

A nation should never stop to think

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THE traffic situation in Dhaka city is deplorable, worsening at the rate of (they say) 100 new cars on the road per day, is an understatement. In reality, it now takes over two hours to get from, say, Gulshan 2 to Dhanmandi Russel Square. That is what I experienced last week. I was not walking for sure. There are of course worse scenarios and every one has a tale to tell, what with hours of waiting at the end of a long tail.

The reasons for the awful circumstances which have developed over the past decades, not suitably tackled by successive governments, include the city having half the required road area, encroachment of available roads by business people and residents, rampant violation of traffic rules, illegal conversion of basement and other parking area, manual control of traffic when electronic lights are in place and working, inability of traffic police to employ punitive measures against errant drivers.

In view of the above sufferings to the common man, the government, over the last few years and more so the past few months, has delved into the matter, drawn up mega plans, conducted years of studies, and now stepped forward to implement different forms of mass rapid

transit (MRT).

The common conception, and the line the government has chosen based on extensive research and brainstorming, is that Dhaka will have underground and above-ground conveyors to move people within and through the city, one of the largest by population in the world.

This is where Urban Planner Dr. Mohammad Shakil Akther steps in with an alternative idea countering the common belief.

Considering that the MRT will have to be achieved at a huge cost, and many years of undertaking, every opinion is valuable, even if some may be rejected after analysis.

The positive in the negative bearing of today's piece is that some of the thoughts may yet be incorporated in the final plan.

A nation should never stop to think, even if a decision has been made.

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A big no to flyover and subway in Dhaka

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YES, you are reading it right, though general knowledge and common sense lead us to the opposite and that is the problem. Transport planning and management is not general knowledge and common sense. It is a complex multi-disciplinary science and need scientific research to solve the problems. Since early 1990s several studies (Dhaka Integrated Transport Study, DITS; Dhaka Urban Transport Plan, DUTP and Strategic Transport Plan for Dhaka, STP) were taken by government to solve the traffic problem in Dhaka. The latest in the line is controversial Strategic Transport Plan prepared and accepted by government despite vigorous opposition from professionals and civil society. Interestingly data of STP does not even support flyovers and subway in Dhaka.

The National Land Transport Policy which was adopted in 2004 also does not support flyover and subway. In section nine (Policies for Dhaka) of the policy it was stated that bus service and pedestrian would be prioritized and commuter rail would be introduced. On the issue of Mass Transit (subway, elevated expressways) it suggested for studies before planning and implementation. STP is one of those studies. Before going into detail let us check some facts on Dhaka transport (Tables 1-3). Some important information we could derive from these tables. For example, 46% of the trips are for 'other' purpose (Table 1). Though the term 'other' is not clearly defined, one could easily conclude that a good percentage of these trips are for shopping and incidentally the average length of these trips is longest (Table 2). The important trip for education is short distance (almost walkable and easily non-motorized able).

Table 3 is not from STP, but from DUTP as no such data regarding road space is provided in STP documents. Some important information could be deduced from this table. It shows a little over 3% (around 9% of vehicular traffic) is performed by cars though it occupies almost 40% of total road space. Bus and rickshaw occupied around 7% and 41% of road space carrying more than 28% and 53% of traffic. This clearly shows that

Table 1: Purpose of Trip	
Home - Work	32%
Home - Education	13%
Home - Other	46%
Non Home Based	9%

Source: STP, 2007

Table 2: Average Trip Length (in kilometer)	
Home - Work	5.81
Home - Education	3.50
Home - Other	6.03
Non Home Based	6.44

Source: STP, 2007

Table 3: Modal Distribution of Trip

Mode	Overall Modal Share	Vehicular Modal Share	% of Road Space
Car	3.24	8.73	39.22
Baby Taxi	1.48	3.98	10.01
Bi-cycle	0.94	2.53	1.70
Bus	10.42	28.03	6.54
Rickshaw	20.04	53.90	40.83
Tempo	1.05	2.83	1.65
Pedestrian	62.82		

Source: DUTP, 2005

car is the source of congestion, not bus and certainly not rickshaw. On the other hand these two are helping to ease congestion. So flyover would eradicate traffic problem is not based on fact; rather there is high probability that it would increase congestion. For example, to eradicate traffic congestion in Bangkok Thai government implemented an ambitious plan of series of flyovers with metro (consisting of underground and elevated rail) in and around Bangkok in the early 1990s. However it did not eradicate problem instead it encouraged people to buy more car. In boom period 1000 cars were added daily in Bangkok traffic and now congestion of 1980s is returning to Bangkok.

Now let us check with the strategies of STP to manage transport in Dhaka City. Under three strategies STP considered ten options (Table 4 for detail) to solve the traffic problems of Dhaka.

All the options (except the base) assumed that circular water way around Dhaka city would be completed and there

BRT dependent and for full metro 50 km of metro (in three lines) is proposed. But in partial case 175 km BRT but 30 km of metro (in two lines) is proposed.

The options were compared using eight objective functions including cost and eight subjective functions including affordability and social and economic development. The consultants concluded that alternative 1a is the best followed by alternative 2a and alternative 3d is the worst. Alternative 1a and 2a not only score high overall but also scored highest or second highest score in most of the criteria. These two alternatives propose neither subway nor flyover. However when the decision time came the consultants first claim "As a final comment, however, ultimately it is the people of Bangladesh, and Dhaka in particular, through their elected representatives, and not the study Consultants alone, who must decide what is the right strategy for the Strategic Transportation Plan."

However, immediately

government decision on flyover and subway shows that government chooses either alternative 3b or alternative 3c, worst of the proposals in terms of cost and second and third worst overall. The cost in either of these is more than double of the best two alternatives (See Table 5 for cost comparison). I would let the reader decide why government (or in this case ministry of communication) is pursuing these expensive projects.

All over the world there is growing consensus against flyovers. Flyovers are not only eye sore but also failed to curb traffic congestion. In Seoul and Tokyo flyovers have been dismantled or in the process of dismantling. Flyover does not decrease congestion but increase congestion. They are bad for business, decrease real estate value in the locality. There is growing consensus among transport planners that demand management is better solution than increased supply. Building flyover is supply solution and it would create its own demand. Some experts are claiming that

Bangkok, Thai government has to buy out private entrepreneurs to save it from bankruptcy; in Kuala Lumpur, it has been placed under ministry of finance because continuous subsidy was making its parent company Malaysian Railway bankrupt. Sydney reintroduced tram instead of expanding subway. Even in Kolkata it is operating much below its design capacity to keep the loss at manageable level.

But even after this if policy makers want to have flyovers and subway then as a concerned citizen taxpayer I have every right to ask and of government's motive.

So is there anyway we could get out of this unbearable congestion? Of course, there is. But for this government need to take some drastic actions. The long term solution is to decentralize so that people do not need to come to Dhaka. In short term we have to take radical measures to control use of cars and land in Dhaka and we have to introduce Bus Rapid Transit and promote non-motorized transport.

As mentioned earlier bus

(TransMilenio) can carry 35000 riders per hour per direction which is comparable with any medium size metro. The other advantages of BRT is its cheap fare and relative short time of construction. Even after massive subsidy, it would be difficult to provide a fare less than 0.50 (point five) US\$ per km for metro while in Bogotá a single fare (unlimited length) cost less than 0.40 (point four) US\$.

It took Kolkata around 25 years to build its metro; though that is an extreme one, even the quickest (for example, Delhi) it took around eight years. On the other hand examples in Curitiba, Bogotá, Quito, Jakarta showed that it is possible to provide a BRT service in three years time. Our study shows that in Dhaka it is possible to introduce BRT in less than three years and run the service profitably by paying a fare less than two and half a taka per km. Construction of flyover and metro means complete or near complete close down of existing road sections while for BRT it is

ing and expanding bi-cycle path, declaring car free zone in the city (we are doing opposite by declaring NMT free road). Even some cities (for example Bogotá; Reykjavic, Iceland; Bremen, Germany and 40 other cities of Europe) go to the extreme by declaring car free day. Studies on Hong Kong, London, and Bogotá increasingly show that pedestrianization and non-motorization has positive impact on real estate, employment, safety and environment.

Bogotá also shows that it decreases crime. As table 2 suggests we could easily introduce pedestrianization and increased non-motorized facility. The table shows that most of our important trips (for work, for education) are within walking distance or can be covered by non-motorized vehicle. In this opportunity I would also like to add that with increased development of telecommunication facility the number of daily trips would be decreased for many purposes including working and shopping. There is evidence in USA, Canada, Japan, Finland and even in India, Nigeria where development of internet network and 3G telecommunication decreased trip and trip length for daily purpose.

All over the world big shopping malls are permitted outside the city limit. There are three reasons for this. Shopping malls are big traffic generators. If it is outside the city less traffic would be generated and city would partially bear the traffic. The second reason is it would create jobs in rural hinterland and thirdly small and medium scale business enterprises would not be affected. However just like the other we are doing the opposite. I could not find one single reason for permitting Basundhara Shopping Mall, Jamuna Future Park by the authority in the middle of the city. Did they ever think how much traffic it would create and whether there is enough capacity of the roads to absorb these traffics? Multi storied apartment is growing with or without approval of RAJUK in almost every plot. Other officials claim that FAR (Floor Area Ratio) allowed those. But FAR could not be only criteria for approval.

The other issues of infrastructure specially how much traffic it would generate must be taken into account. Also it should not be considered as single entity rather a part of the whole area. This lack of foresightedness means that RAJUK allowed a sixteen storied shopping cum apartment complex just behind new market. The road is already over its capacity and would be in permanent dead lock after opening of that building. But our officials rarely think of these consequences. There are examples where tall buildings were allowed on the promise that road would be widened in future (no time limit of when it would be implemented) or there is a proposal of new wider road. So let us make Traffic Impact Assessment (TIA) as mandatory for each and every development.

We need to implement the control on cars immediately. Before operation of BRT is started we could stop the

minibuses. Table 3 shows that buses carried more people than the road it occupied. However a considerable fraction of buses is minibuses. If we could replace these minibuses with single Decker or double Decker buses the ratio would be further improved. Very few large cities of the world use minibus as a major bus mode (Tokyo and Osaka are exception). This is due to the fact minibuses are not cost effective to the passengers (due to higher operating and maintenance cost per capita), occupy more road space than single Decker or double Decker buses for carrying same number of people.

The above discussion clearly shows that there is no scope for subway or flyover in Dhaka from social, financial and economic point of view. But even after this, if government persists with subway and flyover then we have to question policy makers' real intention. It should be noted here that most of construction related recommendations of DITS and DUTP are implemented while very few (if any) non-construction related recommendations of DITS and DUTP are implemented. On the other hand it is possible to make Dhaka congestion free within three years (that means under this government) by making simple steps of increased control on cars, taking stringent measures before giving permission for high-rise building and introducing bus rapid transit.

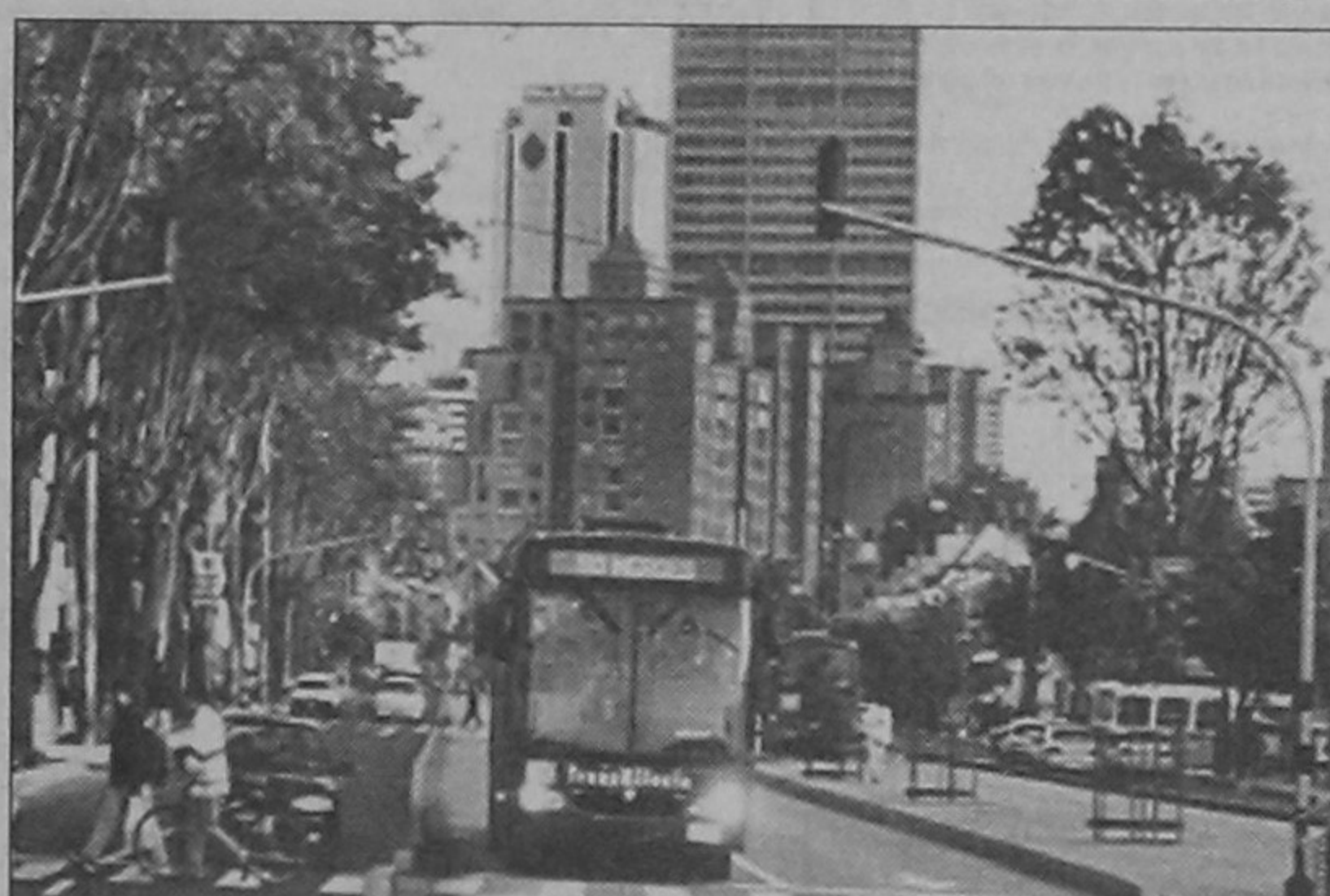
For Further Reading:

- Plans for Dhaka Transport
- Louis Berger Inc., Strategic Transport Plan, 2007
- World Bank, Dhaka Urban Transport Project, 2005
- Ministry of Communication, GoB, National Land Transport Policy, 2004
- Planning Commission, Dhaka Integrated Transport Study, 1994
- Mahbubul Bari et al, A Critique on STP, 2007
- Bus Rapid Transit*
 - www.gobrt.org (A Starting place for BRT)
 - www.itdp.org (Experience of BRT all over the world)
 - Lloyd Wright, Reclaiming public space: The economic, environmental, and social impacts of Bogotá's transformation, (Impact of BRT in Bogotá, Colombia in non-technical term)
 - Leroy W. Demery, Jr, Bus Rapid Transit in Curitiba, Brazil - An Information Summary, 2004 (A compilation of transit development of Curitiba. Well referenced but full of jargon. But could be great starting point as it provides a list of helpful Internet sites and resources)
 - Curitiba, Brazil: BRT Case Study (An overview of BRT in Curitiba; Would be difficult to understand for general people)
 - All of these are available online
- Telecommunication and Transport
 - Thomas L. Friedman, The World is Flat (A fascinating book how telecommunication revolution is shaping the world in jargon free language)

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Bogotá went from this to this in three years



would be major improvement in the railway system which would cost an estimated US\$ 40 million and US\$ one billion respectively over 20 years. Before going further let me explain the options briefly. Under base option it was assumed that the present scenario would continue with the existing projects which are at different stages of planning. There are 13 such projects and it was identified as Roads. Under Roads+, 29 new roads were proposed in addition to those 13. Under Roads++, 37 new roads were proposed in addition to those 13 in Roads. In Roads+++, 10 elevated expressways (so called flyover) are proposed in addition to the 50 roads of Roads++. BRT (Bus Rapid Transit) is the high speed articulated bus service that is now widely used in South American cities while metro is combination of elevated and under ground mass transit system based on railway. 200 km of BRT was proposed if the system is fully

after that they recommend alternative 2b as the solution of transport problem in Dhaka which is a combination of BRT and subway. Interestingly even alternative 2b does not propose any flyover. The best two alternatives were discarded by the STP consultants on the lame excuse that one of them does not fulfill the need for improved road system (alternative 2a, no explanation was provided how it did not or whether there is a need) and the other (alternative 1a) was discarded on the premise that it lacks good road package (again fail to mention why good road package is needed or how it did not). The cost difference between alternative 2b and alternative 1a is roughly 2.3 billion US\$ and that with alternative 2a is roughly 2.1 billion US\$. With that kind of savings we could actually add 1000 MW electricity in national grid. But

Dhaka is suffering so much congestion because less than 25% of land is occupied by road. But there is no scientific basis on this. London and many major European Cities have less than 15% of land as road space but these cities do not suffer congestion. On the other hand Los Angeles has more than 30% land as road space but it is considered as one of the most grid-locked city of the world. So the excuse of increased share of road as a percentage of land space by building flyover is lame and not justified.

Now let us check about some hard truth on metro. It has been already proven by STP consultants that subway is not an option for us. The best metro option alternative 1b is fifth in terms of cost alone. All over the world metro has been proven a white elephant costing a lot to central and local government just to make it financially buoyant. In

rapid transit (BRT) is a bus-based mass transit option that mimics the quality, capacity, and speed of rail options but at a fraction of the cost. There are successful stories (in Bogotá, Colombia; Curitiba, Brazil) of BRT. In fact Sao Paulo in Brazil introduced BRT instead of expansion of its metro. Jakarta, Indonesia; Dakar, Senegal; Dares-Salaam, Tanzania which have similar transport system and centralized administrative system like Bangladesh opted for BRT instead of metro. Delhi, which is one of the last cities to introduce metro, is now aggressively expanding her BRT. One of the arguments put against BRT is that it is not suitable for mass transit as it has capacity constraint. But experience of Bogotá and Curitiba shows that BRT can compete with metro in terms of capacity. Bogotá's famous BRT

only the space for BRT. Now just imagine most of the Dhaka closes down for eight to ten years for introducing metro, and could Dhaka survive for that period? In Delhi and Kolkata that was different as there are enough alternatives in those cities.

But for success of BRT we also need to curb car use. Failing to do so means Dhaka is not so successful like her South American counter parts. In Bogotá, each week day the city restricts 40 per cent of all autos entering the city during the morning (06:00 to 09:00) and evening (16:30 and 17:30) peak periods. The reduction is achieved by not allowing cars with license plates that end with certain numbers to enter on a particular day. The city has also dramatically reformed its car parking management. Parking on the road has been eliminated from most streets, with privately contracted firms providing off-street parking. In many cases even off street parking place is converted to public space like park.

The successful urban transport management all over the world is showing the importance of non-motorized transport (NMT). NMT in the city is encouraged due to health, safety of the citizen. Moreover with the global concern of climate change and energy security it became the catch phrase to transport planners, environmentalist and policy makers. Cities are construct-

Table 4: Options considered in STP			
Alternative	Roads	BRT	Metro
Base Case	Roads	No BRT	No Metro
Alternative 1a	Roads +	All BRT	No Metro
Alternative 1b	Roads +	Partial BRT	Partial Metro
Alternative 1c	Roads +	No BRT	All Metro
Alternative 2a	Roads ++	All BRT	No Metro
Alternative 2b	Roads ++	Partial BRT	Partial Metro
Alternative 2c	Roads ++	No BRT	All Metro
Alternative 3a	Roads +++	All BRT	No Metro
Alternative 3b	Roads +++	Partial BRT	Partial Metro
Alternative 3c	Roads +++	No BRT	All Metro
Alternative 3d	Roads +++	No BRT	No Metro

Source: STP, 2007

Table 5: Estimated Cost for Implementation of Proposed Options	
Alternative	Cost* (in Million US \$)
Base Case	149.4
Alternative 1a	2900.0
Alternative 1b	4900.0
Alternative 1c	5500.0
Alternative 2a	3100.0
Alternative 2b	5200.0
Alternative 2c	5800.0
Alternative 3a	4200.0
Alternative 3b	6300.0
Alternative 3c	6900.0
Alternative 3d	3200.0

*Including cost of circular water way and improvement of Bangladesh Railway