CHAPTER-VIII

SUMMARY AND CONCLUSION

The study investigates the problems associated with the transport system, particularly road transport system in the city of Guwahati. Though the transport related problems could be investigated from different angles, here in this study it is tried to analyse from geographical perspective. After the problem of research is stated, and its goal and significance outlined, the exposition continues with an examination of the physical, economic and socio-cultural environment of the study area in which pattern and problems of transport system are now in progress.

The study uses a wide range of primary data collected through personal field investigation and through questionnaires specially designed for the study. Besides, relevant data were collected from monographs and reports of various government departments and academic institutions. These data are processed, tabulated and analysed through computer and interpreted. Further, satellite imagery, topographical maps of 1:50,000 scale, and other departmental maps were studied to investigate the problems associated with transport pattern in Guwahati.

The study area in the city of Guwahati, which is located in a region of having very strong physical, culture and economic base. Due to direct rail, road and air connections with the rest of the country, Guwahati is gaining its importance in the region day by day. National and State Highways link this city with the states of Tripura, Mizoram, Meghalaya, Manipur, Nagaland and Arunachal Pradesh besides other areas
of Assam. The city is also linked by daily air service with Mumbai, Kolkota and Delhi besides daily flights to Agartala, Imphal, Silchar, Tezpur, Jorhat, Dimapur, North-Lakhimpur and Dibrugarh. Thus Guwahati is not only the capital of Assam but virtually the capital of entire North-East India.

Guwahati experienced initial growth after independence due to establishment of institutions of higher education like Gauhati University, Engineering College, Medical College, Veterinary College etc. After the establishment of the head quarters of the North East Frontier Railways, establishment of the Oil Refinery along with a few medium scale industries and setting up of regional offices of some major business houses increased the importance of Guwahati manifold. In 1971 when the capital of Assam shifted from Shillong, Guwahati gained the political importance and became the pull of attraction of all sorts of urban activities. Its growing importance is realized if one looks into the growth rate of population in the recent years.

At present the city of Guwahati covers an area of about 262 sq. km under the Master Plan area out of which 215.73 sq. km is under Municipal Corporation Area. The city spread about 10.0 km in the north-south direction and about 27 km in the east-west direction. The location of the city is peculiar. The mighty river Brahmaputra washes the northern boundary of Guwahati. The other three sides bounded by a chain of hills of different altitude. A few hills scattered in the city, which on one hand, stand as hindrance to many development activities while on the other hand enhance beauty to the city environment. The population of Guwahati Metropolitan Area as per census of 1971 was about 2.92 lakhs which rose to 8.15 lakhs in 2001 indicating growth more than 280 percent. This rapid growth of the population and consequential growth in residential units and related infrastructure, spurt in building construction activities, filling of the wetlands and low lying areas and encroachment along the side of the
existing drainage channels reduced the hydraulic capacity of drains and has resulted in a situation where even a downpour of half an hour plunges many areas of the city into flood like situation. Clogging of drains due to heavy silt brought down from surrounding hills aggravate the seasonal hazard of water logging in Guwahati.

With the growth of population the number of both motorized and non-motorized vehicles increased alarmingly. Except a very few private cars there were no motorized vehicles seen on the roads of Guwahati till the time of independence. In the month of April 1947, for the first time city bus was placed on the roads of Guwahati. A Ford-L Land bus, number ASA 1148, named ‘Shuttle-Service’ later renamed as ‘Navayuga’ was the first city bus plying from Bharalumukh to Silpukhuri. After that, both the private and public vehicles increased on the roads of Guwahati. Initially it was increased at a slower rate but after the shifting of the capital the rate accelerated. During the last few years the increase of vehicles becomes manifold which cause many problems in the city. As per the report of the District Transport Office there are 3,13,387 motor vehicles on the roads of Guwahati. Many of the vehicles are quite old. From the comparison of the registered and existing figures of motor vehicles in Guwahati, it is found that hardly 306 numbers of old and damaged vehicles gone out of the roads during last ten years. On the other hand on an average more than 300 new motor vehicles added to the total every month. Obviously, this situation creates many problems. The important characteristics of transport systems in Guwahati are-

1) Very high rate of increase of motorized vehicles
2) Absence of rational fare policy
3) Less dependence on public transport system
4) Large number of slow moving vehicles; which act as hindrance in free movement of fast moving vehicles and aggravate the traffic congestion in
the city
5) Slow movement of motorized vehicles due to narrow, un-maintained roads, illegal parking, frequent city bus stoppages and slackness in enforcing traffic laws
6) Costly public transport system compared to many Indian cities
7) Possibilities of river transport is not harnessed and
8) Chaotic situation in many of the roads

All these contribute to inadequacy and inefficiency of public means of passenger transportation. As a result dependence on private means of transport increase day by day which results more congestion and more environmental damage.

The city area does no increase but the vehicles are increasing day by day. As a result, vehicular density has increased manifold in the recent years. Almost half of the total city area in Guwahati is either hilly or wetland where vehicles are not there. Almost all the vehicles in Guwahati concentrated in half of total geographical (140 sq km) area of the city. As a result vehicular density become more then 2500 per sq km., which is a very big figure compared to many of the cities of the country. The amount of pollution per bus-passenger/km and car or two wheeler passenger/km when compared, it is found less in case of using the public means of transportation.

From the analyses of various data collected for understanding the past and present transport scenario the following facts have been found out.

- There are three categories of city bus: services in Guwahati- (i) General (ii) Express (Deluxe) and (iii) Rhino services. As many as 3,60,000 passenger trips generated by the city buses of all categories i. e. around 33 of the total trips generated by all means. Private cars and office vehicles
generate 2,71,300 trips which accounts around 25 percent of total trips. The two wheelers generate 1,68,400 trips accounting 15.5 percent of the total trips per day. Other vehicles like auto-rickshaw, taxi, rickshaw etc generate rest of the passenger trips.

- Around 32 percent of the total passengers normally go out of their residence for once in a day and come back to their respective residences. Around 28 percent of the passengers travel twice a day for various purposes. Similarly 18 percent move out for three times and rest leave their residences four of more times within a day.

- Most of the people in the city (around 73 percent) move out mainly for the purpose of education, business and to reach their respective work places. Of these 26 percent for education, 22 percent for business and 25 percent to reach their working places. The rest of the people use to travel in the city by some means, travel for the purpose like social works, shopping, recreation, health etc.

- Waiting for a bus or any means for traveling vehicles is a tedious job. It has been found here in Guwahati that around 46 percent of city bus passengers get buses within five minutes while they waiting for bus at stoppages. Around 30 percent passengers have to wait for 5 to 10 minutes, around 15 percent for 10 to 15 minutes and nearly 10 percent passengers have to wait for more than 15 minutes for getting a bus at stoppages. In certain stoppages passengers have to wait more than one hour. On the other hand during the day hours in the stoppages between Bharalumukh to Chandmari, passengers get buses less than two minutes.

- Around 26 percent of the commuters in the city travel by city buses, 23
percent use car jeep and office vehicles, 22 percent use scooter and motor cycles and the rests travel either by other means transport or on foot.

- Out of the total city bus passengers 29 percent travel less than 2 kilometers in one journey. In case of two wheeler passengers 24 percent travel less than 2 kilometers in single trip. Considering all the means of transport available in Guwahati, and the travel distance covered in various trips, it has been found that around 50 percent of people travel less than 4 kilometers in single trip.

- More than 50 percent people use to live in such places from where the distances to their nearest market, school and working place not more than 4 kilometers.

- The growth of motorized vehicles in different routes in the city increasing at a very high rate, though not uniformly throughout. From the weekly average data, the figures for scooters, motorcycles and cars have been found increased almost at the same rate. In this route the rate of increase of the auto-rickshaws found to be low. In the Assam Trunk Road the bus traffic volume become almost double in five years gap i.e. 1995 to 2002. In this route auto-rickshaw number has increased more than double. Compared to this, the increase of cars and other motorized vehicles is slightly less.

- The hourly variation of traffic volume indicates the nature of movement of passengers. There are certain peak hours of traffic in a day when maximum traffic congestion takes place and create many inconvenience to the city dwellers. In the R.G. Barua Road the peak hours of heavy traffic is from 11 a.m. to 12 noon. After 12 noon it decreases a little and
rise again from 1 p.m. and attain the peak around 2 p.m. In the GNB road, which is one of the most congested road in the city, the peak hours of traffic starts from 10 a.m. to 8 p.m. except a little relief between 12 noon to 1 p.m. and 3 p.m. to 4 p.m. Similarly in other busy roads also minimum of two peak hours of traffic have been observed in every week days. The situation change in Sunday and other holidays.

- From the trip generation analysis of traffic in Guwahati, it has been observed that location advantage of the city is the main attraction of traffic not only from the other parts of the state but from entire north eastern states. In addition, the city provides the specialized goods and service to the people of entire region, which act as a pull factor. Moreover, non-availability of some important facilities like higher education, specialized medical service etc. people from neighbouring areas pushed to Guwahati. In these ways more trips have been generated.

- From the trip distribution analysis it has been found that non-uniformity of travel trips create congestion and many other inconvenience in certain parts of the city. This variation is created mainly due to the concentration of office establishments, educational institutions, recreation centers, market and business establishments. The worst affected areas are Guwahati Club, Silpukhuri, Chandmari, Ulubari, Ganeshguri, Bhangagarh, Paltan Bazar and Fancy Bazar.

- From the network character analysis it is found that the accessibility in Guwahati mainly controlled by physical features like hills and wetlands and to some extent by the urban infrastructures.
• The travel time in the city is controlled by (i) time spent by a passenger walking to public transport vehicles at origin (ii) time spent for waiting for public transport vehicle (iii) time spent in public transport vehicle (iv) time spent in transfer from one public transport vehicle to another and (v) time spent walking from public transport vehicle at destination. It has been observed that there is scope for minimizing time in point number (ii) and (iii) i.e. time spent for waiting for public transport vehicle and time spent in public transport vehicle.

The transport problems in Guwahati are related to many other aspects. One of such problems is water logging which takes place in many of the areas in the city. It is a colossal and continuous problem of Guwahati. Empirically speaking, the following causes may be attributed to this phenomenon.

1) The topography of Guwahati is significantly undulating. The low lands are usually filled up by rain water particularly during the monsoon season.

2) Both natural and artificial drains are not capable of carrying the storm water due to their shallowness and narrowness.

3) Concentration of rainfall only in two three months and occurrence of heavy rainfall in a few hours cause more run-off and aggravate water logging in many parts of the city.

4) Indiscriminate cutting of hills for constructing houses, roads and other infrastructures cause heavy soil erosion and filling up of road-side drains. As a result water retention capacity of the drains is lost and cause spill over water to the road. Many unscrupulous people of the hills are responsible for more soil erosion and silt accumulation at the foothills. The hill soils in Guwahati are very hard when it is dry. As soon as these get wet during monsoon they become very soft. Many of the hill dwellers carry out the earth cutting works during rainy season mainly to expand their courtyards
and for other construction purposes. As a result, the rate of hill soil erosion aggravated.

5) Encroachment over the low-lying areas particularly the wetlands and on either side of the natural drains done by new settlers cause loss of water retention capacity and blocked the natural flow of floodwater through the drains.

6) Construction of buildings and roads over the man-made drains are also responsible for bottlenecking the drainage.

7) Experts say that every year the Brahmaputra is rising by about five centimeters and the depth of the riverbed is being reduced. Rising of the ground water table with the rise of the Brahmaputra bed saturates the entire plain area and reduces the rate of percolation.

All the above reasons cause water logging in many roads and residential areas in the city. Frequently water logged areas are Chandmari, Silpukhuri, Guwahati Club, Ambari, Bamunimaidam, Nabin nagar, Tarun nagar many parts of R. G. Barua Road, Lachit nagar, Gandhi Basti, Lakhtokia, Santipur, Maligaon, Rehabari, Geetanagar, Chaimail and Christian Basti. There are many areas in the city where water logging is observed occasionally. These areas are Chenikuthi, Ganeshguri, Bhangagarh, Rupnagar, Saru mataria and Panjabari.

Though apparently the water logging problem do not have any connection with the traffic related issues, it has done direct impact on the city traffic system. As soon as the roads inundated, the flow of traffic become slower. In most cases vehicles remain under water for hours together. At that time a chaotic condition created. Not only that, water logging in one road create congestion in other nearby roads also. As soon as water recedes, the silts derived from the hills and garbage with full of germs from the roadside drains left behind on the road surfaces. The silt and dirty materials
coming from the drains get dry very quickly due to the impact of motor tyres. The dry silt and garbage of the drains create a dusty atmosphere and cause air pollution.

Some remedial measures have been suggested by many of the scholars for controlling water logging in the city. If this problem could be controlled the traffic congestion and related problems are also to be minimized. Such measures are –

1. The earth cutting on the hills should be stopped immediately. This will reduce the problem of soil erosion and the rate of siltation in the drains.

2. Hill settlement should be stopped without delay. The practice of terrace making for constructing houses should be stopped.

3. Efforts should be made to cover all exposed slopes of the hills with some kind of trees. This will retain water for sometime on the hills and also reduce topsoil erosion.

4. Efforts should be made to convert the existing drains free from garbage. This will increase the water carrying capacity of the drains and the problem of water logging will be reduced.

5. Regular cleaning of the drains should be done so that water flow is not hampered.

6. Non-degradable solid wastes like plastics, polythene, rubber items and metallic products should not be thrown into drains water, which act as the hindrance of free flow of drain water.

7. The existing drains should be expanded so that water flow is increased.

8. Rain water harvesting, particularly rooftop harvesting should be encouraged so that some amount of water could be kept there to reduce the intensity of water logging.

Guwahati Metropolitan Development Authority (GMDA) with the loan amount
of rupees 67 crores taken up a drainage development scheme in the city. The scheme involves improvement of Bharalu and Mora Bharalu rivers and shifting of sluice gate near Pragjyotish College, digging up of the bed of the river Bharalu etc. Again to reduce the water logging problem of GNB Road- GMDA has a plan for a drain costing about Rs. 43 lakhs. It has been reported by the GMDA that there are plans for new drains or improvement of existing drains in several areas such as Santipur- Durgasarobar, Kumarpara, Lachitnagar, Hatigaon etc. GMDA also mentioned about construction of Silt Chambers to reduce siltation of drains. All these schemes if implemented properly will definitely help in reducing traffic related problems in the city.

Considering the problems of city transport the following points are suggested and brought to notice for consideration of concerned authorities-

(i) Looking into the present state of road condition, public transport means should be selected such a way that congestion and other inconvenience could be avoided. Big city buses, school buses should be made prohibited during the peak hours.

(ii) As the population growth in the city is very high the transport planning should be done such a way that it can cope up with the growth of population.

(iii) Widening of some extremely busy roads like GNB road, GS road is an urgent need.

(iv) Road surface should be maintained properly, repairing works should be done promptly so that traffic flow is not hampered and the vehicles are not damaged.

(v) As the water logging create many problems in the city transport system, measures should be taken to reduce water logging by restricting hill
cutting and filling up of wetlands and low lying areas in the name of infrastructure development.

(vi) To minimize the pressure of traffic in the most congested GNB road a survey should be conducted jointly with Railway authority to find out the possibility for constructing road cum drains on both sides of the railway line which now running through the heart of the city in east-west direction.

(vii) Emphasis should be given to improve efficient public transport system mainly to minimise private vehicles on roads just to reduce traffic volume and fuel wastage. As the city bus is the most economic public transport means in the city the number of buses should be increased in certain routes.

(viii) Emphasis should be given in transport and related developmental works on the basis of a Master Plan; no piecemeal development work will truly benefit the citizens.

(ix) It felt necessary to impose ban on the movement of slow moving vehicles like hand cart and pony cart etc. along the GNB road from Guwahati Club upto Bamunimaidam during the period from 7 a.m. to 8 p.m. on all the days except Sunday.

(x) Quite often it is observed that the city buses do not follow any traffic rule and run by the whims and fancies of the drivers.

(xi) The city has too many city bus stoppages; some are at a distance of 100-200 meters from one another compared to the distances of 1 to 2 kilometers in other parts of the country. As such there is scope for
minimizing the number of stoppages so that the city bus service could be made more efficient.

(xii) Many of the city bus stoppages are opposite to each other for up and down traffic; thereby restricting the road width and causing traffic congestion. This need to be rectified and care should be taken so as to remove all such stoppages at the road interactions, which adds to the traffic congestion.

(xiii) Guwahati Traffic Police should make it mandatory for all drivers to use dippers while driving in the night within the city. The harsh glare of the headlights have caused innumerable fatal accidents in certain roads.

(xiv) All traffic points should be installed with electronic lighting systems and manual regulation should be stopped. Necessary financial resources for this could be mobilized through commercial organizations dealing in tyres, lubricants etc.

(xv) One of the major cause of traffic congestion along the A.T Road and G.S. Road in the city plying of tourist buses to and from the other North Eastern States numbering a few hundred every day and night. There should be Inter State Bus Terminus in the outskirts of the city. However the bus terminal is constructing near Boragaon.

(xvi) Metered local taxi should be introduced so that passengers get relief of paying exorbitant fare.

(xvii) Local train services should be introduced between Jalukbari and Narengi at least at an interval of 30 minutes.
(xviii) City Traffic Police should be vested with powers to impose fine and other penal provisions on the spot.

(xix) Footpaths should be maintained properly and all encroachments should be removed so that pedestrians are not compelled to walk on the road instead of the footpaths. Overhead pedestrian crossings should be constructed in busy intersections like Ulubari, Ganeshguri, Guwahati Club, Silpukhuri, Maligaon Chariali, DC’s Court, Chandmari, Paltanbazar, Lakhtokia etc.

(xx) The city of Guwahati has seen mushrooming growth of private schools over the last few years and the situation now has become so acute that during school hours the traffic condition in almost the whole city goes crazy. Government should direct the concerned authorities to examine all pros and cons before acceding to such proposals which is detrimental to public interest.

(xxi) In the city bus stoppages a few facilities like passenger-shade, toilet etc. to be provided. Such amenities should be designed on the basis of the average number of passengers who wait for the buses in particular stoppages.

(xxii) The passengers have been suffering from the total absence of a scheduled time table. As because a definite frequency is not maintained, one cannot be sure of the waiting time involved. Introduction of time table will not only help the passengers but also help in regulating the bus timings.

(xxiii) In many cases unfair relationship of passengers and the city bus conductors are observed especially in the private buses. Therefore to generate a better relationship, some sort of training is to be given to
the conductors. Passengers also to be made aware in this regard simultaneously.

(xxiv) A central parking place for city buses like that of esplanade of Kolkata Metropolis, a central depot and a central workshop should be built in the city.

(xxv) As proposed by the Chief minister of Delhi to introduce high capacity bus service in Delhi to minimize the pressure of private vehicles, similar steps should also be thought in case of Guwahati at least in a few selected routes.

CONCLUSION

The findings as discussed above answer in a positive way to the original questions stated in chapter I about the complexity of the transport related problems. As the city of Guwahati facing various traffic related problems which are increasing day by day, the remedial measures have to be taken up without delay. For this, an attempt has to be made by all concern departments collectively. To get proper directions and planning to take necessary action an acceptable model has to be evolved considering the present situation and the trend of changes at least in last few years. To do so a strong database is required which is not yet generated at any level. In this dissertation an attempt has been made to pinpoint certain facts based on data generated directly from the field. Though it is only a part of whole planning process of efficient transport management in Guwahati, this study may help in understanding the vital transport related issues in the city.