Transportation Policy for Poverty Reduction and Social Equity

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Summary
Most people would agree that reducing poverty is an important goal, as is reducing the gap between the rich and poor. However, exactly how to achieve these goals is a matter of much debate. One often-neglected aspect is transport.

Transport is a key aspect of life, affecting us not only when we travel, but throughout our days. Our peace and quiet are disturbed by car horns. Our air is polluted from vehicular emissions. Our neighborhoods are given over to moving and parked cars, leaving less room for ourselves and our children to walk, bicycle, and play.

In addition to these quality of life and environment issues is that of economics. Investments made in roads take away from investments in public transport and facilities for non-motorized travel, such as by foot or bicycle. For those who can't afford travel expenses, education and jobs may become inaccessible. For others, travel to and from work represents a heavy expense that contributes to keeping them in poverty. Reducing the travel expenses of the poor could thus help them to improve their standard of living.

This paper discusses various transport options and their advantages and disadvantages, and makes suggestions for improving mobility of the majority while simultaneously decreasing poverty and increasing social equity.

Background
When we think about transportation, we generally think about buses, cars, trains and planes. We dismiss walking, bicycling, and rickshaws as inefficient and backward, somehow replicas of Bangladesh's lack of development and urbanization. Rickshaws have been banned from major roads. Bicycles are the most affordable form of transport for the poor and, like rickshaws, are pollution-free. Yet bicycles are entirely ignored in the transport system, and are heavily taxed. Meanwhile, cars are allowed to proliferate freely. But does this make sense? Are Dhaka's transportation problems really caused by rickshaws, and is the world trend really to further increase cars? Or is Dhaka actually moving in the wrong direction, promoting the problem rather than the solution?

Transport issues are a major topic of discussion around the world, affecting as they do poverty reduction, the environment, economic growth, and standard of living. In fact, expenditure on transport is usually the largest single item in the national budget.[1] One fact has become clear: the "model" of the United States, in terms of extremely high rates of car ownership, is neither replicable nor desirable for the rest of the world, and is causing endless problems in the US. While motorized vehicles have their place, private car ownership is inefficient, polluting, expensive, and promotes inequality. Far more important for the movement of the masses are public transport and non-motorized transport, consisting mainly of walking, cycling, and rickshaws. In fact, "the concept of 'environmentally sustainable development'

[1] Karim

implies that mobility solutions must encompass new targets, such as reducing energy consumption and improving public health and safety."[2] A further important goal of improved transport is reduction of poverty.

High levels of unnecessary consumption—including ownership or private cars—makes for low economic growth rates, because there is less room for investment and savings. Importing vehicles, spare parts, and the fuel to run them consumes a huge portion of foreign exchange—money that could better be spent in other ways—while providing transport mainly to the elite.

The inability to move efficiently also carries an economic cost, with people's productivity, access to education and health services, and ability to participate in social and political life hampered. According to transportation expert Michael Replogle, "The net effect of much current transportation investment in developing countries is to increase social and economic stratification at the expense of the poor while boosting import requirements and foreign debt."[3] Failure to take non-motorized transport into consideration means higher rates of road accidents, longer travel times for non-motorized transport users, or even complete elimination of non-motorized vehicles; mobility often fails to improve, and the poor become poorer.

More bicycles and fewer cars means a stronger economy

Curitiba, Brazil, with a population of 1.6 million, has set about restricting car use. In the 1970s the city adopted various transport-related measures, including improved bus transit, cycle ways, and pedestrian ways, as well as zoning policies. Advantages include a rate of accidents per vehicle that is the lowest in Brazilian cities, and gasoline consumption per vehicle 30% less than in other Brazilian cities of the same size. Residents of the city spend about 10% of their incomes on transport, one of the lowest rates in the country.

In Africa, people can rent bicycle vans for carrying loads; in Haiti, a project trains the poor to maintain and repair bikes, makes non-motorized vehicles out of locally available materials, then sells bicycles at low rates. In Afghanistan, a project provides bicycles and training to people with disabilities.[4]

Meanwhile, most trips around the world are made by foot. Especially in developing countries, the main form of transport is non-motorized, supplemented by public transport. When governments focus on providing opportunities for private car ownership, they often neglect public transport and fail to keep up with population growth, thereby widening the gap between the supply for transport and the demand. An emphasis on car ownership, lack of investment in public transport, and lack of accommodation for non-motorized transport all further increase inequity, representing government subsidies for the rich, while it is the poor who mainly

[2] Guitink et al.
[3] Replogle (1)
[4] Freund and Martin

suffer from the air and noise pollution and difficulties in moving about by foot or bicycle.

While motorized vehicles contribute to the gap between the rich and poor and harm the environment, non-motorized vehicles contribute to poverty alleviation and reduction of air pollution. They provide cheap transport and many jobs. Policies to support the use of non-motorized vehicles could also increase traffic safety, decrease energy use and traffic congestion, and slow the speed of global climate change.

Given all the advantages of non-motorized over motorized transport, why do many governments still focus on infrastructure for the latter? Ideally, choices about investments would be made based on market forces free of distorting subsidies, or on rational decisions about the best way to move people. However, this is not what actually happens. Transport choices are far more likely to be made based on the political power and lobbying of businesses, resulting in investments in roads, bridges, expressways and oil refineries rather than in transport systems which would help the majority and preserve the environment.

The World Bank has contributed to the problem by using most of its resources to support building roads and promoting automobiles, while ignoring or, worse, attacking non-motorized vehicles, thus encouraging transport systems which are both capital- and energy-intensive. For instance, the usual policy to make room for buses is not to restrict private cars—an expensive and inefficient way to move a small number of the elite—but rather to eliminate non-motorized vehicle. Transport expert Replogle suggests that "Getting rid of [rickshaws] is like knocking down slums to solve the housing problem."[5] Fortunately, the World Bank in early 2005 reversed its policy of support for banning rickshaws from major roads in Dhaka. In doing so, the World Bank acknowledged that the policy has caused endless problems to women, children, the elderly, and former rickshaw pullers, while doing little to improve traffic conditions, given that car parking has replaced the space made by banning rickshaws.

Everyone requires access to certain places; the need for access often, though not always, involves the need for transport. (A dense city with a mix of uses spread throughout the city will decrease the need for transport and thus the level of congestion.) Everyone does *not* require a private car, or even motorized transport, to gain access to the places they need to or wish to visit. Places that are closer can be accessed on foot or by non-motorized transport; buses rather than cars can take people long distances. There are not enough resources available in the world to provide everyone with an automobile. Trying to move everyone about by bus for all trips would also prove exorbitantly expensive and cumbersome. Other options must be considered.

Ideally, transport would be a mix of non-motorized forms and public transport. The survival of non-motorized vehicles is dependent on public policy, which to date in

[5] Replogle (2)

Bangladesh has been more focused on the movement of *cars* than on the movement of *people*. Dhaka transport policy has focused on such useless and extremely expensive projects as flyovers, rather than creating special lanes for rickshaws, improving footpaths and pedestrian crossovers, and promoting bicycle use, which would prove less expensive but go much farther towards promoting the efficient and non-polluting movement of people. Increases in motorized vehicles, especially when no provision is made for non-motorized transport, makes all forms of the latter more difficult. This imbalance between policies and need harms the public in general and the poor in particular.

Transport policies in Bangladesh and many low-income countries are exceedingly wasteful. Tremendous amounts of resources are being expended to build and maintain transportation systems that serve only a very small share of the population—the wealthiest and most powerful. Meanwhile, the use of fuel and other resources, and the import of vehicles and parts, needed for the reliance on motorized transport contributes greatly to foreign debt.

While in the 1970s and 1980s transport discussions generally focused on highway infrastructure and economic development, they now include sustainable development and poverty eradication. Decisions about transport are now recognized to affect people's welfare, the environment, and social justice. Planners around the world have begun to realize that it is neither acceptable nor inevitable that large densely-packed cities be noisy and polluted. They are realizing that it is senseless to destroy the environment for the sake of moving people about, when better options are available. They are realizing that we cannot afford to waste fuel moving people short distances, when they could easily travel by foot or non-motorized transport.

More options mean more efficiency; fewer options mean less efficiency. When a lot of people and goods can move around cheaply, the country's economy benefits. People waste too much time walking or waiting for buses, or simply cease to travel and to move their goods. A healthy natural environment means biodiversity; a healthy transportation system means an array of options with fair competition and allocation of road space. Relying on motorized transport to meet all the needs of the population is expensive, inefficient, and wasteful, and will have huge costs socially, economically, and environmentally. Finally, as mentioned above, the trend in the world is no longer towards increasing motorization, but rather to limiting motorization and encouraging non-motorized travel.

<u>World Trends</u>

Is Dhaka unique in relying heavily on the rickshaw for transport? Does the rest of the world rely mainly on the private car and other motorized vehicles, and if so, do any problems result?

While it is true that Dhaka is more heavily rickshaw-dependent than other major cities, it is hardly unusual in having many rickshaws on the streets. Rickshaws are

commonly used throughout Asia, and less commonly so throughout the world. The number of companies producing and promoting rickshaws is astounding—at least 90 rickshaw companies operating in 42 cities in North America and an additional 69 internationally—not counting our neighbors such as India, Indonesia, Nepal, and Thailand. Internationally rickshaws are used to move goods as well as people, and are appreciated for being non-polluting and relatively inexpensive.

Far more common than the rickshaw internationally is the bicycle as a form of non-polluting, inexpensive transport. Throughout the world, and to an increasing degree in many countries including wealthy ones, men, women, and children use bicycles as their main form of transport. Walking and cycling account for 60% of total trips and 40% of work-related trips in Karachi. There are over 160 million bicycles in China, and the *urban* bicycle ownership rate is about 0.5 per person and growing. In most Chinese cities, 50% to 90% of vehicular-passenger movements historically have been by bicycle, with most of the remainder by bus. In India, there are about 30 million bicycles, with about 25 times as many bicycles as motor vehicles per capita and urban bicycle ownership growing rapidly. In medium-sized Indian cities, about 80% of trips are made by foot or bicycle. [6] Around the world, non-motorized vehicles are being used as a cost-effective way not only to move people, but to dispose of trash, provide ambulance services, transport agricultural produce, and deliver goods.

Automobile ownership rates are very low in much of the world. For every 1,000 people, less than 5 are car owners in Haiti, Pakistan, India and Indonesia, less than 7 in Bolivia, Zaire and Honduras, and less than 14 in Liberia and Thailand. The rate in Brazil and Mexico is 60, in Europe 300, and in the US 500 (that is, one car for every two people).[7] While in richer countries even the poor can afford a car—albeit used—only the wealthiest in low-income countries can.

Auto densities range from a high in San Marino of 0.9 people per vehicle to a low of 797.3 people per vehicle in Ethiopia. Three nations (US, Germany and Japan) account for 52% of world vehicle production and 48% of consumption, though they contain only 8% of the world's population. There is in fact no consistent connection between wealth and extent of automobile ownership. A 1999 study showed that US cities had 2.41 times higher car use than the average European city, but only 0.85 the level of average income. Even in the US, the wealthiest cities do not have the highest rates of car use.[8] Singapore and Hong Kong are very wealthy but have low rates of car use; the Netherlands and Copenhagen (capital of Denmark) are wealthy, but bicycle use predominates.

China has for many years offered employee commuter subsidies for those who rode bicycles to work, supported a domestic bicycle manufacturing industry, and allocated extensive urban street space to non-motorized vehicles. As a result, public

[6] Replogle (2)
[7] Replogle (1)
[8] Freund and Martin

transport subsidies were kept in control while meeting most mobility needs. Urban vehicle trips in China by bicycle take no more time than those made by motorized vehicles in other congested Asian cities. In Chinese cities, it can actually be faster to travel by bicycle than by bus. The emerging trend in large Chinese cities to support ownership of individual car use is leading to horrific traffic jams in cities such as Beijing, where it is now common to sit for hours in traffic. It is unfortunate that China is following this misguided policy; not only is there insufficient road space, but the Chinese government is now hard pressed to find adequate fuel on the world market to keep its motorized vehicles moving. Fortunately, in the face of the problems of an increased reliance on motorized transport, China is now rethinking its policies and appears to be returning to its support for bicycles over cars.

Rickshaw vans mean greater profits

A large bakery in Bogota, Colombia cut its distribution costs in half (from 27% to 8% of total costs) and substantially increased employment by changing its system: rather than making all distribution by truck, it only distributes goods by truck to six sub-distribution centers; from there, the baked goods travel by rickshaw van to retail shops. This also means not having to replace their aging fleet of trucks or deal with parking problems.[9]

Non-motorized vehicles are not limited to the low-income countries; they also play a major role in European and Japanese cities. In medium-sized cities in Japan, Germany and the Netherlands, 40-60% of all trips are made by walking and cycling.[10] In Japan, there has been major growth of bicycle use despite increased motorization, thanks to provision of extensive bicycle paths, bicycle parking at rail stations, and high fees for motor vehicle use. Denmark and the Netherlands have succeeded in reversing the decline of bicycle use through similar policies. While in American cities only about 5% of trips are made without motorized transport, the figure is roughly 20-50% in European and Japanese cities. Many cities now have highly popular "pedestrianized" areas that ban all vehicles, motorized or not; cities in Europe and Asia have also developed extensive cycle networks that allow people to cycle safely through the entire city. Northern cities are now building bike lanes and separate bicycle trackways at high cost; it is far more efficient to construct them at the same time as other road work is occurring.[11]

For those countries and cities which continue to focus on motorized transport, the cost is high. For instance, Haiti and El Salvador spend one-third of their total import budget on fuel and transportation equipment. In Mexico City, autos make up 97% of total transport units but make only 16% of total trips; they use 66% of total gasoline consumption, while public transport uses less than 22%. In 1980, Mexico City had 1.6 million cars and only 18,500 buses.[12]

[9] Replogle (2)
[10] Guitink et al.
[11] Mannan and Karim
[12] Freund and Martin

Imports of oil, gas, cars and trucks in 1989 consumed up to half the export earnings of Kenya and Thailand. Many planners see bicycles as "relics on the road to modernity", and are encouraged in this belief by Western "experts"[13] (who presumably stand to make a lot of money from investments into roads and automobiles). Failure to invest in *non-motorized* due to high spending on *motorized* transport is illustrated in Jakarta, where over 70% of roads have no footpaths.[14]

US cities use an average of 64.3 gigajoules of fuel energy per capita for transport; that figure is 25.7 GJ in European cities, and only 12.9 GJ in Asian cities. The difference is due to the higher rates of walking and cycling in Europe, and of walking, cycling, and rickshaw travel in Asia. While European cities are encouraging non-motorized transport, Asian cities are trying to squeeze them out in favor of the fuel-intensive, inefficient, inequitable private car.[15] Should Bangladesh simply imitate the mistakes of other countries, or learn from them and follow a sounder path of development?

<u>Problems with Cars</u>

Because cars are the dominant mode of transport in the United States, people around the world have come to believe that cars are ideal. This dream ignores the reality of the high costs of car ownership: time taken away from family and recreation so as to earn the money to purchase and maintain the vehicle, the graying of the air, the noise pollution involved, the congested roads, the ugly parking lots, the concrete and asphalt, the harm to our environment. The dream also ignores the fact that private cars benefit the individual (and only the wealthiest) at a high cost to everyone else—that nations highly subsidize car ownership, while ignoring the transport and other needs of the masses.

"The continuing diffusion of auto-centered transport systems into the South is a major contributor to its ongoing social and fiscal crises. Yet the system continues to be seen as an icon of modernity."[16]

This is not to say that cars have no advantages. They offer speed, privacy, comfort and convenience (though convenience and speed are limited by poor roads, poor traffic control, traffic jams, and lack of parking). But while the advantages are enjoyed by the very few who can afford to ride in a car, the disadvantages are suffered by the vast majority of the population. Achieving the US dream throughout the world is in any case impossible: there is not enough petroleum, capital, infrastructure, or space (to build roads and parking lots) in the world for this to happen. It is only a small minority of the world's population which can enjoy the benefits of cars; cars are undemocratic and increase social inequity.

The disadvantages of motorized transport (not just private car ownership) are many[17]:

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[13] Replogle (2)
[14] Freund and Martin
[15] Ibid.
[16] Ibid.

- It is expensive and capital intensive.
- A shift from non-motorized to motorized transport will reduce the mobility of the poor and destroy jobs.
- It is highly polluting, and the pollution motorized transport causes will hurt the poor and sick most, while helping them least.
- It creates a tremendous amount of noise pollution; in Dhaka, 97% of students say their studying is disrupted by car horns.[18]
- More motorized transport means that walking and cycling, used mostly by the poor, become more dangerous and difficult.
- Motorized vehicles take up a lot of space both when moving and when parked, and are awkward to maneuver in small lanes.
- Land to expand roads and provide parking is taken away from more productive uses, such as farmland, industry, and other commercial enterprises.
- Construction of new roads fragments the environment and disrupts communities. (Think of the difference in riding in a rickshaw or walking, where you are in direct contact with the neighborhood and people around you, and passing through in a car, where you are closed off, separated. This leads to disintegration of neighborhood and community, and increased crime rates.)

Many Dhaka roads are not designed for the movement of large vehicles, but rickshaws can easily maneuver in space inadequate for cars. How much more sensible to allow rickshaws than to knock down buildings in order to make roads wide enough for cars to move easily? Often there is only one passenger in a private car, meaning a heavy outlay of fuel and other costs, a large amount of space and noise, to move one person often a short distance. There is simply not enough land in Dhaka for high rates of car ownership.

For low-income countries, the newly-emerging pattern of auto use has[19]:

- contributed to oil dependency
- created massive environmental problems
- drained scarce public resources

Cities that rely on motorized transport have high rates of air pollution, including Los Angeles and Mexico City. World Bank data show that in 1989, Mexico City was exposed to 4.4 million tons of man-made pollutant emissions, 76% of which were caused by motor vehicles. In 1985, Los Angeles was exposed to 3.5 million tons of pollutants, of which 63% were from motor vehicles. The problem of auto exhaust is higher in developing countries, which use older, poorly-maintained autos and lower-quality fuel. An estimated 60% of Kolkata residents had pollution-related respiratory disorders in 1988.[20] These are not problems that can easily be regulated

[17] Whitelegg and Williams
[18] Dey et. al.
[19] Freund and Martin
[20] Ibid.

away, and as the case of Los Angeles shows, even with regulations, a high preponderance of automobiles means a huge amount of air pollution, as well as traffic jams—and let us not forget that Los Angeles doesn't have rickshaws any more than Bangkok does. Air pollution in the US has only increased despite strict emissions regulations, as people simply drive farther in their less-polluting cars.

The problems of auto emissions are not local, but global, as is evidenced by international concerns and the treaty on global warming. Carbon dioxide is the most important component of the gases causing the greenhouse effect (climate change). The US, Japan and German account for 34% of the world's CO2 emissions, though they contain only 8% of the world's population. Meanwhile, China and India account for only 4% of world CO2 emissions, though they make up 39% of the world's population. Just 20% of the world's population has contributed about 80% of the damage to the climate—mostly the US, in the form of car use. If developing countries follow the example of industrialized ones in greatly increasing use of motorized transport, then global emissions will increase dramatically, a disastrous scenario.[21]

Costs to the environment are not limited to noise and air pollution. An additional factor is the conversion of arable land to paved surfaces. Transportation networks meant to serve cars are far more expensive to build and operate, and waste much more space, than mass-transit systems. Each mile of roadway requires 25 acres of land. About half of all urban space in the US is used for auto-centered transport (roads and parking). Do we want to pave over arable land and dwelling spaces to create roads? In Indonesia each year, 250 square kilometers of agricultural land, forest and wetland become roads and urban spaces, thereby displacing large numbers of people and destroying the environment as well as food sources. Meanwhile, it is only the elite who can travel by car; that is, taking land from the poor to create roads for the rich, thereby further enhancing social and economic inequity.[22]

Car Free Days

Like many cities in the world, Capetown (South Africa) organizes Car Free Days, drawing thousands of cyclists and pedestrians into six car-free lanes. The event was so popular in 2003 that it was repeated in 2004. The demand for safe and comfortable conditions for walking and cycling is leading to changes in policy and infrastructure. The Car Free Day also encourages people new to cycling to get started.

Rapidly rising rates of car ownership have led to congestion, which in turn have led to expensive road building and changes in the urban physical structure which are difficult to reverse, damage social cohesion, and are regressive in their impact (harming the poor, benefiting the rich). Money spent on road construction and flyovers is money which could have been spent to benefit the community as a whole

[21] Ibid.
[22] Ibid.

and the poor in particular, such as improvements to public transport and projects to improve conditions for non-motorized transport.[23]

Building of roads and highways can never keep pace with the rate of increase of car ownership; they are in fact likely to *increase* congestion because they encourage people to drive more. The classic case is Bangkok, where infrastructure has proved completely useless at reducing traffic jams, due to the unhindered explosion of private car ownership. Policies that focus on increasing motorized while limiting or eliminating non-motorized transport further increase pollution in cities which are already highly polluted.[24]

In Bangkok, an estimated $1.4 million worth of fuel is wasted daily by vehicles idling in traffic; there are further economic costs due to hampered ability of businesses to deliver goods and services, and increased employee commuting times. Yet Bangkok has no rickshaws and virtually no non-motorized transport. People lose an average of 44 working days each year due to the time spent in traffic. According to the Engineering Office of the Bangkok Metropolitan Administration, had those 44 working days been put to productive use, the gross national product would have grown by another 10%.[25]

High rates of traffic accidents and fatalities are another result of an auto-centered system. Despite various safety technology, social controls, good traffic control and well-maintained roads and vehicles, there were 41,480 deaths from roadway accidents in the US in 1998; traffic accidents are the 9th leading cause of death in the US. Simply put, autos are deadly.[26]

Some of the most useful lessons from developed countries are the negative ones—what to avoid. We can follow the destructive path to car-centered societies, then try to retreat, as so many cities around the world are doing. Or we can learn from other countries and plan ahead. Now is the time to develop policies that will allow the majority of the population to move about as easily and affordably as possible, with the lowest costs to the national economy and environment.

<u>Advantages of non-motorized transport</u>

Non-motorized transport includes walking, bicycles, rickshaws, small engineless boats, and animal carts. Non-motorized transport has various advantages, and its use is being highly encouraged in developed countries plagued by the problems of excessive motor vehicle reliance.

The most efficient allocation of road space is for rail or bus-only lanes; the least efficient is for low-occupancy private cars. Bicycles fall in the middle, though may be more efficient depending on road situations and traffic congestion. Bicycles are

[23] Whitelegg and Williams
[24] Ibid.
[25] Guitink et. al.
[26] Freund and Martin

most efficient when most trip lengths are short, as in Dhaka. Bicycles are cheaper and more convenient for short and medium-distances than buses, and are always more efficient than private cars. "If street space is insufficient to accommodate demand even with separation, it is often useful to dedicate different streets to different modes and to impose or expand restrictions or costs for private automobiles, the most inefficient mode. ... Where space cannot be found, non-motorized vehicles and public transport should be favored in allocating street space."[27]

Non-motorized transport also increases safety. With more people walking and cycling, streets become safer in two ways: less serious road accidents, and less crime due to the vigilance of those moving about.

Bicycles: many uses, many advantages

- In rural Kenya, bicycle ambulances are helping transport the poor to health facilities.
- In one village in Tanzania, households that own a bicycle produce 50% more than other farmers, spend less time on transport activities, and take many more trips outside their village.
- In Sri Lanka, trailers attached to bicycles are used in rural areas to haul water, firewood, and other provisions, for materials used in income-generating work, and to transport passengers especially in emergencies.
- Bicycles in Havana (Cuba) increased from 30,000 to 60,000 in two years; separate lanes and dedicated trackways (separate from the road) have been built, and even special buses to carry bicycles and riders through a tunnel which otherwise would be dangerous.
- Bicycles are being promoted in a city in Nicaragua (Central America) as a cheaper and faster alternative to public transport, mostly used to get to work.
- In a city in Kenya, a program helps youth attain bicycles which are then used to transport others for hire. The program gives otherwise unemployable youth a good source of income, provides transport to those otherwise underserved, and are used in addition to take produce to market and patients to the hospital.
- Simple bicycle taxis (a padded seat on the back of a regular bicycle) are used in small cities in Vietnam to transport mostly women to and from the market.
- Combining mobility with a literacy drive in Tamil Nadu has greatly increased cycle use among women, and thereby their mobility, earning potential, and ability to access goods and services including education and health care for themselves and their children. In one district, 50,000 women learned to cycle in one year. The large number of women cycling meant that men no longer opposed the idea of women cycling—probably also because women's economic productivity also increased![28]

[27] Replogle (3)
[28] IFRTD

Bicycles are the cheapest and most convenient mode of transport in developing cities. They are modern, efficient, and sustainable. Their advantages include that they:

- can travel door to door
- are quick
- are affordable for the poor and middle class
- do not consume large quantities of foreign exchange to import vehicles or spare parts
- don't waste fuel
- don't pollute
- use little space when moving and when parked
- are easily maneuverable in small tight spaces
- provide the user with exercise and recreation
- are a form of jobs and foreign exchange, and generate entrepeneurial activities such as vending, scrap collecting, and delivery services
- are labor-intensive to manufacture and maintain
- can carry 3-4 times what a person can carry on their head
- easily triple the speed of a person
- particularly benefit women, who lack mobility; this lack of mobility has direct economic as well as social consequences on the community as well as the individual

Walking and other forms of non-motorized transport such as rickshaws share most of the advantages of bicycles. Non-motorized transport generates huge amount of non-skilled employment, and maintains the income of some of the most vulnerable urban dwellers. A study from 1992[29] estimated that rickshaws contribute 34% of the value added from the transport sector to GDP and support 5 million people (at the time 4.5% of the entire population of Bangladesh). No alternative employment exists for rickshaw pullers; not only they but their dependents would suffer if rickshaw use further declined.

There is no replacement for rickshaws in much of Dhaka, where the streets are narrow and unsuitable for motorized vehicles. In 1993, rickshaws made up 85% of all vehicular traffic in Old Dhaka. Rickshaws are cheap, reliable, and consumer-friendly, providing flexible, door-to-door service with many route options. Rickshaws operate in all weather and at all times of day and night. They are particularly useful for women, the elderly, frail, disabled, and children; they provide safe and reliable transport to school. Door-to-door transport provided by rickshaws may be critical in enabling women and girls to travel to the workplace, schools, and other areas. Having to travel by bus and face the harassment thereon will further decrease the mobility of women and girls. Every trip by rickshaw means not traveling by a polluting vehicle, and means providing employment to the poorest.[30]

[29] Gallagher
[30] Whitelegg and Williams

Experts in transport policy argue that "the rickshaw is currently undervalued and under-utilized as a means of transport".[31]

Transportation and Poverty

Transportation policies can reduce poverty—or increase it. How? As already mentioned, heavy investments in road construction and flyovers take funds away from projects that would help more people. Imports of vehicles, parts and fuel waste foreign exchange. Traffic jams from an excessive number of cars means wasting time getting to and from work, which decreases productivity. Traffic jams also make it difficult to move goods to market. Lack of access to affordable transport by the poor means difficulty getting to schools, accessing health care, moving goods to market, and finding suitable employment. Banning or curtailing the use of rickshaws means huge job losses by the most poor and marginalized, and further impoverishment of their dependents and communities. Keeping the price of bicycles unaffordable through high tax, and their use unsafe through lack of cycle lanes, reduces mobility of the poor and forces them to rely on buses which are both more expensive and less convenient.

The poor spend a larger share of their income on transportation than do high income households. Reasons include that the poor often live far from their jobs in order to find cheap housing, may hold multiple jobs, and since their income is so small, a single bus fare represents a larger share of their earnings than for those better off. Improving conditions for walking and cycling would directly benefit the poor, and their increased economic efficiency would benefit the entire economy. Helping the poor benefits the economy more than helping the rich, since the poor are far more likely to buy local goods and services, while much of the earnings of the rich leaves the country in the form of imports. An increase in income for the poor is likely to lead to a decrease in malnutrition, an increase in school attendance, and other significant improvements in people's welfare, whereas the rich having a little more or less money makes no significant difference in people's lives.

In addition, while subsidies for the rich—such as flyovers—tend to have very high costs per person benefited, subsidies for the poor—such as by removing the tax on bicycles, creating bicycle lanes, and improving the rail network—are inexpensive and benefit many times more people. In fact, by improving conditions for non-motorized transport and public transport, not just the poor, but *everyone* benefits.

Rickshaws are mostly small informal sector or individual enterprises, thus benefiting the poorest and most disadvantaged. A study in India showed that investing several thousand dollars in baby taxis would create **six** direct jobs, and the same quantity invested in rickshaws would create **75** jobs.[32] Motorized vehicles require foreign exchange and create few jobs; non-motorized vehicles require little foreign exchange and create many jobs.

[31] Ibid.
[32] Replogle (3)

Inefficient systems are those that require a good deal of money to move a small number of people. Efficient systems are those that require a small amount of money to move a large number of people. Private cars do the former; rickshaws the latter. In addition, rickshaws have the huge advantage of providing employment to a large number of people; not only those individuals, but their families are dependent on that money. Moving someone by rickshaw requires a very small economic input: the wages for the rickshaw pullers and those who repair the rickshaws all stay in the country, and thus benefit the economy. In contrast, for someone to travel by private car, taxi or bus, there is a large outlay to import the vehicle, then continuing outlays to purchase petrol. This means a steady flow of cash (foreign exchange) out of the country, in return for which very few people are able to go somewhere.

Any major decrease in rickshaw traffic would mean a huge increase in poverty and likely crime (as people have no choice but to turn to theft and prostitution to replace their lost income). Those who repair the rickshaws and are otherwise connected to the trade would also be affected. Loss of income by dependents would again have a multiplier effect, further impoverishing the communities in which they live. Increased motorized traffic would in turn result in less walking and cycling, as the road conditions further deteriorated. The increase in congestion resulting from an increase in motorized traffic would also have an economic cost, as well as further reducing mobility of the poor.

While bicycles are not a major factor in urban transport in Bangladesh, they could be, with significant benefits for the poor. Where the cost of a bicycle is the same as several months of bus fares, it is far cheaper for the poor to travel by bicycle than by bus, given that a bicycle can be used for years and bears almost no recurring costs. With increasing traffic congestion, unreliability of public transport, and slow speeds for buses, bicycles become more competitive even for longer trips, due to their flexibility, convenience, and greater reliability.[33] Bicycles can be a major factor in improving the economic condition of the poor through both greater mobility and decreased spending on transport.

In the words of the World Bank, "Transport interventions that promote the use of non-motorized transport usually contribute directly to the welfare of those people who cannot afford motorized transport. Non-motorized transport is, many times, also the most appropriate and efficient form of transport".[34]

> Nonmotorized transport (NMT) has an unambiguously benign environmental impact. In many cities it is the main mode of transport for the poor, and in some a significant source of income for them. It therefore has a very significant poverty impact. Where NMT is the main transport mode for the work journeys of the poor, it is also critical for the economic functioning of the city. Despite these obvious merits, NMT has tended to be ignored by policymakers in the formulation of infrastructure policy and positively discouraged as a service provider.

[33] Replogle (3)
[34] World Bank (2)

> ...an explicit strategy for NMT is necessary to redress a historic vicious policy circle that has biased urban transport policy unduly in favor of sacrificing the interests of pedestrians and cyclists to those of motor vehicle users. Because of this policy, NMT becomes less safe, less convenient, and less attractive, making the forecast decline of NMT a self-fulfilling prophecy. That process is unacceptable, because it stems from a failure to recognize some of the external effects of motorized transport that distort individual choice against NMT, and hence militates particularly against the poor who do not have the means to use even motorized public transport.[35]

Dhaka

Dhaka's transport situation is highly problematic. Traffic jams are very common and frequently lead to long delays and suffering. Road accidents are common, killing many people, particularly pedestrians, and costing the government billions of taka each year. Noise pollution is devastating, caused mainly by incessant honking of horns, and while air quality has improved since the banning of two-stroke engines, it remains a serious problem. Pedestrians—that is, essentially everyone, at one time or another—suffer from bad conditions on footpaths, bicyclists from unsafe road conditions, bus passengers from poor bus service, and car passengers—as well as everyone else on and off the streets—from the congestion.

Traffic fatalities

While road deaths in most developed countries are below 5 per 10,000 vehicles (2.2. in Germany and the US, 1.4 in the UK, and 1.6 in Japan), there are 40 deaths per 10,000 vehicles in India and 77 deaths per 10,000 vehicles in Bangladesh.[36] It is however important to note that road deaths per 100,000 people are higher in the US than almost anywhere else, because of the high quantity of cars. No matter how safe roads and vehicles are, the more people drive, the more they die—and kill others. Trying to reduce traffic fatalities by improving traffic conditions and/or training drivers will thus prove ineffective if we do not also limit the use of motorized vehicles. The best way to reduce highway deaths, for example, would be to improve rail service, so that more freight and passengers shift from trucks and buses to trains.

In Bangladesh, 55% of traffic fatalities involve pedestrians; the reason is simply that pedestrians are not allocated sufficient space or safe conditions to move about, with the priority being given to cars. Rather than making it safer for people to walk, for instance by providing more signaled intersections, most interventions simply make it difficult or impossible to cross streets. That is, the poor majority, who are most likely to walk, are expected to bear the brunt of the danger and inconvenience of providing the rich minority with road space and maximum speed of movement for their cars. Meanwhile, traffic fatalities cause an estimated annual loss of 40-45 *billion* taka per year.[37]

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[35] World Bank (1)

[36] Freund and Martin

[37] Quazi, Mohiuzzaman, "Road Traffic Accident in Bangladesh, Trends and Characteristics" and Rahman, AKM Fazlur, "Measuring Burden of Road Traffic Accidents and Injuries" in *Road Safety Training Course on Understanding Road Accident Problems and Their Remedies*. Dhaka: BUET Accident Research Centre, 26-28 August, 2003.

Pedestrians

Pedestrians face difficulties due to discontinuous sidewalks, unmaintained sidewalks, open sewers, sidewalks blocked by parked cars, lack of signaled street crossings, and poor conditions of existing pedestrian bridges. Pedestrians are exposed to air and noise pollution as well as danger from accidents when walking. It is unclear how much investment has been made into improving pedestrian walkways as opposed to the amounts being poured into the seemingly unnecessary and possibly obstructive flyovers, which only contribute to traffic jams.

When improving the situation for pedestrians, it is important to consider what is likely to work, and what other effects any measures may have. A policy in Hanoi, Vietnam to ban hawkers from footpaths resulted in increased sufferings of the hawkers, who now must run from the police. Meanwhile, the problems of pedestrians have not decreased, since parked motorcycles, not hawkers, now block the footpaths. People continue to buy from hawkers, demonstrating their popularity in providing a useful and inexpensive service: good, fresh food sold conveniently at low price.

Where hawkers do take up most of the footpath or do block the flow of pedestrian traffic, they could be shifted to another location or made to reduce the amount of space they use. However, banning hawkers outright is likely to have negative consequences beyond harming the earning power of the poor. Hawkers serve as an attraction, offering color and, in the form of eyes, safety to footpaths. People gather where other people are; they avoid empty places. By removing hawkers, we are likely to *reduce*, rather than increase, pedestrian traffic.

Objects that do block footpaths are another matter; these include construction waste, dustbins, and parked cars. Unlike hawkers, other obstacles do nothing to attract pedestrians and much to deter them, and should be banned entirely from footpaths.

Bicycles

Pollution-free transport in the form of bicycles is greatly under-used in Dhaka for two main reasons: price and safety. The 63.5% tax means that a 3,000 taka bicycle costs 4,905 taka. This extremely high tax on bicycles makes them unaffordable for many of those who would be most likely to use them if they could—and who would gain the most from a one-time investment in a bicycle rather than the ultimately far higher expenditure for bus fares. While the rich can take out a loan to buy a private car, no such assistance exists to help the poor and middle class to buy a bicycle, despite the fact that this country needs bicycles far more than it "needs" private cars.

Safety is the second major problem. The lack of safe conditions for cycling discourages many other potential cyclists, who instead rely on other forms of transport. These other forms take up more road space, such as rickshaws; or pollute, such as buses (even CNG buses emit the cancer-causing chemical benzene as well as CO2); or do both: waste space and pollute, that is, CNG baby taxis and car taxis.

Denied all transport, the poor are often forced to travel long distances by foot, thereby decreasing their productivity and increasing their suffering.

Bicycle lanes on major roads would require very little use of road space and little expenditure. Ideally, cycle lanes would be physically separated from lanes for rickshaws and buses, in order to allow safe and easy movement for bicyclists. Given current traffic conditions in Dhaka, a cycle lane could allow people to travel, in many cases, as fast as motorized vehicles, thus making cycling an extremely attractive option not just to the poor, but to all who are concerned about saving time and/or money. A shift from other forms of transport to bicycles would decrease traffic congestion, reduce air and noise pollution, and improve people's health.

Rickshaws

Rickshaws, which like bicycles are pollution-free, but unlike bicycles are an ideal option for women, children, the elderly, and the ill, are being discouraged. They have been banned from several major roads, and there is a grossly inadequate number of licenses available for rickshaws. Illegal rickshaws—illegal simply because the government issues so few licenses—are frequently seized and destroyed, and rickshaw pullers are frequently hassled by police over registration.

Urban rickshaws annually account for over 30,000 passenger miles and nearly 100 ton-miles of goods movement. Bicycles, rickshaws, ox carts and country boats jointly account for about 75% of the value added, 80% of the employment, and about 40% of vehicle assets employed in the transport sector. On secondary roads, non-motorized vehicles make up about 85% of traffic. Rickshaws in Bangladesh are often used to carry goods, to transport female passengers and small children, and to move men for short distance on irregular routes—that is, rickshaws fill a niche unlikely to be met elsewhere.[38]

In Bangladesh there are approximately 1.25 million people directly involved with driving and maintaining rickshaws, with more than 75% of the total in urban areas, while 5 million people depend on them for subsistence.[39] Rickshaws benefit the poor not primarily as a means of transport, but as a source of income. Not only rickshaw pullers and their families, but others depend on rickshaws for an income, including hawkers selling to rickshaw pullers and their passengers, and those who repair rickshaws. A decline in rickshaw traffic harms a large segment of the working poor, as well as the passengers who lose a high-quality service for which they are willing to pay.

Some people call rickshaw pulling an "inhuman profession". Which jobs for the poor are considered "human"? Farming, factory work, day labor—are all, in a sense, "inhuman"—and all are infinitely preferable to being jobless. It is a cruel joke indeed to "help" the poor by denying them the chance to earn a living for themselves and their families. There are already millions of unemployed and

[38] Replogle, Michael, "Non-Motorized Vehicles in Asia"
[39] Freund and Martin

underemployed people in this country; it is unrealistic to assume that thousands of jobs can be created to replace those lost by banning rickshaws from major roads. If jobs *could* easily be created, why not save those for people already jobless, rather than creating new unemployed people for whom alternatives must be sought?

Rather than ban rickshaws, we could make the profession more humane by:

- Introducing improved rickshaw designs, such as those used in India, Europe, and the US;
- Creating separate rickshaw lanes, to make rickshaw plying easier and safer;
- Training rickshaw pullers in road safety;
- Instituting a fixed and fair fare system;
- Issuing sufficient licenses to cover the number of rickshaws demanded by the public, and thus protect the rickshaw pullers from police harassment;
- Acknowledging the important role of rickshaw pullers in providing a pollution-free and useful service.

Moving forward

Attempts have certainly been made, and a good deal of money continues to be spent, to improve Dhaka's traffic situation. A World Bank project in 1997 included, special lanes for buses, special lanes for rickshaws on congested roads, better sidewalks, and more pedestrian over-bridges.[40] Unfortunately, not everything envisioned in the plan materialized, or was implemented appropriately. Bus lanes failed to be created, and the rickshaw lanes were destroyed after being built because they were unusable (among other reasons, due to all the cars parked in them).

Dhaka Integrated Transport Study (DITS) emphasized schemes to make walking easier and less hazardous. Dhaka Urban Transportation Project (DUTP) included in its key objectives "retaining a positive role for the cycle-rickshaws", and its components include "junction improvements and special lanes (for non-motorized vehicles) and pedestrians (sidewalks, pedestrian over-bridges)". Policy development includes lane separation for slow- and fast-moving vehicles.[41]

We hope that in the future, efforts to improve Dhaka's transport situation will look not only at the movement of people—or worse yet, at the movement of cars—but also at the effects on other aspects of life of the different forms of transport being considered. While improving people's mobility, it is also important to consider the effects on air and noise pollution, traffic fatalities, and on social issues such as the ability of the poor to move about and earn a living.

<u>Recommendations and conclusion</u>

Solutions to one problem should not cause or aggravate other problems. Reducing employment options for the poor is not an acceptable or necessary output of improving transportation options. On the contrary, improvements in transport

[40] World Bank (3)

[41] Mannan and Karim

should seek specifically to *benefit* the poor, and thus increase social equity while also improving people's mobility and our urban environment.

A well-considered plan for Dhaka's transport needs would consider some of the following points:

1. While mobility is important, the goal should be access. It is better to ensure that destinations are close to people than that people can travel far. All neighborhoods should contain a diverse mix of residences, offices, shops, schools, etc.
2. Non-motorized vehicles and walking have considerable advantages over motorized vehicles, and should be promoted.
3. Private cars increase inequity. Bangladesh should follow the example of the many cities in other parts of the world, including much of Europe and parts of the US and Canada, which are working to decrease travel by private car and support walking, cycling, and public transit.

In order to improve mobility of the poor and reduce their expenditure on transport, several measures are needed:

- Eliminate the existing bicycle tax (63.5% in 2005);
- Create bike lanes;
- Make rickshaw lanes;
- Improve bus service, including through allocating bus-only lanes that are physically separated from the lanes for bicycles and for rickshaws;
- Reduce private car use through a range of measures, including:
    - increasing the tax on cars
    - limiting the number of licenses issued
    - banning parking on footpaths and in other places where road space is needed for other transport
    - charging for parking everywhere that it is permitted
- Encourage mixed-use neighborhoods where people can live in walking distance to jobs, shops, schools, etc.

Changes in transport policy should emphasize access and equity. They should seek to achieve poverty reduction by decreasing spending on transport and by increasing jobs. They should result in a reduction of air and noise pollution by causing a modal shift to non-motorized transport. They should reduce dependence on fuel (both imported and natural gas), and improve the mobility of the majority. These changes will benefit everyone, and will help ensure that Dhaka is a healthy, enjoyable, productive, and well-off city for decades to come.

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