



The Nine Challenges for the  
Development of Transport in  
the Fast Growing Capital of  
Vietnam: Hanoi.

# Challenge 1: Economic growth – Higher Incomes. More people can afford cars and motorbikes.

In “good old times” there was almost no motorized traffic – only the streetcar. Economic growth makes motorbikes and cars affordable. In all affluent cities of the world, the result are crowded streets and traffic jams.



## Challenge 2: Growth of urban population. More people move to the cities.

### VIETNAM

- ✦ Growth of GDP in the last years 8.2 – 8.4 %
- ✦ Population by 2005 83.1 Mio
- ✦ Population Growth 1.31 %
- ✦ Urban Population 26,7 %

Source> World bank and UNFPA – most recent, that is 2005 and 2006.

### Hanoi

- ✦ Population 3 232 000
- ✦ Population including migrant workers and commuters > 4 Mio

Source Hanoi Portal. There is a great diversity of data: General Population Statistics VN 2,055 Mio, our own estimate based on satellite survey 3 400 000.

Forecast 2020 for greater Hanoi 15-20 000 000

Greater Hanoi refers to the con-urban agglomeration with a radius of about 40 km. People will increasingly commute to Hanoi. The rate of urbanization in Vietnam will grow to 50%.

## Challenge 3: Congestion –

More traffic on a limited road network increases congestion and makes travelling slower. People lose time! How to keep the city alive?

- Motorcycle jam – before Long Bien Bridge.



Modal Split, use of road space and fuel consumption by mode

	<i>Modal Split</i>	<i>Road Space</i>	<i>Fuel consumption</i>
<i>Public Transport</i>	10,73%	8,89%	5,89%
<i>Cars and mini vans</i>	4,04%	19,05%	20,53%
<i>Motorbikes</i>	80,78%	62,40%	69,94%
<i>Bicycles</i>	2,50%	2,89%	0
<i>Tourist buses</i>	1,78%	2,04%	1,34%
<i>Light trucks</i>	0,15%	4,74%	2,3%
<i>3 wheel</i>	0	0	0

**The mode contributing the most to congestion is the fast increasing number of cars.**

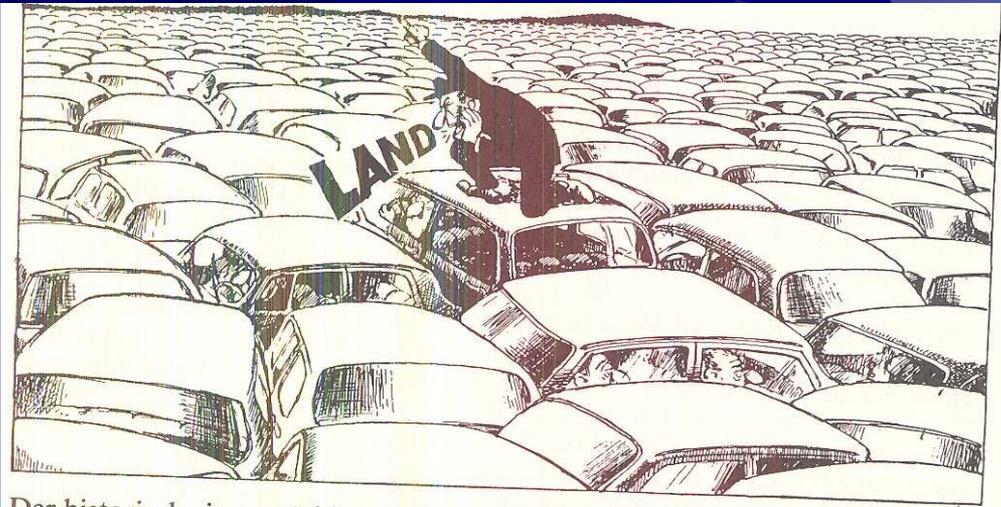
Roads in Hanoi have to handle an extremely heavy traffic.

330 000 people are crossing the red river via Chuong Duong Bridge and Long Bien Bridge.

410 000 people are using the road from Ha Dong.

The motorbike is a very efficient means of transport. If this number of people would all travel by car, 10 lanes would be required for Chuong Duong. Nguyen Trai would have to have about 14 lanes.

Even though 90% of the people are using the motorbike or public transport, Hanoi traffic has reached its saturation level.



Der historische innerstädtische Straßenverkehr in Hanoi

## Challenge 4: Urban space in the city is precious.

Difficult and expensive to build new roads and widen existing ones.

- ✦ The value of land is very high. Compensation for land is a high cost factor for new roads.
- ✦ Modern, high capacity roads use a lot of space. One intersection free junction would almost cover the entire area of the old quarter.



Transport infrastructure uses enormously space. These two google-world maps have the same scale. On the left: 1 intersection in Los Angeles. On the right the old quarter of Hanoi – just one intersection?

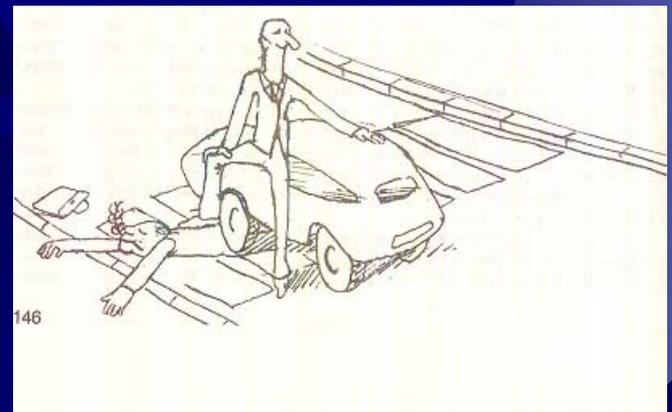
## Challenge 5: Reduce fuel consumption

- ✱ Transport uses 30% of the fuel in developed countries. In Vietnam it should still be only 5%!
- ✱ Traffic jams cause waste. Cars and busses are burning fuel without moving.
- ✱ The best modes of transport concerning fuel consumption are:
  - The bicycle,
  - Walking,
  - Rail based public transport,
  - Busses on their own lane (BRT).
- ✱ Motorbikes are much better than cars and almost equal to busses on congested roads.

## Challenge 6: Safety.

Road safety: protect the children, the old and the poor.  
Control criminal behavior.

- ✱ The roads of Vietnam are unsafe. 14000 killed per year, this means also about 100000 injured.
- ✱ The motorbike is the most unsafe way of transport. Experience in European countries is, that number of people killed when using the motorbike is about 7 times as high as compared to the user of cars, relative to km driven.
- ✱ The most vulnerable part of the population are the children, the old and women, who have less access to motorized transport than men.



## Challenge 7: Health.

### Reduce hazardous emissions

- **Ambient PM<sub>2.5</sub> (Particulate Matter 2.5  $\mu\text{m}$  or less in diameter)**

Exposure to particulate matter has been associated with premature death and cardiorespiratory diseases.

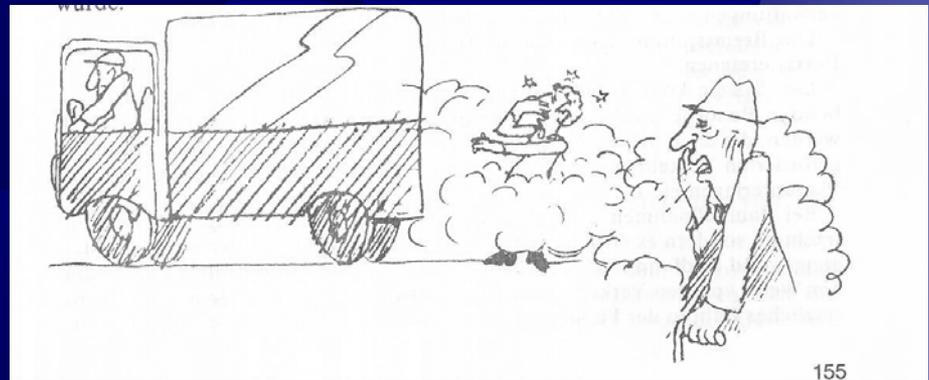
- **Ambient Ozone**

Ozone exposure can lead to reduced lung function and increased respiratory symptoms; it is even associated with illness and premature death.

- **Diesel Particulate Matter**

Exposure to diesel exhaust particulate matter can be associated with premature death and cancer as well as other health problems.

**Reference:** Quantified Health Impacts of Air Pollution Exposure, gvt. Of California, Dec. 2007



## Challenge 8: Plan and manage a more and more complex urban transport system.

- The growth of population and the growth of the size of a city require modern means of transport. Road traffic by car and motorbike needs to be guided and channelled. Modern means of mass rapid transit (MRT) are busses on their own lanes, well managed (BRT), urban rail like METRO and suburban rail or regional rail services.
- Infrastructure to handle the large volume of travellers – 3 million per day – will require huge investment. Calculate \$3 billion in the next 8 years.
- Public transport has to be integrated by a comprehensive management system to allow seamless flow of passengers from one system to the other and to avoid waste.
- Modern tools to manage such complex systems, based on computer systems and GIS are available.
- **Management is a task for humans. Management capacity building is the single most important effort, to make the investment a success!**
- **An integrated transport systems requires integrated planning and decision making for all modes of transport.**

## Challenge 9: Bureaucracy and corruption.

Where there is a lot of money, there is a big temptation for corruption. Control is necessary!

Too much bureaucracy slows down activity, costs time and money.

- Where there are large investment and big budgets for operation, there is the temptation and opportunity for big corruption. This is a problem well known in all cities and countries in the world.
- Transparency, political oversight, control and independent auditing have to evolve in order to check and control these hazards.
- An administration, which is a necessity, has always a risk aversion. By doing nothing, the administration thinks it will make no mistakes. Complicated procedures and timid decisions are the result. Long delays in getting plans implemented cost money, are another cause of squandering scarce resources. Nobody profits, but all loose!