

Financing of Urban Roads in Asian Cities Experiences and Perspectives

by

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1. Population growth, sector concepts and basic principles

Bangladesh, being initially a country with rural population, has changed. In the years ahead most of the population increase will take place in the cities.

Based on the annual growth rate of 3.6 % p.a. for the urban population in Bangladesh the doubling period for this population is approximately 20 years.

Starting now with 20 million urban inhabitants for the major 20 cities in 20 years time further 20 million inhabitants will live in the cities of Bangladesh additionally. Who will pay for the DOUBLING of the existing infrastructure during the next 20 years ?

The general budget? Or the user of the infrastructure? Or a combination of both of them ?

Indeed Asian countries answered this question differently:

Some countries followed the **SOCIAL approach** of former Eastern Europe considering all kinds of infrastructure as a social service to be paid for by general budget

Others followed an **ECONOMIC approach** (as in the American market economies) requiring a profitability of each single project based on the user pays principle.

Finally the concept of a **SOCIAL MARKET ECONOMY** exists, where the profitability of the roads subsector (e. g. via road funds) is guaranteed as a whole, but where limited SOCIAL adjustments are possible, i.e. limited cross subsidies as from motor fuels to mass transit in towns are possible (example of Central Europe).

This latter concept, as it includes the overall goal of economic growth of the country also, seems to be the best solution for Asian countries and found the approval of international banks as well.

Practically the financing of urban roads and urban transport is based on three essentials:

a) The User Pays Principle in Commercial Infrastructure

Roads, electricity, telephone and drinking water should be treated as a received service and paid with charges depending on the individual usage.

Any other concept may contribute to public insolvency and declining service quality as experienced in the countries of the former Eastern Bloc.

b) The Efficiency Principle by use of Private Management

All services with intensive maintenance depreciation (i.e. everything that requires the service providers working on a commercial basis with private-enterprise balance sheets.

c) The **Referee Principle** for State intervention. I. e. the role of the state remains necessary to safeguard the competition and to look for social corrections.

The main sources of revenues for the urban road infrastructure are the automotive **fuel** (taxes per liter), the **vehicles** (revenues as annual vehicle fees) and the **urban building**

land (revenues as a pre-paid charge per m² of land). A fourth revenue source as road tolls and parking fees, (with the exemption of the sophisticated system of Singapore) generally plays a minor role.

The responsibility for revenue collection for **fuel** lies with the **Central Government**, as fuel taxation generally is carried out in the refineries. The annual **vehicle license fees** are collected by the local **Vehicle Registration Offices** and transferred partly to the Central government or to the City Council, whereas the third source, the **development fee on building land** is to be paid into a trust fund with the **City Council**.

Taxes on motor fuels are the pre-dominant source of revenues from the transport sector. The amount of **10 US Cents per liter** Gasoline and Diesel constitutes an international benchmark for financing the economic network of goods transport, connection all rural and urban markets of a country.

This holds true for **Least Developed Countries** as in Africa, where – due to the lower motorization rate – recurrent and periodic maintenance are paid by it, as well as in industrialized countries like the United States, where all road expenses including new construction may be paid out of the 5 US Cents per liter for the Federal Road Fund plus 5 US Cents per liter for the provincial State Road Funds.

In the case of the Last Developed Countries **the revenues for the Road Maintenance Fund** may be distributed by **10 % for roads within city limits, 70% for inter-city roads and 20% (i.e. 2 US Cents per liter) for rural roads** connecting the main highway system with the rural markets. The fuel taxation is a taxation of the moving traffic according to the road user principle and based on the amount of motor fuel consumption.

As for public transport additional transfers from fuel tax revenues are often necessary. In Germany 3 US Cents per liter are paid within the Urban Transport Finance Law GVFG for mass rapid transit systems. In **Colombia appr. 5-8 US Cents per liter fuel were earmarked for Bogotá's new bus system** (during the years 1998-2000).

The taxation of the vehicles is the second mayor source of transport revenues. The annual vehicle license fee is taken from cars; taxis and trucks are based on motor capacity, horsepower, and total weight or on vehicle value and collected by the local vehicle registration offices. **Small passenger cars** may pay **75 – 200 US \$ yearly**. (Bangladesh pays 78 US \$ for small vehicles p.a.) Revenues preferably should be used for the local urban road network, as it is in most cases a taxation of the standing traffic.

The land taxation on building plots according to their m² size is the third source of revenues. (As a basic rule the price of land (including its development charges) may be in the range of 10% of the total for city houses).

Typical development charges for the road infrastructure **are 2-10 US \$ per m²** to be paid additionally with the purchase of building sites. It represents a supply charge

For street infrastructure, is taken only within the legal city limits. Therefore many informal settlements take place outside the city limits, where no land taxes are to be paid and where no supply of road infrastructure can be asked for.

3. State of the Art of Transport Taxation in Bangladesh

3.1. **Fuel Prices** and fuel taxation are the key factor for financing transport infrastructure worldwide. And therefore represent indeed a mayor bottleneck for progress in the Bangladesh transport sector

The data on present fuel prices (dated: 22 March 2004) in Bangladesh reveal that the fuel taxation level in Bangladesh is relatively low. In absolute figures the fuel selling prices in

Bangladesh are 33 Taka/liter **Gasoline = 58 US cents** per liter and
20 Taka/Liter **Diesel = 35 US Cents** per liter.

These Bangladesh prices - if compared with world market prices and non-taxed prices (without excise taxes on fuel) - are very low. **Diesel is sold with state subsidies** and gasoline only carries some cash into the government's pockets

In India fuel prices for **Gasoline** are **87 US cents** per liter
and for **Diesel** are **55 US cents** per liter.

Result: Fuel in India costs at least 50% more than in Bangladesh.

The **price difference** only (and smuggling incentive) between India and Bangladesh for **gasoline is 29 US Cents (= 16 Taka)** per liter and for **diesel is 20 US Cents (= 11 Taka)** per liter.

I.e. the price incentive for professionally smuggling fuel from Bangladesh to India has reached an all-time high in the last years. Profits of smugglers always represent a loss for State finances. As a several thousand kilometer long border as between Bangladesh and India can never be controlled effectively, there is an urgent need for price harmonization between the two countries. Furthermore international fuel price comparisons reveal (www.worldbank.org/transport) or (www.zietlow.com/docs/engdocs.htm) an international trend for higher fuel taxation.

The **time series** for fuel price development during the **last 9 years (1995-2004)** displays remarkable long-term issues in the energy and transport policy of Bangladesh, as the price gap between Bangladesh and India constantly widened.

The key price of **DIESEL in Bangladesh** remained nearly **constant** (1995 31 US Cents and in 2004: 35 US Cents per litre), while during the same period **DIESEL in India** nearly **tripled** (from 19 to 55 US cents per liter).

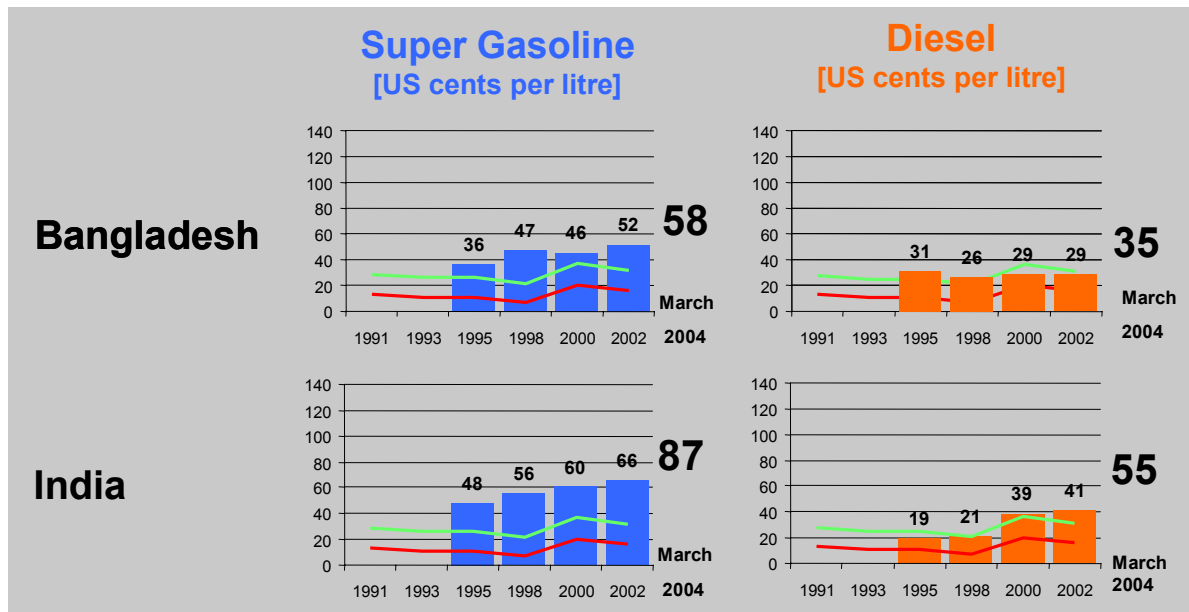
Given the fact, that street riots against **fuel price increases** blocked government actions in the past, it should be recognized that price rises can only be introduced stepwise (**preferably at 10% steps** every 9 months), and that the influential lobby of the "cross-border trade" be stopped in mobilizing the masses, as this has been experienced in Ghana, Nigeria, Yemen and Indonesia also.

At the moment fuel taxes represent **1% only of the overall Bangladesh tax revenues** (in **China it is 4%, in India and Russia 8%, Mexico 10%, Turkey 24% and Bulgaria 36%**), so that there is much room for improvement.

Even a **20% surcharge on Bangladesh fuel** (as in Bogotá for **financing a Rapid Bus system**) would increase prices to a sales price of 70 USCents /litre only (40 Taka) for petrol and 42 USCents /liter for diesel (24 Taka only).

It is a political task of the local transport sector to closely watch the further fuel price increases in the country and look for a **fair share of fuel taxes to be reinvested** into the transport sector.

Time Series from the years 1995 to 2004 in Bangladesh and India (real paid prices, non-adjusted)



The graphs above show the time series of gasoline and diesel real sales prices over a period of 9 years.

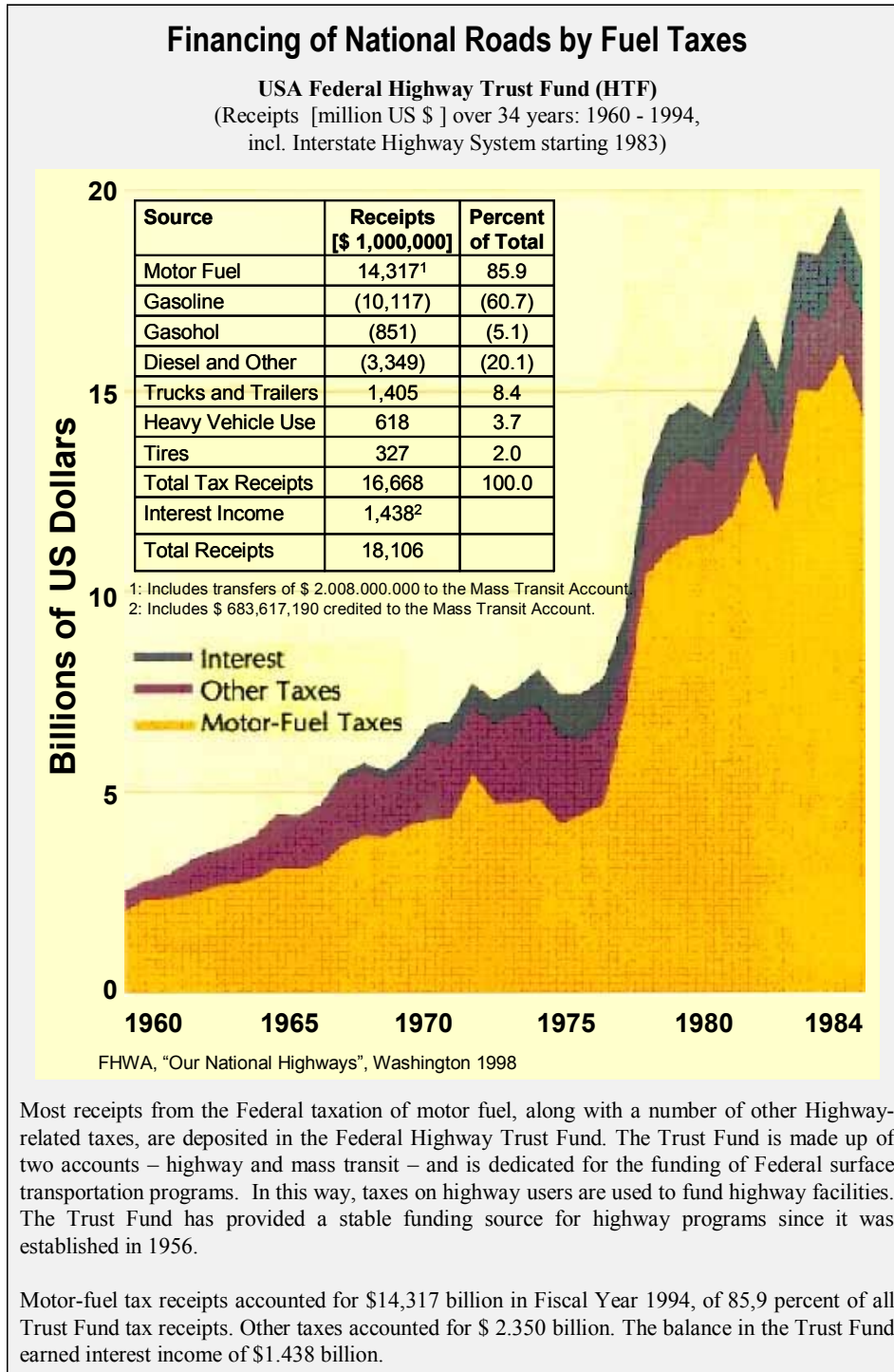
Note: The “Red Base Line” represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.

The “Green Base Line” represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy and fuel taxation.

A 20% surcharge on fuel (as in Bogotá for financing a Rapid Bus system as discussed during the seminar) would increase prices to 70 USCents /liter only (40 Taka) for petrol and 42 USCents /liter for diesel (24 Taka only). **As a general example how a nation road network has been financed exclusively by fuel taxes the US example during the years may be cited from the ANNEX (next page).**

ANNEX

**Federal Highway Trust Fund (HTF) Receipts
 USA Federal Highway Trust Fund**



The graph demonstrates road financing in the USA over a period of 34 years (1960 to 1994) completely out of fuel taxes. It shows, that even a heavy financial burden, as the construction of the Interstate Highway System in the years 1983-1986 had been financed by an increase of own tax revenues.

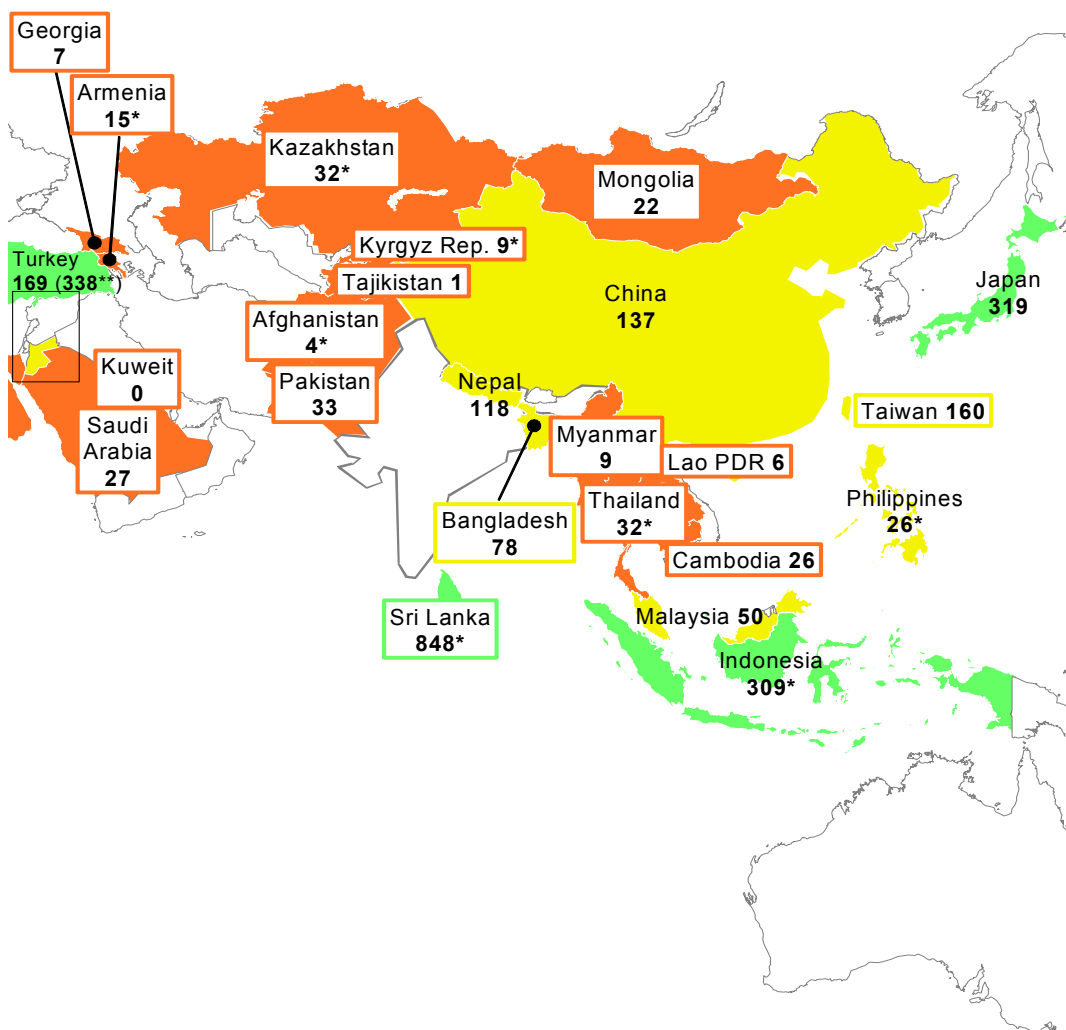
ANNEX: Passenger Car Taxation

Passenger Car Taxation (annual levy) in Bangladesh is often called „Road Tax“ also. It is 78 US \$ p. a. for a small 1400 ccm passenger car, while in India annual vehicle taxes differ considerably from state to state. **(Kolkata: 36 \$)**. **Nepal (118 \$)**, **China (137\$)** and **Indonesia (309 \$)** have higher annual vehicle charges compared with Bangladesh

Note : Annual fees for **Taxis** are different. Taxis are charged 6 times normal cars in Kolkata, but 0.3 times in Dhaka.

The following graph shows an Asian survey on vehicle taxes

Taxation of Small Passenger Cars in US \$ / year





**Annex: Vehicle tax with modification for social adjustment
 (acc. to the actual value of the vehicle as in Indonesia)**

In some countries, annual vehicle taxes play a dominant role in the field of transport taxation. Whereas in most countries the vehicle tax is based on the engine value of displaced cub.cm, in **Indonesia** it is based on the car value.

Basically, the vehicle tax is calculated at 1.5% of the present market value of the car. The rates according to car makes and year of production are officially published annually.

E.g. a 5 year old small car like the 1600 cubic Toyota Corolla pays 84 US\$ vehicle tax per year, whereas a new 5000 ccm Mercedes has to pay 1371 US\$, which is 16 times as much.

Motor Vehicle Tax (PKB) in Indonesia <small>(new rates as of 2 January 2001, (1,5% of the present market value/sales price) Results of a GTZ – market research on effective annual motor taxes:</small>		
Make of vehicle	Year of production	Tax \$ US p.a.
Motocycles and locally made transporters 		
Motos Jialing Jh150	1999	4
YAMAHA F1-RH	1998	6
Daihatsu Espas. S. 91	1999	33
PASSENGER CARS 		
Toyota Corolla LTD 1.6	1996	84
Mazda 626 CRNS 2.5	1998	127
Opel Blazer DOHc 2.2	2000	169
Volvo 960 GL A/T (3 y.)	1998	225
Mercedes Benz S 500	2000	1 371

Such a value-based vehicle tax is considered an option for transition countries, where traditional the fuel taxes are very low and a rise of fuel prices is hindered by political reasons.

Note: a) The vehicle license fee is increasing with the luxury (price) of the car. b) The vehicle license fee is decreasing year by year, according to its official second- hand value. c) Generally the vehicle license fee in Indonesia stagnated over the last 8 years (as already in 1993 Toyota Corolla 1.3 paid a license of 189 US \$)

Result: Based on the value of the vehicle, luxury vehicles pay up to 10 times more than small cars.

3.3. Land Development Charges for New Urban Roads

Infrastructure Financing of urban road construction by pre-paid urban development charges for land acquisition: **2-10 US \$ per m²** terrain surface (to be included into purchase price of building land).

Access provisions for fire brigades and measures against epidemics remain the responsibility of the authorities. Rule of thumb from Europe: **15-20% of the city area should be saved for transport**, whereas a value for 30% may be typical for some US cities, and an **Asian value of 10%** or less as too small.

Land taxes to be paid by the landowner have a long tradition in Asia. How land development charges for urban road construction are incorporated into a land taxation may be seen from the examples executed in Germany, Australia, Japan, Korea, Togo and Namibia. In these countries a **public-private cost sharing** between the Municipal Road Owner and the private Resident Plot Owner take place. The general rules of a so-called **development statute** to be applied for all **Urban Promotion Areas** Pupas are:

a) For residential roads the **new construction** of is to be paid by the residents on the road, for which – as for some through-going traffic - the city pays a general contribution of 10% only. But for the **maintenance** of this road including the sidewalks the city pays **100%** and the residents nothing. The distribution key of the charges is applied to the different residents bordering the road and according to the length of the roadside they occupy.

b) For existing urban roads also the **maintenance** is paid **100% by the municipality**.

c) Rehabilitation and upgrading of existing roads (from gravel to asphalt, conversion into pedestrian zones etc. including new lighting and drains) is to be paid

- With pure residential roads **50% city and 50%** land owner
- With mixed residential and artery roads **70% city and 30%** land owner,
- With main traffic roads **90% the city and 10%** the landowner.

By this way the Land Development Statutes follow the principle, that the city residents must not be subsidized by the general public, but have to pay for their own share of the benefits they enjoy by improved infrastructure.

4. CONCLUSION

Three main financial sources were identified for the improvement of urban transport in Bangladesh affecting the activities of the three main stakeholders:

a) FOR THE CENTRAL GOVERNMENT

Improvement of fuel taxing policy (for the increased transfers)

- To the Road Fund and
- To the cities for public transport

b) FOR THE CITY COUNCIL

Introduce legislation to tax “windfall gains” experienced by land speculators

c) FOR THE CITIZEN

General acceptance of the user pays principle and acceptance of restrictions for passenger car use in the inner city, if urban traffic space is too scarce.

But if there is a need for higher fuel taxes the citizens expect, that the benefit of higher taxes are linked to new investments for a better transport system. At the same time citizens in towns must realize, that not the general public or the entire nation, but they themselves have to pay for the benefits of improved infrastructure they want to enjoy with their local transport facilities.

Therefore all these 3 elements may become effective, if put into practice by a determined executive body and – as the case may be – by additional efforts of the international cooperation. A successful co-operation of these three stakeholders is the way ahead for improving the Bangladesh city transport also.