

FINANCIAL ASPECTS ON SUSTAINABLE TRANSPORTATION

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Roads are the primary asset of nations and especially in growth economies like China a long-term strategy for future sustainable financing of provincial, urban and rural roads is a key issue. Therefore an EXECUTIVE SUMMARY may be presented here covering an in-depth analysis of reasons for the present infrastructure crisis (two slides), the details of corrective measures in the transport sector (two slides), the main result for China (one slide) compared with 25 other Asian countries. Finally I'll close my presentation by illustrating two pitfalls and in formulating an plan for further action.

A. Two reasons for the infrastructure crisis in China may to be identified:

1. Roads infrastructure and economic growth

Contrary to the developing countries, in the new Tiger and Transition Countries the infrastructure crisis may be compared with the so-called Malthusian Crisis of the former population explosion. This new "black-out crisis" of insufficient infrastructure has reached already alarming dimensions:



Therefore out of the graph three consequences are to be drawn:

- Transport infrastructure has to expand in line with economic growth
- The financing of the road infrastructure cannot longer be considered as a social service, as roads represent a capital of 20 to 25 % of GNP,
- Hence the roads sector in general basically is not a social, but an economic sector, which should have a constant and sustainable source of funds.



2. Strategic changes in State Financing

Not only in Eastern Europe, but also in many other transition countries as CHINA the change of the former low-price system for infrastructure into the new market-oriented and cost-covering system hasn't been accomplished. The general issue may be seen from the comparison of State financing between West and East Germany: After reunification, when the old state companies as former source of state financing collapsed, the western system of taxing the individual consumption had to be introduced. That meant a change of the amount of individual taxes from 8% to 55%, i.e. 7 times or 600% increase.



To change prices for all infrastructure goods like electricity, gas, water, transport fares for railways and public transport as well as for diesel and gasoline often by 600% is difficult, often impossible to understand for the normal population, which was used to the wrong prices for so many decades, and many governments are very reluctant to tell its people the truth.



B. Price adjustments in the transport sector

3. Fuel and Vehicles taxes

As far as the special case of the transport sector in China is concerned, two main adjustment are identified as to be completed, first of all the fuel taxation.

Diesel and gasoline taxation generally is the predominant source (often about. 75 %) of all revenues from the transport sector for those countries, where fuel is taxed (**marked green** on the map like India and Cambodia).

The GTZ price survey of 20 Nov. 2004 revealed that fuel retail prices vary considerably in different Asian countries. This holds true despite a uniform world market price for crude oil (\$ 42.4 per barrel BRENT at time of survey). A series of countries - mostly in the Near East and Indonesia (**marked red**) are subsidizing the motor fuel from the general budget. Other countries like China and, Vietnam (**marked yellow**) do apply fuel prices which are cost-covering but not securing the road expenditures.



4 www.International-Fuel-Prices.com

www.metschies.com

Generally a rate of **10 US cents per litre**, **for** both gasoline and diesel is an accepted average for financing a country-wide **road network** linking all rural and urban markets in a country. This holds true for the least developed countries of Africa as well as advanced market economies such as the United States, where sales prices (including the levy for the Road funds) were 57 cents per litre Diesel and 54 cents per l Super. **For public transport** additional transfers from fuel tax revenues are often necessary: In Germany **3 cents/litre** is collected for mass rapid transit systems. In Colombia the additional fuel tax to finance Bogotá's bus rapid transit (BRT) system was **5 to 8 cents per litre**.

The fixing of prices for fuel energy (gasoline and diesel) in China still follows the autonomy pattern of the past. But since the year 1993 already China became a net oil importer. Entering the world fuel market and with ever rising volumes of oil imports she may not ignore the overriding importance of World Crude Oil Prices any longer.

Thus a short-term target may be to reach US price levels, but in the long run the higher INDIAN price levels could be attained and finally perhaps even the EUROPEAN levels.



4. Annual taxes for passenger cars

As fuel taxes are going mainly into the Central State budget, they are to be used for the centrally build highway system (with a fixed percentage - e.g. 25% - earmarked for rural roads).

But as CCICED put a special emphasis on the urban transport situation, the annual vehicle tax of passenger cars should be analyzed here. This tax may form the basis for a constant and sustainable flow of fund into the transport sector of the city, not only for roads, but also for public transport expenses.



As seen from the graph, Chinese annual vehicle taxes (at 127 US\$ per small passenger car) are still low and have in the long run room for further increase by up to 200% to reach levels of Turkey, Indonesia and Japan.



C. MAIN RESULT

5. STATE FINANCING and FUEL TAX level in CHINA

But returning to the main issue of sustainable interurban road financing, the main result of sufficient road financing may be seen from the chart below: The fuel tax contribution to the overall State budget revenues (right side of the graph):



The graph reveals that the cost-covering situation is worst in Yemen (where 17% of all State Revenues are **spend** on fuel subsidies !) and best in SOUTH KOREA (where 33% of Revenues are **received** from the motor fuel tax !). Most important is that CHINA and VIETNAM don't tax the motor fuel and therefore don't dispose of sufficient funds for the national, provincial and local road network. CHINA with nearly zero taxation (average of diesel and gasoline taken) stands on the crossroads, which way to take, again into the red area of subsidisation or into the green area of taxation, whereas INDIA receives 15% of total state revenues from fuel taxation.

How this present situation has been developed over time, may be seen from the time series of fuel prices covering the last 10 years, shown also for diesel (yellow) and gasoline (blue) on the left side of the graph. Here 3 mayor Asian countries are compared with China: Indonesia as a subsidizing country, India and south Korea as highly taxing countries.

The horizontal lines represent the Crude Oil price (Brent in red), the US sales price (green line, which is cost-covering inclusive VAT and includes the contribution of approximately 10 US cents per litre for the two US road funds) and the grey line on the top (showing the Luxembourg price as EU minimum for EU entry countries).



D. Three examples.

6. The dream of a zero fare for expensive metro systems is still alive. The cheapest Metro fare may be that of Kolkata, where the fare is 4 EURO cents only. The entire deficit has to be borne by the owner, which in this case is the Indian Railways belonging to the Central Government.

Financing Sustainability of Public Transport: "Zero Fare" in India ?





1 Ticket in the Central Zone of Kolkata City (8 stations) for 40 rides (20 working days single and return) costs 100 Indian Rupies (valid for 4 weeks). Thus the price for 1 ride is 2.5 Indian Rupies (=100 Indian Rupies / 40 rides). (1 Euro = 57.53 Rupies (FT 09. Feb. 2004) => 2.5 Rupies = 4.3 Euro-Cent)



1 Coca Cola (200 ml) in Calcutta City costs 5 Indian Rupies (= 8.6 Euro-Cent).

A subsidised metro ride costs 5 Euro Cents [half of 1 local Coca Cola]. But 80% of the metro costs have to be born by all the Indian tax payers.

7. The transition from subsidy to taxation in Kyrgyzstan. The graph was developed within the Ministry of Finance of Kyrgyzstan for a World Bank seminar on transport financing and displays the herd of sheep (among them sheep no. 6: transport) which by no means should be kept in the subsidy camp, but graze with the other self-financing sectors and may even pay a luxury tax if entering the luxury camp.

<complex-block><complex-block>

Transition from subsidized to self-financed and luxury sectors



8. Avoiding the Crash. Input taxation (by increased prices for infrastructure and energy) instead of price correction for product output may be best cure.



D. Conclusion

9. Plan of Action for Sustainable Transportation

Two main reasons for the infrastructure crisis were identified:

- Supply of roads, transport, electricity, water etc. outstrips the exponential curve of economic growth ("black-out crisis")
- Price adjustments from subsidized infrastructure to generally taxed infrastructure are still to be completed.

Two main price adjustments in the transport sector are recommended:

- A strategic policy decision should be initiated, beginning with fuel:
- To increase the fuel tax contribution to the State Revenues (now 0%) to levels of India, Japan, Turkey and even South Korea.

Three main consequences are to be expected:

- the financing of future road infrastructure is possible out of own State revenues,
- car owners in cities will increasingly contribute to the transportation measures of cities
- expenditure for ENVIRONMENTAL SUSTAINABILITY as road safety measures, public transport, improved fuel quality and lower emission vehicles are possible.

Thank you. GTZ 2005



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Strategy and Policy

on Sustainable TRANSPORTATION Development in China CCICED International Forum (28 June 2005, Beijing) and 3rd TF Meeting



FINANCIAL Aspects for Sustainable Transportation

- Consulting Services of the German Technical Cooperation GTZ -



German Technical Cooperation GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit GmbH), Department 44 – Energy and Transport, P. O. Box 5180, 65726 Eschborn, Germany





Counter Measures (taken in China):

- a) on the exponential curve:
 - Birth Control (0.58 % p.a. instead of 2,6 %)
- b) on the linear curve: Initiative to increase the Productivity (GDP)
- *) Note: Thomas Robert Malthus (1766-1834) was a famous British economist and philosopher ("Essay on principles of population" - 1778)

Counter Measures (needed in China):

- a) on the exponential curve:
 - **Economic Growth* controlled by Taxation**
- b) on the linear curve:

Initiative to enlarge the Economic Infrastructure with Revenues from Infrastructure Taxation (Fuel Taxation, Water Taxation, Electricity Taxation)

*) 9% growth p.a. in China (= doubling in 8 years)



State Financing in capital und social orientated Countries (West and East Germany 1989 before Reunification)





Fuel Prices in Asia and the Middle East of November 2004 in US Cents per Litre





Very high Fuel Subsidies

The retail price of fuel (average of Diesel and Super Gasoline) is below the price for crude oil on world market.

Fuel Subsidies

The retail price of fuel is above the price for crude oil on world market and below the price level of the United States.

Note: The fuel prices of the United States are aver. cost-covering retail prices incl. industry margin, VAT and incl. approx. 10 US cents for the 2 road funds (federal and state). This fuel price being without other specific fuel taxes may be considered as the international minimum benchmark for a non-subsidised road transport policy.

Fuel Taxation

The retail price of fuel is above the price level of the United States and below the price level of Luxembourg.

Note: The fuel prices of Luxemboug are the approx. minimum entrance level for new EU accession countries.

Very high Fuel Taxation

The retail price of fuel is above the price level of Luxembourg.



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Financing Source for Urban Infrastructure





- * annual tax is reduced for older cars
- ** since 01.01.2003



The vehicle tax in Kolkata is 36 \$.





Grey Benchmark Line = Retail Fuel Prices of LUXEMBOURG = approx. Minimum Entrance Level for new EU **Accession Countries**



Green Benchmak Line = Retail Fuel Prices in the UNITED STATES = aver. **Cost-Covering Retail Prices** incl. Industry Margin, VAT and incl. approx. 10 US Cents for the 2 Road Funds (Federal and State). This Fuel Price being without other Specific Fuel Taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport

Policy.

40 42

48

135

109

92

1991 1993 1995 1998 2000 2002 2004



Red Benchmark Line = CRUDE OIL Prices on World Market ("Brent" at Rotterdam)

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1991 1993 1995 1998 2000 2002 2004



Fuel Tax Contribution to Total State Revenues in Asian Countries 2004



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Financing Sustainability of Public Transport: "Zero Fare" in India ?



Metro Entrance ""Esplanade Station" in Kolkata (Calcutta) City Foto: March 2004 / Metschies / GTZ



Informal Restaurant in Kolkata City Foto: March 2004 / Metschies / GTZ



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Transition from subsidized to self-financed and luxury sectors





"Can wisdom ever be taught ?"

DIAGNOSIS OF AN OVERHEATED ECONOMY

MEDICINE PRESCRIPTION: CURE INPUT, NOT OUTPUT. (AFTER LOWERING TEMPERATURE BY RISING INTEREST RATES)



Input of Prices						
Infrastructure	Current Price Level	Target Price Level (MEDICINE)				
Product		for 6 Years	per Year	per Month		
Water	low	?	?	?		
Electricity	low	+100%	+12.2%	+1.0%		
Diesel Fuel	low	+100%	+12.2%	+1.0%		
Gasoline Fuel	low	+130%	+14.9%	+1.2%		
Vehicle Tax	low	+350%	+28.5%	+2.1%		
Gas	?	?	?	?		
Rail Transport	?	?	?	?		
Public Transport	?	?	?	?		





ANNEX 1: Discussion Paper "Considering the local purchasing power..."

Diesel Prices in Egg Equivalents in Asian Countries and the Middle East from Nov. 2004



Calculation details of the graph:

Country	Egg Price	Diesel Price	Egg Index
	US Cent	US Cent	Eggs per
	per Egg	per Litre Diesel	Litre Diesel
	(Nov. 2004)	(Nov. 2004)	(Nov. 2004)
Bhutan	4	59	14,8
India Coudi Archio	4	62	15,5
Saudi Arabia	6	10	1,7
Bekieten	6	10	3,0 6 9
China	6	41	0,0
Nenal	6	43	8.2
Irag	7	1	0.1
Turkmenistan	7	1	0,1
Yemen	7	9	1.3
Bangladesh	7	34	4.9
Sri Lanka	7	41	5,9
Iran, Islamic Rep.	8	2	0,3
Syrian Arab Republic	8	13	1,6
Afghanistan	8	58	7,3
Jordan	9	19	2,1
Philippines	9	34	3,8
Thailand	9	37	4,1
Cambodia	9	61	6,8
Azerbaijan	10	18	1,8
Vietnam	10	32	3,2
Kazakhstan	10	38	3,8
North Korea	10	61	6,1
Mongolia	10	67	6,7
Turkey	10	112	11,2
Banrain Komme Demoktie	11	19	1,7
Kyrgyz Republic	11	43	3,9
West Bask and Caza	11	43	3,9
Russian Endoration	12	70	0,4 3.8
Taiwan (China)	12	4J 55	3,0
Armenia	12	56	4,0
Uzbekistan	13	30	2.3
Taiikistan	13	59	4.5
Georgia	13	67	5.2
Brunei	14	19	1,4
Fiji	16	73	4,6

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