CONCLUSIONS:

Urban sprawl is demonstrated through the growth of built up area. Sprawl leads to crisscross commuting. This makes an uneven mixed-destination demand on the transport infrastructure. There are fragmented transport routes diverging in different directions.

The Hinjewadi It Park has developed along the outskirts of Pune. The commuting of people living in the city has become a basic necessity. The public transport seems inadequate in the supporting this commuting (Table no 1). Hence it is necessary for the people to rely on two wheelers for the daily commuting. In spite of heavy traffic along these routes, the proportion of two wheelers is fairly high. The demand in the transport routes towards the Hinjewadi IT Park has resulted in the new transport lines

The new developments in transport include the introduction of the Wakad Underpass. This has reduced the congestion in traffic to a certain extent. In the sample survey these changes have not been clearly discernible, but these changes will create suitable conditions for reducing the traffic congestion in future.

References:

Agarwal Pallavi (2006) MA Ekistics dissertation effects of urbanization on urban sprawls in Raipur, Chhattisgarh.
Douglas D. McGregor, D. Simon and D. Thompson (2006) Peri urban ecosystems and societies transitional zones a contrasting values. In Peri-urban interface: approaches to sustainable natural and human resource use, London, U K. Earth scan Publications Ltd., pp. 18-29.
Jean-Paul Rodrigue, Claude Comtois and Brian slack,(2006) The Geography of Transport Systems, Routledge Taylor & Francis group.
Lu Wang a, Huayi Wu b ,Fei Wang c Yuemin Hu(1997) economic globalization and a case study of the urban land use. Growth of Wuhan, Pr. China
McGee, Terry (1997), Globalization, Urbanization and the Emergence of Sub-Global Regions, in Watters R.F. and T. McGee (eds.) Asia Pacific: New Geographies of the Pacific Rim, Hurst and Company, London.
Parkhi S. (2011) the Concept of Urban Fringe and the Basis for Delineation. The Urban Fringe of Indian Cites. Rawat Publications pp 55-63

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