Transport System in Bangladesh: Issues and Options for Sustainable Development

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ABSTRACT: Transport developments have been driven in Bangladesh mostly by improvised considerations having no explicit focus on future requirements and the means of meeting these requirements on a competitive as well as sustainable basis. The unplanned combination of rapid urbanization and motorization has been a key cause of numerous transport problems in Bangladesh. It has resulted in deterioration in accessibility, service levels, safety, comfort, operational deficiencies. The rapid urbanization process, high vehicular population growth and that of the mobility, inadequate transportation facilities and policies, varied traffic mix with over concentration of non-motorized vehicles, absence of dependable transport system and inadequate traffic management practices and parking facilities have created a significant worsening of traffic and environmental problems particularly in urban areas. Traffic accidents are now a very serious and growing problem and the safety situation is very severe by international standard. The problem of road accidents costing the community in the order of US$ 800 million (nearly 2% of GDP) each year. The other serious deficiencies resulting from ad-hoc planning are sectoral bias improper modal mix, un-integrated system, serious institutional weakness, limited role of the private sector etc. The current deficiencies have produced an unsustainable trend of transport development, which is characterized by misallocation of resources, adverse impacts on the environment and lack of competition. The current disturbing trends in transport development indicate the need for guidelines to make such development environmentally and to create a transport system that can meet the growing demand for transport services. In this paper characteristics of transportation and consequent mobility, safety and environmental effects are discussed. The purpose of the present paper is to conceptualized a vision and identify supporting policies for sustainable transport development. The authors also make an attention on key transport issues and possible options for ensuring sustainable transport development in Bangladesh.

Key words: Transport system, Deficiencies, Sustainable Development

INTRODUCTION

Transport is an important component of economic activity in all countries but especially so in those that are developing. Since ancient times, cities and trade canters have developed in locations that took advantages of the availability of transportation connections such as rivers, roads, protected harbors and railways. The potential for enhancing economic and social development through improvements in the transport sector are very large indeed. It helps the generation of economies of scale, increased competition, reduced cost, systematic urbanization, export-led faster growth and a larger share of international trade. But, it is true that, the unguided nature of present development efforts is rooted in the absence of a vision for future development. A vision sets the direction for development and guide formulation of policy measures

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and strategies to attain identified objectives. Unfortunately, no such vision for transport development exists in Bangladesh. The current disturbing trends in transport development indicate the need for policy directions to make such development environmentally and otherwise sustainable and to create a transport system that can meet the growing demand for transport services which is resulting from increasing economic liberation and external orientation of the economy.

It is generally agreed that a well-articulated transport policy is needed for the development of transport sector, even when the private sector plays an increasing role in such development. The level of transport needs in a growing economy depend on the pattern of development (e.g. spatial combination of economic activities, sectoral composition, and importance of international trade). Transport policy can influence the way the transport needs associated with a particular pattern met. A policy is required to answer such vital question, among others, as who will provide transport infrastructure, who will provide transport services, how transport infrastructure and services should be priced, what the appropriate roles of various transport modes in a transport system are, and how to resolve potential conflicts between transport developments and the environment.

There is growing interest in the concepts of sustainability, sustainable development, and sustainable transport. Sustainability reflects one of the most fundamental human desires supported by virtually all philosophies and religions: to create a better future world. It provides guidance for long-term, strategic decision-making. Sustainability emphasizes the integrated nature of human activities and therefore the importance of comprehensive Planning that coordinates between sectors, jurisdictions and groups. This is an important change because existing institutions are often poorly suited to address complex, long-term problems. The purpose of the present paper is to conceptualized such a concept of sustainability, sustainable development, sustainable transport and identify supporting policies for sustainable transport development in Bangladesh. At the outset of the paper, the authors describe the overview of present transport development. The authors also make an attention on key transport issues and possible options for ensuring sustainable transport development in Bangladesh.

**OVERVIEW OF BANGLADESH TRANSPORT SYSTEM**

The transport system of Bangladesh consists of roads, railways, inland waterways, two seaports, maritime shipping and civil aviation catering for both domestic and international traffic.

Development and maintenance of transport infrastructure in the county is essentially the responsibilities of the public sector. The public sector is involved in transport operations in road, inland water transport (IWT) and ocean shipping alongside the private sector. In the road transport and IWT sub-sectors, the private sector is dominant. In ocean shipping, however, public sector still predominates, although the private sector has considerably increased its role in this sector in recent years. Recently private sector has also been involved in domestic air transport and railway in a very limited scale.

Bangladesh witnessed rapid growth of transport since independence. The overall annual growth rate has been nearly 8.2 per cent for freight transport and 8.4 per cent for passenger transport. Even then, the transport intensity of the Bangladesh economy is considerably lower than that of many developing countries.
Projected Transport Demand and Allocation of Resources

The overall annual rates of growth for transport demand with reference to the estimated benchmark year of 1997 are assumed to be 7.5 per cent and 8 per cent for passenger and freight traffic respectively for the year 2002. The projected transport demand and modal shares for the year 2002 is presented in Table 1.

Table 1. Projected Transport Demand and Modal Shares - Passenger and Freight

<table>
<thead>
<tr>
<th>Year</th>
<th>Passenger</th>
<th></th>
<th></th>
<th>Freight</th>
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<tbody>
<tr>
<td></td>
<td>Total Pass-km</td>
<td>Mode Shares</td>
<td></td>
<td>Total Ton-km</td>
<td>Mode Shares</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Road</td>
<td>Rail</td>
<td>IWT</td>
<td>Road</td>
<td>Rail</td>
<td>IWT</td>
</tr>
<tr>
<td>1997</td>
<td>90 billion</td>
<td>72%</td>
<td>11%</td>
<td>17%</td>
<td>12 billion</td>
<td>65%</td>
</tr>
<tr>
<td>2002</td>
<td>152 billion</td>
<td>70%</td>
<td>12%</td>
<td>18%</td>
<td>19 billion</td>
<td>72%</td>
</tr>
</tbody>
</table>


An amount of Tk. 109,955.50 million has been earmarked from public sector for the development of transport in the Fifth Five Year Plan. Besides this, a sum of Tk. 11,800 million has been provided for the Bangabandhu Bridge giving a total allocation of Tk. 121,755.50 million for the transport sector as a whole. The percentage share of transport in the total public sector outlay is 14.20 compared with 16.50 in the Fourth Five Year Plan and about 19 during 1995-97. The sub sectoral break-up of the Fifth Five Year Plan Transport Sector financial outlay of Tk.121,755.50 million is shown in Table 2.

Table 2. Public Sector Financial Outlay for Development of Transport in Fifth Plan

<table>
<thead>
<tr>
<th>Sub-Sector</th>
<th>Total Allocation</th>
<th>On - going Projects</th>
<th>New Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road Transport</td>
<td>64905.50</td>
<td>51500.00</td>
<td>13405.50</td>
</tr>
<tr>
<td>Bangladesh Railway</td>
<td>24000.00</td>
<td>17900.00</td>
<td>6100.00</td>
</tr>
<tr>
<td>Water Transport</td>
<td>13550.00</td>
<td>9750.00</td>
<td>3800.00</td>
</tr>
<tr>
<td>Air Transport</td>
<td>7500.00</td>
<td>6160.00</td>
<td>1340.00</td>
</tr>
<tr>
<td>Sub-Total</td>
<td>109955.50</td>
<td>85310.00</td>
<td>24645.50</td>
</tr>
<tr>
<td>Bangabandhu Bridge</td>
<td>11800.00</td>
<td>11,800.00</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>121755.50</td>
<td>97110.00</td>
<td>24645.50</td>
</tr>
</tbody>
</table>

Note: Of the total Plan outlay, only 20.24 per cent is available for new projects. The highest outlay is given to the road sub-sector (about 53.30 per cent) which is followed by Bangladesh Railway (19.71 percent).

Road Transport

The total paved road length under Roads and Highways Department (RHD) has expanded from a mere 600 km in 1947 to around 4,265 km in 1973 and to around 21,000 km in 2001. At present it is nearly 22,000 km.

Another 1,83,354 km of road existed under LGED, as of December 1998, which link rural growth centres with the arterial routes. Most of the heavy vehicles in Bangladesh are of 2-axle configuration, with two wheeled front axle and 4-wheeled rear axle. The axle load limit is 18,000 lbs or 8.2 tonnes, compared to 10.2 tonnes in India.

Bangladesh Railway (BR)

Bangladesh Railway (BR) has a total route kilometer of 2734, of which 901 km is Broad Gauge (BG) and 1833 km is Meter Gauge (MG). The BR is at present catering to passenger and freight services at 489 stations spread over the entire country.
Private sector is being increasingly involved in railway operations over the last few years. These initiatives included the leasing out of commercial functions for passenger trains. BR signed private sector contracts for the development, operation and maintenance of their ticketing reservation and for the maintenance, expansion and provision of telecommunication services to both railway and general public utilizing the railway’s fibre optic network. In general, this private sector involvement has been highly successful resulting in increased revenue for the railway and better levels of service for the public.

Bangladesh Railway has also introduced computerized wagon control system (RAILWICS) in 1999-2000. UNESCAP assisted programme, can now be used for tracking and monitoring movement and status of all rolling stock, containers and cargo. System can be integrated for international tracking. The system is now fully operated by BR.

**Inland Water Transport**

Bangladesh is a Maritime country with vast network of inland waterways. Out of nearly 24,000 km of rivers, streams and canals in Bangladesh, only about 5,970 km is navigable by mechanized vessels during monsoon period, which shrinks to about 3,970 km during dry period. Approximately, 90% of IWT services are provided by private sector.

The IWT sector carries over 50% of all arterial freight traffic and one quarter of all passenger traffic. River instability coupled with rapid deterioration of the river system through massive siltation causes serious problems to navigation and also to the management, operation and development of IWT system. Passenger and cargo facilities are inadequate in terms of landing stages, storage area and handling equipment. The management capabilities and skills are quite low and it requires human resource development (HRD) and training. Rural landing facilities (pontoon and jetties) are few and far between compared to the needs for mass transportation.

**Urban Transport System**

The urban transport issues of mobility, congestion, safety and environmental aspects are becoming increasing important and critical in Bangladesh. The rapid urbanization process, high vehicular population growth and that of the mobility, inadequate transport facilities and policies, varied traffic mix with over concentration of non-motorized vehicles, absence of dependable public transport system and inadequate traffic management practices and parking facilities have created a significant worsening of traffic and environmental problems in the major urban centres, Dhaka in particular.

The urban transport system focuses on mobility and access within the main cities and towns. The main strategic issue related to urban transport is the efficiency of intra-urban transport in the main urban centres. Rapid urban growth and its contribution to the national economy need to be carefully addressed. Transport’s role in the urban economy and growth of this sector has been phenomenal (e.g. individual mobility and new employment opportunities in the transport service sector). This role need to be strengthened and qualitatively improved in the coming years, while the management of the urban system has become a critical issue. Management issues are expected to
constrain the growth of the sector, vis-a-vis, the national economy, unless clearly defined policy and strategic actions are initiated without further delay.

**DEFICIENCIES IN PRESENT TRANSPORT DEVELOPMENT**

The transport development in Bangladesh has taken place within the context of a low level of overall national development and essentially with an inward looking policy. Until now, the development and maintenance of transport infrastructure has remained the responsibility of the public sector. In addition, public sector is the main provider of rail and air services and is also involved in providing services in road, inland water transport and shipping along with the private sector. An overview of the main features of the existing transport situation in Bangladesh, deficiencies, trends on transport development is presented in this section.

**Poor Quality of Transport Services**

The transport sector in Bangladesh is characterized by weak public and private institutions, and low level of investment. It operates in a physical environment of high levels of risk, and socio-political context of extreme poverty and frequent man-made disruptions. The general quality of services at all levels and by all modes has been poor. The overcrowded buses, trains and water transports, with poor safety and security records, and unreliable service operations are quite common in Bangladesh. In freight transport, excessive cost, time, pilferage, etc., are some of the common problems. These problems are further complicated by vested interests from both within and outside the transport sector itself and the socio-political environment of the country.

Road accidents, air pollution due to vehicle emissions, hazardous vehicle driving/operations, overloading, etc are some of the most common phenomena, in transport sector, particularly in the urban areas. These phenomena have actually developed due to lack of enforcement of existing rules and regulations with regard to transport operation in the country. While overloading of buses, rash driving of trucks, unworthy vehicles are supposed to be stopped by law enforcing agencies viz, traffic police, very little effective measures are actually taken in this regard.

**Inappropriate Modal Mix**

Due to its comparative advantages in terms of speed, flexibility, and accessibility, road transport has emerged as the most popular mode of transportation in Bangladesh. Reflecting popular demand for road transport and increased realization of the significance of road transport for rural development and poverty alleviation, road development has continued to receive major attention of all successive governments since liberation in 1971. As a result, road transportation has become the principal mode of transportation for both goods and passenger traffic.

With major developments in the road sector, the relative roles of the three modes of surface transport - road, inland water transport (IWT) and railways are changing with road transport growing progressively. Figure 1 presents the overall transport output estimates in respect of the three modes of surface transport together. The changing roles of the three major modes have many social, economic and environmental implications.
Public sector allocations to different modes of transportation over the successive plan periods in Bangladesh are shown in Table 3. It shows that the share of road sector has gradually increased from less than 30 per cent during the First Five Year Plan period (1973-78) to more than 66 percent during the Fourth Five Year Plan (1990-95). Its share in the current Fifth Five Year Plan (1997-2002) is about 60 per cent. Water transportation suffered the most followed by air and rail transport. During the same period, the share of water transport decreased from about 24 per cent in 1973-78 to a mere 12 per cent during the current plan period.

The implications of these changes in resource allocation are clearly reflected in the evolving relative roles of these modes. The road transport has expanded at the expense of railways and inland water transport. All these distortions have taken place due to distorted pricing of the services which are neither based on economic costing nor based on cost-recovery principle.

Table 3: Share of allocation to different modes in the past plans*

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</tr>
</thead>
<tbody>
<tr>
<td>Road</td>
<td>28.36</td>
<td>37.51</td>
<td>31.80</td>
<td>42.30</td>
<td>66.42</td>
<td>74.46</td>
<td>58.68</td>
</tr>
<tr>
<td>Rail</td>
<td>23.91</td>
<td>27.35</td>
<td>32.14</td>
<td>29.83</td>
<td>17.06</td>
<td>16.08</td>
<td>21.82</td>
</tr>
<tr>
<td>Water</td>
<td>35.30</td>
<td>24.41</td>
<td>24.63</td>
<td>20.38</td>
<td>13.07</td>
<td>5.32</td>
<td>12.53</td>
</tr>
<tr>
<td>Air</td>
<td>12.44</td>
<td>10.73</td>
<td>11.44</td>
<td>7.49</td>
<td>3.45</td>
<td>4.14</td>
<td>6.96</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Total allocation for all modes (m taka)</td>
<td>5276.1</td>
<td>4500</td>
<td>12864.6</td>
<td>28023</td>
<td>52170</td>
<td>24799.8</td>
<td>107705.5</td>
</tr>
<tr>
<td>Sector allocation as % of total public sector outlay</td>
<td>11.65</td>
<td>13.79</td>
<td>11.59</td>
<td>12.01</td>
<td>16.50</td>
<td>18.81</td>
<td></td>
</tr>
</tbody>
</table>

* Excludes allocation for Bangabandhu Bridge

Source: Computed from data given in the Fifth Five Year Plan (Planning Commission, 1997)
**Unaware of the Regional Role of the Transport System**

As indicated earlier, Bangladesh has been developing its national transport system, essentially with an inward looking strategy. In the context of the globalization process which is currently underway, it has been observed that world wide economic dynamism has been driven to a significant extent by economic exchange on an increasing scale among economies situated in the same region/sub-region. Despite her strategic location in the sub-region comprising the countries/areas which are the close neighbours, such as Nepal, Bhutan and North-East India, Bangladesh has not been planning and developing its transport system with a regional perspective in mind.

**Development Trend Not Sustainable**

There is a growing interest in sustainable development, which requires us to be more sensitive to environmental and social constraints, including indirect and long-term impacts. It emphasises intergenerational equity and long-term ecological viability. Sustainability has significant implications for transportation planning, since transport activities tend to be highly resource intensive, have numerous external costs, and frequently distribute impacts inequitably. Sustainable development focuses on improved access to facilities and to using each mode for what it does best. Improvement of access and distribution of linked production and storage activities can substantially reduce the necessity of movement and/or reduce trip length resulting in lower demand for transport infrastructure and services, less energy consumption and reduction of external costs.

Pricing policy for the transport sector of the country poses a serious problem for the proper functioning of the transport sector. Although pricing policy should ideally be based on cost recovery principle, in reality it is not commensurate with the cost of providing transport services. Fare and rates in all the transport sub-sectors are fixed at a level much below the combined cost of transport. This leads to substantial losses in all the transport sub-sectors and in turn puts strains on the total allocations meant for the different sectors of the economy. Although the transport is a service sector and the public transport is provided depending on the principle of public service obligation (PSO), the practice of providing unlimited subsidy from Govt. exchequer is creating problem for other sectors of the economy too, and is therefore not sustainable.

**Transport System Not Fully Integrated**

Integrated system development which has now become a major issue in modern sustainable transport development, has particular significance for Bangladesh with her acute resource scarcity. Thus there is an urgent need for an optimum mix of modes and minimisation of consumption of resources. However, such a mix cannot be achieved if one looks at a mode in isolation from others. Thus although rail and water transport is generally more efficient than road transport because of their higher energy efficiency and better labour productivity, this fact by itself cannot ensure greater use of these modes. In most of the cases they alone cannot provide door-to-door services. Because of their higher terminal costs they are also not suitable for short trip length or where intensity of demand is too low to justify higher capacity modes. These inherent characteristics of different modes require that to improve overall efficiency each mode should be used for what it does best in an overall transport chain. Reflecting a fundamental change in the traditional way of looking at transportation of goods and people, a mode is increasingly considered only as a link in the chain and the whole issue of transportation from the origin to ultimate destination is considered. In Bangladesh,
each mode of transport operators on its own without any initiative to establish efficient logistic chains between O-D involving different modes as necessary. Thus an integrated system involving different modes, as appropriate from the origin to ultimate destination is needed.

**Poor Air Quality Due to Higher Vehicular Emissions**

Around 1000 MT of pollutants are pumped into the environment every day in Dhaka, of which 70% comes from vehicles, followed by industrial units, garbage and other biomass burning by the slum dwellers and burning of coal and wood by the large number of brick fields in and around the city.

Although the total number of vehicles in Dhaka city are not large relative to human population, there is preponderance of para-transit. The city, however, suffers from high level of ambient air pollution due to vehicular emissions, and is one of the worst environmental problems affecting more than ten million inhabitants of Dhaka city. Motor vehicles contribute about 55% of SOx, 70% of NOx and 60% of CO of the total. The motorized vehicle population in Dhaka is dominated by three wheelers and these vehicles are mostly powered by two stroke engines which have high HC emissions as well. In addition these vehicles emit unburned gasoline as a liquid particulate that combines with water vapor to form an aerosol that provides a blue haze on the roads. It is fully established now that two-stroke engines are a major contributor to ambient Hydro Carbon (HC) and suspended particulate matter (SPM), HC and PM carbon monoxide (CO) concentrations. There are about 70,000 two-stroke three wheelers (per year increase 3500), 2000 two stroke large tempos (per year increase 200) and 3000 four stroke three wheelers (per year increase 300) in Dhaka city.

**Private Sector’s Role Not Fully Defined**

The conventional wisdom that government ownership and direct operation of services are required to deliver social benefits of transport is no longer held sacred. Evidence in many countries has shown that private sector ownership and operation of transport services can also deliver social benefits to the people as a whole. In order to secure competitive access to industrialised economies and global trade generally, and also to exploit the potentials of providing transport services to the sub-region, Bangladesh needs an active participation of private sector to bring in efficiencies of service operation and access to capital. However, currently the involvement of the private sector is limited mainly to providing services in some of the sub-sectors like road, inland water and shipping. They have also very limited participation in civil aviation and rail services. The involvement of private sector in infrastructure development is also low. There are many reasons for low private sector involvement. Absence of regulatory institutions, an appropriate legal framework and inadequacy of capable and educated transport providers, bureaucratic procedures and practices, etc., are some of the factors which are working as the obstacle to private sector involvement.

**Lack of Urban Transport Policy**

Bangladesh has no urban transport policy as yet. As such there is no clear decision as to which modes of transport and facilities, the urban areas should encourage. In the past urban transport received little attention, as investment went more in infrastructure development for inter-urban linkages and for opening up links to rural growth centres.
The 4th Five Year Plan of Bangladesh (1990-95) indicated that urban transport problems, will be tackled, particularly in the metropolitan areas with emphasis on landuse and water management system.

Government therefore, undertook a study “the Greater Dhaka Metropolitan Area Integrated Transport Study (DITS) (1992-94), funded by UNDP. In line with the findings of the study, World Bank formulated a project – “Dhaka Urban Transport Project”, to address in the short-term, urgent policy issues, infrastructure bottlenecks and traffic management constraints, and in the longer term, to focus on planning, institutional and policy action. Based on another recommendation of the World Bank for strengthening coordination mechanism, Greater Dhaka Transport Planning and Coordination Board (GDTPCB) was established. The Board has recently been renamed as Dhaka Transport Coordination Board. While efforts are underway to improve urban transport situation in Dhaka, similar initiatives need to be taken to address urban transport problems in other cities, and before that there is an urgent need for setting urban transport policies of Bangladesh.

Generally speaking such a policy should aim at developing an integrated, balanced and environmentally sound urban transport system in which all modes (motorized and non-motorized) can play their roles efficiently.

**Institutional Deficiency**

The Bangladeshi institutions which are linked to transport sector, in general, have weak and outdated structure. Their lack of capacity and shortage of resources seriously undermine their capability for good governance, sound policymaking and public management. Powerful vested interests and legal constraints further compound the problem. The manifestations of all these are reflected in the poor- and malgovernance of the transport sector, the outcomes of which are loss-making state enterprises, lack of investments in transport infrastructure, breeding corruption, deterioration in the institutions of law and order, weak law enforcement impacting on safety, security, environment, private sector participation, etc.

Different ministries and government agencies responsible for transport sector development are currently following a sectoral approach with no or very little coordination among themselves. The basic problem here is the lack of coordination among various government agencies and the absence of a clear policy framework with regard to transport sector of the country. Inter-modal priority that is essential for efficient resource use and for avoiding duplications and minimizing wastage of resources is hardly found in practice. Instead, some non-economic factors such as political considerations get prominence in many instances in connection with inter-modal as well as intra-modal transport allocation in the country. In the past, the Planning Commission used to play a major coordinating role in the allocation of resources for development based on detailed analysis of economic costs and externalities. This has diminished over the years.

**Lack of Vision**

It is vital for any country to have a vision for transport development. Without a vision, development efforts become ad-hoc, and remain unguided. A vision sets the direction for development and guides the formulation of policy measures and strategies to attain
certain objectives. Unfortunately, no such vision for transport development exists in Bangladesh. Consequently, our development efforts have resulted in situations such as sectoral imbalance leading to inefficient utilisation of scarce resources, adverse environmental impacts, development of a system having little focus on any regional role, etc.

A vision is therefore, needed for a long-term balanced and integrated system development, which can address the present deficiencies and at the same time meets the future requirements. A vision is needed which is realistic and is based on recognising current development, potentials of growth, and global trend. This should also take into account the changing needs of the people, their aspirations, wellbeing and affordability, system efficiency, effective utilisation of the existing facility, technological development, and minimisation of resource (physical and financial) consumption which is of vital importance. Our actions in transport development cannot deliver the social benefits we are looking for without having such a vision and accompanying broad strategies.

GROWING ISSUES IN OVERALL TRANSPORTATION

- Non integrated transport system: road, water and water are act separately and on is developing but other deteriorating
- Only road sectoral basis: road transport is comparative advantage than other competing modes. Investment, resource allocation, maintenance and management is very much questionable
- Unsustainable development: it requires more sensitive to environment and social constraints including indirect and long-term impacts with less energy consumption and reduction of external costs. In this case, rail and water is more efficient than road
- Private Sector’s road undefined: Absence of regulatory institutions, an appropriate legal framework and inadequacy of capable and educated transport providers, bureaucratic procedures and practices etc are some of the factors which are working as the obstacle to private sector involvement.
- Lack of Outward Looking Approach: transport sector consider basically national context not cross border issues. It may become extremely costly for Bangladesh to provide inter-country transport services when situation demand unless compatibility with neighboring transport systems.
- Serious Institutional Weakness: weak and outdated structure. Lack of resources, capacity to good governance, sound policy making and public management. Lack of coordination in different institution.
- Lack of Vision: Long term vision is vital for transport development. But, for the lack of vision development efforts become ad-hoc and remain unguided.
- Inappropriate Modal mix
- Neglect of Intentional Surface Transport

GROWING ISSUES IN URBAN TRANSPORTATION

- Traffic Congestion: traffic congestion means delay caused by one vehicle to others. It results when the number of vehicles is high to the capacity of the road network.
- Accidents: on the roads accidents constitute one of the major social problems. the highest incidence of road accidents occurs ,not surprisingly ,in those cities with highest rate of car ownership.
- Public Transport, the problem of peak period: In practically every city the use of
public transport is concentrated in the morning and evening and rush hours. Whatever the volume of demand, there is invariably too little capacity to permit comfortable traveling condition at these conditions.

- Pedestrian: there is lack of accessibility and facilities for the pedestrians
- Environment: air pollution, noise pollution are associated with increased road traffic.
- Parking: in many cities parking difficulties are deliberately created by removal of parking space and refusal to allow the provision of new car parks. Nevertheless from the consumer’s point of view, the shortage of parking space, the regulations and charges applying to it, are another source of dissatisfaction and complaint.

DEFINING SUSTAINABILITY

There is no universally accepted definition of sustainability, sustainable development or sustainable transport (Beatley, 1995). Some definitions are listed below.

**Brundtland Commission (1987)**

Sustainable development “meets the needs of the present without compromising the ability of future generations to meet their own needs.”

**Transport Canada (1999)**

“The goal of sustainable transportation is to ensure that environment, social and economic considerations are factored into decisions affecting transportation activity.”

**Richardson (1999)**

A sustainable transportation system is “one in which fuel consumption, vehicle emissions, safety, congestion, and social and economic access are of such levels that they can be sustained into the indefinite future without causing great or irreparable harm to future generations of people throughout the world.”

**Transportation Research Board (TRB, 1997)**

“…sustainability is not about threat analysis; sustainability is about systems analysis. Specifically, it is about how environmental, economic, and social systems interact to their mutual advantage or disadvantage at various space-based scales of operation.”

**Litman (2005)**

Sustainable planning means that local, short-term decisions are consistent with strategic, regional and global, long-term goals.

**KEY ISSUES IN SUSTAINABLE TRANSPORTATION**

**Access, not Mobility**

Movement in cities is not an end in itself. We move in order to gain ACCESS to people and things. But in car-oriented cities, activities tend to spread out. This forces people to travel further and further for the same level of accessibility as before.
Moving People, not Cars

We need to focus on moving people and goods rather than vehicles. In dense cities, public transport saves valuable space and energy compared to private transport, and can make a healthy profit at the same time. However, cities need to nurture their public transport by giving them some priority on the road over cars.

Reclaim City Space for Walking and Pedalled Vehicles

The healthiest and most sustainable modes of transport are walking and cycling. Even car drivers become pedestrians to complete a trip, and effective public transport depends on people being able to walk comfortably to stations and stops. But walking and cycling are vulnerable to the impacts of traffic. Many rapidly motorising Asian cities are quickly losing their walking spaces. In Bangkok, only 14% of all trips are on foot or bicycle compared to a whopping 45% in the enormous Tokyo metropolitan area!

Stop Subsidising Private Motor Vehicles

A 1990 study found that peak hour driving by car in Bangkok is subsidized by society to the tune of about 15 Baht (about 60 US cents) per km. Numerous studies are finding similar results in diverse places, from Perth, Australia to Germany to Kuala Lumpur, Malaysia. It is no wonder that too many people drive if they are not paying the full costs of their actions. This can be corrected by road charges and taxes, which are reinvested in measures to help public transport, walking and cycling.

TEN STEPS TOWARDS MORE SUSTAINABLE AND PEOPLE-CENTRED TRANSPORT

1. Accessibility for All

The purpose of transport is to provide access to the contacts, services and goods that we all need in an equitable, low-cost and low-impact way. Transport policy should not fall into the trap of seeing mobility as an end in its own right and of simply promoting more and more vehicle movement at higher and higher speeds. Accessibility planning aims to ensure that destinations remain within easy reach and seeks to maintain the viability of diverse and plentiful transport choices, particularly non-motorised transport, public transport and paratransit.

2. Social Equity

Almost everywhere, transport priorities serve the poor badly and devote most investment to the mobility of affluent vehicle owners. The negative impacts of transport fall most heavily on disadvantaged people- those living in poverty, people with disabilities, women, the young, the frail elderly and people with insecure housing rights. Social equity demands that highest priority should go to public transport, walking and non-motorised vehicles that are accessible to almost everyone and which have low impacts.

3. Ecological Sustainability

Both global sustainability and the local environment of settlements are seriously threatened by overuse of private motor vehicles. Local impacts of transport, such as noise and air pollution, are extreme in many developing countries of Asia like
Bangladesh. Places whose transport systems contribute least to environmental damage are those with lowest car and motorcycle use and highest use of public transport, cycling and walking.

4. Health and Safety

Transport has a major impact on health and safety. Motor vehicles are responsible for around 70% of air pollution in many of the world's major cities. Worldwide more than 1.2 million people are killed every year in road crashes and 50 million are seriously injured. In most developing countries, more than 60% of the victims are pedestrians and other vulnerable road users. Travel is safest in places that provide plentiful public transport and facilities for cyclists and pedestrians.

5. Public Participation and Transparency

Transport planning is always the better for involving the communities who are being planned for. Transparency and open information also help to prevent corrupt practices that hurt the whole society. Traditional transport planning distrusts community involvement and insists that it be left to the “experts”. But around the world, more and more community organisations are realising that they can and must take action.

6. Economy and Low-cost

The most sustainable, people-centred and equitable transport policies are low cost and include restraint of the highest-cost mode of transport – the private car. By restraining cars and motorcycles and charging them their full costs, cities can avoid or postpone the need for expensive roads while retaining high use of low-cost public transport, walking and bicycles.

7. Information and Analysis

To take action, communities need to understand the forces that are pushing transport priorities in the wrong directions. They need solid arguments and information to dispel the myths propounded in support of destructive projects and policies. Destructive proposals will not stand up to critical scrutiny. We can all learn from the successes and failures of other campaigns around the world.

8. Advocacy

Unless voices are raised from local communities (especially poor communities), pedestrians, bus riders, and non-motorised vehicle (NMV) users in transport planning, then only the voices of motorists, truckers and big business will be heard by decision-makers. People’s advocacy has made a dramatic difference to transport plans in diverse places.

9. Capability building

There is an urgent need to build capacity and commitment among transport decision-makers to adapt to the new paradigms that are replacing car-oriented mobility planning. Community organisations also urgently need help to build their ability to assert their rights to speak up on transport issues, to understand the fundamental issues, and to know where to turn for help.
10. Networking

Networking involves actively making contacts and encouraging information exchange and collaboration while always respecting the independence of diverse participants. The active sharing involved in networking opens up creative opportunities for action and synergy. Through generous networking, we can all gain ideas, information, lessons, encouragement, and solidarity to further our mutual goals.

SOME ECONOMIC BENEFITS OF SUSTAINABLE TRANSPORTATION

- Attracts New Business
- Generates sales
- Encourages local circulation of money
- Stimulates retail trade
- Offers cost effective services
- Encourages high value land use
- Increases productivity
- Reduces transportation costs
- Enables economic development
- Reduces infrastructure costs
- Creates Jobs

OPTIONS AND ACTIONS FOR SUSTAINABLE DEVELOPMENT

Access

Access to people, places, goods and services is important to the social and economic well being of communities. Transportation is a key means, but not the only means, through which access can be achieved.

Strategic Directions

- Demand Management
  - Reduce the need for travel while protecting social and economic needs for access by changing urban form, promoting new communications technologies, and developing more efficient packaging etc.

- Diversifying Options

Improve access by diversifying transportation options, giving people more choices as to how they meet their access needs.

People and Communities

Transportation systems are a critical element of a strong economy, but can also contribute directly to building community and enhancing quality of life.

Strategic Directions

- Urban Planning and Transportation Planning
Concentrate urban growth, limit sprawl and provide for more mixed land use through urban structure and land use policies. This would reduce demand (especially for automobile trips) by moving origins and destinations closer together and also help reduce habitat destruction and loss of agricultural and recreational lands.

Give priority to less polluting, lower impact modes of transportation in the design of transportation systems and urban areas. Pedestrian and cycling paths should be provided as attractive and safe alternatives to cars.

Maintain and enhance the health and viability of urban public transit systems.

Integrate transport modes, whether for passengers or goods, in order to provide more efficient goods movement, and to increase the availability of lower impact transportation options such as public transit.

Protect historical sites and archaeological resources, reduce noise pollution, and consider aesthetics in the planning, design and construction of transportation systems.

Decision Making Processes

Ensure public and private sector stakeholders coordinate their transportation planning, development and delivery activities. These transportation decisions should also be integrated with environment, health, energy and urban land-use decisions.

Make transportation-related decisions in an open and inclusive process. Inform the public about transportation options and impacts, and encourage them to participate in decision making so that the needs of different communities (i.e. rural vs. urban; cyclists vs. drivers, etc.) can be understood and accounted for.

Anticipate environmental or social impacts of transportation-related decisions rather than trying to react to them after they have occurred. This will result in considerable cost savings since transportation decisions often involve costly, long-term infrastructure investments.

Consider both the global and local social, economic and environmental effects of decisions.

Environmental Quality

Human activities can overload the environment's finite capacity to absorb waste, physically modify or destroy habitats, and use resources more rapidly than they can be regenerated or replaced. Efforts must be made to develop transportation systems that minimize physical and biological stress, staying within the assimilative and regenerative capacities of ecosystems, and respecting the habitat requirements of other species.

Strategic Directions

Environmental Protection and Waste Reduction

Minimize transportation-related air emissions and discharges of contaminants to surface (fresh and salt water) and ground water.
Minimize the generation of waste through each phase of the life-cycle of transportation vehicles, vessels and infrastructure. Reduce, reuse and recycle.

Ensure that the rate of use of renewable resources does not exceed rates of regeneration, and non-renewable resource use is minimized.

Ensure emergency management systems are in place in order to respond to spills and other transportation-related accidents.

- **Land Use**
  - Emphasize compact urban form in order to reduce habitat destruction and loss of agricultural and recreational lands around urban areas.
  - Minimize the impact on natural habitat and the wildlife and people it supports in the design, construction and operation of inter-city transportation systems and infrastructure, including, for example, highways, pipelines, and railways.

- **Energy Use**
  - Reduce fossil fuel consumption and emissions through efficiencies and demand management.
  - Promote the use of alternative and renewable energy.

**Institutional Developments**

Institutional reform to create new institution and/or revitalize the existing ones would be crucial to achieving the sustainable transport system of the future. The existing institution need to be reformed. The reform would involve redefining the role of various institutions and changes in organizational structure and operational practices. The institutions must be able to operate in a multisectoral and multilateral environment. To prepare the public sector to assume its changing role, revitalization of the existing institutions should focus on capacity building, allocation of resources, access to new technology especially related to IT etc. Along with reforms and revitalization of existing institutions, setting of new institutions especially regulatory bodies and reforming of existing regulatory regimes would also be required to facilitate participation of the private sector, promoting competition and also to protect social interest at large.

There is also a need to redefine the concept of national interest in transport policy development. The national economic policy of Bangladesh is becoming outward looking. The transport policies need to keep pace with this trend. The transport system must cater to national needs, which now require more interactions with the outside world. The future transport policies should therefore be based on an outward looking approach.

Besides this, need for clear framework for delegation

- Allocate responsibility between levels of government clearly by law
- Plan inter-governmental transfers to be consistent with the allocation of responsibility
- Link statutorily imposed obligations to specific channels of finance
Economic Viability

Sustainable transportation systems must be cost effective. If adjustment costs are incurred in the transition to more sustainable transportation systems they should be equitably shared, just as current costs should be more equitably shared.

Strategic Directions

- **Fuller-Cost Accounting**
  - Identify and recognize public subsidies (hidden or otherwise) to all modes of transport and make transportation decisions accordingly.
  - Reflect the full social, economic and environmental costs (including long-term costs) of each mode of transport or transport related practice as accurately as possible in market prices.
  - Ensure users pay a fuller share of all costs, while respecting equity concerns.
  - Research and Technological Innovation
  - Promote research and development of innovative alternative technologies that improve access and help protect the environment. The emphasis should be on providing a wide range of transportation options.

- **Job Creation**

  Consider the potential economic and employment benefits that could be derived from the restructuring of our transportation systems.

CONCLUSIONS

The major aspects considered in this paper are issues/problems of present transport development and policy action for sustainable development in Bangladesh. The goals of an efficient transport system must be linked with fostering economic development, enhancing the quality of the environment, reducing energy consumption, promoting transportation-friendly development patterns and encouraging fair and equitable access and safe mobility to residents of different socioeconomic groups. The existing institution should be defined roles and make ready in the new environment. Integrated and comprehensive approach would ensure with all stakeholders. The paper in particular focuses on the elements requiring immediate attention. Best practices in the developing countries need to agree to a package of measures for achieving sustainable mobility.

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