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**POLICY BRIEF ON “TRANSPORT AND
INFRASTRUCTURE”
CPD TASK FORCE REPORT**



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POLICY BRIEF ON TRANSPORT AND INFRASTRUCTURE

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SUMMARY OF FINDINGS AND RECOMMENDATIONS

Introduction

1. The provision of adequate transport infrastructure and services, along with macro-economic stability and a long term development strategy is one of the necessary conditions for sustainable economic and social development. However in the case of Bangladesh, frequent power brown-outs or black outs and long hours of traffic congestions, high level of air pollution in cities, poor traffic safety, presence of non-motorized transport on major roads, and long delays at major ports, inadequate telecommunication services, including long waiting list for telephones, unplanned urbanization and sub-division of land around major urban centers, all bear witness to the inadequacy of existing infrastructure facilities, inefficiency in the management of services, lack of enforcement of laws and regulations, and provisions of approved Master Plans.

2. Partly in response to such observations and in recognition of the vital role which transport infrastructure and services play in economic and social development, government of Bangladesh has been trying its best to develop the transport system to meet the country's present and future requirements. An analysis however, shows that although in most of the national five year plans, policies to address many of the deficiencies were clearly stated, yet during implementation, these were not adhered to. As a result transport development in Bangladesh have been driven mostly by ad hoc considerations having no explicit focus on long term requirements and the means of meeting these requirements on a competitive as well as sustainable basis. These have also produced many serious deficiencies and imbalances in the system. Some of the major deficiencies include sectoral bias, improper modal mix, unintegrated system, serious institutional weaknesses, limited role of the private sector and lack of national and urban transport policies. The current deficiencies have produced an unsustainable trend of transport development, which is characterised by misallocation of resources, adverse impacts on the environment and lack of competition.

3. 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 and strategies to attain identified objectives. Unfortunately, no long term vision for transport development exists in Bangladesh. The current road biased trends in transport development indicate the need for correct policy directions to make such development environmentally and socio-economically sustainable and to create a transport system that can meet the growing demand for transport services in the future resulting from increasing economic liberalisation and external orientation of the economy.

4. The purpose of this policy brief is to enhance awareness among the distinguished politicians and the civil society of the need for a vision and supporting coherent transport policies, and outline some of their important elements. Development of a coherent policy requires active involvement of both the government and other stakeholders in the search

<p>iii. To overcome the problem of certain misconception and lack of understanding about the benefit of integrating national transport system with the region, a study should be commissioned to estimate the potential traffic to be handled so that actions could be taken to improve transport facilities accordingly. Based on the outcome of the study, it would be essential to arrange an extensive programme of awareness creation of the benefit of transport integration, through discussion/ consultation, dialogues, seminars, workshops and multi-media publicity. (Para 89)</p>	<p>A</p>
<p><u>Institutional reform essential</u></p>	
<p>iv. At present 3 ministries and a large number of parastatals are involved in planning, development, operation and management of transport sector, without much coordination and adequate assessment as to whether another mode of transport could undertake a particular task more economically and with much less damage caused to the environment. In fact this uncoordinated development has given rise to some of the problems such as sectoral bias, inappropriate modal mix and unintegrated system. There is also a serious deficiency in the current planning approach followed by different ministries and agencies. In the present top-down approach, transport policy is developed by the responsible government agency with very little or no cognisance of other stakeholders views. Broad participation of different interest groups and consumers is essential for the effectiveness of such planning which is absent in the present practice. (Para 92, 93)</p>	<p>A</p>
<p>v. For effective coordination and development of an integrated transportation system in the country, all transport related ministries and their parastatals be brought under one broad based “Ministry of Transport”. The Cabinet Minister in charge of the Ministry could be assisted by several State Ministers, one each for Roads; Railways; Ports, Shipping and inland waterways; and Civil Aviation cum Tourism. There could be several Divisions in the Ministry one for each sub-sector of transport but coordinated by an official of the rank of Principal Secretary. Ministry of Transport should set the policies and regulations, leaving the implementation of those policies to the parastatals and the private sector. (Para 94)</p>	<p>A</p>
<p><u>Integrated transport system needed</u></p>	
<p>vi. To assist the Ministry of Transport in setting coordinated policies and ensure integrated development of the transport system, there should be a high profile Policy Research Unit (PRU) headed by a</p>	<p>A</p>

<p>professional of high standing, directly reporting to the Principal Secretary of the Ministry (whose major responsibilities would be coordination and research). (Para 97)</p> <p>vii. Bangladesh also needs independent in-house transport research and analytical capability. It is therefore recommended that an autonomous National Transport Research Centre (NTRC) be established. The Planning Commission, the Transport Ministry and other government agencies could use research findings of NTRC in the allocation of resources for the development of different modes, and in setting appropriate policies to further improve the transport situation. NTRC should promote capacity building for research not only at the centre itself, but also at the Universities and other research organizations. (Para 98, 99)</p> <p>viii. It is essential to ensure development of a balanced, integrated, and sustainable transport system, to face the challenges of globalisation. The proposed high profile Policy Research Unit (PRU) to be set up at the proposed Ministry of Transport, together with the proposed National Transport Research Centre (NTRC), and the Planning Commission would be required to ensure integrated and coordinated planning and development of the transport system, whether nationally, or at the urban level. (Para 107)</p>	<p>A</p> <p>A</p>
<p><u>Bangladesh has potential to be transport-hub</u></p> <p>ix. In view of its unique geographical location, Bangladesh could become the “transport hub” to serve the entire hinterland comprising Nepal, Bhutan and North-East India. Bangladesh should try to provide transport services to the sub-region as a “trade in services” and as a potentially important source of foreign exchange earning. Accordingly, future development strategies should include a regional role for the national transport system. Future actions concerning appropriate modal mix and integration of different modes should also reflect this regional role of the transport system. (Para 85)</p>	<p>B</p>
<p><u>Enhancing efficiencies of national experts</u></p> <p>x. To enhance the efficiency, in-service professional and management training needs to be organized in a dedicated manner for those who are in position, and separate training programmes for new comers. More and more authorities should be delegated to the</p>	<p>B</p>

<p>agencies/parastatals so that they could function as autonomous bodies. (Para 96, 101)</p> <p>xi. In order to ensure sustainability and continuity, the national experts of Bangladesh should be given more opportunities to get involved in planning, development and in solving transport problems including urban transport. (Para 102)</p>	<p>B</p>
<p><u>Private sector's involvement</u></p> <p>xii. To promote private sector's involvement in transport infrastructure development and management, Government's functions as a provider should reduce while its functions as a facilitating regulator should increase. To this end, the government needs to develop an institutional framework to create a favourable operating environment for the private sector and at the same time to protect social and environmental interests. (Para 110)</p> <p>xiii. To strengthen Public-Private Partnership (PPP) in transport infrastructure development and management, further improvements are required in a number of areas to create a conducive environment. These include:</p> <ul style="list-style-type: none"> a. Improving the legislative and regulatory environment, including the formulation of a BOT law; b. Strengthening the capabilities of civil servants; c. Removing unnecessary bureaucratic procedures and practices; d. Marketing the potential of Bangladesh to the international investor community. (Para 111) <p>xiv. One of the factors contributing to lower levels of private sector interest in transport projects is that, in developing countries, incomes are low and consequently, the ability of users to pay is correspondingly low. In these cases, it is incumbent on governments to undertake detailed feasibility studies in order to ascertain realistic traffic volumes and affordable fare levels. Where traffic is insufficient to attract private sector interest, specific packages may need to be developed to make them attractive. (Para 112)</p>	<p>B</p> <p>B</p> <p>B</p>
<p><u>Privatisation in transport sector</u></p> <p>xv. BIWTC and BSC need to be privatised with a clear understanding that some of the public service obligations (PSO), which are still</p>	<p>B</p>

<p>considered essential could be paid for by the privatised organizations with the required compensation to be provided by the government. Similar action could also be taken with respect to BRTC, for which appropriate and conducive environment should be created for private sector to come up with comparable services. (Para 115)</p>	
<p><u>Reducing air pollution</u></p> <p>xvi. To reduce the level of air pollution contributed by transport sector in major cities, actions should be taken to secure the replacement of two-stroke by 4-stroke engines, despite the fact that the economic costs of this are substantial and that the four-stroke option has only recently become available for three wheelers. (Para 127)</p>	A
<p><u>Reducing air pollution</u></p> <p>xvii. To reduce the level of air pollution contributed by transport sector in major cities, actions should be taken to further encourage the use of compressed Natural Gas (CNG) in transport vehicles of all types. In this context it is crucial to note that CNG to be popular in the country, the pump price difference would need to be about 50 percent of the production cost of liquid fuels. Hence natural gas would seem to require strong fiscal encouragement if it is to be more than a niche fuel. (Para 131, 137)</p>	B
<p><u>Reducing urban transport problems</u></p> <p>xviii. To address the deteriorating urban transport situation, Bangladesh needs to adopt comprehensive urban transport policies which are fully integrated with area development plans. Some of the major policy actions should include the following:</p> <p>(a) to strictly enforce traffic rules and regulations, improve on existing traffic legislation, and achieve effective traffic management, through improvement in manpower and equipment. To this end, recognize urban traffic management as a separate discipline and develop manpower accordingly. Traffic police should be primarily responsible for enforcement of traffic rules, and the traffic management responsibilities should be left to traffic management</p>	A

<p>specialists. Traffic control centers should also be established manned by trained manpower for efficient management of traffic. (Para 149 (iv))</p>	
<p>(b) to clearly define the role of non-motorized transport (NMT), and to this end –</p> <ol style="list-style-type: none"> 1. to restrict NMT on some main roads; 2. to restrict NMT on some main roads during peak hours; 3. to make all efforts to complete development of a network of secondary roads for NMT to ply, when their entry to main roads are restricted; and 4. to segregate NMT from motorized transport in other roads where they are sharing road space, but ensure proper road maintenance and enforcement. 5. to impart “drivers training” to rickshaw and rickshaw van pullers to enhance traffic safety and discipline. (Para 149 (iii)) 	A
<p>(c) to develop off-street multi-storied parking facilities, together with a clear policy for on street parking and enforcement of rules regarding use of earmarked spaces for parking of various types of vehicles. (Para 149 (iv))</p>	A
<p>(d) to organize strict land use coordination by introducing restriction on approval of new construction of buildings without taking into consideration the impact of the proposed construction on the traffic situation in and adjacent areas. (Para 149 (vi))</p>	A
<p>(e) to reduce traffic congestion, and increase speed on all major roads, by rationalization of routes i.e. through identification of trunk routes for buses, feeder routes for paratransits on an area basis. (Para 149 (i))</p>	B
<p>(f) to increase capacity of public transport, through introduction of large size/double-decker buses, and improve services by introducing more premium quality air conditioned buses, by encouraging use of CNG buses, as well as to go for rail based mass rapid transit (MRT) system. (Para 149 (ii))</p>	B
<p>(g) to develop self-contained secondary cities and satellite towns around large cities with adequate infrastructures to attract private sector investment. In planning these towns, arrangements should be made to relocate some of the main</p>	

<p>city’s activities to these towns. For this to happen there shall have to be political commitment together with supportive policy and resource mobilisation both external and internal to develop the infrastructure (efficient rail connections) and for providing supporting facilities. (Para 150)</p>	<p>B</p>
<p><u>Improving traffic safety</u></p> <p>xix. To improve traffic safety, the current Motor Vehicles Act needs to be replaced by a new legislation at the earliest together with appropriate levels of fines for violation of rules, a penalty point system, and driving license disqualifications system. In addition, following actions should be taken:</p> <p>(a) all schools in Bangladesh need to teach road safety to their students in an effective and appropriate way for which proper materials need to be produced. Teachers’ training programmes should also include lectures on road traffic safety. (Para 167)</p> <p>(b) strict enforcement of the vehicle fitness standard would be crucial to improve the overall vehicle condition on the street. (Para 164)</p> <p>(c) to improve the quality of driver’s training, Bangladesh Government should make a special effort through the Ministry of Defence to allow its driving schools in all cantonments to deliver crash programmes for training of drivers and orientation course for drivers who are already in employment. This programme could be run initially for a period of two years. (Para 163)</p> <p>(d) to arrange training programme for the fake driving license holders in employment. This could perhaps be done at the BRTC driver’s training institute in Joydepur, where, one-weeks training could be given to 100 drivers in a batch. BRTA need to look into this proposal together with owners of smaller commercial vehicles, to work out a funding mechanism for this short-training programme. (Para 162)</p>	<p>A</p> <p>A</p> <p>A</p> <p>A</p>

<p><u>Development of MRT essential</u></p> <p>xx. Government should workout a long term plan to develop large capacity rail based mass transit system along high density corridors in major urban areas. (Para 177)</p>	<p>A</p>
<p>xxi. <u>Sectoral Issues : Road Transport</u></p> <p>(a) In order to avoid wastage of scarce resources, it is essential to develop road transport, as part of one integrated logistics chain, allowing each mode to play, within the multimodal transport context, a role which it is in a better position to serve, keeping in view, economic, social and environmental costs (ie cost to overcome the externalities created). (Para 179 (ii))</p> <p>(b) Bangladesh should urgently consider setting up a “road fund” for financing road management. Without creation of such a fund, proper maintenance of the existing network on a sustainable basis would prove to be difficult (Para 179 (iii))</p> <p>(c) Meanwhile maintenances budget both for RHD and rural road network should be increased and effectively utilised for maintenance and preservation of the system. (Para (iv))</p> <p>(d) To avoid misuse of land, it is essential to develop a land management regime in order to regulate the physical framework in which transport infrastructure, particularly future road development/improvement can take place. (Para 179 (i))</p> <p>xxii. <u>Sectoral Issues : Rail Transport</u></p> <p>(a) Bangladesh Railway should commercialise some of the service operations and introduce a new market-based pricing system. Its routes and services need to be integrated with other surface modes to make the railway more attractive to the users. (Para 180 (i))</p> <p>(b) The on-going reforms and reorganization of BR should be completed for transforming the organization into a corporate entity. Infrastructure and operation need to be segregated and both operated on commercial principles. Whatever</p>	<p>A</p> <p>A</p> <p>A</p> <p>B</p> <p>A</p> <p>B</p>

<p>reform has been achieved so far should be consolidated by bringing the changes under the legal coverage. (Para (v))</p> <p>(c) Bangladesh railway should provide the backbone of intercity, intra-city passenger transit and commuter service. Further areas of railway operations should be opened up to private sector involvement. (Para 180 (vi))</p> <p>(d) Dualization of railway should be extended from Dhaka to Chittagong to facilitate regional integration, and provide uninterrupted broad gauge rail service from Rauxal (in Nepal) to Chittagong in Bangladesh. In addition, there is a need to standardize coupling and braking system, as these restrict operating speeds for Indian trains hauling Bangladeshi wagons.</p>	<p>B</p> <p>B</p>
<p>xxiii. <u>Sectoral Issues: Inland Water Transport (IWT)</u></p> <p>(a) IWT routes used for both inter-country and Indian transit traffic are facing certain problems such as lack of year round navigation, lack of night navigation, limited number of ports of call, etc. These problems needs to be addressed on an urgent basis. (Para 181 (iv))</p> <p>(b) Problems in the mechanisation of country boats should be addressed urgently and provision should be made for modest infrastructure for their safe operation. Encourage private sector involvement in the development of river ports, terminals and provision of cargo handling facilities. (Para 181 (v))</p> <p>(c) IWT should be integrated with other surface modes roads, railway and seaports, and efficient logistics support should be provided, to make it attractive to the users. (Para 181 (i))</p> <p>(d) Development and maintenance of inland waterways for navigation all the year round, should be conceived as an integrated project for land development, flood control, irrigation, etc. (Para 181 (ii))</p>	<p>A</p> <p>A</p> <p>B</p> <p>B</p>
<p>xxiv. <u>Sectoral Issues : Rural Transport</u></p> <p>(a) To continue providing adequate rural transport services including access to market places and social services, with</p>	<p>B</p>

<p>particular emphasis on poverty alleviation and rural-urban integration (Para 182 (i))</p> <p>(b) To restrict building of incomplete rural roads. Incomplete rural roads in areas of growth potential should be completed on a priority basis. (Para 182 (ii))</p>	<p>B</p>
<p>xxv. <u>Sectoral Issues : Sea Ports</u></p> <p>(a) All political parties should participate in a round table conference in order to arrive at a consensus that the country's maritime ports will be allowed to function without outside political interference and the Port Authorities be allowed to manage and operate the Port activities in consultation with the stake holders keeping in view the interest of the country. (Para 185 (i))</p> <p>(b) A Consultative Committee headed by the President of FBCCI may be established, which will include members from all stake holders including representatives of the Labour Unions. (Para (ii))</p> <p>(c) An awareness campaign among the stakeholders including the labour unions should be undertaken with a view to highlight the precarious situation of the ports, and their various implications to the economy (Para 185 (iii))</p> <p>(d) The provision and management of cargo handling should be divested to private sector. The equipments workshop and other facilities of the Port Authority may also be leased out to the said private sector. (Para 185 (viii))</p> <p>(e) The ICD at Kamalapur is not being used optimally. Bangladesh Railway should create facilities to carry more containers between Chittagong and Dhaka.</p> <p>(f) Some more Inland Container Depots (ICD) should be built in other parts of the country including one in Chittagong (outside the port area). Private sector should be encouraged to build a high capacity Dhaka-Chattagong express way and inland container depots (ICD) on BOT basis. (Para 185 (ix))</p> <p>(g) To promote Bangladesh as the transport hub for the sub-region, it shall have to modernize and expand its port capacity, where private sector should be encouraged to</p>	<p>A</p> <p>A</p> <p>A</p> <p>A</p> <p>A</p> <p>B</p> <p>B</p>

<p>invest. (Para 185 (x))</p> <p>(h) Feasibility study should also be undertaken to explore the possibility of establishing new sea Port/deep sea port in Bangladesh to serve longer term requirements of the country. (Para 185 (xi))</p>	<p>B</p>
<p>xxvi. <u>Sectoral Issue : Maritime Transport</u></p> <p>(a) Maritime shipping should be declared as an Export Industry giving tax and other benefits enjoyed by the Entrepreneurs in other such Industries. (Para 188 (i))</p> <p>(b) Bangladesh Shipping Corporation could be turned into a profitable organization if managed as a commercial entity. The Shipping Corporation should, therefore, be divested to private sector. (Para 188 (ii))</p> <p>(c) Marine environment act should be finalized and enacted. Training to the personnel for enforcement of the act is to be initiated and requisite equipment procured. (Para 188 (iv))</p> <p>(d) Since freight forwarders play a major role in multimodal transport system, there is a need to review the operation of freight forwarders and strengthen arrangements for their registration and regulation, and for their further development and training. (Para 188 (vii))</p> <p>(e) To develop container terminals both at existing ports and at new sites, and encourage participation of the private sector, both national and foreign in their development together with back up facilities, handling equipments and support services. (Para 188 (iii a))</p> <p>(f) To recapture the lost market of seamens, Bangladesh should try to standardize seamens' training curriculum, modernize training facilities and conduct examinations under government supervision. Private sector should be encouraged to take over these activities, for which government should provide support including opportunities for finding jobs for the seamen. (Para 188 (viii))</p>	<p>A</p> <p>A</p> <p>A</p> <p>A</p> <p>B</p> <p>B</p>

<p>xxvii. <u>Sectoral Issues : Air Transport</u></p> <p>(a) Civil Aviation Authority of Bangladesh (CAAB) needs to prepare a plan to install CNS/ATM system, as part of its air traffic management modernization programme (Para 193 (i))</p> <p>(b) In order to stop constant drain on the national economy, management of Bangladesh Biman (not the ownership) should be handed over to private sector, similar to that of Sonargaon Hotel management in Dhaka. (Para 193 (ii))</p> <p>(c) Present distortion in the pricing policy of Biman should be addressed and further strategic concessions provided to encourage private sector to come forward to invest in air transport. (Para 193 (iii))</p> <p>(d) Bangladesh Biman should go for strategic integrated routing arrangements with other airlines to improve passenger occupancy. (Para 193 (v))</p> <p>(e) For air safety, all private airlines operating in Bangladesh should be brought under strict compliance of international air safety regulations. (Para 193 (vii))</p>	<p>A</p> <p>A</p> <p>B</p> <p>B</p> <p>B</p>
<p>xxviii. <u>Sectoral Issues : Multimodal Transport (MMT)</u></p> <p>(a) More and more short training programmes should to be organized on MMT to promote the concept in practice among transport operators/freight forwarders for efficient movement of international trade. (Para 194 (i))</p> <p>(b) Inland Container Depots (ICD) should be established according to demand, at strategic locations, to enable multimodal operation of containers from the premises of the shippers to the premises of the consignees without stuffing and destuffing of containers at the ports. ICDs should be well-equipped with proper container handling equipments. (Para 194 (iii))</p> <p>(c) To increase efficiency in handling container traffic, Bangladesh Railway may like to establish a separate self-sustaining organization like CONCOR (container corporation of Indian Railways).</p>	<p>A</p> <p>B</p> <p>B</p>

6. Lastly to implement the above recommendations and the actions suggested in chapter V, a concerted effort of both public and private sectors would be required. Awareness of civil society could also contribute a great deal in creating pressure for early implementation, and adoption of appropriate policies. Finally, the support of the political leadership for the entire process of change and in particular, for the implementation of the recommendations would be crucial.

I. INTRODUCTION

The strategic role of the transport sector in enabling sustained economic and social development to take place in a society is self-evident. An efficient distribution system becomes increasingly critical to sustained growth of economic activities. As the income in the society increases, there is also increasing demand for access to various social services like health, sanitation and education. Transport sector is thus called upon to provide strategic support services on an increasing scale. Even when the transport sector itself may make relatively modest direct contribution to the national income, it acts as a powerful catalyst in promoting production in other sectors. Its overall impact on the economy therefore is highly significant.

2. There is a long and well-entrenched tradition of the provision of basic transport services by the government, whether at the national or local levels. The governments have traditionally looked at transport activities as being too strategically important to be left to the uncertainty of the marketplace.

3. Although there is considerable amount of disagreements regarding the appropriate level of direct governmental provision of transport services, 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 distribution of economic activities, sectoral composition, importance of international trade). Transport policy can influence the way the transport needs associated with a particular pattern are met.

4. The purpose of this policy brief is to enhance awareness among the distinguished politicians and the civil society of the need for a vision and supporting transport policy for Bangladesh and outline some of their important elements. The paper has adequately established that in the absence of a coherent transport policy framework, and supportive strategies the transport developments have been driven in Bangladesh mostly by ad hoc considerations, which has produced serious inadequacies and imbalances in the system. It is necessary to emphasise at the outset that such a coherent policy couldn't be developed in a vacuum. It requires active involvement of both the government and other stakeholders in the search for a broad consensus on how the transport needs of the society could be efficiently and equitably met. In addition, there is an urgent need for developing an overall vision for the transport sector in Bangladesh. It is only with such a vision before us that we can develop an effective transport policy, supported by appropriate strategies, to guide specific actions for the sustainable development of the transport sector in Bangladesh.

5. In the subsequent chapters, an overview of the existing transport system and trends in Bangladesh, and a number of imbalances and deficiencies in the present transport development have been identified. It has been established that there is a need to have a vision for transport development together with supportive policies. The last

chapter has focussed on strategies that need to be pursued with respect to transport as a whole as well as specific mode of transport to address many of the deficiencies.

II. OVERVIEW OF BANGLADESH TRANSPORT SYSTEM

6. 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.

7. Development and maintenance of transport infrastructure in the country 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.

8. 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.

9. As a part of transport network development, efforts are being concentrated on development of 5-main road corridors namely: Dhaka-Chittagong, Dhaka-Northwest, Dhaka-Khulna, Dhaka-Sylhet and Khulna-Northwest. Rural transport system is being developed by integrating inland water transport with existing road transport system which are linking growth centres.

Projected Transport Demand and Allocation of Resources

10. 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**

Year	Passenger				Freight			
	Total Pass-km	Mode Shares			Total Ton-km	Mode Shares		
		Road	Rail	IWT		Road	Rail	IWT
1997	90 billion	72%	11%	17%	12 billion	65%	7%	28%
2002	152 billion	70%	12%	18%	19 billion	72%	8%	20%

Source : Fifth Five Year Plan (FFYP), 1997-2002.

11. 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**

(In million taka, at 1997 prices)

Sub-Sector	Total Allocation	On – going Projects	New Projects
Road Transport	64905.50	51500.00	13405.50
Bangladesh Railway	24000.00	17900.00	6100.00
Water Transport	13550.00	9750.00	3800.00
Air Transport	7500.00	6160.00	1340.00
Sub-Total	109955.50	85310.00	24645.50
Bangabandhu Bridge	11800.00	11,800.00	-
Total	121755.50	97110.00	24645.50

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 per cent).

Roads and Highways

12. 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.

13. 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.

Bangabandhu Bridge

14. Construction of the Bangabandhu Bridge has been completed in June, 1998. For the implementation of the bridge project, an organisation named Jamuna Multi-Purpose Bridge Authority (JMBA) was established. Subsequently, a separate Division, titled Jamuna Bridge Division (JBD), was created under the Ministry of Communication for monitoring, supervision and quickening the decision-making process in respect of different activities and problems of this giant project. A brief description of the bridge, is given below :

- The bridge is a 4.8 km long and 18.5 meter wide, 4 lane multipurpose bridge; it is a road bridge with provisions to carry a power inter-connector, gas pipeline and telecommunication links. The foundation/ sub-structure of the bridge has been strengthened so as to carry a dual gauge rail line (both meter and broad gauge).
- Construction of the bridge started in October, 1994 and it was opened to traffic in June-1998. The project was financed jointly by IDA, ADB and the Government of Japan each with a share of US \$ 200 million. The final cost of the project including the resettlement component was Tk. 36,036.90 million.

Asian Highway (AH) routes in Bangladesh

15. According to the new criteria, the following routes (1695 km) of Bangladesh have been included in the Asian Highway network.

Route A-1: *Benapole - Jessore - Narail - Bhanga - Mawa - Dhaka - Katchpur - Comilla - Chittagong - Cox's Bazar (561.50 km)*

Route A-2: *Banglabandh - Rangpur - Hatikamrul - (Bangabandhu Bridge) - Tangail - Dhaka - Katchpur - Sarail - Sylhet - Tamabil (829.70 km)*

Route A-1(b): *Hatikamrul - Bonpara - Jessore - Mongla port (304 km)*

16. Out of this mileage, 92% are 2-lane highway of AH class II standard, and 3.7% are single lane which are below AH standard. Out of another 81 km missing or gravel road, construction of 51 km (Hatikamrul – Bonpara) and 30 km (Bhanga-Narail) is now on-going.

Bangladesh Railway (BR)

17. To the west of Jamuna it is predominantly BG with a small MG network in the north-west. To the east of Jamuna it was all MG. The BG portion was a part of the main Indian Railway network oriented towards Calcutta and the MG portion was mainly a part of the network connecting northeastern Indian states with Chittagong port.

18. The network is physically divided by the river Jamuna. Ferry services operate at two locations. 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. Provision has now been made for BG and MG on Bangabandhu bridge.

19. The rapid pace of urbanization will therefore, add new dimensions to the railway activities in the country. The traffic situation in the capital city Dhaka has already reached a stage where elevated mass rail transit has become a necessity to ease traffic congestion and meet ever increasing traffic demand in a sustainable and environment friendly manner. Establishing an **elevated mass rail transit system (EMRTS)** for the Dhaka Metropolitan City on BOT (Build Operate and Transfer) basis is already under active consideration of the government.

20. Effort should be made to establish rail based efficient commuter service between Dhaka and places like Narayanganj, Tongi and Joydepur, with proper transshipment facilities between EMRTS and Rail commuter system. Accessibility to city centre gives railway an edge over other modes of transportation, in respect of timely arrival.

21. 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.

22. 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.

BR's position in the context of TAR

23. A study undertaken by UN-ESCAP has adequately established the potential role that Bangladesh Railway could play in serving efficiently the transportation needs of Nepal, Bhutan, and North-East India. BR is agreeable to provide transit facilities,

provided India agrees to allow Nepal traffic along short-cut rail route from Raxaul to Mongla/Chittagong passing through Singabad/Rohanpur. Railway being an environmentally sound and energy efficient as well as cost-effective on longer distances, it could have a promising role in the inter-country transport, in the near future, when political situation becomes favourable to allow transit traffic.

24. A dualization programme is going on in Bangladesh covering a distance of nearly 380 km from Parbatipur to Dhaka over the Bangabandhu bridge. There is a need to coordinate this dualization programme of BR with the gauge conversion programme of Indian Railway, for ensuring efficient and uninterrupted movement of sub-regional traffic across Bangladesh.

Inland Water Transport

25. 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.

26. 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.

27. 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.

28. Perhaps the most critical area of poor performance of the Bangladesh inland water transport sector relates to vessel safety. A good number of accidents are caused by overloading of vessels, wrong construction and inadequate stability of the inland crafts, incompetence of crew, human errors, neglect as well as omissions and lack of safety rules and lack of manpower to supervise the safety of inland vessels and navigation. Total loss of life in these accidents could be well over 1,000 per year.

Urban Transport System

29. 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. The World Bank assisted Dhaka Urban Transport Project (DUTP) is one of the important projects under the Ministry of Communications, to address some of the issue.

30. The Dhaka Urban Transport Project has both short and long terms objectives. It will address urgent policy issues, physical infrastructure bottlenecks, and traffic management constraints in the city, and for the long term, it will focus on planning, institutional and policy actions needed to take the urban transport issue over the next 20 years.

31. At the recommendation of the World Bank, the Greater Dhaka Transport Planning and Coordination Board (GDTPCB) has also been set up for achieving coordination among various organizations involved. The Board has recently been renamed as Dhaka Transport Coordination Board (DTCB)

III. DEFICIENCIES IN PRESENT TRANSPORT DEVELOPMENT

32. 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

33. The transport sector in Bangladesh is characterised 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.

34. 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.

35. Some of the major problems in urban transportation also include fragmentation of organisational responsibilities, inefficient use and overcrowding of major roads by low capacity vehicles, inadequate road space, poor traffic control and management, absence of a reliable and dependable mass transit system, and absence of adequate pedestrian facilities. In addition, the rapid urbanization had led to unplanned land development in the fringe areas of major urban centers including Dhaka. Although some efforts have been made by the government to address these major problems especially those of the big cities including Dhaka, they appear to be far less than what is required to bring in an acceptable condition. In the national context, the transport system is not fully integrated, and there is road bias. If this trend continues the transport sector development would become unsustainable from economical, social and environmental points of view.

Inappropriate modal mix

36. 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.

37. 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. Table 3 presents the overall transport output estimates in respect of the three modes of surface transport together with their actual and projected percentage shares for different years, separately for the passenger and goods (freight) transport segments. The changing roles of the three major modes have many social, economic and environmental implications.

Table 3
Transport output and modal shares

Sl No.	Year	Passenger				Freight			
		Total Pkms (billio n)	Share (%)			Total Tkms (billio n)	Share (%)		
			Road	IWT	Rail		Road	IWT	Rail
1	74/75	17	54	16	30	2.6	35	37	28
2	84/85	35	64	16	20	4.8	48	35	17
3	88/89	57	68	15	17	6.3	59	30	11
4	92/93	66	75	13	12	9.0	61	32	7
5	99/ 2000*	95	69	20	11	14.5	74	20	6
6	2004/ 2005*	121	69	19	12	20.3	74	19	7
7	2009/ 2010*	155	69	19	12	28.4	74	19	7

* projected

Source: Planning Commission (1994)

38. Public sector allocations to different modes of transportation over the successive plan periods in Bangladesh are shown in Table 4. 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. It is important to mention here that these calculations did not include special allocations for Bangabandhu Bridge. If this is considered, share of road sector exceeds 80 per cent of total allocation to transport sector. Obviously, greater allocation for road sector resulted in cuts in shares of the other modes. 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.

39. In most cases, strategies and policies for different transport sub-sectors are adopted by each sub-sector independent of the consideration of optimal modal-mix/inter-modal priority.

40. 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 4
Share of allocation to different modes in the past plans*

Mode	Per cent of sector allocation in past plans						
	1973-78	1978-80	1980-85	1985-90	1990-95	1995-97	1997-02
Road	28.36	37.51	31.80	42.30	66.42	74.46	58.68
Rail	23.91	27.35	32.14	29.83	17.06	16.08	21.82
Water	35.30	24.41	24.63	20.38	13.07	5.32	12.53
Air	12.44	10.73	11.44	7.49	3.45	4.14	6.96
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total allocation for all modes (m taka)	5276.1	4500	12864.6	28023	52170	24799.8	107705.5
Sector allocation as % of total public sector outlay	11.65	13.79	11.59	12.01	16.50	18.81	

* 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

41. As indicated earlier, Bangladesh has been developing its national transport system, essentially with an inward looking strategy. In the context of the globalisation 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

42. 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.

43. As mentioned earlier, road transport in Bangladesh has received much greater share of resources over the successive plan periods considering its apparent technical and cost advantages over the other competing modes. This sectoral bias because of market and policy distortions has set a trend of development which may not be sustainable in the long term because it leads to misallocation of resources, and inhibits competition. However, the misallocation of resources could have been much less severe, if the allocations were based on true economic costs of all modes of transport rather than on their perceived costs by the users.

44. It is noticeable that development funds are allocated by the Planning Commission while funds allocated for maintenance are made by the Ministry of Finance as part of recurrent expenditure. Practically there is very little interactions between these two agencies in determining the levels of these two funding categories.

45. 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

46. 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

47. 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.

48. 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. This is due to the poor and inadequate road system, high density of traffic, poor traffic system, poor maintenance of a majority of commercial vehicles, lack of proper monitoring and strategies, policies and plan of action for the enforcement of existing laws, rules, and regulations, etc. Reports of different lung related diseases, headaches, nausea, irritation of eyes, risks of miscarriage etc. in Dhaka are wide spread.

49. Motor vehicles contribute about 55% of SO_x, 70% of NO_x and 60% of CO of the total ¹. 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.

50. 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. The three wheelers are generally leased from the owners on a daily basis by the drivers. So the owners do not have much control and initiative to maintain their vehicles to maximize fuel economy or minimize pollution. They are not also properly trained. The vehicle drivers are usually uneducated and have incorrect perception on how to maintain vehicles or properly fuel the vehicles to minimize emission. The vehicles are often overloaded with as many as six persons instead of three and the drivers often use cheaper or recycled lubricating oil, which give rise to acute pollution problems.

Private sector's role not fully defined

51. 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

¹ M.J.B. Alam, M.H. Rahman and M.A. Jaigirdar. Air pollution caused by Motor Vehicles in Dhaka City, Bangladesh Environment 2000, paper presented at International conference on Bangladesh Environment 2000, organized by POROSH.

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.

52. 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

53. 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.

54. 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.

55. 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

56. 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.

57. 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 which 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.

58. There is also a serious deficiency in the current planning approach followed by different agencies. In the present top-down approach, transport policy is developed by the responsible government agency with very little or no cognisance of other stakeholders views.

Lack of a vision

59. 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.

60. 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.

IV. NEED FOR A VISION AND TRANSPORT POLICY

61. In the light of the above overview of the current status of Bangladesh's transport systems and the trends in transport sector developments, it is possible to identify six major and interrelated deficiencies and imbalances namely, low level and poor quality of transport services, inappropriate modal mix, unsustainable development trend, institutional deficiency, private sector's role not fully defined, and negligence towards development of international surface transport. As much as they reflect the consequences of uncoordinated transport development in the absence of well-articulated policy guidelines, they also have resulted from the application of wrong policies.

62. For example, our inability to envision transport as an integrated activity has led to purely mode-oriented approach to transport development and fragmented institutional responsibility, creating an over-reliance on road transport at the expense of other modes.

63. Given the potentially adverse environmental impacts of transport development and the need to minimise the use of resources, particularly land which is a very scarce resource, it is imperative that we develop a new vision of transport in which the natural advantage of each mode of transport will be fully harnessed, and the conflicts between transport development and the environment will be minimised. **Sustainable transport**, within the overall context of sustainable social, environmental and economic development, must therefore be an essential element of our vision for the future transport system in Bangladesh. The social sustainability means that the benefits that transport produces, are equitably shared by all sections of the community. Economic, social and environmental sustainability are often mutually reinforcing. Road or public transport systems that fall into disrepair because they are economically unsustainable, fail to serve the needs of the poor and often have environmentally damaging consequences. Hence, there should be policy instruments, which would serve all of the dimensions of sustainability in a synergistic way, generating "win-win" solutions. These include measures to improve asset maintenance, charging for external effects, technical efficiency of supply, safety, contract design, and public administration. A sound economic base is fundamental to sustainability. Transport investments must be subjected to rigorous cost-benefit analyses encompassing social and environmental externalities. Economic sustainability requires that adequate finance be available for maintaining infrastructure and equipment to ensure that the expected and planned benefits from infrastructure actually accrue. All projects and programs should, therefore, be accompanied by a committed pricing and/or financing package that is sufficient to ensure the maintenance of the asset through its effective economic life. The low level and quality of transport services, likewise, reflect the harsh reality that the subsidized provision of transport services as a public good no longer keep pace with the ever accelerating demand for transport services. The reality calls for envisioning the transport sector as the provider of productive services, similar to other utility sectors.

64. Although the government will continue to play a very important role in transport development, we must envision stronger **public-private partnership (PPP)** in creating

an efficient, equitable and financially sustainable transport system. In the context of the ongoing globalisation process, the national interest of the country itself increasingly requires that Bangladesh develops stronger and stronger transport interface with national transport systems of other countries in the region. The cost of not doing so could be very high in terms of missed opportunities. In this context, Bangladesh needs to have the vision that its transport system forms an integral part of the larger sub-regional, regional and world transport systems in a concentric manner. **Greater external integration**, and not isolation, should therefore be part of the vision for the future transport system of Bangladesh. The visions, as laid out above, in terms of environmental sustainability, comprehensiveness and financial sustainability based on greater public-private partnership and greater external integration provide only a very broad outline of the future transport system in Bangladesh. In order to put flesh to this outline, it would be necessary to clearly define the supporting transport policies and identify specific strategies and actions.

The Vision Statement

65. In line with the above analysis, the vision for transport development in Bangladesh could be as follows:

“Development of an integrated, efficient and affordable multimodal transport system which is sustainable from social, economic and environmental points of view. Natural advantage of each mode of transport to be fully harnessed, and public goods concept of transport services to be gradually moved away from and pricing to be based on principle of cost-recovery. Transport services to be treated at par with other utility services. Stronger public-private partnership (PPP) to be promoted while the government will continue to play important role as facilitating regulator for setting overall policies as well as for strengthening governance. In the context of public sector entities, commercial principles and wherever possible, privatization to be promoted.

Rural transport development to continue receiving priority with emphasis on providing uninterrupted black-top road links to all important growth-centres. Urban transport system in all major urban areas to be made efficient, environmentally sound and congestion free by restricting movement of slow moving vehicles on major roads. Improvement of public transport, including introduction of integrated mass-transit system in major cities, to receive priority.

To reap the benefit of globalization process, transport system of the country to be fully integrated with sub-regional and regional transport network and its port capacity modernized expanded and made efficient so that Bangladesh could become the “transport hub” to serve the entire hinterland comprising, Nepal, Bhutan, NE-India and Northern Myanmar”.

The Transport Policy framework

66. In order to achieve the vision stated above, there would be a need to develop and adopt clearly spelled and supportive policies. An attempt has been made here to provide a framework within which policies could be formulated by a team of experts.

67. An analysis of all the five year plans adopted since the creation of Bangladesh reveals that some form of overall transport policies were outlined in the plan documents of the country. The different plans emphasised on the adoption of appropriate pricing policy, capacity utilization, investment principle, development of rural and urban transport systems, efficient allocation of resources, improved services, fuel economy and identification of most cost-effective mode of transport. Apart from these overall policies, some detailed policy measures were enunciated for different transport sub-sectors. In principle these overall transport policies as well as policies relating to each sub-sector were well documented and appeared to be well thought out and commensurate with the requirement of the economy.

68. During implementation of these policies for the development of transport sector, things did not happen as expected. While it was stated in the plan documents that the investment in the transport sector would be in accordance with commercial and cost-benefit criteria, and pricing policy would be framed aiming at cost-recovery, only a few of these principles were applied in practice. It is found that fare and rate fixed for the transport services are far below the cost of providing these services. It was proposed that full capacity utilization of the existing facilities would be ensured, but in practice under utilization due to a number of reasons still exists in the different transport sub-sectors of the economy.

69. In respect of urban transport whose development should be clearly related to land use planning, things have taken a distorted shape. Policies for withdrawal of slow moving vehicles like rickshaws have not been implemented at all, as a result the problem has become quite serious. Any solution to this problem to be sustainable, needs to include measures such as creation of alternative job opportunities for the displaced rickshaw pullers and/or provision of a network of secondary roads, where some of the rickshaws displaced could ply.

70. In the light of the above review. The transport policy is required to answer such vital questions, 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. The fact that transport policy can strongly influence transport sector developments by answering these questions is today recognised not only at the local and national levels, but also at an international level.

71. At the local level, for example, the city of Curitiba, Brazil, has a well-defined and well-integrated transport strategy. At the national level, the Government of the Netherlands has a comprehensive long-term transport policy, aimed at making transport developments sustainable. The Common Transport Policy of the European Union is a case in point at the international level. The transport policy document to be prepared needs to spell out not only the broad policies, but also clearly state some ways and means as to how to implement these policies. The policy formulation exercise, should therefore, be undertaken in consultation with all stakeholders.

V. STRATEGIES AND ACTIONS FOR REALISING THE VISION

72. Considering the deficiencies presented in chapter 3, some major strategies and directions for future actions are presented in this section to realise the vision for future transport development in Bangladesh.

Addressing inappropriate modal mix

73. Bangladesh being a flat country of limited spatial spread (leading to short trip lengths), road transport has an apparent technical and cost advantage over the other two surface modes. The comparative advantage of road transport vis-a-vis the other competing modes has given rise to popular demand for road development in all parts of Bangladesh and at all levels. On the other hand, particularly the railways is in a technically disadvantaged position in Bangladesh mainly because of its outdated and disjointed network that was developed about a hundred years ago to serve a different spatial pattern of movement of goods and people. Inland water transport has suffered owing to reduction of length of the navigable waterways, lack of investment for modernisation, and for various other reasons.

74. This road bias has been further strengthened because of existing market distortions in pricing of services by different modes, which favours road transportation. The present trend in resource allocation for transport development has also a clear bias for the road sector, which is reflected in Table 2. However, this modal substitution of water and rail transport by road transport is very much questionable on economic as well as environmental grounds. Till such time all costs and externalities are fully included in cost calculations, this distortion will continue.

75. Special efforts should be made for the improvement of the operational efficiency of the public sector transport organizations through efficient maintenance, management and use of the available assets and enabling them to be operated on commercial principle. Pricing for transport services should be designed in such a manner that cost of providing services by each mode can be recovered in the long run and amount of subsidies in support of public service obligation (PSO) should be cut to a minimum, and adequately compensated for by the government, for avoiding colossal financial losses incurred by the transport sector.

76. To address the issues, a small inter-ministerial committee supported by quality professionals of high standing should be set up immediately to undertake an in-depth analysis of the full cost (economic costs) of each mode of transport together with cost of externalities created by each mode. Based on the outcome of such an exercise, pricing of different modes should be adjusted, adopting the principle of cost-recovery, and allocation of resources by the Planning Commission for their development, made accordingly. The transport policy to be formulated should take into account the outcome of the above exercise. The cost of the services of the professionals could be funded by development partners, if required.

Outward looking approach in transport development in Bangladesh

78. Traditionally, development of transport system has been considered basically in the national context and did not take into account seriously the cross-border issues of compatibility, uniformity of standards, infrastructure and equipment design, which are vital to cater for today's increasing travel activities across national boundaries. Even if a system serves primarily domestic traffic, these issues cannot be ignored if Bangladesh is to remain competitive in the global context. Unless compatibility with neighbouring transport systems is built in as early as possible, it may become extremely costly for Bangladesh to provide inter-country transport services when situation demands. All actions and activities should be compatible with the global trend of development as well. Otherwise, efficiency of operation would be lost and economic obsolescence of transport hardware would take place much earlier than their technical obsolescence imposing higher costs of operation.

79. Geographically, Bangladesh is well situated in its sub-regional context. Nepal, Bhutan, North-East India and the northern part of Myanmar could be considered as its natural hinterland. The waterways and the rail network of Bangladesh were, prior to the partition of the Indian sub-continent in 1947, integrated with the greater Indian Railway and Indian Waterway system.

80. The railway and waterway links between India and Bangladesh survived the partition of India, but these communication links got disrupted following the Indo-Pak war of 1965. However, river transit traffic between Kolkata and North-East India resumed in 1972 after a protocol was signed between Bangladesh and India. This protocol was revised and renewed every two years and is still in force, although the volume of inter-country traffic has reduced from roughly 100,000 tons in 1995 to about 20,000 tons in recent years while the transit traffic has remained around 10,000 tons a year, during the same period.

81. Similarly, agreement for rail transportation between India and Bangladesh was renewed in 1972 providing for both inter-country and transit traffic. While inter-country operation by railway has been going on, transit movement by railway did not start. There is no agreement for inter-country and transit facilities by road.

82. The first trade agreement between Bangladesh and India, signed in 1972, provided, for transit of goods from one point to another of the same country through the territory of the other. The trade agreement of 1980 also provides for such a facility. Finally, in 1993, the SAPTA (South Asian Preferential Trading Agreement) provided for transit facilities among the member countries of the SAARC (South Asian Association for Regional Cooperation). Mostly due to political reasons, transit has not yet materialised.

83. Subsequently, in the 9th SAARC summit, held in 1997 in Male, the Member countries made a declaration for smooth transition from SAPTA to SAFTA (South Asian Free Trading Agreement). This has provided a solid background for sub-regional cooperation between the four countries/territories namely Bangladesh, Bhutan, Nepal and North-East India, which is also known as South Asian Growth Quadrangle (SAGQ).

84. Under the UN-ESCAP initiated Asian Land Transport Infrastructure Development (ALTID) project comprising the Asian Highway (AH), the Trans-Asian Railway and facilitation of international traffic, the member countries have already taken measures to improve inter-country road and rail links among the countries in the neighbourhood of Bangladesh. Construction of Bangabandhu bridge over Jamuna has completed the much needed missing link between South Asia and South East Asia.

85. As indicated earlier, because of its unique geographical location, Bangladesh could play a pivotal role by providing road and rail linkage to Nepal, Bhutan, North-East India and rest of India. Ports of Chittagong and Mongla with improved management could provide the much needed maritime exit to the outside world. This is particularly significant since major part of the above mentioned sub-region is land locked. Further development in the above sub-region would require efficient access to the sea in order to become and remain competitive in the global economy. Given the limited resource potentials of the country, Bangladesh should try providing transport services to the sub-region as a “trade in services” and as a potentially important source of foreign exchange earning. Accordingly, future development strategies should include a regional role for the national transport system. Future actions concerning appropriate modal mix and integration of different modes should also reflect this regional role of the transport system.

86. In this context, a special effort would be required to convince the people of Bangladesh and its political leadership to agree to the sub-regional cooperation. Due to highly unbalanced trade flows between India and Bangladesh, the people have the impression that integration would mean, facilitation of Indian trade only, at the cost of great damage to the transport infrastructure of Bangladesh.

87. So far we have not been able to come up with realistic facts and figures as to what benefit (in quantified terms) Bangladesh could get from the potential traffic generated by new investment based on untapped mineral resources in the North-East India. Similarly other member countries of SAGQ need to understand clearly as to how they are going to be benefitted by this initiative of regional cooperation, and at what cost? We need to

come up with facts and figures and supporting analysis which provide a clear picture of win-win situation for all members of SAGQ.

89. The potential that Bangladesh could become the "transport hub" to serve the entire hinterland comprising SAGQ countries, a role similar to Rotterdam (in the Netherlands) in Europe, should be widely publicized for creation of public support within the country towards integration of transport system. To reap the potential benefit envisaged above it would be necessary for Bangladesh to prepare itself to take this new role. To this end, a study should be commissioned to estimate the potential traffic to be handled so that actions could be taken to improve transport facilities accordingly. Based on the outcome of the study, it would be essential to arrange an extensive programme of awareness creation of the benefit of transport integration, through discussion/consultation, dialogues, seminars, workshops and multi-media publicity.

90. In this context, it is also necessary to emphasize that time is opportune now. If action is not taken immediately, it may become too late to take any fruitful step. The awareness creation of the civil society for increased sub-regional cooperation on equal footing, could in turn persuade the political leadership to come forward with their blessing.

Addressing Institutional weaknesses in transport sector

91. Institutional reform to create new institutions and/or revitalise the existing ones would be crucial to achieving the sustainable transport system of the future. Revitalisation of the existing institutions should focus on capacity building, allocation of resources, access to new technology especially related to IT, etc.

92. At present 3 ministries and a large number of parastatals are involved in planning, development, operation and management of transport sector, without much coordination and adequate assessment as to whether another mode of transport could undertake a particular task more economically and with much less damage caused to the environment. In fact this uncoordinated development has given rise to some of the problems such as sectoral bias, inappropriate modal mix and unintegrated system.

93. There is also a serious deficiency in the current planning approach followed by different ministries and agencies. In the present top-down approach, transport policy is developed by the responsible government agency with very little or no cognisance of other stakeholders views. Broad participation of different interest groups and consumers is essential for the effectiveness of such planning which is absent in the present practice.

94. It is therefore being suggested that for effective coordination and development of an integrated transportation system in the country, all transport related ministries and their parastatals be brought under one broad based "Ministry of Transport". The Cabinet Minister in charge of the Ministry could be assisted by several State Ministers, one each for Roads; Railways; Ports, Shipping and inland waterways; and Civil Aviation

cum Tourism. There could be several Divisions in the Ministry one for each sub-sector of transport but coordinated by an official of the rank of Principal Secretary. Ministry of Transport should set the policies and regulations, leaving the implementation of those policies to the parastatals and the private sector.

95. In setting policies and in allocation of resources, adequate care should be taken to emphasise the importance of maintenance and rehabilitation rather than construction of new infrastructure, while new investment is being contemplated for the transport sector.

96. More and more authorities should be delegated to the agencies/parastatals so that they could function as autonomous bodies.

97. To assist the Ministry of Transport in setting coordinated policies and ensure integrated development of the transport system, there should be high profile **Policy Research Unit (PRU)** headed by a professional of high standing, directly reporting to the Principal Secretary of the Ministry (whose major responsibilities would be coordination and research). The Policy Research Unit should be manned by a group of competent professionals of high calibre, funded by development partners, if necessary. The salary and other remuneration of these professionals should be outside the public sector purview, as in the case of navigational Captains of Bangladesh Biman and Bangladesh Shipping Corporation.

98. Bangladesh also needs independent in-house transport research and analytical capability. It is therefore recommended that an autonomous **National Transport Research Centre (NTRC)** be established. It could be manned by both full time and sizeable part-time professionals of high quality who are available within the country but currently working with various universities and in the private sector. The set up of NTRC should be autonomous, similar to technical universities such as BUET.

99. National Transport Research Centre should focus on developing capability to undertake research not only at the centre but also at the universities and other research organizations, covering, among others, areas such as (a) inter-modal mix based on economic, social and environmental considerations, (b) development of integrated transport system with focus on addressing physical and non-physical barriers along various links and nodes (c) Pricing of transport facilities based on cost recovery principle (d) Promotion of multi-modal transport (MMT) practices and container traffic (e) Improving urban traffic management (f) Dealing with non-motorized transport (g) Introducing in practice, the coordinated land use and transport planning and development concepts (h) Promoting private sector involvement in transport infrastructure and management (i) Improving transport facilitation measures across international borders, etc.

100. In the past, the Planning Commission used to decide the allocation of resources among different competing modes, based on in depth analysis of the most appropriate role that each mode could play from economic, social and environmental points of view.

Since it is now manned by cadre service officials, it lacks in professional and technical capacity in undertaking intermodal comparative study from economic point of view. The Planning Commission, the Transport Ministry and other government agencies could use research findings of NTRC in allocation of resources for the development of different modes, and in setting appropriate policies to further improve the transport situation.

101. Effectiveness of any Ministry or agency depends on the quality of human resources who are manning those organisations. To enhance the efficiency, in-service professional and management training needs to be organized in a dedicated manner for those who are in position, and separate training programmes for new comers.

102. In order to ensure sustainability and continuity, the national experts of Bangladesh should be given more opportunities to get involved in planning, development of transport and solve their transport problems including urban transport problems. This will reflect country's concern and commitment to be self-reliant in the long run.

103. There are certain weaknesses in the institutional set up of most of the sub-sectors. These have been addressed under the section "Sub-Sectoral issues in Transport.

Integrated and sustainable development of transport system

104. The present deficiencies of sectoral bias, improper modal mix, unsustainable and unintegrated development can largely be addressed by institutionalising an appropriate planning and development process based on certain norms.

105. It is well recognised now that the transport costs facing the users do not fully reflect either the economic costs due to the provision of subsidy etc., or the environmental costs which are not reflected in the market prices. The present sectoral bias which led to misallocation of resources, improper modal mix and set a trend of unsustainable development has largely been an outcome of distortion in resource pricing. This situation should therefore be rectified on the basis of correct evaluation of resource costs to ensure long-term sustainability. As highlighted earlier, all future allocation of resources should be based on a detailed analysis of true cost including those of externalities by the different modes. While allocating resources, particular attention needs to be paid to environmental costs and other adverse effects of transport development.

106. While resource allocation based on true costs will contribute towards a more appropriate modal balance, a change in modal balance should be an explicit objective of all future public policies and actions to achieve a transportation system, which is environmentally sustainable, and at the same time socially acceptable and economically efficient. As already pointed out, the 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. This requires a fundamental change in the traditional way of looking at transportation. A mode should be considered only as a link in the logistics chain and the whole issue of transportation from the origin to ultimate destination need to

be considered. For all major movements, integration of concerned modes from the origin to ultimate destination should therefore be the strategy of future infrastructure development. This would require development of both physical and non-physical measures for efficient transfer of goods and people from one mode to the another with minimum loss of time and transfer cost, through the provision of efficient physical interface, single travel/shipping documentation and costing, freight forwarding, etc. To ensure sustainability, another issue which needs immediate attention is the adequate maintenance of the assets already developed. The transport system, in Bangladesh in general is very poorly maintained, mainly due to lack funds. According to the findings of a study on RHD roads, there is a long term maintenance needs of Tk. 500 crore per annum, as against the present availability of about Tk. 150 crore from revenue budget. One of the ways of reducing the gap would be to involve the private sector users, and go for establishment of “Road Fund”. Please see the section on “Road transport” under “Sub-sectoral Issues in Transport” for further details.

107. In the context of the new situation the effectiveness of national policy now requires greater articulation of efforts by all national agencies in a multilateral framework. It is essential to ensure development of a balanced, integrated, and sustainable transport system, to face the challenges of globalisation. The proposed high profile Policy Research Unit to be set up at the proposed Ministry of Transport, together with the proposed National Transport Research Centre (NTRC), and with the support of the Planning Commission would be required to ensure integrated and coordinated Planning and Development of the transport system, whether nationally, or at the urban level. (please see sub-item “Addressing Institutional weaknesses in transport sector” for further details).

Encouraging public private partnership

108. The desire to involve the private sector in the management and provision of infrastructure and services is prompted, firstly by the fact that the public sector practices and processes are not always conducive to efficient operations of commercial activities, and secondly in recognition of the private sector’s relative strength in this field. Again in view of the fact that investment sources outside the public sector must be tapped in the provision of such infrastructure and services, involvement of the private sector provides the opportunity to share risks and, in times of rapidly changing economic environment to respond quickly to market/demands and opportunities. Some of the potential strengths of the private sector are:

- (a) A much stronger management capability due to its ability to recruit and compensate qualified managers and technicians at the market rate;
- (b) Relative freedom to operate outside of political and bureaucratic constraints (e.g. in procurement and the working of overtime);
- (c) Better company specific labour management;
- (d) Potentially greater experience in developing facilities and providing services attuned to the competitive world of global trade; and

- (e) access to non-traditional resources for investment in the infrastructure to serve trade which some individual governments may lack.

109. These attributes of the private sector enable it to respond rapidly to market changes through speedy decision making and investment. But in the context of Bangladesh, it should be noted that the private sector are still in a growing stage, and will take sometime to mature. Thus, they need considerable support from the public sector, for quite sometime, to enhance their capabilities to be at par with other private sectors internationally.

110. With the changing focus of transport policy and the adoption of the general policy of increased private sector involvement in economic development, a substantial change in the role of government is required. Government's functions as a provider should reduce while its functions as a facilitating regulator should increase. To this end, the government needs to develop an institutional framework to create a favourable operating environment for the private sector and at the same time to protect social and environmental interests.

111. It is noted that Bangladesh is making considerable progress in the direction of facilitating greater private sector participation in infrastructure development. In the present state of development, involvement of the private sector through partnership projects with the public sector (Public Private Partnership or PPP) appears to have a better promise than other options. There are however a number of areas where further improvements are required to promote PPPs in Bangladesh. These areas include:

1. Improving the legislative and regulatory environment, including the formulation of a BOT law; the development of new sectoral laws outside of the telecommunications, electricity and gas sectors (especially in the areas of ports, roads and highways, and railways); dispute settlement and arbitration; establishment of independent regulatory authorities; and setting-up of one-stop-shops.
2. Strengthening the capabilities of civil servants;
3. Removing unnecessary bureaucratic procedures and practices; and
4. Marketing the potential of Bangladesh to the international investor community.

112. Even if many of these improvements are made, it may still be difficult to attract the private sector into infrastructure development, especially in the transport sector, unless some special packages are offered. One of the factors contributing to lower levels of private sector interest in transport projects is that in developing countries incomes are low and consequently, the ability of users to pay is correspondingly low. In these cases, it is incumbent on governments to undertake detailed feasibility studies in order to ascertain realistic traffic volumes and fare levels. Where these are insufficient to attract private sector interest, specific packages may need to be developed to make them attractive.

113. Such packages are not necessarily subsidies being given to the private sector. They are in fact measures to attract private sector. In this context, Government should also recognise that resources available to private sector are also limited and there are competing demands from other developing countries for such resources. Under these circumstances, countries which can offer better deal will attract more private sector investment.

114. Another reason for low private sector interest is that traffic volumes are too low to generate sufficient revenue. In some of these circumstances government may decide, for social reasons or until traffic volumes build up, to support the project. In these cases there is scope for public-private partnerships whereby the government provide subsidies to make-up for revenue shortfalls. In such cases, many countries have gone for public-private partnerships with private sector involvement ranging from, say, 40 per cent to 70 per cent. Alternatively, the public sector could also guarantee payment of compensation to the extent of loss being incurred by the private sector, which will gradually reduce as traffic/demand builds up.

115. There are a number of public sector transport organizations namely BIWTC and BSC which are providing parallel services with private sector. These organizations are no more relevant when the government's stated policy is to encourage private sector involvement wherever possible. In view of this, these organizations should be privatized, with a clear understanding that some of the public sector obligations (PSO), which are still considered essential could be provided by the privatized organizations with the required compensation to be paid for by the Government. Similar action could also be taken with respect to BRTC, for which appropriate and conducive environment should be created for private sector to come up with comparable services.

116. While "privatization" is frequently employed as a generic term covering the full spectrum of options for greater private sector participation, i.e. commercial orientation, the literal meaning of privatization is the actual transfer of ownership of all or certain components of the organization to the private sector to own in perpetuity.

117. True privatization, therefore, involves a transfer of deed of title from the public sector to a private undertaking. This could be accomplished through outright sale or through public flotation of shares. Through this process, government could reduce sizeable amount of its burden, and at the same time bring in higher efficiency and productivity in the operation. None can deny that involvement of private sector promotes a healthy economical competition, without countering the importance of public sector. What is important in the context of developing countries is to maintain a balance between public and private sector.

Addressing Transport and Environment related issues

118. Dhaka city is one of the most polluted cities in the world. Although the city wide average air pollution level is still below the allowable limit set by the Department of Environment, Bangladesh and WHO, the level of air pollution on the road sides of the

city far exceeds the limit. The Air Quality Index (AQI) at many points of the city is found to be above 200 which is much higher than the acceptable limit of 50 for fairly clean air.

119. It can, therefore, be visualized easily that the consequences of such high level of pollution will be much more severe on the health of the drivers, roadside shopkeepers and vendors for whom the duration of exposure is much longer. Children are particularly vulnerable to air pollution. Studies suggest that the mental and physical growth may be severely hampered due to breathing of polluted air.

120. In an economic evaluation of air pollution in Bangladesh, the World Bank estimated that nearly 15,000 deaths would be avoided annually (10,800 in Dhaka, 2,060 in Chittagong, 1,020 in Khulna, and 975 in Bogra), if the level of air pollution in Bangladesh four largest cities reduced to the WHO annual average standard.

121. As indicated earlier, transportation is one of the most significant sources of air pollution in the urban areas. It is observed that the level of emission of pollutants from all types of motor vehicles in Bangladesh are significantly higher than similar vehicles in other countries.

122. In Bangladesh pollution severity occurs due to the high content of lead in gasoline, large number of high polluting vehicles, impure fuel, inefficient landuse planning, and overall poor traffic management. Major issues are the heterogeneous flows of traffic and two stroke engines moving in urban streets which emit greater proportion of black smoke. Another dominating factor of urban traffic pollution is the number of auto-rickshaw and auto-tempo. This increase is most remarkable in Dhaka where the proportion of such two-stroke vehicles in the total vehicle population rose from 2.3% in 1982-83, 18% in 1990-91 and as high as 23% in 1996-97. It is not out of subject to mention here that the two-stroke engines (auto-rickshaw) moving in Dhaka City are simple modified forms of an Italian model of 1960's. These two stroke engine vehicles have technology disadvantages of inefficient combustion and results high tailpipe emissions. It is estimated that a baby-taxi emit several folds more pollution than a normal car. Moreover, gasoline pilfered from official vehicles find its way into the informal market for sale to the baby-taxi and auto-tempo drivers. Such pilfered gasoline is often mixed with kerosene before sale and when used on 2-stroke engines, it becomes a potent agent for pollutant emission.

123. A representative assessment of black smoke emission through vehicle count at Farmate intersection was performed in December 1992 under the Dhaka Integrated Transport Study (DITS). Of all vehicles, 90% auto-rickshaws, 80% auto-tempos, 75% trucks were observed to emit black smokes.

124. The significant pollutants from diesel-fueled vehicles are PM (including smoke) and NO_x exhaust. Because diesel engines operate at high air fuel ratios (30:1), they tend to have low HC and CO emissions. They have considerably higher PM emissions than gasoline-fueled vehicles. The estimated PM emissions from different modes indicate that around 54% emission contribution is from bus/minibus, followed by truck and tanker

(26%). The modal contribution of SO₂ in Dhaka is coming from mainly high sulfur content in the diesel fuel. It is observed that buses powered by diesel fuel contributes 58% and truck and tanker emit the second largest share 34% of SO₂ emission in Dhaka City. Another reason behind such high SO₂ emission is that the sulfur content of diesel in Bangladesh is abnormally high.

125. In the light of the above facts and figures, among the various elements which contribute to environmental damage in relation to transport attempt could be made to address two elements, which could greatly improve the environmental situation in large urban areas. One of these elements will be to deal with two-stroke engines and the other to replace the use of both diesel and gasoline in vehicles by CNG (Compressed Natural Gas).

Dealing with two-stroke engines

126. Although two-stroke two and three wheelers emit more than ten times the amount of fine particulate matter per vehicle kilometer than a modern car, and only a little less than a light diesel truck, Bangladesh has not yet issued standards for PM emissions for two and three wheelers.

127. The best possible solution would be to secure the replacement of two-stroke by 4-stroke engines, despite the fact that the economic costs of this are substantial and that the four-stroke option has only recently become available for three wheelers.

128. Given the strong economic motivation for the use of two wheelers, mandatory scrappage of existing fleets is also likely to be politically difficult. Phasing out more gradually, without total loss of the value of the existing fleet might be achieved by the imposition of differential license fees according to technology and location, to encourage the more polluting vehicles to move out initially into country side where pollutant concentration is less. The same objective might be achieved by refusing to license high emitters in the cities, or limiting that age up to which vehicles are permitted to be relicensed. Benign incentives might also be introduced through the subsidy of environmentally advantageous scrap and replace programs.

129. If auto-rickshaws (baby-taxis) are replaced by vehicles with much higher engine capacity such as cars in the form of taxi-cabs, the ultimate goal of improving environment may not be attained. Introducing four-stroke engine in the baby taxis may bring about the desired result.

130. If large vehicles like buses and minibuses remain struck in the roadways due to congestion, the consequences may be more harmful than the usage of more cars and auto-rickshaws. This is implied by the figures on emission on the basis of per unit time of engine operation.

Using cleaner fuel

131. Compressed Natural Gas (CNG) is a relatively clean fuel, available in abundance in Bangladesh. It may thus appear attractive to the government for both environmental and economic reasons.

132. The penetration of natural gas vehicles in any country thus depends primarily on its market attractiveness, which turns on a combination of the cost and convenience of the vehicle and the fuel.

133. As far as vehicles are concerned, there is extra cost associated with the CNG engine (or its conversion), the fuel control system and the fuel tanks. Together these increase the cost of a basic vehicle (whether a bus or a car) by up to 10-20 percent.

134. The convenience factor can be very important. Vehicles lose significant amounts of luggage and passenger space to fuel tanks. Until a network of filling stations is established, refueling can involve some dead running and can be time consuming. In addition, the vehicle range may be reduced by over 50 percent, doubling the refueling frequency.

135. Some initiative to convert petrol cars to CNG operated cars has been taken since 1997 and until now about 1200 cars have been converted in Dhaka. Their operation is however facing some problem because only two CNG filling stations were installed, and 50% of these work on average. Average filling time is about 7 minutes, but 4 cars can be filled in one go. Government has taken up a programme to install 6 more CNG filling stations in Dhaka for which fund has been made available. Government's initiative also includes conversion of another 1000 cars within a short period.

136. Government is also going ahead with another joint venture project with China, on the basis of 25% (Govt.) and 75% (China). Under this Public-Private Partnership programme, 51 CNG filling stations are going to be installed in the country, of which 13 will be in Dhaka city. Out of these 13, two stations are going to be commissioned soon.

137. In this context, it is, however, crucial to note that CNG to be popular in the country, besides large reserve and wide network for gas distribution, the pump price difference would need to be about 50 percent of the production cost of liquid fuels. Hence natural gas would seem to require strong fiscal encouragement if it is to be more than a niche fuel. Arising from this are the question of fiscal policy. Diesel fuel which is a direct competitor of CNG, typically carries a low tax rate. The reason being that diesel is used by vehicles carrying inter-urban freight movement, and for agricultural purposes.

138. Hence it is necessary to develop tax structures which protect the urban environment but do not discourage use of the most economical fuel by agricultural or intercity freight vehicles. One possible way of doing that is to identify the most damaging vehicle types (cars and urban buses) and use high duties on those types of diesel vehicles, rather than fuel taxation, as the means of changing the balance of economic advantage.

That is already done in some countries by exempting clean vehicles from import duties or vehicle license duties.

139. In this context, Government of Bangladesh has been implementing the following two major projects;

- i. Bangladesh-Air Quality Management Project (AQMP) financed by the World Bank; and
- ii. Urban Transport and Environment Improvement Study, financed by the Asian Development Bank.

140. The objective of the World Bank's Learning and Innovation Loan (LIL) project is to learn about options and develop components of urban air quality management by means of pilot activities and institutional support, with the ultimate goal of reducing human exposure to vehicular air pollution in a cost-effective manner.

141. The activities under this LIL focus primarily on Dhaka, with some components replicated in other cities. The project consists of two main components :

- i. Vehicle Emissions Reduction : Enforcement, Standards and Control

This component will support the role of DOE to revise vehicle, fuel and lubricant standards; carry out vehicle spot-checking for emissions compliance; and promote pilot technologies for emissions reduction in two-stroke engine and heavy-duty diesel vehicles.

- ii. Air Quality Monitoring

Air quality monitoring is an integral part of an environmental management strategy. The data collected are used in evaluating current trends in air pollution and assessing the benefits of control options. The current preliminary level of monitoring needs to be systematized and strengthened with quality control and assurance so that the data obtained can be used for developing air pollution control strategies.

142. The ADB study on Urban Transport and Environment, on the other hand is making an effort to identify and prioritise problem areas and to develop policies and strategies to improve air quality in Dhaka and other major cities in Bangladesh.

143. The principal objective of the study is to assist the Government to formulate a strategy to improve air quality in Dhaka and other major cities.

144. Alongside with these two major projects, some programme for effectively dealing with two-stroke vehicles, together with introduction of CNG more widely, would be essential to improve urban air quality.

145. For implementing above suggestions, a concerted effort with the assistance of civil societies is essential. Awareness of the issue, proactive policies, economically affordable standards and technologies, international standard monitoring and proper enforcement are the key elements in any effective air quality management

Improving urban transport and role of NMT

146. Bangladesh has been experiencing a rapid growth in urbanization during the last three decades. During that time the urban population in the country grew much faster than the rural population.

147. In the year 2000, level of urbanization was around 28%, and by 2015 it is expected to increase to about 37%. The urban population in Bangladesh which was about 23 million in 1990 is estimated to reach about 68 million by 2015.

148. Due to such growth of urbanization, demand for transport services has also increased significantly. But urban transport infrastructure and services did not develop commensurate with the need. As a result, demand-supply imbalance, inefficiency in vehicular movement has ensued, indisciplined and haphazard movement has become a common phenomenon, quality of service has deteriorated, safety has diminished, and loss/injury of human lives has become a daily routine.

149. Since further urbanization cannot be avoided, the best way would be to arrange for its effective management. With regard to existing urban areas, Bangladesh need to adopt comprehensive urban transport policies which are fully integrated with area development plans. The main objectives of the policy should cover the following:

- (i) to minimize traffic congestion, and increase speed on all major roads, by rationalization of routes i.e. through identification of trunk routes for buses, feeder routes for paratransits on an area basis. Motorized and non-motorized traffic separation to reduce conflict among the vehicular modes, as well as by reducing dependence on paratransits (baby taxis, auto-tempo, cycle, rickshaws).
- (ii) to increase capacity of public transport, through introduction of large size/double-decker buses, and improve services by introducing more premium quality air conditioned buses, by encouraging use of CNG buses, as well as by reducing conflicts between different types of vehicles operating on the street. To cater to the needs of urban poor, efforts may have to be made to improve access to large slum areas and/or improve public transport to peripheral locations.
- (iii) to clearly define the role of non-motorized transport (NMT) in the urban transport context. To this end, it may be noted that in Dhaka city, 60% of all passenger trips are made on foot, and a further 20% by rickshaws and the remaining 20% by motorized, of which more than half by buses. Roughly 20% of the city population are employed in providing rickshaw services, and a further one and a half million people in Dhaka and in the rural areas depend on these people's earnings. Passenger with luggage or goods cannot normally use buses and tempos, which are often crowded and therefore out of reach for women, children and the elderly

people. 90% of all rickshaw trips are within 5 km range, hence for longer journeys the auto-rickshaw (baby taxi) is preferred. Thus, for shorter journey in various directions, rickshaws are more competitive. In the light of the above characteristics of NMT like rickshaws, it appears that most appropriate solution would be to apply a combination of various options to deal with NMT, as they have a definite role to play in the context of urban transport, at least in the near future. In view of this, it is highly important that the rickshaw drivers are brought under some discipline by giving them “drivers training” and providing them with licenses after training, so that they behave properly when on the road, and contribute to traffic safety (For further details, please see Annex I). In the case of large urban centers, possible solutions could include the following:

- (a) To restrict NMT on some main roads;
- (b) To restrict NMT on some main roads during peak hours;
- (c) To make all efforts to complete development of a network of secondary roads for NMT to ply, when their entry to main roads are restricted; and
- (d) to segregate NMT from motorized transport in other roads where they are sharing road space, but ensure proper road maintenance and enforcement.

For the implementation of the above strategy, it would be essential to undertake extensive consultation with all stakeholders, (rickshaw owners, rickshaw pullers, owners of rickshaw manufacturing industries, the users, operators of other modes, the DCC officials, DMP officials, municipal ward commissioners, etc) to arrive at a consensus on actions to be taken. In all the consultations, high level political commitment and support would be most essential, backed by donor assistance. In the use of smaller urban centres, role of non-motirized transport may continue to be more important at the early stages, till the grow bigger and motorized public transport (buses, etc) become essential. In planning of ll urban centres, this aspect needs to be kept in view that these centres are continuously growing as such provisions should be made for different forms of transport.

- (iv) to strictly enforce traffic rules and regulation, improve on existing traffic legislation, and achieve effective traffic management, through improvement in manpower and equipments. In this context, it is essential to recognize urban traffic management as a separate discipline, and efforts made to develop human resources for planning and management of urban transport and traffic services. Establishment of traffic control centers manned by properly trained personnel for efficient management of traffic would also be essential. For ensuring effective urban traffic management, the division of responsibility among various agencies involved should be clearly defined. Traffic Police should be primarily responsible for enforcement of traffic rules, whereas the traffic management responsibilities should be left to the traffic management specialists. A close coordination between the two would, however, be essential.
- (v) to improve urban air quality and reduce noise by replacing 2 stroke engined baby-taxis with 4-stroke engines, and by ensuring better maintenance and fitness of vehicles on the street.
- (vi) to organize strict land use coordination by introducing restriction on approval of new construction of buildings without taking into consideration the impact of the proposed construction on the traffic situation in and adjacent areas. Adoption of appropriate policy for land and pre-planned residential area development, as well as creation of pedestrian zones in congested urban areas would be essential.
- (vii) to strengthen the institutional set ups responsible for planning, development, management and provision of road transport facilities and services, particularly to ensure coordination between departments responsible for the above tasks and those responsible for traffic management and enforcement of traffic legislation.
- (viii) to increase infrastructure facilities for pedestrians at intersections and mid blocks through provision of more and more footpaths, cycle tracks if possible, guardrails, pedestrian overpasses, zebra crossing and by eliminating encroachment of pedestrian facilities by hawkers, and illegal storage of building materials and garbage. There is a need to improve bus stands and bus terminals for convenience of users.
- (ix) to plan and provide for adequate transport infrastructure capacity including development of missing links in the traffic network to meet both present and future travel needs, keeping in view the need for travel demand management. Infrastructure facilities may include improvement of major intersections, development of off-street multistoried parking facilities together with a clear policy for on-street parking and enforcement of rules including earmarked parking for cars, auto-tempos, baby taxis and cycle-rickshaws, and space for loading and unloading of buses and trucks.
- (x) to plan, well in time, for mass-transit system, preferably based on railway, wherever feasible.
- (xi) to reduce travel cost by optional utilization of existing facilities and capacity through better maintenance and effective management.
- (xii) to introduce other measures, wherever necessary, including one-way street, signal coordination, restriction on loading and unloading, staggering office and school hours.

150. With regard to the problem of over concentration of urbanization in few large urban metropolitan area, there should be deliberate policy to counteract that possibility by encouraging development of distributed urbanization. To this end, there is a need for development of self-contained secondary cities and satellite towns around large cities with adequate infrastructures to attract private sector investment. In planning these towns, arrangements should be made to relocate some of the main city's activities to these towns. For this to happen there shall have to be political commitment together with supportive policy and resource mobilisation, both external and internal, to develop the infrastructure (efficient rail connections), and for providing supporting facilities.

Improving traffic safety

151. The road safety situation in Bangladesh is one of the worst in the world. Every day 10-12 people are killed on the road and almost double the number are injured. Road accident fatality rate of Bangladesh is 30 to 40 times higher than that of the developed nations where the number of motorized vehicles is many times more. Among the victims of road accident, majority are pedestrians. Other vulnerable road users are cyclists/motorcyclists and public transport passengers. One third of the victims are adult males between 21-35 years of age. Accidents on national roads are more severe than those on city roads. The national loss due to road accident is estimated to be about Tk. 1500 crores every year.

152. The main causes of road accidents are three O's, i.e. over-speeding, overloading and overtaking, and in more than 80% cases, this way or that way drivers have a role to play. Unregulated use of same roads by non-motorized vehicles along with motorized vehicles is one of the major causes of road accidents and traffic congestion in urban areas. Most involved vehicles in the accidents are trucks, buses and minibuses.

153. To address the traffic safety issue, and to provide guidelines and drive road safety initiative forward, Bangladesh established in 1993s a National Road Safety Council (NRSC) headed by the Hon'ble Minister for Communication. As a first step the Road Safety Strategic Action Plan covering a two-year period was drawn up by the NRSC in July 1997. In the plan, road safety activities have been earmarked into nine individual road safety sectors. These include besides establishing NRSC, the accident data system, Road engineering, Traffic legislation, Traffic laws enforcement, Driver training and testing, vehicle safety, Road safety education and publicity as well as medical services. Due to various reasons, the Action plan could be implemented fully.

154. To develop and implement road safety programs at the local levels, as a line agency of the NRSC, District/Metropolitan Road Safety Committees headed by the respective Deputy Commissioners and Police Commissioners have been established. To provide secretarial and technical support to the NRSC and to coordinate the road safety activities of different organizations very recently a Road Safety Cell has been established in BRTA. The Cell would be able to monitor implementation of the Road Safety Action Plan.

155. In the context of accident data recording, Bangladesh has already adopted a standardized computerised accident report form, which has become a part of police FIR (first information report), and completed by police immediately after reaching the accident site. A large number of police Sub-Inspectors have been trained to undertaking this accident recording task, and these officials are now manning the different police stations across the country. Accident data are initially being compiled at Police Range Office (DIG, Police) level and then transferred via computer diskettes to accident data units at Dhaka Metropolitan Police HQ, the Police HQ (IG. Police) and at the Road Safety Cell at BRTA where data are analysed using Micro-computer Accident Analysis Package (MAAP) programme already installed.

156. In the context of road engineering, Road and Highways Department (RHD) has already compiled a list of black spots and low cost remedial measures are being introduced to address the situation. In addition formal road safety audits are being made compulsory for every new road. Road signs and signals manual already prepared and colored copies being produced for wider distribution.

157. Concerning traffic legislation, the current Motor Vehicle Ordinance (MVO) is not appropriate for modern day traffic enforcement needs. The legislation does not mention about needs of seat belts in cars, and does not cover such safety concerns as “give way” procedures. The current legislation does not cover non-motorized transport, so traffic police are not allowed to cite rickshaws. Although fines are specified in current MVO, the deterrence has been ineffective since the current level of fines are too low. To address the situation, a new “Road Transport and Traffic Act” has already been drafted and being further examined. The new legislation should, however, be introduced at the earliest together with appropriate levels of fines for violation of rules, a penalty point system, and driving license disqualifications system. Meanwhile the displaying of tax token on the windshield has been introduced.

158. Traffic Enforcement is an area where considerable improvement is needed. Traffic police is responsible for enforcement in metropolitan areas. While they are hard working, they can not be effective, as they are ill-equipped. However, the number of sergeants and motor cycles have been increased recently in Dhaka Metropolitan Police (DMP), and Traffic Management training courses expanded at DMP Training Academy. Lack of off-street parking, and lack of enforcement on illegal parking near road junctions, and the present freedom of parking on the street is creating lot of traffic congestion on the street and at road junctions. Traffic violators are also not being taken to task. As a result traffic irregularities are on the increase.

159. Outside the urban areas, traffic enforcement by police is extremely restricted by a lack of mobility. Little progress can be achieved in terms of safer driving until the Police are able to regularly patrol the roads, both in urban and inter-urban areas. The traffic police budget constraints lower both enforcement effectiveness and morale. To address this issue, government may wish to allocate 10% of the traffic fines, to traffic police to

enhance their resource capability. This would also encourage the traffic police to be more strict in enforcing traffic rules and reducing traffic violations.

160. Some of the violations, particularly those related to road transport related laws, are not being strictly dealt with by traffic police, as their priorities are different. To address this problem, BRTA could be allowed to have some in-house capacity to enforce road transport related laws, without depending on police.

161. Since most accidents occur through human error/behaviour; driver training and licensing are essential aspects of road safety. The problem in Bangladesh is that drivers training can be done by any one. Although tests are conducted, a lack of standards for such tests by qualified instructors, is one of the major short-comings of driver training.

162. Due to increasing demand for drivers, particularly for smaller commercial vehicles (baby taxies, tempo, etc.) and lack of strict enforcement, there are large number of fake license holders. To deal with this irregularity, there is a need to arrange training programme for the fake driving license holders in employment. This could perhaps be done at the BRTC driver's training institute in Joydepur, where, one-weeks training could be given to 100 drivers in a batch. BRTA need to look into this proposal together with owners of smaller commercial vehicles, to work out a funding mechanism for this short-training programme. BRTA should also examine the practicalities of establishing a training institute for instructors and examiners.

163. In added, to improve the overall quality of drivers, serious consideration should be given to use the existing drivers training institutions under the Ministry of Defence. Considering the seriousness of the overall disastrous condition of traffic management in urban areas, and deteriorating traffic safety, Bangladesh Government should make a special effort through the Ministry of Defence to allow its driving schools in all cantonments to deliver crash programmes for training of drivers and orientation course for drivers who are already in employment. This programme could be run initially for a period of two years.

164. For road worthiness of vehicles, Bangladesh laws require vehicles to be tested annually, if older than 5 years. Modern vehicle Inspection centres are being set up in 4 Divisions (2 centres in Dhaka) with financial support from ADB. Installation is complete and testing is going on. Bangladesh is however in the process of setting its own standards for inspection. Once it is finalized, strict enforcement of the vehicle fitness standard would be crucial to improve the overall vehicle condition on the street.

165. Vehicle inspectors receive only on-the-job training and current vehicle inspections are restricted to a brief visual inspection. While both BRTA and the Traffic Police occasionally conduct roadside inspections, these actions are rarely targeted at specific safety violations and are restricted to daylight hours.

166. Bangladesh has a wide mix of vehicles with the vast majority being non-motorized. Most rickshaw drivers are migrants from rural areas, as such have no

knowledge of traffic rules and regulations of the urban areas. To ensure a higher level of traffic safety, there is a need to provide training to the rickshaw drivers as well. These drivers after training should receive a drivers license duly recognized by police and city corporation, so that they could also qualify for having life insurance at nominal cost.

167. Road safety education is an important aspect to be considered, which includes what to do and what not to do while traveling by a vehicle, riding a motorcycle, walking on walkway or crossing a road. In Bangladesh, road safety education, has recently been introduced into the National curriculum, but is covered in only 3-lessons in all primary and secondary school education. But lessons are not relevant to vast majority of the children. To address the problem, all schools in Bangladesh need to teach road safety to their students in an effective and appropriate way for which proper materials need to be produced. Teachers' training programmes should also include lectures on road traffic safety. Publicity, campaigns involving the community as a whole, need to be organized based on accident data analysis and target a road user group or behaviour that can be influenced. NRSC should undertake the above task. More and more NGOs, should be encouraged to take interest in road safety matters.

168. In addition, timely and effective assistance to road accident victims is important for saving a considerable number of lives and resources. To provide assistance to accident victims, nationwide emergency phone numbers need to be available.

Mass-transit system for Dhaka

169. Dhaka City including the suburb has already got a population of over 10 million. Average growth rate of city population is about 4% per annum. City Transport like classical Buses, Air-conditioned Buses, 3-Wheelers (Baby Taxis) are grossly inadequate to meet the growth in traffic demand. Amongst the non-motorized vehicles, the cycle rickshaw still plays a major role.

170. A World Bank Study has indicated that there is an immediate demand of about 5000 large buses in the city and the 'classical' outdated small buses and polluting 2-Stroke Engine-based 3-Wheelers should be replaced by more cost-effective, efficient and comfortable modes of transport, like taxi cabs, additional large air-conditioned buses. This fact has been practically proven by the immediate acceptance and high occupancy factors of quality Air-conditioned Bus Services like 'METRO' (Tongi-Uttara-to-City Centre and other City areas) and NIRAPAD-USERIX (a Bangladesh-Malaysian Joint Venture).

171. A preliminary estimate by transport experts, including transport economists indicate that the average economic loss due to routine 'traffic jams' in Dhaka is running into millions of dollars per annum – in terms of lost man-hours of top-managers, mid-level managers, executives, administrative and logistic staff and skilled/semi-skilled and unskilled workers. With an average 'Jam period' of about two hours a day and a movement of about 3.8 million passenger trips, the financial value of such loss amounts to about US\$ 570 million per year, even if the average opportunity cost of lost time is estimated at a conservative value of about US\$ 0.25. - per man-hour. On the higher side,

it may exceed over a billion dollar per annum. In line with this ‘macro-economic’ consideration of the Benefit-Cost Analysis, even a billion dollar worth of Investment in EMRTS pays-off within a reasonable pay-back period, i.e. with a high EIRR on a national basis. However, since the EMRTS Project is proposed as a private-funded commercial venture, the market and financial feasibility on a commercial basis, has already been investigated.

172. Based on 1991/92 DUTS data, and extrapolations made for the year 2000, indicate that about **3,856,560 passengers travel in Dhaka city on a daily basis, using various modes of motorized and non-motorized transports, i.e. rickshaws, auto-rickshaws/’tempo’, buses and private Cars.** Even with latest additions of about 60 air-conditioned city bus services, the current total number of Buses is only about 1,600. This means that over the past decades, there has not been any substantial growth in number of buses. Break down of the above figure on passenger travel indicates that about 214,000 passengers travel by auto-rickshaws and tempos, 1,471,501 travel by buses (mini, large, double decker and air-conditioned) and 71,883 passengers use private cars. The passengers of buses and other motorized vehicles (baby taxis) will be the most potential users of EMRTS, as they are presently paying anywhere between Tk. 10/- (min. for ordinary city buses) upto Tk. 20/- for air-conditioned buses. For auto rickshaws passengers pay on the average about Tk. 30/-, Tk. 20/- - 25/- being presently their minimum charge.

173. To solve the large gap between demand and supply in the transport sector in a cost-effective, as well as environmental friendly manner, a large number of Yellow Cab taxis as well as taxies belonging to other companies have recently been fielded. The response from the middle, upper middle class, including car owners is enormous. Although the average Fare is in the range of Tk. 75/- per passenger trip (Tk. 20/- Embarkation Fare, Tk. 40/- on low side and Tk. 120/- on the high side), these Taxis are operating with very good occupancy factors (75% avg.).

174. High Occupancy factors and the growth of serious public interest in use of ‘Yellow Cabs’ within a short span of time, indicate that a large cross-section of Dhaka city dwellers, comprising of middle-income groups, are willing to pay, provided they get good service - a fact, which indicates that potential of EMRTS to solve Dhaka city’s transport problem is very high, because it provides a very fast, cost-effective and comfortable service with minimum exposure of passengers to surface road’s highly polluted air.

175. A Projection, based on the passenger trips per day, the average number of short city trips and the passenger capacity (seating - 52) indicates that presently (Year 2000), there is an easy Demand for about 3,708 (say abt. 4000) Nos. of large A/C buses, which is expected to increase to 5,442 (or say abt. 5000 Nos.) in next 10 years, i.e. by the year 2010.

176. An analysis of the affordability of passengers in the upper middle income group (having monthly income more than tk. 5000/-) reveals that they are willing to avail good facilities and comfort which EMRTS could provide, within an average ticket cost of Tk.

25/- per passenger. Based on further investigation it was observed that the Passenger potential for EMRTS in Year 2001 would be 500,000 Passengers/day, which is expected to increase to 832,743 Passenger/day in the Year 2010. The EMRTS market would work out to be about 14% of the total transport market – a finding which is very much in coincidence with the Ministry of Communications estimates. Based on these estimates, it appears that the EMRTS facilities that need to be developed in Dhaka should have the following capacity:

Year 2000	10,000	passengers	per hour	per direction (pphd)
Year 2010	20,000	”	”	”

177. Keeping in view the rapid growth of urbanization in Bangladesh, Government should work out a long term plan to develop large capacity rail based mass transit system along high-density corridors in major urban areas, with priority action in the context of Dhaka.

Sub-sectoral issues in Transport

178. Under this sub-item, some of the key issues in each of the transport sub-sectors are presented together with some suggestion on the type and nature of public policies and other interventions that would be required to address these issues.

Road Transport

179. As indicated earlier, present transport infrastructure development is road biased. To address this situation, following actions should be taken :

- i. Considering that land is a scarce resource in the country, indiscriminate use of this resource for road development where other mode of transport could serve the purpose more economically, could lead to loss of land otherwise available for agriculture and forestry. Infrastructure development could also create drainage problem leading to environmental degradation. To avoid misuse of land, it is essential to develop a land management regime in order to regulate the physical framework in which transport infrastructure, particularly future road development/improvement can take place. Such a framework can help minimize the major adverse environmental impacts.
- ii. In order to avoid wastage of scarce resources, it is essential to develop road transport, as part of one integrated logistics chain, allowing each mode to play, within the multimodal transport context, a role which it is in a better position to serve, keeping in view, economic, social and environmental costs (ie cost to overcome the externalities created). It is now well established that both railway and inland water transport are environmentally sound and economical over longer distances. Thus making use of these modes for long haulages, with road transport providing the feeder services from origin to

- destination, could be highly competitive, if developed with proper care and attention, particularly the transshipment point.
- iii. Bangladesh should urgently consider setting up a “road fund” for financing road management. Without creation of such a fund, proper maintenance of the existing network on a sustainable basis would prove to be difficult. This “Road Fund” could be set up with the support of the private sector road users who are willing to contribute a little extra, in the form of fuel levy, to be collected for the dedicated purpose of road maintenance/management. To ensure the sustainability and continued growth of the “Road Fund” it would be essential to have private sector involvement in the management of this fund through a specially constituted Road Fund Management Board where both public and private sectors would be involved. The World Bank together with UN-ESCAP, DFID and the concerned Private Sector in Bangladesh worked together in 1998 to set up such a Fund with the support of the Government of Bangladesh. A proposal to set up such a fund was submitted to the Ministry of Communications, in 1998, and the matter is still pending there. The government need to agree to this proposal at the earliest.
 - iv. Meanwhile maintenance budgets both for RHD and rural road network should be increased and effectively utilized for maintenance and preservation of the system.
 - v. Awareness creation programme should be organized to make the civil society of the country more knowledgeable about the issues indicated above, so that these could receive due attention.

Rail Transport

180. Globalisation of economic activities and potential of increasing intraregional and interregional transport have special significance to the railway sector in Bangladesh. Efforts are needed to revitalise this sector in order to recapture some of its lost traffic from road transport. The Bangladesh Railway should take the following steps:

- i. Commercialise some of the service operations and introduce a new market-based pricing system. An aggressive customer-driven marketing strategy should be adopted to provide services at competitive prices. The government has already identified the socially obligatory services for which Bangladesh Railway is being compensated. This obligation to be continuously reviewed and gradually discontinued as there are other modes of transport which could provide those services more economically
- ii. BR routes and services need to be integrated with other surface modes to make the railway more attractive to the users.
- iii. BR needs to further modernize and improve its operational efficiency through adaptation of new technology, particularly, information

technology, and through extensive programme for human resource development.

- iv. Once the political climate is in favour of allowing Bangladesh transport system to carry regional, inter-country and transit traffic, considering the distances likely to be involved Bangladesh railway could be in an advantageous position to provide most cost-effective and environmentally sound integrated multimodal transport service, with railway carrying the main haulage, and road/IWT providing feeder and linked services. In this context, based on the outcomes of the study envisaged under subitem “outward looking approach in transport development in Bangladesh”, an awareness creation programme should be initiated to get the support of the political leadership, and the civil society at large.
- v. The on-going reforms and reorganization of BR should be completed for transforming the organization into a corporate entity. Infrastructure and operation need to be segregated and both operated on commercial principles. Whatever reform has been achieved so far should be consolidated by bringing the changes under the legal coverage.
- vi. Private sector involvement in some of the railway operations which have been successful, should be continued, and new areas opened up for further involvement of private sector. Railway should provide the backbones of intercity, intra-city passenger transit and commuter service.
- vii. Towards rationalization of gauges in Bangladesh, the on-going programme of dualization from Parbatipur to Dhaka, should be extended upto Chittagong, to facilitate regional integration, and provide uninterrupted broad gauge rail service from Raxaul (in Nepal) to Chittagong in Bangladesh. In addition, there is a need to standardize coupling and braking system, as these restrict operating speeds for Indian trains hauling Bangladeshi wagons.
- viii. To Establish a container company (a holding company like CONCORD in India) for multi-modal transport operation.

Inland Water Transport

181. Inland water transport is one of the oldest modes for economically efficient and environmentally sustainable transportation, yet it has been perennially neglected. Efforts are needed to revitalise this sector to recapture some of its lost share of traffic. Following actions need to be taken :

- i. To make water transport attractive to the users, it should be integrated with other surface modes roads and railway and seaports, and efficient logistics support should be provided.

- ii. Development and maintenance of inland waterways for navigation all the year round, should be conceived as an integrated project for land development, flood control, irrigation, etc. Both conventional and low cost techniques should be used for dredging. Navigation aids should also be improved. Private sector should be encouraged to participate in the development and maintenance of waterways while public sector will continue to be the main partner.
- iii. Ferry crossings at major rivers should be gradually rolled over to the private sector
- iv. IWT routes used for both inter-country and Indian transit traffic are facing certain problems such as lack of year round navigation, lack of night navigation, limited number of ports of call etc. These problems needs to be addressed on an urgent basis.
- v. Problems in the mechanisation of country boats, should be addressed urgently and provision should be made for modest infrastructure for their safe operation. Encourage private sector involvement in the development of river ports, terminals and provision of cargo handling facilities. To improve their level of safety, these mechanized country boats need to be brought under a system of registration, for which government should frame rules, procedures and guidelines.
- vi. Promote regulatory and safety measures in water transport including fitness requirements of mechanized vessels.
- vii. Develop facilities for transporting containers by IWT including establishment of Inland container depots (ICD)
- viii. Encroachment upto the rivers need to be stopped to avoid problems of navigation in the future.

Rural transport

182. Rural transport in Bangladesh includes the transport services for passengers and freight by motorised and non-motorised means of transport. Rural transport infrastructure, includes mainly rural roads, paths and footbridges and rural waterways. Road infrastructure development in the form of feeder road development has made significant contribution to poverty alleviation in rural areas of Bangladesh. Major actions to be taken include :

- i. To continue providing adequate rural transport services including access to market places and social services, with particular emphasis on poverty alleviation and rural-urban integration
- ii. To restrict building of incomplete rural roads. Incomplete rural roads in areas of growth potential should be completed on priority basis.
- iii. To enhance management and maintenance capabilities for rural transport infrastructure at the grass root level.

Sea Ports

183. Chittagong and Mongla are the two major sea ports of Bangladesh. They together handle about 95% of total international trade, of which over 80% is handled by Chittagong port. There has been a great change in the composition of cargo traffic from break-bulk to containerization which has increased to about 25% in 1999-2000. It is expected that this trend will continue for a considerable period of time.

184. The present volume of containers being handled by the Chittagong Port is around 500,000, 20-ft containers every year. This is increasing at about 20% every year so it is expected that in five years about 900,000, 20-ft containers must be handled. If the port works very hard to improve its operations it may be able to handle 600,000 containers without further major investment. Thus it can be seen that the port situation will become desperate unless immediate steps are taken to increase capacity.

185. The efficiency level of the container terminal is very low due to the absence of rail mounted gantry cranes. At the moment, ship to shore handling operations, are carried out entirely by ship's own gear. This together with labour problem, sometime reduces the handling productivity below five containers per vessels-hours. In addition, vessels are forced to wait for berths for 2-7 days. Total turnaround time can range from 5-13 days for an activity that would require less than one day in most ports. As a result, the port remains congested nearly all the time.

186. To overcome some of the above problems and to enhance efficiency and productivity with a view to establish Chittagong as the "transport hub" to take care of national as well as the regional traffic from North-East India, Nepal and Bhutan, Chittagong Port Authority (CPA) has already taken a number of steps. These include:

- (a) acquisition of modern equipments together with human resource development to improve cargo handling efficiency at the existing Chittagong Container terminal and general cargo jetties;

- (b) Construction of a 1000 metre long container terminal at New Mooring within Chittagong Port area based on own resources. The terminal when completed would be leased out to private sector for provision of 'handling equipments and for its operation and management';
- (c) A private sector container terminal proposed to be built at Patenga, on BOO basis. In this context, all necessary background studies namely, the Chittagong Port Entrance study conducted by the Netherlands Economic Institute (NEI) in 1978, the study on Oceanographic conditions conducted by Montgomery Watson New Zealand Ltd., of 1997, and the Mathematical Model Study of Karnafuli conducted by Danish Hydraulic Institute, recommended Patenga as the site for future port development.

187. Once the private sector container terminal at Patenga is completed by the year 2005, it will be able to handle 300,000 containers per year efficiently. By that time, the container terminal at New Mooring should get ready to handle containers, and it should be able to capture all new growth of container traffic, because the management will be with the private sector. With these new facilities, Bangladesh should be able to handle all container traffic upto 2010 and beyond.

188. With regard to the clearance of containers from Chittagong Port, it may be noted that the port handles 95 percent of the total containers received in Bangladesh, and 70 to 80 percent of these are bound for Dhaka. However, only 10 to 15 percent (less than 40,000 ton equivalent units) are moved by rail to an inland container depot (ICD) in Dhaka. This ICD has a capacity of 100,000 ton equivalent units. The remaining container traffic (85-90 percent) is unpacked at Chittagong and moved in break bulk by small trucks. There is no container movement by road due to axle load limitation on bridges. The reason behind limited use of railway for moving containers is partly due to unfavourable rail charges and regulations between Chittagong and Dhaka. Since the difference is substantial, the shippers and exporters prefer to move goods by truck in break bulk to and from Chittagong port. This causes congestion due to space limitation at the port as well as on the Dhaka-Chittagong road.

189. Bangladesh railway should seriously explore various ways of increasing its share of carrying container traffic between Chittagong and Dhaka which is a captive traffic. For this purpose some of the actions among others, may include, acquisition of a fleet of flat cars, creation of an autonomous container corporation like CONCOR within the framework of Indian railways.

190. Although, Bangladesh is a riverine country and Dhaka is well connected with Chittagong by inland waterways, no container moves as yet by barges. There is a proposal to build a container terminal and ICD at Pangaon, Dhaka on the bank of Burigunga river. Some land has been acquired for the purpose on the river bank, and negotiations are underway with some private sector to build this terminal.

191. If Chittagong is to become the “Transport hub” of the sub-region in the hinterland of Bangladesh, the proposed container terminals at Patenga, New Mooring and the IWT container terminal at Pangaon should be built on an urgent basis to serve both the national and regional requirements. Similarly Bangladesh railway should also be prepared to carry containers destined to other states/countries in the hinterland of Bangladesh. The capacity should be built accordingly. As the traffic builds up some more inland container terminals (ICDs) would have be built around Dhaka/Narayanganj, and elsewhere within the sub-region.

192. In addition, a number of factors, such as rent seeking (extortion, speed money) disruption of cargo handling activities due to hartal and labour unrest have been contributing to poor performance of the port. It is therefore, necessary to adopt some of the following policies/strategies to address these problems:

- (i) Towards minimizing rent seeking, labour unrest, pilferage of cargo from port, and increase safety of ships in the port, all political parties should participate in a round table conference in order to arrive at a consensus that the country’s maritime ports will be allowed to function without outside political interference and the Port Authorities be allowed to manage and operate the Port activities in consultation with the stake holders keeping in view the interest of the country.

- (ii) A Consultative Committee headed by the President of FBCCI may be established, which will include members from all stake holders including representatives of the Labour Unions. In order to make the port activities transparent, these are to be discussed and cleared by the Consultative Committee before they are processed for implementation.
- (iii) An awareness campaign among the stakeholders including the labour unions should be undertaken with a view to highlight the precarious situation of the ports, and their various implication to the economy, particularly in facing the challenges and competitiveness of globalization.
- (iv) In order to safeguard national interest and facilitate private sector participation in the operation, management and maintenance of existing port infrastructure and facilities and in building the new infrastructure, legal and administrative frameworks are required to be formulated and adopted. Possibilities of converting Chittagong port into a public limited company with 51% government share and 49% private share, should also be looked into.
- (v) All port users and regulatory agencies including the Port Authority should be brought under an integrated system of computer network for processing cargo clearance/dispatch from the Port areas.
- (vi) All hard copy documents presently used for cargo handling/clearance at the Ports are to be replaced with electronic data interchange. An appropriate training program is required to be undertaken concurrently with the establishment of electronic data interchange system.
- (vii) In order to minimize pilferage and ensure safety of cargo at the Port areas, existing Port security arrangement is to be privatized on an experimental basis for a limited period of time. Further action could be taken based on experience gained.
- (viii) To increase efficiency of the existing container terminal, rail mounted gantry crane should be acquired urgently. In the near future, the provision and management of cargo handling should be divested to private sector. The equipments, workshop and other facilities of the Port Authority may also be leased out to the said private sector.
- (ix) Existing arrangements for clearance of containers to and from Chittagong port are not at all satisfactory. The ICD at Kamalapur is not being used optimally. Bangladesh Railway should create facilities to carry more containers between Chittagong and Dhaka. Water transport should also be used to carry containers and for this container terminals at Pangaon and elsewhere should be built. More ICSs should be built in other parts of the country including one in Chittagong (outside the port area). Private sector

should be encouraged to build a high capacity Dhaka-Chattagong express way and inland container depots (ICD) and water transport container terminals on BOT basis.

- (x) Special arrangement would be required to handle regional traffic at sea Ports when transit traffic from the hinterland countries/areas are allowed to pass through Bangladesh. To meet the demand of both national and regional traffic, new facilities at the existing Port such as at New Mooring and Patenga in Chittagong and elsewhere should be created and private sector encouraged to invest. To this end, the proposal already made by a private sector group to establish a container port at Patenga, (near the mouth of Chittagong port) needs to be looked into by the government carefully, and a decision made quickly so that private sector interest in developing port facilities in Bangladesh continues undisturbed.
- (xi) In addition, feasibility study should also be undertaken to explore the possibility of establishing a new sea Port/deep sea port in Bangladesh to serve longer term requirements of the country.

Maritime Shipping

193. Access to adequate and competitive shipping services is a pre-requisite for a country's participation in global markets, and is critical to the nation's economic growth. The development of shipping services in Bangladesh, however, must be considered in the context of the cargoes passing through the ports and international trends in the provision of shipping services and cargo handling technology. The key considerations include the growth of the container trade and specialization in bulk trade.

194. Government of Bangladesh has recently finalized a National Shipping Policy with the objective of ensuring that it enjoys the most economical and efficient shipping services. This will be achieved through continued support for the national shipping line, encouragement of ship owners and operators in the private sector, and the continuation of an open policy on the provision of international foreign owned and operated shipping services.

195. For effective implementation of the National Shipping Policy, following actions need to be taken on a priority basis:

- i. Shipping to be declared as an Export Industry giving tax and other benefits enjoyed by the Entrepreneurs in other such Industries.
- ii. Maritime shipping is one of the transport sub-sectors which is most suitable for private sector investment, provided the public sector policy is supportive. Bangladesh Shipping Corporation could be turned into a profitable organization if managed as a commercial entity. The Shipping Corporation should, therefore, be

- divested to private sector. In support of such a move, financial institutions might be encouraged to provide the necessary long-term finance for vessel acquisition including the establishment of a “shipping development fund”.
- iii. In view of rapid increase in container traffic (over 15% a year) in Bangladesh, and to take full advantage of the containerisation, there is a need to improve the following:
- (a) Development of container terminals both at existing ports and at new sites, and encourage participation of the private sector, both national and foreign in their development together with back up facilities, handling equipment and support services.
 - (b) Strengthen liaison between relevant agencies and customs to ensure the swift implementation of practices to simplify cargo documentation and inspection procedures.
 - (c) Enhance coordination between relevant ministries to ensure that adequate attention is paid to efficient road, rail, IWT connections for ports.
- iv. To introduce and enforce relevant international conventions on pollution control for vessels, shipbuilding, ship repair and ship breaking, also prepare disaster contingency plan. In this context, the Marine environmental act should be finalized and enacted. Training to the personnel for enforcement of the act is to be initiated and requisite equipment procured.
- v. To review the operation, financing and management of the marine training institutions with a view to enhance their continued sustainability, with a consistent and clear financing framework. Also encourage private sector to invest in training and training facilities with provision for certification of such training within the established regulatory framework.
- vi. Government needs to undertake a complete overhaul of current laws and regulations for port and shipping activities to remove all non-tariff barriers, to bring the current practices in line with international norms, by rationalizing the use of documentation within the framework of FAL convention..
- vii. Since freight forwarders play a major role in multimodal transport system, there is a need to review the operation of freight forwarders and strengthen arrangements for their registration and regulation, and for their further development and training.
- viii. To try to recapture the lost market of seamen, as Bangladesh has a long tradition of seamanship. To this end, there would be a need to standardize the seamen’s training curriculum, modernize training facilities and conduct examinations under Government supervision. Private sector should be encouraged to take over these activities, for which government should provide support including opportunities for findings jobs for the seamen.

- ix. To promote the welfare of seamen in general and to support the resolution of problems seafarers routinely face such as accidents, disabilities or death, the Government should in co-operation with relevant international agencies, support the establishment of a “Seamen’s Welfare Centre”.
- x. To carry out a review of the tax and tariff regime affecting national transport services in general and to investigate the scope for the introduction of financial, fiscal, and other incentives for the shipping line and operations of specialised cargo handling equipment.
- xi. Necessary steps may be taken to declare desertion of Seamen as extraditable offence and measures to be taken to incorporate the same in Merchant Shipping Ordinance 1983 and also provision to be made for other deterrent punishment to the deserters in the same Ordinance.

Air Transport

196. The Civil Aviation Authority of Bangladesh (CAAB) carries out the regulatory functions of the air transportation sector. It also provides and manages airport facilities, and ensures safety and security of all civil aircraft operations.

197. Bangladesh Biman, a public sector enterprise, provides air transport in the country. It has absolute monopoly in the international routes, while in the domestic route and for carrying international cargo, there is some private sector participation.

198. The first private sector airline started operation in the middle of 1995. Initially it was allowed to operate STOL services in those places where Biman did not operate. It was strongly felt that from the very beginning Biman has been dictating policies regarding participation of private sector, as the policy makers are owners of Biman. Biman’s fare structure is not determined on commercial consideration, as a result, it is a constant drain on the national economy. While the flying time to Rajshahi and Saidpur is longer than Chittagong, the fares to those places are less than Chittagong. As a result private sector can not provide services to these places, because losses are not compensated for by the government, as in the case of Biman. Unless Biman changes its pricing policy, private sector will not feel encouraged to invest in air transport. Officials of Biman tend to blame the decisions taken without commercial considerations in matters relating to procurement of equipment, recruitment, outside interference, undue competition, etc as the cause for Biman’s unacceptable performance. Biman has not been able to develop a cadre of its own as they face opposition from the unions to engage worthy aspirants.

199. Communication, Navigation system and Air Traffic Management which are being introduced throughout the world, should also be introduced in Bangladesh.

200. Runways at Rajshahi and Saidpur are inadequate for operation of F-28, as a result they are operated there with reduced load, thereby causing financial loss. To address some of the problems indicted above, following actions could be taken:

- (i) CAAB needs to prepare a plan to install CNS/ATM system, as part of its air traffic management modernization programme
- (ii) To stop constant drain on the national economy management of Bangladesh Biman (not the ownership) should be handed over to private sector, similar to Sonargaon Hotel management in Dhaka.
- (iii) Present distortion in the pricing policy of Biman should be addressed and further strategic concessions provided to encourage private sector to come forward to invest in air transport.
- (iv) Biman may be asked to prepare a long and short-term plan to improve performance as well as to plan for future fleet.
- (v) Bangladesh Biman should go for strategic integrated routing arrangements with other airlines to improve passenger occupancy.
- (vi) The destinations which are within the hinterland range of Bangladesh, namely Agartala, Akyab (Myanmar) Shillong, Gowhati, Darjeeling should be air linked, and private sector encouraged to invest in providing services to these destinations.
- (vii) For air safety, all private airlines operating in Bangladesh should be brought under strict compliance of international air safety regulations.
- (viii) Some of the services in ZIA such as parking, cleaning, peripheral security and cargo handling may be privatized to achieve higher productivity.
- (ix) Steps may be taken to establish one shopping complex, in place of small shops all over the terminal building
- (x) Zia International Airport (ZIA) seems to serve the interest of lots of well-connected groups involved in unlawful activities. The matter needs to be tackled with an iron hand.

Multimodal Transport (MMT)

201. For effective introduction of MMT practices in Bangladesh, following actions should be taken :

- (i) More and more short training programmes should to be organized on MMT, to promote the concept in practice among transport operators/freight forwarders for efficient movement of international trade.
- (ii) Supportive legislation need to be adopted for introducing MMT concept in the country.
- (iii) Necessary infrastructure, in the form of Inland Container Depots (ICD) should be established according to demand, at strategic locations, to enable multimodal operation of containers from the premises of the shippers to the premises of the consignees without stuffing and destuffing of containers at the ports. ICDs should be well-equipped with proper container handling equipments.

- (iv) Bangladesh Railway should seriously explore various ways of increasing its share of carrying container traffic between Chittagong and Dhaka. To increase efficiency in handling container traffic, Bangladesh Railway may like to establish a separate self-sustaining container organization like autonomous container corporation CONCOR established within the framework of Indian Railways.

VI. CONCLUSIONS

195. Bangladesh must have an efficient and sustainable transport system to ensure continued economic development and wellbeing of the people. However, the present trend of development appears to be more ad-hoc having no explicit focus on future requirements and the means of meeting these directions on a competitive as well as sustainable basis. The need to address the deficiencies with appropriate policies, strategies and actions as indicated in chapter V are of paramount importance in the context of new environment of increased globalisation, regionalisation and privatisation.

196. To face the challenges of competitiveness and sustainability, Bangladesh must have a vision for future transport development with supporting broad policies, strategies and actions, which are to be pursued by the transport agencies of the country. In this context, institutional development is an issue of major importance. The government has now adopted the general policy of private sector led development. In this context, an appropriate institutional and legal framework consistent with the changing economic environment is yet to be put in place. The existing institutions should be made ready to assume their redefined roles in the new environment.

197. There is also a great need to change the current approach to planning. The planning agencies, be central, sectoral, or local must look for a new methodology to implement an integrated and comprehensive approach that would ensure direct involvement of all stakeholders in dealing with the multi-dimensional issues of transport development in Bangladesh.

198. Concerning the potential role of Bangladesh transport system to cater to the sub-regional/international needs, political commitment would be of paramount importance. Physical integration of the system would actually involve a reintegration of existing infrastructure requiring minimum economic resources, except for capacity expansion in certain stretches and management improvement for higher level of efficiency. It is essential to undertake a study to come up with concrete estimate of potential benefit for all countries of SAGQ to set a process of awareness creation through consultations, dialogues and media activities. The awareness of the civil society for increased sub-regional cooperation on an equal footing, could in turn persuade the political leadership to come forward with their blessing, which is of crucial importance.

ROLE OF NON-MOTORISED TRANSPORT IN URBAN AREAS

The majority of transport in most urban areas of Bangladesh is non-motorized. It accounts for over half of all vehicle trips within Dhaka city. Approximately 60% of all passenger trips within the city are made on foot, and a further 20% by cycle-rickshaw. In recent year motor vehicles accounted for only 20% of passenger movements, and more than half of these were on buses.

The majority of NMT is provided by cycle-rickshaws. There are about 300,000 rickshaws within the Dhaka City Corporation area, and 400,000 in the metropolitan area. Although officially, the government would like to phase the rickshaws out, and a ceiling had been set on rickshaw licenses (currently 79,000, plus 8,000 rickshaw van licenses. **In practice, the ceiling had no impact on rickshaw numbers. But it has caused much hardship** for rickshaw operators, and also deprived the City Corporation of a great deal of potential revenue. The cycle-rickshaw is widely used because it provides a service which buses and tempos (10-12 seater auto-rickshaws) cannot easily provide. It serves areas where bus services are insufficient or absent, and caters particularly to the needs of women and children, and people carrying small loads.

A huge number of people are employed in the rickshaw sector. Most rickshaws (about 80-90%) are operated by two drivers, who change shifts at around 2 pm. If the average employment is 1.8 drivers per rickshaw, then overall there could be 540,000 rickshaw drivers employed in the Dhaka city area, plus another 40-60,000 people employed in ancillary occupations (owners, repairers, shopkeepers selling spare parts, and so on).

Hence roughly 20% of the city's population are employed in providing rickshaw services, and a further one and a half million people in Dhaka and in the rural areas depend on these people's earnings.

The cycle-rickshaw is cheaper than the auto-rickshaw, but considerably more expensive than buses and `tempos'. According to a reliable estimate undertaken recently, the relative economic costs per passenger-kilometre in 2000 were: rickshaw Tk. 3; auto-rickshaw Tk. 3.5; tempo Tk. 1; minibus Tk. 0.9; large bus Tk. 0.5. However, cars and jeeps, at Tk. 4.5 to Tk. 5.8 per passenger-kilometre, are far more expensive than any of these modes.

However, the cycle rickshaw's range is limited. 90% of its trips are within 4 km, hence for longer journeys the auto-rickshaw is preferred, and its unit cost is more competitive with cycle-rickshaws over these longer distances. Hence rather than being a straight competitor with the cycle-rickshaw, the auto-rickshaw tends to have a complementary role, serving the longer distances where speed and range is important.

While buses and tempos provide a much cheaper service than rickshaws, they also are not strictly competitors in many instances. Passengers with luggage or goods cannot normally use them. Similarly, the buses and tempos are so crowded that women and children and the elderly people often cannot enter them. The cycle-rickshaws also have an economic advantage in certain circumstances. To operate economically, the larger modes need to be relatively full. This tends to restrict their operation to routes where passenger demand is heavy for much of the day.

In other words, where demand is low, or irregular, the larger modes may not be able to operate economically, and the smaller cycle-rickshaw is a more economic alternative (i.e. a full rickshaw is cheaper than empty bus or tempo). The same applies to goods movements.

One further characteristic of Dhaka ensures a role for the cycle-rickshaw. Most residential neighbourhoods in the city have developed without any systematic planning control. The neighbourhood roads are very narrow, and in many cases are not wide enough for minibuses. Overall, the city lacks secondary roads – having either wide primary roads, or narrow tertiary roads which often do not link up. This road pattern makes it very difficult to introduce large public transport in many parts of the city.

Impact of NMT on Traffic congestion

The impact of the less efficient mode like rickshaws was observed at a junction such as Moghbazar, which is one of the busiest and most congested junctions in Dhaka (and where a fly-over is being considered). A 16-hour traffic count by the Dhaka Urban Transport Project in 1996 indicated that buses and tempos carried 65% of all passengers, but took up only 18% of the road space. Rickshaws occupied 40% of the road space to carry 15% of the passengers compared to 18% of the space occupied by auto-rickshaw to carry the same percentage of passengers. This analysis indicates clearly that rickshaws contribute a great deal to traffic congestion, but do not pay even a fraction of the road users charges.

In the light of the above, it appears that most appropriate solution would be to apply a combination of the following to deal with NMT transport, as they have a definite role to play in the context of urban transport.

- (i) To restrict NMT on some main roads;
- (ii) To restrict NMT on some main roads during peak hours;
- (iii) To make all efforts to complete development of a network of secondary roads for NMT to ply, when their entry to main roads are restricted.
- (iv) to segregate NMT from motorized transport in other roads where they are sharing road space, but ensure proper road maintenance and enforcement.

With regard to the banning of rickshaws from 150-200 km of main highways and in implementing all the above mentioned solution, there could be some difficulties unless

certain supportive measures are addressed together. It would be essential to undertake extensive consultation with all stakeholders, (rickshaw owners, rickshaw pullers, owners of rickshaw manufacturing industries, the users, operators of other modes, the DCC officials, DMP officials, ward commissioner, etc) to arrive at a consensus on actions to be taken. In all the consultations, high level political commitment and support would be most essential, backed by donor assistance.

Since it is foreseen that NMT particularly rickshaw will have a definite role to play in the near future, it is highly important that the rickshaw pullers who are usually migrant from rural areas without any knowledge of traffic rules and regulations, are brought under some discipline by giving them “drivers training” and providing them with licences after the training so that they behave properly when on the road, and contribute to traffic safety.