Chapter 1

INTRODUCTION

1.1 Introduction

Transport is considered as a major plank of infrastructure for growth and development as it provides basically) linkage of nodes and canters with its means and modes. The meaning of transport has been understood by economists, planners, engineers and geographers with a different sense and widening the horizon of the text. Transport is studied in terms of spatial expression which examine the pattern. Broadly speaking the subject matter of transport can be categorized as (i) pattern of transport network (ii) Study of junctions and nodal joints or terminals i.e. ports and airports (iii) Study of commodity movement forming commodity flow and flow analysis (iv) Study of people movement forming traffic flow and flow analysis and (v) The entire system of hinterlands and hierarchical relationship associated with network.

Transport network plays a pivotal role in reducing the spatial disparities and bringing about a balanced and integrated development, this could be “basic infrastructure helping in the proper exploitation of the regional resources of the region and transport network is thus a necessary element of spatial expression. The linkage and flows between centers, their nature and size, function and accessibility are basic consideration in structural aspects.

The earth surface is not uniform if isotropic. Some areas are favorable for human habitation, some are rich in minerals, some have abundance of water, plants and animals and some areas have deep fertile soils suitable for agricultural purpose. If these different areas could move freely to the places of their demands, then there would be no need of developing artificial system of movement and in that situation the space economics would be perfectly uniform. But the practical situation is quite different. These areas are quite far apart from each other and are fixed. Unless they are joined or linked or made to interact with each other no space economy of any
sort is possible. For the basic needs of his survival, man directly depends on the environmental resources, which if not available or scarcely available may narrow down the chances of human survival. Human beings are therefore bound to move to various places for various resources and requirements just to augment and ensure the possibility of their existence.

The creation of society and economy may be considered as the byproduct of this critical movement process. This necessitates the development of a system of spatial interaction which in turn demands the creation of a comprehensive and an efficient transportation system. The development of an efficient transportation system is important not only for effective unitization of resources and the mobility of people and goods but also for creating all organized society and space economy.

The space economy thus responds to requirements of intra-sectoral and inter-sectoral and intra-regional and inter-regional relationship through bilateral and multilateral commodity flow occurring over a range of varying distance from one discrete node to another in the network of an interactive system and not along spatial continuum as is the case of surface flows in a stream. The spatial elasticity of demand and the critical range of these flows are greatly influenced by two factors (1) the dynamic requirement of the development process as reflected in the structure and pattern of the inter-sectoral linkages, and (2) the resources availability and the location of economic activities over space.

An efficient road transportation system is of vital importance to economy of any nation. Road transport occupies a dominant position in the overall transportation system of India due to its advantages in terms of easy availability, flexibility of operation, door-to-door service and reliability. Road transport has been acknowledged as the primary requirement for the development of basic infrastructure such as agriculture, industries, and power sector leading to overall economic growth of the country. Roads are an enormous national investment and require maintenance to keep them in satisfactory condition and ensure safe passage at an appropriate speed and with low road user costs. Without timely maintenance, roads deteriorate considerably, leading to higher vehicle operating costs (VOC), increased number of
accidents and reduced reliability of transport services. When the maintenance work can no longer be delayed, it will often involve extensive rehabilitation, and even reconstruction, costing many times more than timely maintenance treatment carried out earlier. Late or inadequate maintenance will increase the ultimate repair costs, road user costs and inconvenience to road users, and reduce safety. Road maintenance is therefore an essential function and should be carried out on a timely basis.

1.2 Perspectives on the Role of Transportation in Regional Development

The basic objective of the thesis is to focus the role of transportation in regional development. To illustrate the relevant issues, examples have been drawn from India. At the outset concept of regional development is precisely discussed. Prior to summing up, an agenda for the future is also presented.

Regional development may be defined as a strategy to achieve certain desired socio-economic goals such as provision of minimum basic needs to the masses and elimination/minimization of striking dichotomy in the standard of living of the two distinguished groups of people, one residing in the big cities and the other in the rest of the vast rural areas (Singh, 1973) taking care of disparities also within the cities that the rural areas in a holistic perspective. Obviously, it involves building-up and strengthening of resources base and spatial as well as functional co-ordinating of settlement system starting from the lowest level to cover up the entire country in an integrated manner. For this purpose the country needs to be divided into hierarchies of regions characterized by intrinsic wholeness and social unity. Of late has been added the dimension of sustainability (economic, social and ecological). It follows from the foregoing that the realization of the objectives described above is not being possible without an appropriate provision of transportation facilities in a spatio-temporal frame-work. Needless to mention that in the light of regional development being a joint venture of experts from various associated disciplines, the geographers equipped with their unique integrative synthesizing technique embodying theories and methodologies based on spatial variables, and economic models and generalizations can contribute significantly to these fields.
1.3 Transportation and Regional Development Relationship: An Overview

Transportation being a seminal factor for any kind of economic activity plays a crucial role in the process of development particularly in terms of spatial economic integration, a key element of regional development and planning. In general a reciprocal relationship has been observed between transportation and regional development, the former providing infrastructural base for the latter and the latter acting as stimulant to evolution and expansion of the form. It is pertinent to mention that the nature of relationship between transport and regional development is subject to change with reference to time and space. And investments in transportation have been found to be positive as well as negative in spectral and spatial consequences. In a broader perspective, two possible impacts (Gauthier 1970) of transportation on development could be noticed viz. (a) positive (B) permissive investment in transportation may create polarized space inconsistent with the spatial objective of their regional development programmers (Hoyle, 1973). Thus it has to be meticulously investigated. It is advantageous to extend or otherwise improve the net whether limited capital resources available for investment might more efficiently or beneficially be used in other ways. (Weitz, 1971) Ironically; India’s transport network considered suitable forty years ago and large in the same form with similar problems. The positive role of transportation in regional development has however, been better acknowledged. In this context Wheeler (1973) stressed the need to study transportation in societal perspective underlining its contribution to the process of industrialization, economic specialization and socio-economic underdevelopment. Similar are the ideas of Hoyle (1973) who observed that the interaction between the level of living pattern of transportation facilities and the average level of living of the population of an area is a critical factor affecting economic and social progress and it needs to be taken into account at all the stages of national and regional development planning. As a matter of fact the formation of regional hierarchies is initially related with the levels and patterns of development of network of transportation and communication. As experiences have shown the objective of a country to achieve optimum economy through regional planning can be realized
effectively by controlling transportation and therefore circulation (London, 1959) in many cases, in order to avoid bottlenecks in the execution of the plan it becomes imperative to provide for a well coordinated transport network with requisite capacity in advance. So, quite relevant is the observation of Belousov (1964) that no regional planning scheme can be considered complete or can be properly evaluated if it does not provide for transport links and does not envisage transport network necessary to achieve the planned development.

1.4 Transportation and the Rural Development:

The transport network introduces an element of dynamism and mobility in the locational structure and pattern of the region. It provides an effective system of vital arteries around which the functional organization of an area takes place. It serves both the short term function of satisfying the demand for movement between areas and long-term function of helping the growth of places by inducing changes in comparative advantage as a result of changes in accessibility and relative location. Thoman and Corbin (1974) rightly observe that today’s volume of consumption, production and trade would not have been possible without large-scale transportation and communication. Particularly vital is commodity movement which is as important to the functioning of the world’s economy as the flow of blood through the human body. Without transportation the functional differentiations of areas into various specialize types of land and indeed the existence of cities themselves, in the modern sense, would be impossible. Transportation by providing a means for moving people and goods to places, where they can be more useful permit to concentration of labour-force and material for carrying on manufacturing and trade and is, therefore, indispensable to the development of cities. However, the improved facilities of transportation in, a region considerably favour the growth of productive opportunities and potential market and increase the possibility of economic expansion. In fact the transport networks are demonstrably part of the development infrastructure with high and low densities may be reasonable linked to their general level of economic development.
In view of the diversity of resources availability over space, it is expected that various regions would specialize in different production processes. As regional specialization proceeds with development, the economy of scale, agglomeration and urbanization emerges on the scene as important determinants of location of productions process at different levels of settlement hierarchy. Each region thus specializes in the production advantage compared to other regions. However it may be noted that comparative advantage by itself is not a sufficient conditioning for inter-regional trade. The absolute difference between prices in different regions must also be considered in relation to transport costs.

There is a tendency in various regions of an economic system to concentrate their trade with a few regions rather than job. All the regions of the on system is because of the friction of distance or distance decay process. In this way the system of inter-settlement interaction gets enmeshed in to the system of inter-regional trade. The inter-meshing of these two operates within the national space economy which is bound by traffic barriers, a common currency and an integrated transport network. It is through these processes that a loosely knit and weakly connected system of settlements gets transformed into a highly differentiated and well integrated field of unified home market in national space. Thus, the interdependencies of various sectors of economy form the basis of spatial interaction and through a transport

Network, result in commercial exchange within regions. The whole process thus goes on and strengthens the process of regional development and transportation. There is, of course a symbiotic relationship between the levels of transport development (level of interaction) and the process of urban-industrial growth and the concomitant process of culture change in any region. If the interactions are symbiotic and not exploitative the rural areas would specialize in products which would be shipped to the urban areas in form for food products add and raw-materials in exchange for wage goods and technological inputs into agriculture which are the specialties of the urban manufacturing sector. Viewed thus, the exchange of commodities is intended to provide intermediate inputs and final demand
requirements to both the rural and urban segments in terms of their respective economic basis. The process of such exchanges is linked to the system determining the level of spatial interaction and the national development by formulating the widening of domestic market which is essential to regional economic growth.

An efficient system of transport helps accentuate the process of resource utilization and management in various regions, creation of employment opportunities, utilization of local skill and enterprise, improvement in income and living standard of the people and elimination of poverty, inequality, deprivation, exploitation etc. which ultimately lead to the balanced rural development and growth. Hence the study of evaluation and meaning for the transportation facilities which aim at rationalizing the routes and the modes of transport in a region should constitute the regional part of regional development planning.

1.5 Review of literature

The project opens up with an article of D.N. Singh (1969) on “Perspectives on the Role of Transportation in Regional Development” He emphasizes development making contextual perusal. Moreover, D.N. Singh (1969) explored the certain practical limitations of rail network quoting two examples of two states one from Bihar and another from Madhya Pradesh. In this rail net has overlooked the places of potential deposition of mineral resources whereas construction of Howrah-Patna-Mugalsarai line is an irrational layout of the rail net in Uttar Pradesh. D.N. Singh (1969) reviewed the studies carried out by geographers and economists and put forth a possible agenda for transportation and its layout for the future. An article entitled “Road Transport and Regional Development - A case study of Mandya District” written by Dayanand. He has presented, and analyzed the level of regional development and later on this is correlated with the road transport in Mandya district in Karnataka. This study is based on the certain selected indicator regarding road transport. The author has computed component analysis to identify road transport region at tahsil level.
B.N. Mishra and Vandana Shukla (2010) have stressed and examined the analytical analysis of existing transport of Bara Tahsil in Uttar Pradesh in which the authors have the problems of transportation confronted in the study region and have suggested a suitable possible plan for the development of effective transport network. Here emphasis was given to rural transport development. The proposal suggested regarding transportation planning for the study area seems to be worthwhile. B.C. Vaidya (2003) studied transportation of Backward and Tribal Dominant region entitled “Transport network and planning strategy for backward region in Maharashtra - A case study of Gadchiroli District”? This study explicitly examined the existing transport and its importance and future infrastructure in the district. Vaidya (2003) felt lack or road network in some tahsils is responsible for the slow development in the district.

Another paper on “Transport Development in India - A Case Study of Andaman Island” is written by Ratan Majumdar (1990). Majumdar outlined the historical evolution of transportation in Andaman Island. The author found out the linkages through various means is considered as a crucial factor in handling the goods and people of this Island in order to explore local resources and is hopeful of opening up a newer transport network in the study region.

Abani Kumar Bhagabati (1984) wrote paper on “Road Network and Accessibility Pattern of Urban Centers in Assam”. In this paper the author has tried to highlight major characteristics of transport in Assam. He has selected major urban centers for the study in Assam state and its transportation. Finally the author has mapped out accessibility of various urban centers and correlated with transport indicators. It was found that the size and spacing of towns are significantly correlated with transport development.

The article entitled “Transport and Rural Development in Dakshmin Dinajpur District of West Bengal” was written by M. M. Jana. This paper deals with the development of transportation and its impact on rural areas. He has studied transportation with using at police station data for the district. Moreover the author
has found out that the lack of transportation in rural area is a crucial factor for accelerating the slow pace of development and has suggested some new effective measures for rural development in order to enhance and increase agricultural activity in the region transport network and the amputation of Sprinkler irrigation in desert land also. Such irrigated patches are linked with the transportation network in Bhiwani district. The author has rightly pointed out ‘the positive relationship with irrigation and road density. Moreover he has stateistically proved that road length increased with increasing area extent under sprinkler irrigation in the study region.

Transport and economic development in Andhra Pradesh was studied by J. Shivaram in which transport development has been thoroughly examined using huge data In addition the author has assessed the types of transportation available in Andhra Pradesh. The development was assessed through various five year plan periods and finally he has dealt with expenditure estimated on transport. C.K. Degaonkar (1998) in her paper on “Transport Development in Karnataka - A regional Analysis” outlined road and railway network in the state and she correlated transportation network with the development by computing the index value. The interpretation is found quite worthwhile.

The paper written by P.C.Tawari and Bhagwati Joshi (2012) on “Socio-economic and Environmental Implications of Road development in Himalaya” has thoroughly assessed road development and finally found out the road density pattern in the study region. The authors have stressed .The Central Himalayas transport where there is a scope to enhance transport facilities that would be practically helpful to exploit local and regional resources of the study region. Moreover the authors have outlined the road density of all the districts belonging to the study area. The authors have also estimated the road length for the year 2001 in Central Himalaya. It was noteworthy that the authors explained and correlated” the road and rural transformation growth of settlements and urbanization and possible tourist’s places for the future lay outing of road network. In conclusion the authors have pointed out the need of inter-development collaboration among road, forest and soil conservation departments in order to have an effective transport development in the
study area. S.K. Sharma (1979) in his article entitled “The Study of Transport Development in Madhya Pradesh” has mainly dealt with the association between industrial development and transport network in the study area. For this he has assessed the transport progress and industrial development in Madhya Pradesh and computed the degree of development within Madhya Pradesh. The author supplied huge data of growth and length of roads and railway routes from the year 1956-1993. He has computed the road density for all 459 development blocks and finally mapped out six areas/zones of various levels of transport development with measuring interpretation in the text.

The research paper on “Planning Strategy for Road Transport Network in Sheonath Basin in Madhya Pradesh” written by Z.T. Khan and T. R. Dehre (2001) rightly focused on the problems encountered in the existing transportation in the study region and has suggested a meaningful and sound plan for future worthwhile transport development. The authors concentrated in this study on the aspect of road transport as it has highly linked and connected the rural under-development and the developed area. The block wise study of Sheonath Basin has been mapped out to identify the accessibility level interpreted in the text. The capability of roads and utilization level has been computed and explained with the feasibility of new strategy to be adopted for speedy transport development in Sheonath Basin in Madhya Pradesh. T.R. Nath thoroughly examined the role of State Bus Corporation in the article entitled “The study of Working of Andhra Pradesh State Road Transport Corporation”. He discussed personnel structures, security and vigilance, passengers amenities, maintenance of Bus and finally examined the Financial Operation of Andhra Pradesh State Road transport Corporation in providing services and social responsibility.

The article on “The Study of Transport Facilities and Market Centers in Madhya Pradesh”, jointly written by S. K. Sharma and Archana Bhargava (1991) examines the mandi market centers in the state according to size, class, caste, income structure and availability of transport facilities in the mandies in the region. The main purpose of this study is to analyze the distributional perspective of the means of transport. The authors efforts was exhaustively related with the aspect of density
of regulated mandies, mandi-population ratio, spacing and annual income of mandies
Manaranjan Behra in his paper on “Block Level Planning for Transport Development - A case study of Backward Block (Khunta) of Orissa” has critically examined the role of transport at village level. The author considers that inadequate and inefficient transport facilities cannot initiate any sort of development in an area. Therefore, it is essential to integrate the isolated villages of the block with a network of transport system. Manaranjan Bahra has rightly prepared a sound and rational plan to transport for Khunta block in Orissa.

S.K. Mahajan in his article “Road Transport and Regional Planning in Himachal Pradesh” explains the role of road transport in the state. The main objective was to analyze the importance of road transport in the regional development of the hill state of Himachal Pradesh in lieu of insufficient mechanized modes of transport viz. Railway roads, water and airways. This study is based on the secondary data for the period of 10 years (1985-1995) herein the author has circulated the growth of nationalized roads transport. Moreover the author has emphasized regional development through road transport in Himachal Pradesh to integrate rural economy with urban growth centers.

Amitava Mitra and Debarti Mitra in their article “The Role of Transport in the Economic Development of Arunachal Pradesh” have explain the existing transport system and have assessed expenditure during then seven year plan on transport and communication. The authors have also compared road development aspect of Arunachal Pradesh with all states, belonging to the Northeast region in India. The present study clearly reveals the lack of road transport which in turn prevents the growth and progress of Arunachal Pradesh in extending road transport due to difficult mountain terrain interspersed with a large number of streams and rivers. The eighth Five Years Plan has considered new road connecting Tezu in Lohit district to Ruksin in East-Siaba district that would open up access in remote areas in the state.

Debasis Das has identified the relationship between transport and agricultural land use in Birbhum district in West Bangal in an article on “Relation between
transport Factor and Agricultural Land use- A case Study. The present study was carried out with clear objectives: (i) to identify relationship between length, density of road and land use (ii) to examine the nature of association between local degree, capacity of road and land use, (iii) to study the relationship between accessibility of road and land use and (iv) to enumerate interdependence between direct connectivity of aggregate travel distance and land use. In this paper the author emphasizes the re-orient of the transport planning while considering rural environment in order to see better prospect to gear up rural resources in the district.

Article written by R. P. Tiwari on Development of Transport in Tikamgarh District in Madhya Pradesh The main purpose of this study was to carry out the survey of road development through various Five Year Plans in Tikamgarh district. This study was confined to years 1951 to 1981 revealing the acts that the development of road transport began in the British period but road development took place when India became Independent from British rule.

The extensive clarification and elaborative explanation on rural transport was given by S. Samual Sundersing and E. Raja (1991) Justus in an article on “Transportation and Rural Development in India”. It was that the Indian road and railway transport in rural area can’t speed up effectively to make progress in countryside and therefore the authors studied transport development after the year 1950. The Maps in this regard reveal the progress of rail and road transport in India and provide easily access to mobilize local and regional resources of the region. The author not only explained transport situation in India but also identified the problems of transport in rural area where attachment is quite appreciable and praiseworthy.

P.K. Chakrabarti (1995) has attempted to focus on railway transport in an article “Transport and Economic Development - A case study of Indian Railways”. The author has systematically presented certain highlights of railway transport and access railway progress right from its inception. The author also gives an account of various aspects of railway facilities and others like coach, luggage wagons and
finally establishes a positive correlation providing huge data, facts and Maps to prove the benefit of the railway in India.

The study of road transportation in Northeast India was carried by D.K. Nayak and Surendra Singh in 1998 an article on “Assessment of Transport Development in Northeast India” The authors have examined the various parameters of socio-economic development and have justified how transport factor contributes as a major factor in the process of development of the region. It was found that road density in Northeast part is very low due to the physical hindrance of mountain terrain. After study, in depth analysis of transport the authors have emphasized the orient policy to build newer road network in this region, particularly in rural areas urban centers should be linked with countryside to mobilize local and regional resources in Northeast India.

1.6 Objective

1. To study the regional variation of study region.

2. Understand the impact of transportation on General land use pattern.

3. Understand the impact of transportation on Agricultural land use pattern.

4. To understand changing economic stateutes of region with respect to changing land use pattern and transportation network.

1.7 Hypothesis

5. Transportation plays an important role in regional development of land use pattern, with impact on the economic stateus of regional people in respect of changing cropping pattern
1.8 Methodology:

The spatial aspects of agricultural land use in Nasik District are studied. This necessitates the development of a regional frame for the analysis data. The spatial patterns of land use revealed through maps were based upon quantitative analysis. The data collected through primary and secondary sources were processed and represented by statistical and cartographic techniques. The various methods and techniques used are explained the work of systematic analysis has been accomplished mainly through the use of the cause and effect models of analysis avoiding the relevant sections in the text. The work of systematic analysis has been accomplished mainly through the use of cause and effect models of analysis avoiding passive description, as far as possible. A spatial analysis based on this methodology covering a period of twenty years from 2001 to 2011 has thus facilitated the understanding of land use behaviors of the region. For enhancing the quality of the work further the smallest viable administrative unit of tahsil has been used in the study.

1.9 Sources of Data:

The main body of the data used is collected from the secondary sources. The study is based on the use of tahsil as a unit of observation to understand the spatial variation in the general and agriculture land use.
1.10 Secondary Sources:

It includes published and unpublished reports and abstracts such as socio-economic review and district stateistical abstracts, Census handbook, Gazetteers, Agricultural bulletins, published by Department of Agriculture, Maharashtra state, Nasik, periodicals published by ground water survey and development agency, Government of Maharashtra, and some unpublished documents by irrigation and power departments. These documents provide a rich back ground material in the form of vast amount of information, which is both comprehensive and iterated tahsil and district as unit of reference. Season and crop report published by the Government of Maharashtra formed a major source of data on land use and cropping patterns at District level.

District census handbook (2001 and 2011) of Nasik District compiled by the Maharashtra census office, Bombay were the other important sources of data on population, occupational classes and general land utilization.

The offices of Talathi’s provided information regarding the distribution of crops, landholding, irrigation, general land utilization, population distribution and settlements at tahsil level. However, certain limitations of data have restricted the scope of study. Tahsil is the area unit in this study.

Data of some aspects of irrigation and transport were collected from the, office of the executive engineer and office of the superintendent engineer departments of irrigation, Nasik B. and C. department, Maharashtra and Nasik region, Zilla parishad offices at Nasik, Maharashtra Engineering research institute (MERI) Nasik, and R.T.O. office of Nasik region.

1.11 Other Sources:

1 Census Nasik District 2001

2 Map of Nasik District, published by the Government of Maharashtra. 3

Topographical maps of the survey of India
1.12 Choice of the Region:-

The scale problem is fundamental in social studies. A district study would provide as with a frame on which further research can be based. Keeping this view in mind, Nasik District is chosen as an area of investigation. The choice was influenced by several considerations. Such study would provide a useful approach to obtain a more complete understanding of the problems of transportation and land use in the region.

Secondly Nasik District has a significant location in respect to the Sahyadri ranges. It is a good representative of Maharashtra State in many respect viz. geology, physiography, drainage, natural vegetation and soils. Therefore the study of the land use and transportation of Nasik District will help to a certain extent to understand the transportation of the state.

Thirdly the district has special physical base i.e. it represents large variations in the topography (mountains, hill-ranges, plain, flat topped interfluves, steep slopes - and genital slopes etc.) and climate (rainfall from above 500 mm to below 4000 mm.).

1.13 Design of the Proposed Research Work

1. First chapter is devoted to introduction to research work.
2. Second chapter shows spatio- temporal changes in land use
3. Third chapter deals with Physical and cultural aspect of study region.
4. Fourth chapter gives the idea about General land use pattern of Nasik district.
5. The fifth chapter explain agriculture pattern in study region.
6. Sixth chapter is devoted to impact of transportation on land use in Nasik district.
7. Seven chapter explain Role of transportation on agricultural land use of tribal people case study of Surgana, Igatpuri, Dindori and Trimbak tahsils.
8. The last chapter deals with Observations and Conclusions based on the study.
Finally the references, bibliography, articles and reports are listed