Chapter 3

Role of transportation in society

3.1 Overview

Transportation is a non separable part of any society. It exhibits a very close relation to the style of life, the range and location of activities and the goods and services which will be available for consumption. Advances in transportation has made possible changes in the way of living and the way in which societies are organized and therefore have a great influence in the development of civilizations. This chapter conveys an understanding of the importance of transportation in the modern society by presenting selected characteristics of existing transportation systems, their use and relationships to other human activities.

Transportation is responsible for the development of civilizations from very old times by meeting travel requirement of people and transport requirement of goods. Such movement has changed the way people live and travel. In developed and developing nations, a large fraction of people travel daily for work,shopping and social reasons. But transport also consumes a lot of resources like time,fuel, materials and land.

3.2 Economic role of transportation

Economics involves production, distribution and consumption of goods and services. People depend upon the natural resources to satisfy the needs of life but due to non uniform surface of earth and due to difference in local resources, there is a lot of difference in standard of living in different societies. So there is an immense requirement of transport of resources from one particular society to other. These resources can range from material things to knowledge and skills like movement of doctors and technicians to the places where there is need of them.

3.2.1 The place, time, quality and utility of goods

An example is given to evaluate the relationship between place, time and cost of a particular commodity. If a commodity is produced at point A and wanted by people of another community at any point B distant x from A, then the price of the commodity is dependent on the distance between two centers and the system of transportation between two points. With improved system the commodity will be made less costly at B.

3.2.2 Changes in location of activities

The reduction of cost of transport does not have same effect on all locations. Let at any point B the commodity is to be consumed. This product is supplied by two stations A and K which are at two different distances

from B. Let at present the commodity is supplied by A since it is at a lesser distance but after wards due to improvement in road network between B and K,the point K becomes the supply point of product.

3.2.3 Conclusions

- Transport extends the range of sources of supply of goods to be consumed in an area, making it possible for user to get resources at cheap price and high quality.
- The use of more efficient systems of supply results in an increase in the total amount of goods available for consumption.
- Since the supply of goods is no longer dependent on the type of mode, items can be supplied by some alternative resources if usual source can not supply what is needed.

3.3 Social role of transportation

Transportation has always played an important role in influencing the formation of urban societies. Although other facilities like availability of food and water, played a major role, the contribution of transportation can be seen clearly from the formation, size and pattern, and the development of societies, especially urban centers.

3.3.1 Formation of settlements

From the beginning of civilization, the man is living in settlements which existed near banks of major river junctions, a port, or an intersection of trade routes. Cities like New York, Mumbai and Moscow are good examples.

3.3.2 Size and pattern of settlements

The initial settlements were relatively small developments but with due course of time, they grew in population and developed into big cities and major trade centers. The size of settlements is not only limited by the size of the area by which the settlement can obtain food and other necessities, but also by considerations of personal travels especially the journey to and from work. The increased speed of transport and reduction in the cost of transport have resulted in variety of spatial patterns.

3.3.3 Growth of urban centers

When the cities grow beyond normal walking distance, then transportation technology plays a role in the formation of the city. For example, many cities in the plains developed as a circular city with radial routes, where as the cities beside a river developed linearly. The development of automobiles, and other factors like increase in personal income, and construction of paved road network, the settlements were transformed into urban centers of intense travel activity.

3.4 Political role of transportation

The world is divided into numerous political units which are formed for mutual protection, economic advantages and development of common culture. Transportation plays an important role in the functioning of such political

units.

3.4.1 Administration of an area

The government of an area must be able to send/get information to/about its people. It may include laws to be followed, security and other needful information needed to generate awareness. An efficient administration of a country largely depends on how effectively government could communicate these information to all the country. However, with the advent of communications, its importance is slightly reduced.

3.4.2 Political choices in transport

These choices may be classified as communication, military movement, travel of persons and movement of freight. The primary function of transportation is the transfer of messages and information. It is also needed for rapid movement of troops in case of emergency and finally movement of persons and goods. The political decision of construction and maintenance of roads has resulted in the development of transportation system.

3.5 Environmental role of transportation

The negative effects of transportation is more dominating than its useful aspects as far as transportation is concerned. There are numerous categories into which the environmental effects have been categorized. They are explained in the following sections.

3.5.1 Safety

Growth of transportation has a very unfortunate impact on the society in terms of accidents. Worldwide death and injuries from road accidents have reached epidemic proportions. -Present indications are that about half a million people are killed and about 15 million injured on the road accidents annually. Increased variation in the speeds and vehicle density resulted in a high exposure to accidents. Accidents result in loss of life and permanent disability, injury, nd damage to property. Accidents also causes numerous non-quantifiable impacts like loss of time, grief to the near ones of the victim, and inconvenience to the public. The loss of life and damage from natural disasters, industrial accidents, or epidemic often receive significant attention from both government and public. This is because their occurrence is concentrated but sparse. On the other hand, accidents from transport sector are widespread and occurs with high frequency.

For instance, a study has predicted that death and disabilities resulting from road accidents in comparison with other diseases will rise from ninth to third rank between 1990 and 2020. Road accidents as cause to death and disability could rank below heart disease and clinical depression, and ahead of stroke and all infectious diseases. Significant reduction to accident rate is achieved in the developing countries by improved road designed maintenance, improved vehicle design, driver education, and law enforcements. However in the developing nations, the rapid growth of personalized vehicles and poor infrastructure, road design, and law enforcement has resulted in growing accident rate.

3.5.2 Air Pollution

All transport modes consume energy and the most common source of energy is from the burning of fossil fuels like coal, petrol, diesel, etc. The relation between air pollution and respiratory disease have been demonstrated by

various studies and the detrimental effects on the planet earth is widely recognized recently. The combustion of the fuels releases several contaminants into the atmosphere, including carbon monoxide, hydrocarbons, oxides of nitrogen, and other particulate matter. Hydrocarbons are the result of incomplete combustion of fuels. Particulate matters are minute solid or liquid particles that are suspended in the atmosphere. They include aerosols, smoke, and dust particles. These air pollutants once emitted into the atmosphere , undergo mixing and disperse into the surroundings.

3.5.3 Noise pollution

Sound is acoustical energy released into atmosphere by vibrating or moving bodies where as noise is unwanted sound produced. Transportation is a major contributor of noise pollution, especially in urban areas. Noise is generated during both construction and operation. During construction, operation of large equipments causes considerable noise to the neighborhood. During the operation, noise is generated by the engine and exhaust systems of vehicle, aerodynamic friction, and the interaction between the vehicle and the support system (road-tire, rail-wheel). Extended exposure to excessive sound has been shown to produce physical and psychological damage. Further, because of its annoyance and disturbance, noise adds to mental stress and fatigue.

3.5.4 Energy consumption

The spectacular growth in industrial and economic growth during the past century have been closely related to an abundant supply of inexpensive energy from fossil fuels. Transportation sector is unbelieved to consume more than half of the petroleum products. The compact of the shortage of fuel was experienced during major wars when strict rationing was imposed in many countries. The impact of this had cascading effects on many factors of society, especially in the price escalation of essential commodities. However, this has few positive impacts; a shift to public transport system, a search for energy efficient engines, and alternate fuels. During the time of fuel shortage, people shifted to cheaper public transport system. Policy makers and planners, thereafter gave much emphasis to the public transit which consume less energy per person. The second impact was in the development of fuel-efficient engines and devices and operational and maintenance practices. A fast depleting fossil fuel has accelerated the search for energy efficient and environment friendly alternate energy source. The research is active in the development of bio-fuels, hydrogen fuels and solar energy.

3.5.5 Other impacts

Transportation directly or indirectly affects many other areas of society and few of then are listed below:

Almost all cities uses 20-30 percent of its land in transport facilities. Increased travel requirement also require additional land for transport facilities. A good transportation system takes considerable amount of land from the society.

Aesthetics of a region is also affected by transportation. Road networks in quite country side is visual intrusion. Similarly, the transportation facilities like fly-overs are again visual intrusion in urban context.

The social life and social pattern of a community is severely affected after the introduction of some transportation facilities. Construction of new transportation facilities often require substantial relocation of residents and employment opportunities.

3.6 Summary

1. The roles of transportation in society can be classified according to economic, social, political and environmental roles.
2. The social role of transport has caused people to live in permanent settlements and has given chances of sustainable developments.
3. Regarding political role, large areas can now be very easily governed with the help of good transportation system.
4. The environmental effects are usually viewed negatively.

3.7 Problems