

**Urban Road Transport For Healthy Tomorrow: Issues And Options In Reference To
Andaman And Nicobar Island**

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Abstract

Cities and town play a major role in encouraging economic growth and prosperity. Though less than one third of Indian people live in cities and towns, these areas produce over two third of the country's income and account for 90% of government revenues (Mishra, 2017). The momentum in economic growth can be sustained if cities function efficiently. The effectiveness of cities and urban areas largely depends on the effectiveness of its transport systems. Transport is an artery of any region. The revolution of automobile industry and liberalized economy has led to tremendous increase in the vehicle ownership which has resulted change in traffic characteristics on road.

Key Words: Transport, Vehicular Growth, Congestion, Pollution, Emission.

Introduction

Geography as a social science is concerned with the analysis of the spatial dimension of social phenomena and with the synthesis of natural as well as social variables within a regional frame. The geography of transportation is concerned with the study of its development, location and operations with territorial economy of countries and its relationship with the location of industry, agriculture, population, natural phenomena and resources. It is concerned with the movement of persons and goods from place to place and region to region for some particular purpose.

The distance measured in length is one of the barriers of human society. The prosperity of a country and its various aspects are very important, but equally important is concerned with the movement of people and materials for some specific purpose. It is a single power factor on which the economic, social and political activities of a nation depend. Without transport, the functional differentiation of area into the various specialized types of land uses would be difficult. Transport network plays an important role in production and consumption.

Methodology

The present study is an attempt to analyses the process of development and status of transport facilities in Andaman and Nicobar Islands. The present study is mainly based on secondary data which has been collected from various sources i.e. census report, statistical handbook, report etc.

Various statistical and cartographic techniques have been used for analysing and representing collected information.

The Study Area

Andaman and Nicobar Islands are the sub aerial expression of the Andaman-Nicobar ridge separating the Andaman Sea from the Bay of Bengal. These two seas are connected to each other through prepares channels-Ten Degree channel and Great channel. The Andaman and Nicobar Islands consisting of 306 islands 206 rocks and rocky outcrops are latitudinally situated between 6°43'N to 13°41'N and longitudinally 92°12'E to 93°57'E. The total geographical area is 8249km² with a coast line of 1962kms.

The land area of 6408 km² of the Andaman group constitute almost 90% as reserve or protected forest of which 36% is tribal reserve. The Nicobar group is spread over an area of 1841 km² of which 1542 km² is recorded forest. These islands are situated in the equatorial belt and are exposed to marine influences and had a tropical climate-warm, moist and equable. The temperature ranges from 18°c to 35°c. The proximity of the sea and the abundant rainfall prevents extreme of heat and these islands experience both the north east and south west monsoon.

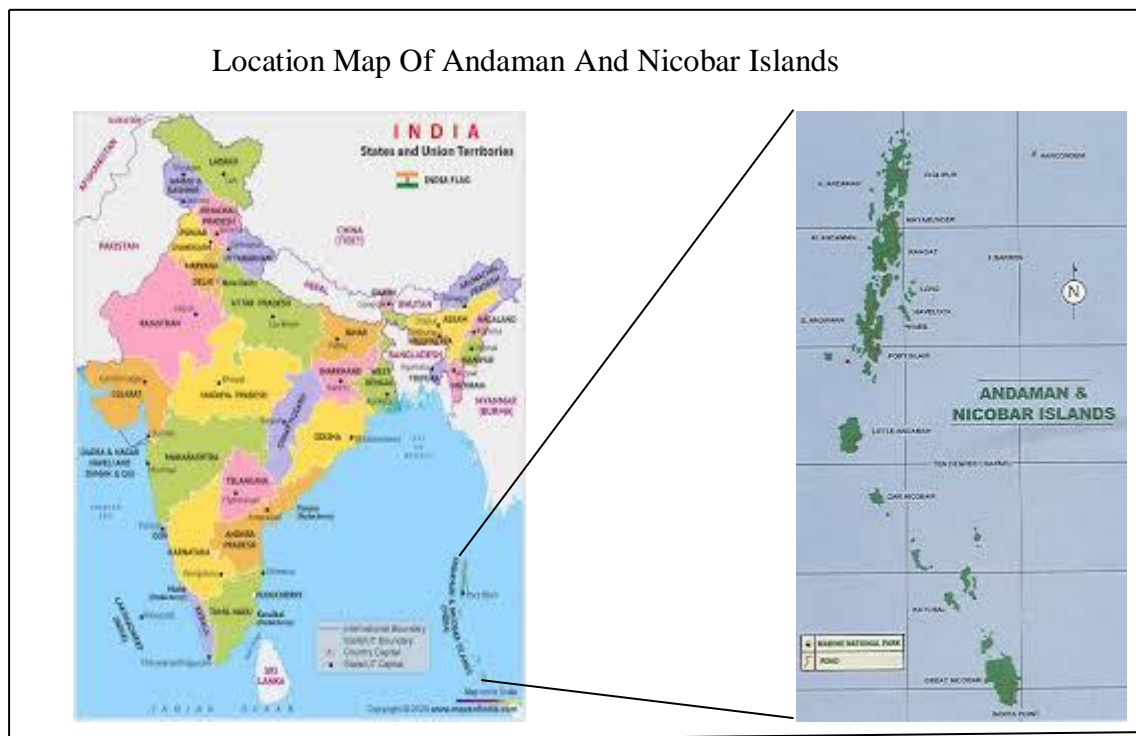


Fig. 1

Transportation Infrastructure

As one of the main urban elements, transportation infrastructure plays an important role in the transmission of materials and the flow of population. Transportation infrastructure is a critical

ingredient in the economic development at all level (Wang et.al, 2018). Before the major technical transformation brought forward by the industrial revolution at the end of 18th century, no forms of motorised transportation existed. Transport technology was mainly limited to harnessing animal labour for land transport and wind for maritime transport (Mehtani & Sinha, 2010). The economic importance and the geopolitics of transportation were recognised very early. It was during the industrial revolution that massive modification of transport systems occurred. The transportation infrastructure represents the motivator of economic growth and social welfare. The construction of transport infrastructure not only reduces the travel cost but also attracts foreign investment and trade. A clearly defined transport network hierarchy and a well designed road network accommodating all modes of transport will continue playing an important role in efficient transport operations. However the importance of the development of public transport infrastructure is even more crucial to bolster city sustainability and liveability. In this regard, the support of active travel modes through additional infrastructure, the integration of services and the prioritization of accessibility over mobility are also seen as prerequisites for the smart city of the future. The reduction of traffic speeds in urban streets can increase the balance between motorized and active travel modes while increasing safety and sustainability in cities. Table: 1- Length of constructed roads in Andaman and Nicobar Islands 2022-23 (in kms)

Roads	Length (kms)
1. National Highway	333.00
2. State Highway	263.915
3. Rural Road	1302.542
4. Major District Road	61.220
5. Other District Road	200.094
Total	2160.771

Table-1 and fig.2 depicts the length and share of constructed roads in Andaman and Nicobar Islands. Compared to the National Level Figures all the Tehsils except Car Nicobar and Nancowry the figures are much above the national average of 128.87 km per 100 km² of area. In case of Car Nicobar and Nancowry the figured are 108.8 km and 14.8 km respectively and this is due to the non-demarcation of the clear cut settlement area. Similarly, the road density for 1000 population at the National level is 3.7 km whereas all the tehsils except Port Blair which is an urban area has more than 3.7 km road length per 1000 population. In case of Port Blair still the road density of 2.1 km is much above the National level average urban road density of 0.91 km (Master Plan, 2020). Despite this connectivity figures much higher than the national average, there is a public demand on

regular basis for alignment of new roads. As construction of road is resource & capital intensive work, therefore, proper planning is essential. In this direction, an effort has been made for the preparation of Master Plan for Road Network in A&N Islands. Andaman & Nicobar Administration has decided to prepare a Master Plan for the Road Network in Andaman & Nicobar Islands. These Islands have various category of roads viz. National Highway, State Highway, Major District Roads, other District Roads, and Rural Roads etc. In the Post- Independence Era and after the establishment of APWD, many of the roads were planned and constructed by APWD and were subsequently notified as National Highway and State Highway etc. After the establishment of Engineering Wing under the PRIs in these islands, the roads networks in the rural areas are constructed by the PRIs also.

Share of constructed roads in Andaman and Nicobar Islands: 2022-23 (in kms)

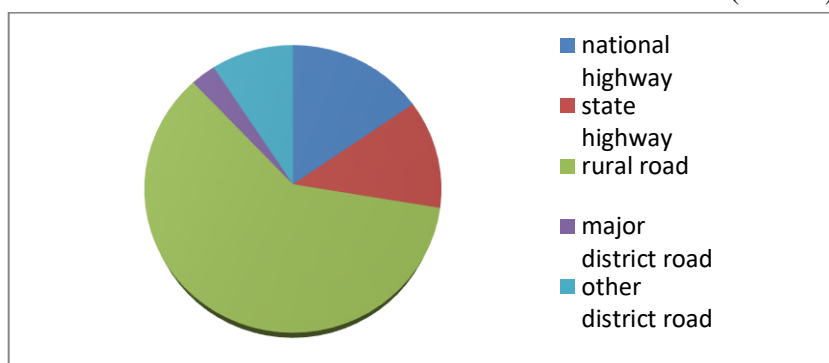


Fig. 2

The transportation infrastructure represents the motivator of economic growth and social welfare through improving production performances and investment performances for the private sectors. More specifically, the construction of transportation infrastructure could reduce the travel cost, attract foreign investment and expand trade of shared resources .In terms of the social overhead capital, transport infrastructure plays a decisive role in industrialization and has obvious spill over effects on regional innovation, factor reallocation and manufacturing productivity ,which promote the aggregation of industries, population and economy ;this is often called the economic distributional effect.

Development of Road Transport

The motor transport department was established by the British Regime with the objective to undertake repair and maintains of government vehicles in Andaman and Nicobar Islands. Most of the roads during this period were built by ex-convicts and freedom fighters who were the prisoners at that time, as forced and free labour force was available in plenty. But the condition of roads was not good. During the Japanese occupation, the road construction received much attention and about 35 kms of strategic road, mainly along the coast, was developed. But it was only after independence

that a planned development of road network was started. Later on in 1956, a commercial wing of State Transport Service (STS) was set up for providing road transport services to the general public of South Andaman. The STS services gradually speeded its network in all the major islands. The sole objective of the department is to meet the increasing demand of general public and to provide the better and safe mode of passenger transport services. The establishment of state transport services did an enormous service in linking towns and villages. Transport demand has increased substantially every year due to increases in population. Availability of motorized transport, increase in house hold income and increases in commercial and industrial activities has further added to transport demand. In many cases, demand has out stripped road capacity. The state transport services have played a major role in improving the living conditions of both urban and rural population. The STS buses have brought different villages and city closer to each other which have brought a remarkable improvement in the village's trade and economy. The growth of STS and expansion of bus services in different islands has set in motion of rapid growth, particularly in rural areas in field of education, health, trade and industries etc.

Vehicular Growth

The transport sector is an important component of the economy impacting on development and the welfare of population. When transport systems are efficient, they provide economic and social opportunities and benefit that impact throughout the economy. Transportation links together the factor of production in a complex web of relationship between producers and consumers. The outcome is a more efficient division of production by an exploitation of geographical comparative advantages as well as the means to develop economies of scale and scope (Mehtani & Sinha, 2010). Traffic composition in India is of a mixed nature. A wide variety of about a dozen types of both slow and fast moving vehicles exist. In 2014, 102301 vehicles were playing in Andaman and Nicobar Islands which increased up to 176424 in 2023-24(table- 2 & fig-3) showing an increase of 7.25 percent per annum during the last decade. The basic problem is not the number of vehicle but their concentration in few selected areas.

Total number of registered motor vehicles in Andaman and Nicobar Islands (2014-15 to 2023-24)

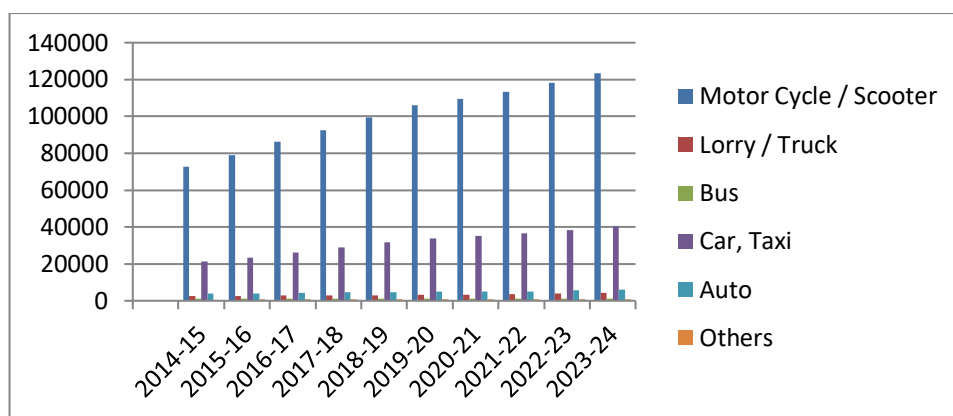


Fig.3

Analysis of figure-4 reveals that personalized vehicle population share was more than 90% of the total vehicle population in Andaman and Nicobar Islands. The share of public transport (buses) is negligible as compared to personalized vehicles.

Table- 2: Total Number Of Registered Motor Vehicles In Andaman And Nicobar Islands (2014-15 to 2023-24)

Vehicle s	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Motor Cycle	72800	79098	86402	92532	99494	106133	109457	113369	118127	123375
Lorry / Truck	2638	2730	2826	2934	3048	3138	3263	3507	3959	4267
Bus	1039	1074	1088	1101	1119	1135	1177	1179	1198	1215
Car, Taxi	21439	23334	26097	29100	31766	33916	35309	36596	38424	40481
Auto	3826	4072	4304	4603	4738	4835	4982	5135	5565	6093
Others	559	821	839	869	886	903	915	955	971	993
Total	102301	111129	121559	131139	141051	150060	155103	160741	168244	176424

Andaman And Nicobar Islands: Share Of Transport Population

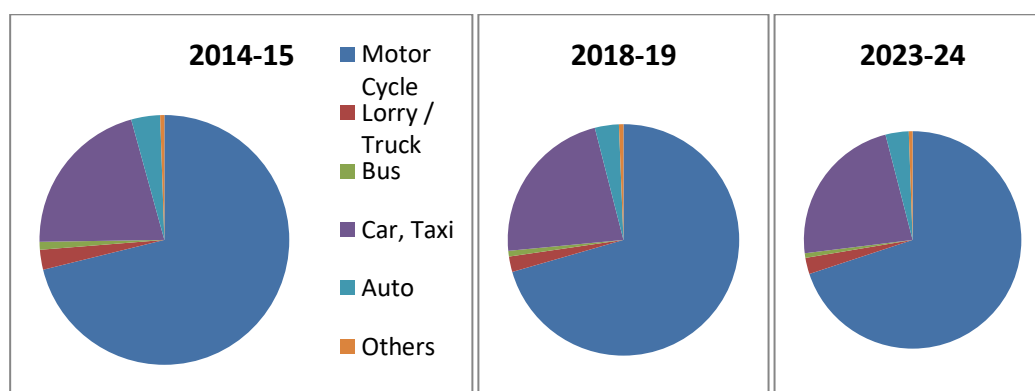


Fig. 4

Vehicular Emission, Congestion And Road Safety Issues

The transport sector is the major contributor to air pollution in urban areas. According to the studies by the central pollution control board of India, 76.2% of Co, 96.9% of Hydrocarbon and 48.6% of Nox are caused by emissions from the transport sector (Singh, 2005). With deteriorating levels of mass transport services and increasing use of personalized modes vehicular emission has reached an alarming level. The urban areas in this Union Territory are facing serious environmental problem due to growing air pollution caused by fuels used in vehicles. Pollutants from vehicular emission have various adverse health and environmental effects.

Cities also face severe traffic congestion. Congestion occurs when transport demand exceeds transport supply in a specific section of the transport system. It reduces mobility and enhances cost and pollution. It is considered one of the main urban transportation problems. Growing traffic and limited road space have reduced peak hour speed in the central areas of the city. This also leads to higher levels of vehicular emission. Port Blair (now known as Sri Vijaya Puram) being the capital of the Union Territory, faces the problem of traffic congestion. Keeping in view, the congestion and vehicular emission, the Andaman and Nicobar Administration has developed an urban transport strategy for providing green modes of public transportation to the public. The transport department is replacing electric vehicles in place of carbon fuel vehicles in a phase wise manner. Thus the Union Territory Administration is giving more emphasis on the development of public transportation system to reduce the carbon emission. Andaman and Nicobar Islands are also facing serious road accident problems. The number of road accidents across the Union Territory of Andaman and Nicobar Islands in 2011 was 234 which have been reduced up to 141 in 2022 (table-5 & fig. 5). Traffic discrepancies have been a major source of death, injury and damage to property every year. In 2022, over speeding of vehicles was the main reason for road accident casualties.

Conclusion

Transport systems are among the various factors affecting the quality of life. The evolution of transportation has generally led to changes in urban form. The more radical the change in transport technology, the more urban form has been altered. It is evident that vehicle emissions are problematic to the global environment. CO₂ specifically leads to climate change and other vehicle emissions contribute to air pollution causing negative health effects for the inhabitants. A logical way to reduce these negative impacts would be to decrease vehicle emissions. This can be accomplished through lowering the number of vehicles on the road. The increasing trend for private vehicle ownership can be replaced by increased reliance on public transportation. Policy recommendations for reaching this goal involve improving current public transportation systems, encouraging the use of public transportation systems, discouraging the use of private vehicles, and

changing urban plans and city designs. A clearly defined transport network hierarchy and a well-designed road network accommodating all modes of transport will continue playing an important role in efficient transport operations; however the importance of the development of public transport infrastructure and implementing bold schemes is even more crucial to bolster city sustainability and liveability. The need of the hour is to formulation of an urban transport strategy that is both pragmatic and holistic in its approach.

Table: 3- Andaman And Nicobar Islands Noise Pollution 2023-24

Area Code	Category of Area	Limit in db(A)leg				During visit normal / festival found Limit in db(A) leg	
		Daytime		Night time		Daytime	Night time
		Standard	Actual	Standard	Actual		
A	Industrial area-Dollygunj	75	-	70	-	48.49	71.5
B	Commercial area						
	-Haddo Market	65		-		71.4	47.8
	-Aberdeen Bazaar	65	62.82	55	72.5	76.4	56.6
	-Junglighat	-		-		72.6	52.7
	-Dairy Farm	65		55		84.8	63.3
	-Bathu Basti	-		-		76.1	56.3
	-Shadipur	65		55		83.7	50.6
C	Residential area-Govt. Quarters/others	-	-	-	-	-	-
D	Silence Zone	50	-	40	-		
	-G.B. Pant Hospital	50	-	40	-	44	55
	-Govt. Model School	-	-				
	-Secretariat	-	-				
	-Court Complex	-	-				
	-Others, if any (specify)	-	-				

Table: 4- Andaman and Nicobar Islands Air Pollution 2023-24

Area Code	Category of Area	Air pollution			
		SOx (µg/m3)	NOx(µg/m3)	PM10(µg/m3)	PM 2.5(µg/m3)
A	Industrial area-Dollygunj	<5.0	17.92	48.93	20.53
B	Commercial area-Aberdeen bazaar	<5.0	12.15	49.48	25.31

Table: 5- Andaman And Nicobar Islands: Number of Road Accident (2011-2022)

Year	Road Accident
2011	234

2012	236
2013	200
2014	218
2015	258
2016	238
2017	189
2018	254
2019	230
2020	141
2021	115
2022	141

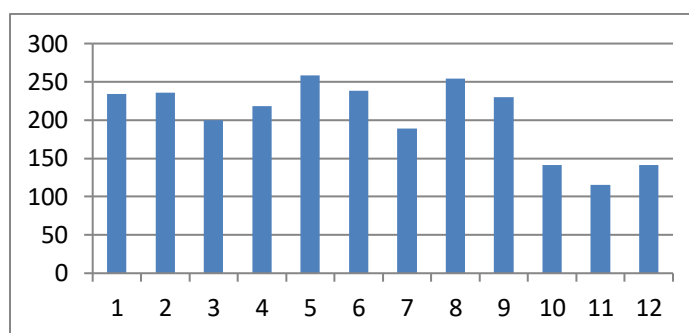


Fig.5

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