

Traffic Congestion

Day in, Day out with a Demon

Traffic congestion has become a major problem both in the developed and the developing countries. Dhaka is already burdened with an overgrown traffic system. Until and unless there is immediate and effective solution, the system will collapse, write **Sumaiya Andaleeb** and **Syed Abul Bashar** as they take a look at the negative impacts traffic congestion has on the environment as well as the economy.

TRAFFIC congestion has become one of the most serious global problems, affecting both developed and developing countries with its scourge. Bangkok, once renowned for its canals, is now infamous for the daylong traffic tangle on Sukhumvit Road. Atlanta, which has been one of America's fastest-growing urban areas in the past three decades, is losing much of its attraction, as commuting becomes more difficult. Rather than the failure to deliver faster processors and smaller microchips, it seems that the biggest barrier to the future growth of Silicon Valley may be permanent congestion on the two main freeways leading to it. Even Moscow faces car problems, although it has only been a decade since private cars have been permitted. On a good day, it can take 45 minutes to reach Sheremetyevo airport, which is only 30km (19 miles) away from the city, or two-and-a-half hours on a bad one. In Bangladesh, a recent seven-hour traffic congestion stranded thousands of vehicles on the Dhaka-Chittagong-Sylhet highway — many passengers proceeded to Dhaka on foot while the heat caused several women and children to faint during the long wait.

Current scenario

The traffic in Dhaka is composed of 250,000 motor vehicles and 300,000 slow-moving vehicles, mostly manually driven, namely, the rickshaws, vans and pushcarts. Undoubtedly, this huge number is more than enough for Dhaka's limited roads, the total length of which is approximately 2,000 kilometres. This accounts for only eight per cent of the total DMA (Dhaka Metropolitan Area) although the minimum requirement for metropolitan areas is 25 per cent. In addition to this, total incoming traffic to the capital from other parts of the country is about 50,000 daily, including buses, trucks, minibuses, private vehicles and container carriers; 35,000 of these stay within the city, thereby occupying more road space, while the rest pass through.

From 1998 to 1996, the number of motorised vehicles doubled and the annual growth rate of registered automobiles is estimated at 22 per cent. According to a survey carried out by the BRTA, traffic is continuing to increase by about nine per cent annually. Despite this, on average the BRTA issues 120 licenses for motorised vehicles. It should be pointed out that 53 per cent of the country's total registered automobiles are located in Dhaka.

The congestion that is paralysing Dhaka rarely follows any pattern. Reports about congestion in developed countries show cars synchronously lined-up in long queues, waiting for the green light to be turned on — however, that is not the case in our country. Congestion is being compounded by haphazard parking of rickshaws, lingering of buses to load passengers, unlawful pedestrian crossings and exhaustive use of the footpath by street vendors. More than 3,000 big and small private shopping centres have mushroomed on the road crossings and the main roads in the city during the last 12 years. About 100 open markets (*kutcha bazaar*) are also located in these places. Furthermore, frequent road deconstruction and maintenance work often slows down traffic, as the construction materials occupy large parts of the roads. The flow of vehicles is hardly directed to other roads. In addition to this, the spree of real estate development leads to the piling of construction materials on the narrower by-lanes, making it difficult, if not impossible, to use them.

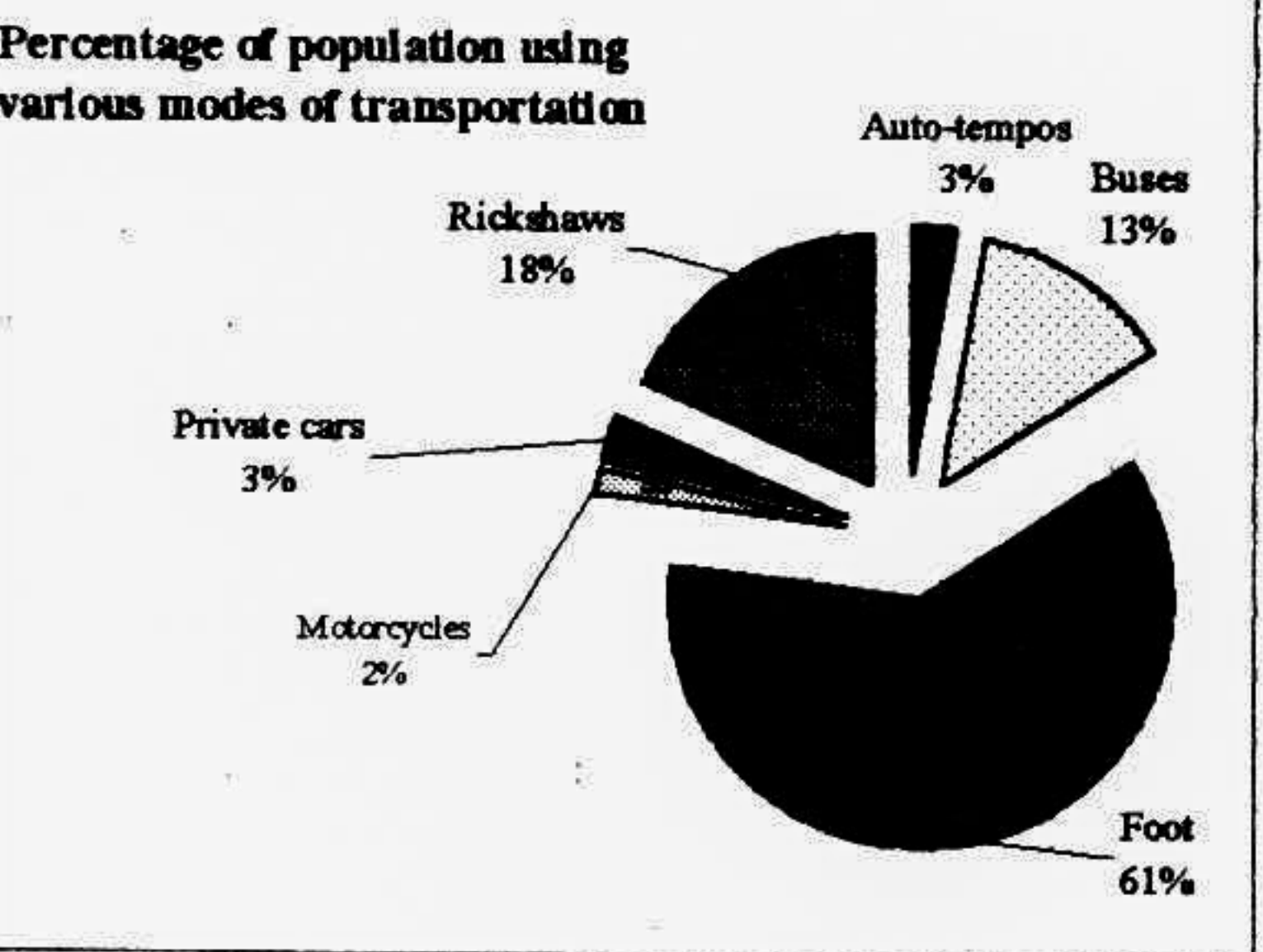
Apart from these, our politicians are fond of using the city's roads to render their messages to the masses. Frequent meetings and processions are only compounding the problem. Besides, clearing routes that the Prime Minister or the President will pass through is a regular feature of road-life in the capital, halting others and causing unaccountable pain and delay.

One always finds the roads clogged up by vehicles. The difference in peak and lean hours is hardly discernible during the day, starting from 9:00 am to late in the evening. We seldom see ambulances or emergency vehicles finding their way smoothly through the traffic without being obstructed. It is partly fault of other vehicles on the road. Everyone is in a hurry and nobody wants to pull over at the side to allow these vehicles to pass, even if there was enough space on the roads to permit this. However, the scenario turns very different at nights, especially from 10:00pm to 7:00am when roads are surprisingly underused. This creates another type of traffic problem — driving at high speed that often lead to fatal accidents.

Urbanisation and Traffic Congestion

Geographically speaking, the capital is situated in the wrong place! Being located in middle of the country, it offers an easy point of immigration into the city. Although, Dhaka's area is less than one per cent of the country's total land area, it supports about 7.2 per cent of the total population. It has previously been projected in a GOB-UNEP study that the Dhaka SMA (Statistical Metropolitan Area) is expected to have an urban population of approximately 16 million (or 30 per cent of the total urban population) by the year 2016. At present, approximately 60 per cent of urban growth originate in migration and reclassification. The rest is from natural increase (Bhadra, 1997). Like metropolitan areas elsewhere in the world, people migrate to Dhaka in the hopes of finding a better life, since the major business activities are transacted in the capital. The periodic natural calamities add to the flow of people, when the limited employment opportunities in the villages are further reduced.

In the struggle to find jobs, many choose the one that is most readily available and requires only the possession of reasonable health and little skill — pulling rickshaws. Thus, no time is wasted in looking for other hard-to-find jobs. This is one of the reasons behind constant growth of these slow three-wheeled menaces. No wonder that 70 per cent of the city's roads are occupied by rickshaws. In order to curb traffic congestion, experts have to recommend the phasing-out of rickshaws from the city. But they should bear in mind the long-term effects of such an action. It is estimated that some 400,000 rickshaw-pullers, counting both day and night



Source: NSU database

shifts, support two million people, given the assumption that each rickshaw-puller has a family of five. While rickshaws are a nuisance due to their slow-speeds and tendency to congregate at major intersections and road-crossings, it cannot be denied that they are the most environmentally friendly means of transportation. It is true that they do not use fossil fuels and therefore do not produce emissions. A rough estimate shows that rickshaws save about Tk. 10 billion worth of fuel. However, due to their slow speeds and occupation of a large area of the roads, they serve to retard the speed of all the vehicles which consequently burn more fuel and produce more emission than if they had been travelling at a more efficient, constant speed. Thus, while it is recommended that the existing number of rickshaws should be lowered, it is necessary first to find alternative employment for these displaced people. But by no means should rickshaws be completely abolished. Apart from the socio-economic and environmental perspectives, rickshaws contribute to the cultural identity of the city and are even aesthetically pleasing to some.

Economics of traffic congestion

Congestion undoubtedly does have economic costs. If unpredictable traffic forces factories to keep extra components on hand in case deliveries run late, capital is being wasted. If clogged delivery routes mean that consumers pay higher prices for groceries or that working time is unproductive that too represents a genuine economic loss. Businesses would willingly pay a price, and often a steep one, in order to avoid the externalized costs of too much traffic, but generally there is no way for them to do so. In that sense, the transport market can truly be said to have failed (The Economist: September 5, 1998).

Traffic congestion poses serious threats to the socio-economic environment. It causes what economists call a negative externality. Although quantifying the consequences of such externalities is notoriously difficult, some of the cost estimates are huge. Japan's international co-operation agency calculated that in 1990 Bangkok lost as much as one-third of its potential output because of overcrowded roads. In 1994, two economists, Richard Annot and Kenneth Small, put the annual cost of driving delays in the United States at \$48 billion, or about 0.7 per cent of its GDP. The European Union's transport directorate put the cost of congestion in Europe at two per cent of their GDP for 1995. Lex, a British car-leasing firm, says congestion wastes 1.5 billion hours of motorists' time a year costing the UK economy \$16.5 billion. The annual loss of fuel due to congestion in Bangladesh is put at Tk. 1,600 million.

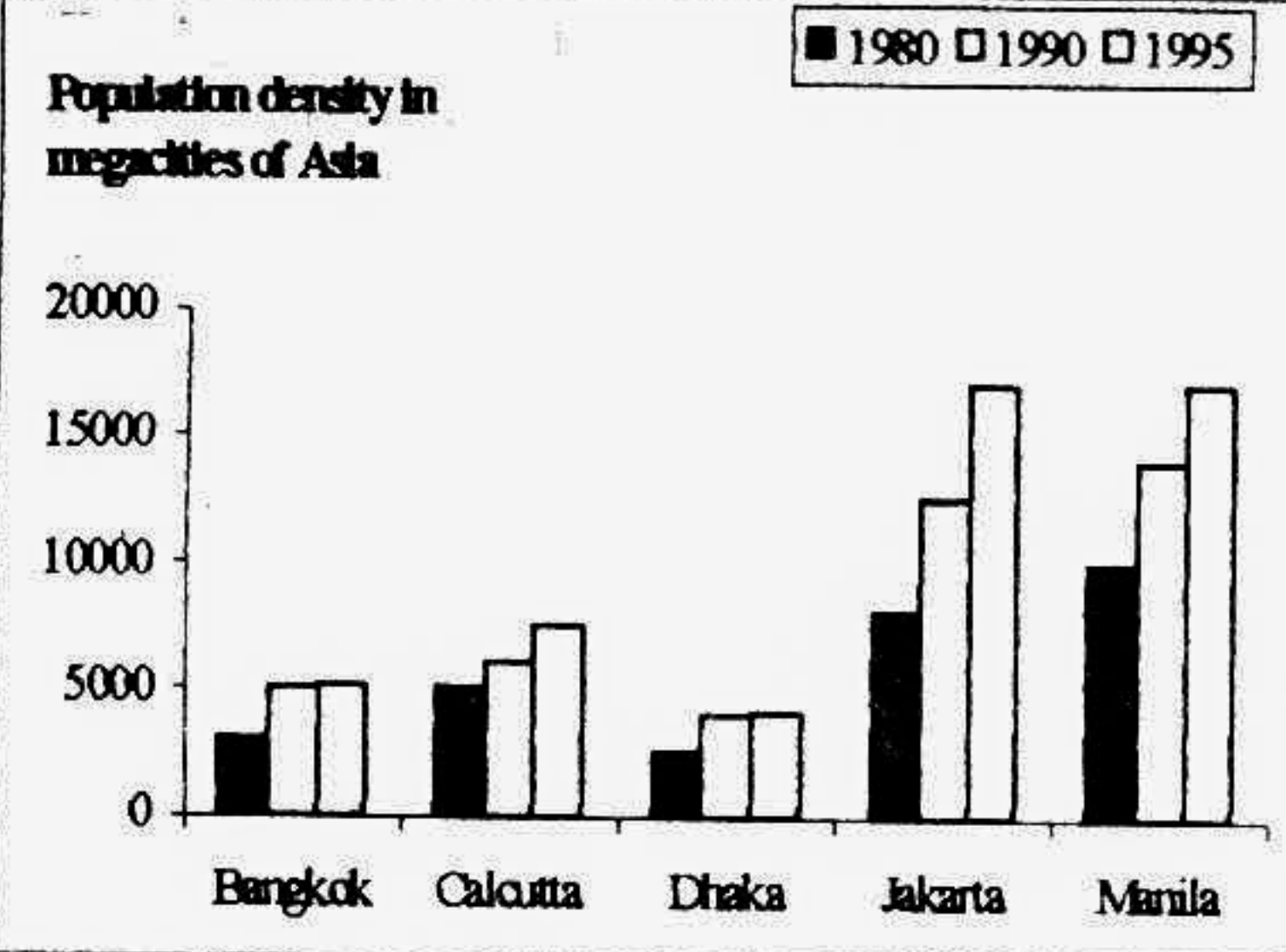
Even rickshaws, which significantly contribute to the congestion, suffer severe economic losses.

Prior to the present state of the roads, a rickshaw-puller was able to earn an average of Tk. 30-40 per hour. But now a 10 taka fare alone may take up to an hour.

Apart from these economic losses, there are costs resulting from the loss of life due to traffic accidents which can also be quantified to get a more accurate picture of the extent of damages.

These losses can be measured in monetary terms and researches in a number of countries indicate these are normally in the range of 1-2 per cent of the country's GDP. An ESCAP study for road safety has ranked Bangladesh lowest among its 51 member states as regards co-ordination of road safety activities. Between the five-year period from 1991 to 1996, an average of 1,600 people were killed and another 3,000 injured due to road accidents. The fatality rate of Bangladesh is currently estimated at 58 deaths annually per 10,000 motorised vehicles, a rate that is 25 times higher than most industrialised countries. Even compared to neighbouring countries this is quite high. Based on these assumptions, the economic loss due to road accidents in Bangladesh, amounts to US\$ 220 million, if using the conservative estimate of one per cent of the GDP.

Strange as it seems, there are a few benefits accruing from traffic congestion. The most interesting one is the growth of small vendors who sell everything from newspapers and magazine to



chewing-gum and *chanachur* to flowers when cars are stranded from all other shops and amenities.

Though the problem of traffic is universal, its solution is highly geocentric. What is applicable for Europe, may not be relevant for Asia, especially in poorer nations such as Bangladesh. In advanced economies, roads are beginning to be priced like any other scarce commodity. In Singapore, cars are being charged \$2 in the morning peak hour, falling to \$1.30 at off-peak times. Technology makes it possible to track vehicles via satellite to make sure that no one escapes charges. The Washington Department of Transportation's website offers an up-to-date map of motorway hotspots, each segment coloured according to the speed of traffic flow. But these are highly unlikely scenarios in developing countries as they involve huge investments in technology.

Environmental Costs

Road transport accounts for about a quarter of the manmade gases that may be contributing to global warming, about which hands were being wrung in Kyoto last year. Actually the role car plays in global warming is not the pressing question. More important, and more certain, is the enormous local damage (in terms of pollution, noise, ugliness and wasted time) caused by traffic congestion — and the great cost of the orthodox solution to that problem, which has been to keep on building roads (The Economist: December 6, 1997).

Considering all the potential consequences of traffic congestion on our economy and environment, policies should be formulated that are both economically viable and environmentally friendly. A recent study conducted by the World Bank (1998) revealed that the urban air pollution was worsening rapidly due to upward trends in vehicle ownership and use, particularly that of the two-stroke engine vehicles, i.e., baby-taxis, tempos and motorcycles. According to the report, auto-exhaust, particularly pollutants from these vehicles are responsible for 50-60 per cent of the air pollution in the metropolis. Currently 40 per cent of the motor vehicles that operate within Dhaka contribute either to air or noise pollution, or both. Although it is possible to remove these defective vehicles within 48 hours, the people in charge dare not take any action, as they fear that such a move would lead to strikes and riots.

Another study carried out by an international organisation, concentrates on the possibility of gradually phasing out these environmentally risky two-stroke vehicles by introducing new solar-electrical auto-rickshaws and tempo, which are not only noise-free but also are completely emission free. A pilot project will be undertaken this year to assess its viability. The GOB is also keen to implement the project because of its eco-friendliness. However, it must be borne in mind that solar power requires a huge initial capital investment, and that it will not completely replace the traditional vehicles, which must be present for use on cloudy days and during the monsoon period. The findings from the solar village in Meghna harbour can be used while developing this idea.

Policy Implications

A common solution to traffic congestion is to build new roads. While this approach has limited success in advanced economies — newer roads seem to attract new traffic — there is much potential for this in Dhaka. This is because the proportion of roads to the city size is still highly imbalanced. The accepted ratio is 25 per cent of the total city area but in Dhaka this is only eight per cent. There is also the scope of building fly-overs. But this calls for foresight and prudent planning since it is a sensitive issue. One of the repercussions of such an action will be the dislocation of people who must be rehabilitated. This will require planning not just the roads but also a question of where to put these people.

Improving public transport is another frequently proposed policy to control congestion. Apart from buses, railways have often worked cheaply and efficiently. Sadly, this has not been replicated in our capital. In Mumbai, thousands of commuter travels via train everyday certainly reducing the pressure of heavy-traffic in peak hours. It was once suggested to build an intra-city railway system to keep the capital free from the evil of congestion. Had it been implemented, this would surely have been a blessing for the city dwellers.

One could ask why the wiring of the capital with railways did

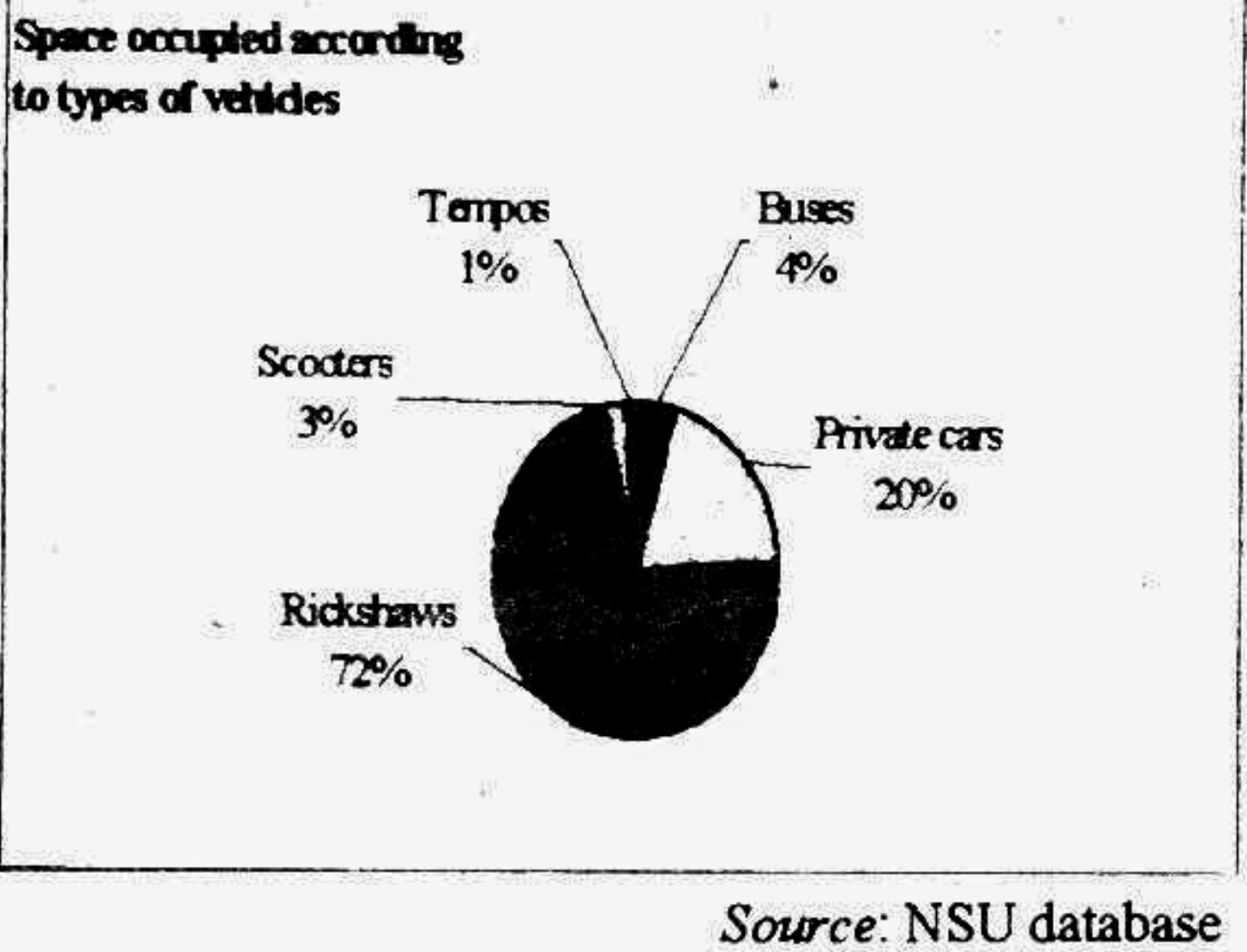
not take place. Financial constraints can partially explain the failure. But our policymakers are often unaware of the strength of existing domestic resources, which require a lower level of capital investment. The intra-city rail service can be introduced for the benefit of the denizens of the city. This could easily be done since the existing railroads connect many of the major parts of Dhaka. However, some new railroads must be built to connect other areas to the network. For this concept to materialise, better co-ordination between Bangladesh Railway and the Dhaka City Corporation is essential.

Another way to increase public transportation is to make use of other mass-transport vehicles such as double-decker buses. A normal bus has a capacity equal to 14 scooters. Thus, a double-decker can be expected to carry passengers approximately twice this amount. Currently there are plans to import more vehicles (buses, double-deckers and taxi-cabs) for public transport. However, these new imports should only be of vehicles that have CNG engines, which have fewer emissions and therefore, create less pollution. Having these engines now will be cheaper than having to replace normal engines with this technology later.

Along with the increase in the alternative forms of transportation, it is also necessary to take steps to eliminate those vehicles, which are inefficient and in fact, contribute to congestion and air pollution. For example, the two-stroke engine ought to be phased out as these serve only two per cent of the urban population but contribute to almost 60 per cent of air pollution. This suggestion has been put forward by several organisations and is supported by studies conducted by the World Bank and other NGOs.

With the aim of imposing traffic consciousness into citizens, a Traffic Week is held annually. In 1997 over 150,000 vehicles were penalised for violating traffic rules and during the first half of last year, 67,000 were penalised. However, these do not reflect the actual number of vehicles, which violate traffic regulations, as more often than not, bribes are enough for the law enforcement to look the other way. It is not that the citizens cannot follow traffic laws. The recent deployment of the MP (Military Police) showed that traffic laws are obeyed — when properly enforced. But there simply are not adequate resources, in terms of manpower or money. The existing number of policemen, including both the MP and the DMP (Dhaka Metropolitan Police), is 1,561. This can be compared to a force of 12,000 in Delhi, which has the same volume of population.

It is a foregone conclusion that traffic congestion is one of the scourges of modern life. Like the weather, traffic congestion has become a common topic of dinner table chatter. True enough, all these rickshaws, cars, trucks, buses and motorcycles have brought a host of other unpleasant problems with them: air pollution, noise pollution, and an excessive dependence on oil. Clearly, stalled traffic does impose a cost on society, and the government is right in attempting to alleviate this problem. Better public transport and new technology to unclog roads are all valuable parts of



Source: NSU database

Magic Potion for an Ailing City

Dhaka is soon to add its name to the megacities of the world. However, this capital city has been over-burdened with traffic, growing steadily in volume every day. Public health and the environment are at stake. The Dhaka Urban Transport Project couldn't be a more timely intervention. **Probe News Agency** takes a look at this World Bank-funded project that may just be the answer to this ailing city.

IT is going to be a tough job to restore Dhaka's reputation as the City of Mosques," says Anwar Ahmed, "Right now it is an image of congested traffic and pollution."

Anwar Ahmed is the Director of the Dhaka Urban Transport Project (DUTP). He is aware that it will be a tough job to resolve the city's traffic problems, but he is also confident that the problems are not insurmountable.

"There is little scope of increasing the roads," he says, "So we are setting up a long-term strategy to reduce congestion and delays in the transport network of the city."

Overpasses for motorised vehicles, separate lanes for fast-moving commuter buses and alternative routes for slow-moving rickshaws — all these are just part of the plan to save Dhaka's traffic from total collapse.

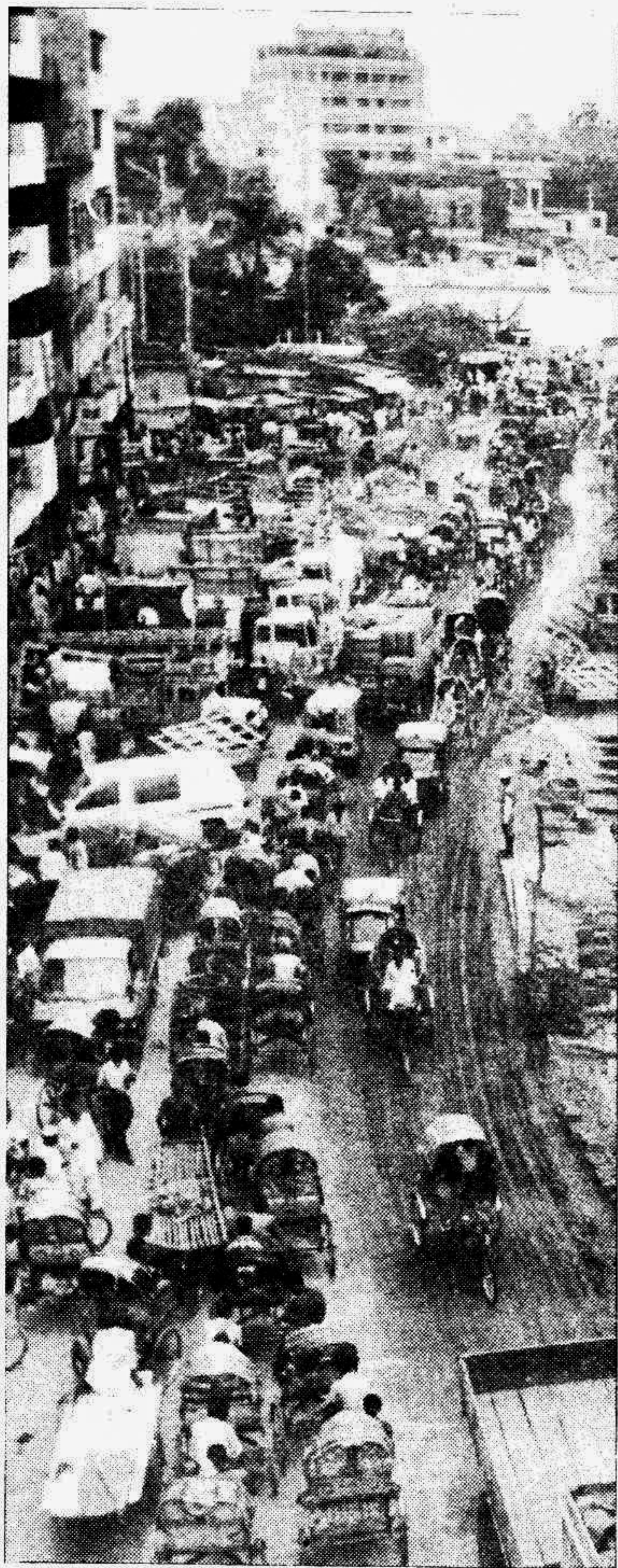
Nearly 200,000 motorised vehicles, far more than capacity, ply the 2,500 kilometre roads of the capital Dhaka. With another 200,000 adding to this every year, the problem is intensifying manifold.

Riddled under the pressure of over 200,000 rickshaws, the roads see an additional 10,000 of these slow-paced three-wheelers every year. Ironically, only about 70,000 rickshaws are lawfully licensed.

"Effective measures have to be taken immediately for significant improvement of the traffic system and also for controlling the air pollution in this future megacity," says MA Bhuiyan, the transport-engineering expert appointed by the World Bank to co-ordinate the Dhaka Urban Transport Project.

The US\$284 million project aims at reducing congestion, improving the public transport system and strengthening policy and regulatory framework.

The International Development Agency is providing US\$117 million for the DUTP while the government will finance the rest from its own sources.



the traffic manager's arsenal. But such instruments should be applied with caution. It is obviously not possible to let the status quo prevail, but any changes have to be made with far-reaching goals and a clear vision of the future. However, it has often been the case that despite the best of intentions, the first law of traffic materialises — "whatever is done to smooth the flow is certain to have unexpected consequences". Nevertheless, this does not justify inaction. Appropriate measures to control the menace of traffic congestion are certainly preferable to allowing missed appointments, respiratory problems, and a general sense of discontent from becoming a norm.

The Road to the Future

It is an accepted theory that one of the reasons that the environment is subjected to widespread abuse is because its ownership is not clearly defined. Similarly, roads, which are also a public good, face the problem of non-ownership. If roads are priced like normal traded goods, then their use can be regulated through the market. There are many ways in which this can be done. One is the paying of tolls when passing through roads that are frequently used at peak times. In technologically advanced countries, electronic tagging is used to keep the flow of traffic moving. In neighbouring Calcutta, there are steep fines for vehicles that are parked at the side of busy streets. Tk. 1.3 million is collected daily at the Bangabandhu Bridge, which demonstrates the success of the toll collection mechanism. Although in this case the high tolls pay for the maintenance of the multi-purpose bridge, it indicates a willingness to pay for better and faster transportation. Similarly, a solution that is suitable to the roads in Dhaka can and must be found.

ment issues like black smoke and noisy vehicle horns. The BRTA will set guidelines for registration and controlling the vehicles causing serious pollution problems.

The authorities are organising regular seminars and workshops to discuss the traffic problems of Dhaka. A city of more than eight million people, Dhaka will soon be one of the world's megacities.

As part of the initiative to make the project a success, the World Bank and other donor agencies are trying to create awareness among the car, truck, bus, rickshaw and auto-rickshaw drivers.

Under this programme, four leaders of the auto-rickshaw owners association were taken to India. There they were shown the causes of air pollution by the three-wheelers. Drivers of the auto-rickshaws use a higher percentage of motor oil along with petrol under the misconception that this would give better mileage.

At the Bajaj company, which exports most of the auto-rickshaws in Bangladesh, the auto-rickshaw owners were given practical demonstration showing that excessive lubricant with the fuel is harmful and the cause of the worst pollution.

"It will take time for the misconception about motor oil to clear up," says Fozlul Huq, one of the leaders of the owners' association who had travelled with the World Bank team to India.

Rickshaw-pullers too are being directly involved in the programme. ESCAP recently conducted an awareness programme for the rickshaw-pullers of Dhaka city. Nearly 12,000 rickshaw-pullers participated in the programme. Similar programmes are likely to be conducted on a regular basis to encourage them to obey the traffic rules.

Additionally, slow-moving vehicles will be prohibited on certain roads for fast-moving traffic. But before that we have to provide them with alternative routes," says the project director of DUTP.

The government is planning to eventually ban the import of two-stroke engine vehicles as well as bus and trucks without the catalytic converters that control the emission of toxic fumes.

A central city bus terminal is also to be set up on a site provided by the Dhaka City Corporation.

Being participatory in nature, the project has a public consulting group to exchange views with relevant people before the plans are finalised. Once the project is complete, the people can be proud of Dhaka, a megacity of the new millennium.