

# TRANSPORT AND MOBILITY



*ETH Studio Basel*  
Contemporary City Institute  
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Christian Mueller Inderbitzin

Spring Semester 2012

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# TRANSPORT AND MOBILITY MOVEMENT OF PEOPLE AND GOODS

## PATCHY NETWORKS

**Politics and Infrastructure**

**National Bipolarity**

**Autonomous and Disconnected Networks**

**Land Use Problematic**

## THE REIGN OF THE MOTORBIKE

**How the Motorbike conquered Hanoi**

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## A SOCIETY ON WHEELS

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**Wholesale Markets: the Junction of Multiple Fluxes**

## EVENLY SPREAD MOBILITY

**The Homogenizing Energy of the Street Use**

**Transport and Economy: a Developing System**

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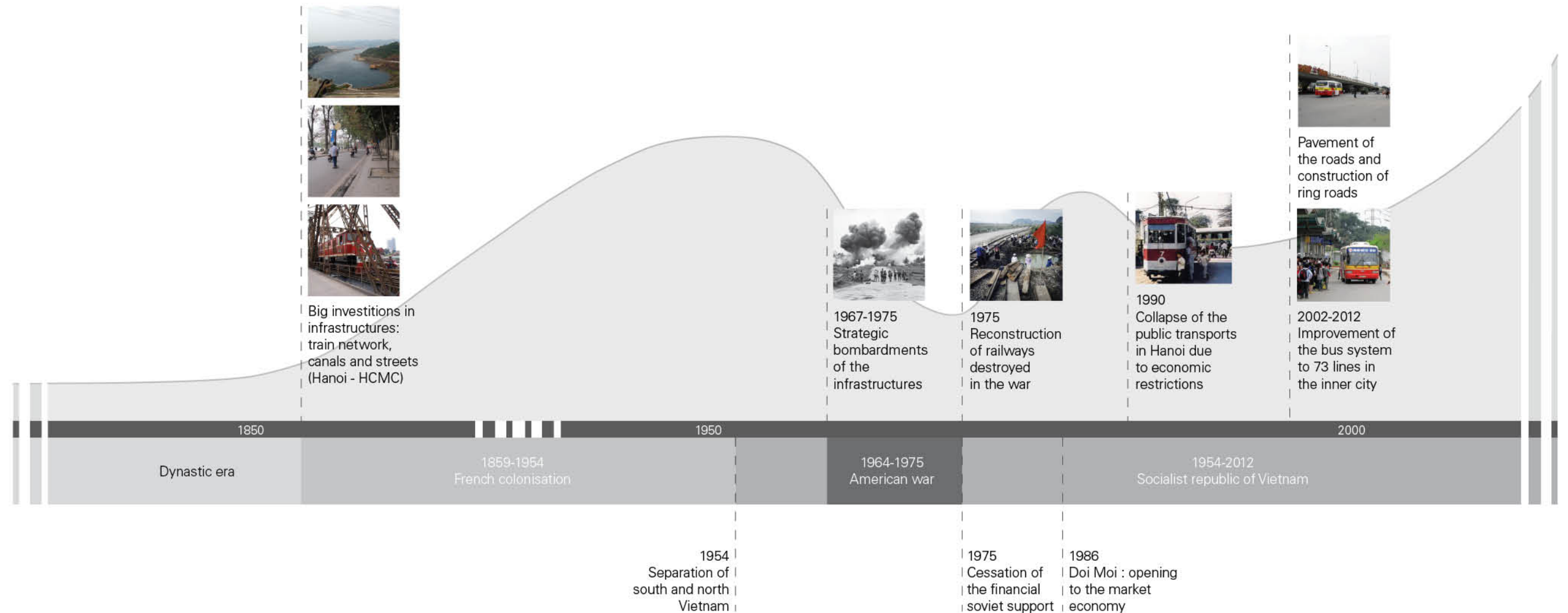
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## PATCHY NETWORKS

The Red River Delta's transport networks are an expression of the political orientations over the time, combined with the physical reality of Vietnam's elongated territorium. Since the American War, the focus has been set on the road, neglecting the other infrastructures. As a result, the networks are incomplete and not interconnected. The roads are overloaded and struggle to gain a real hierarchy because of the unregulated land use.



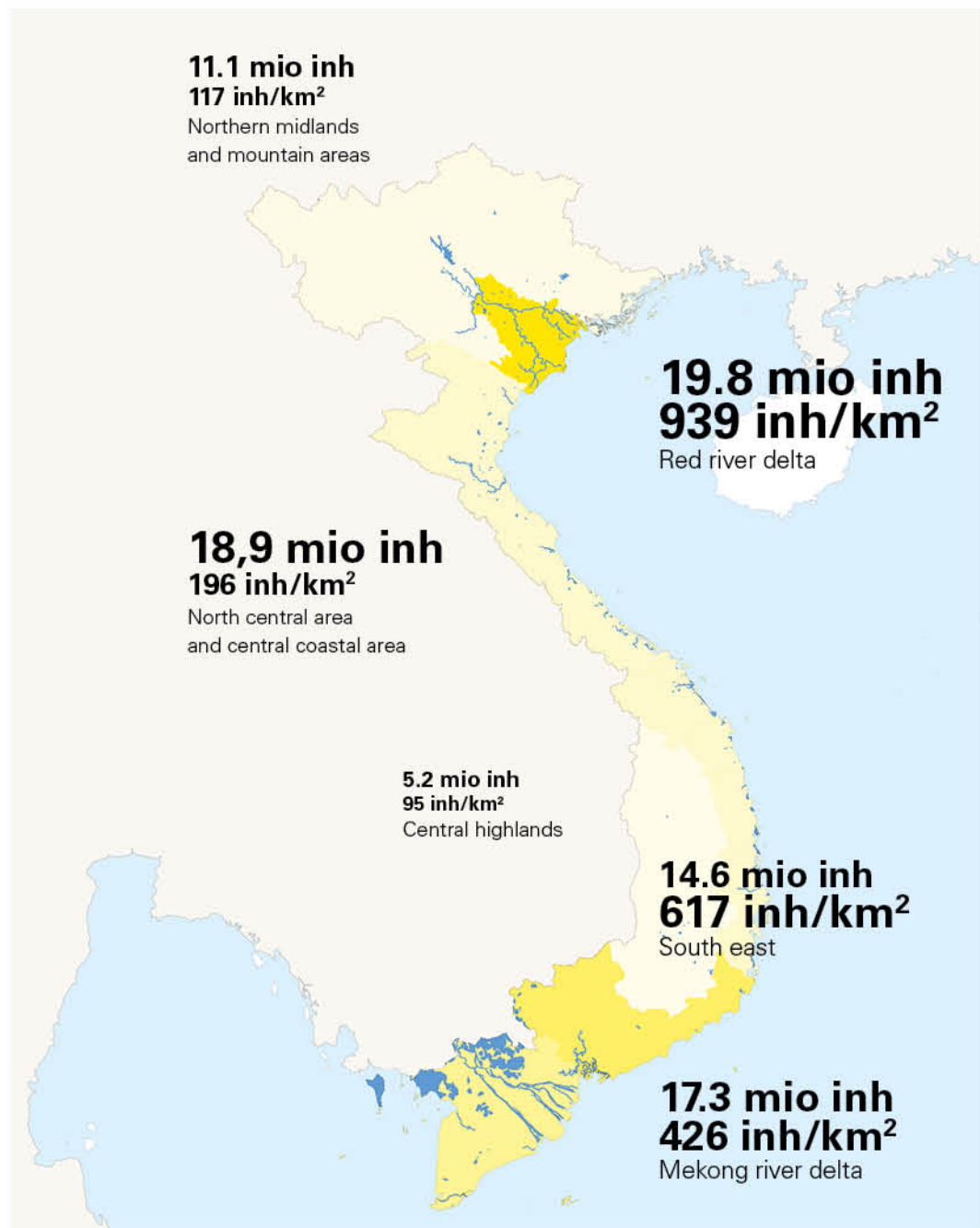
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### Politics and Infrastructures

All over its history, Vietnam was strongly exposed to different foreign influences. The transportation networks were firstly developed during the french colonialism. After the American War, a big phase of reconstruction took place under communistic ruling. Finally, as Vietnam opened to the market economy, foreign investments stepped in again in the transport planning. Under this constant changing ideologies, it has been difficult to coordinate the infrastructural development.

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Population Density (pers/km<sup>2</sup>)

### National Bipolarity

In Vietnam the highest population densities are naturally located in the center of the two deltas - in the north the Red River Delta with Hanoi and in the south the Mekong River Delta with Ho Chi Minh City. The networks are therefore concentrated in this two areas. Politically, the two cities compete in their ambitions to become modern metropolises, with Ho Chi Minh City in a leading position. As a result, the efforts for developing the networks emphasize this bipolarity.



0.6%  
Transport of people

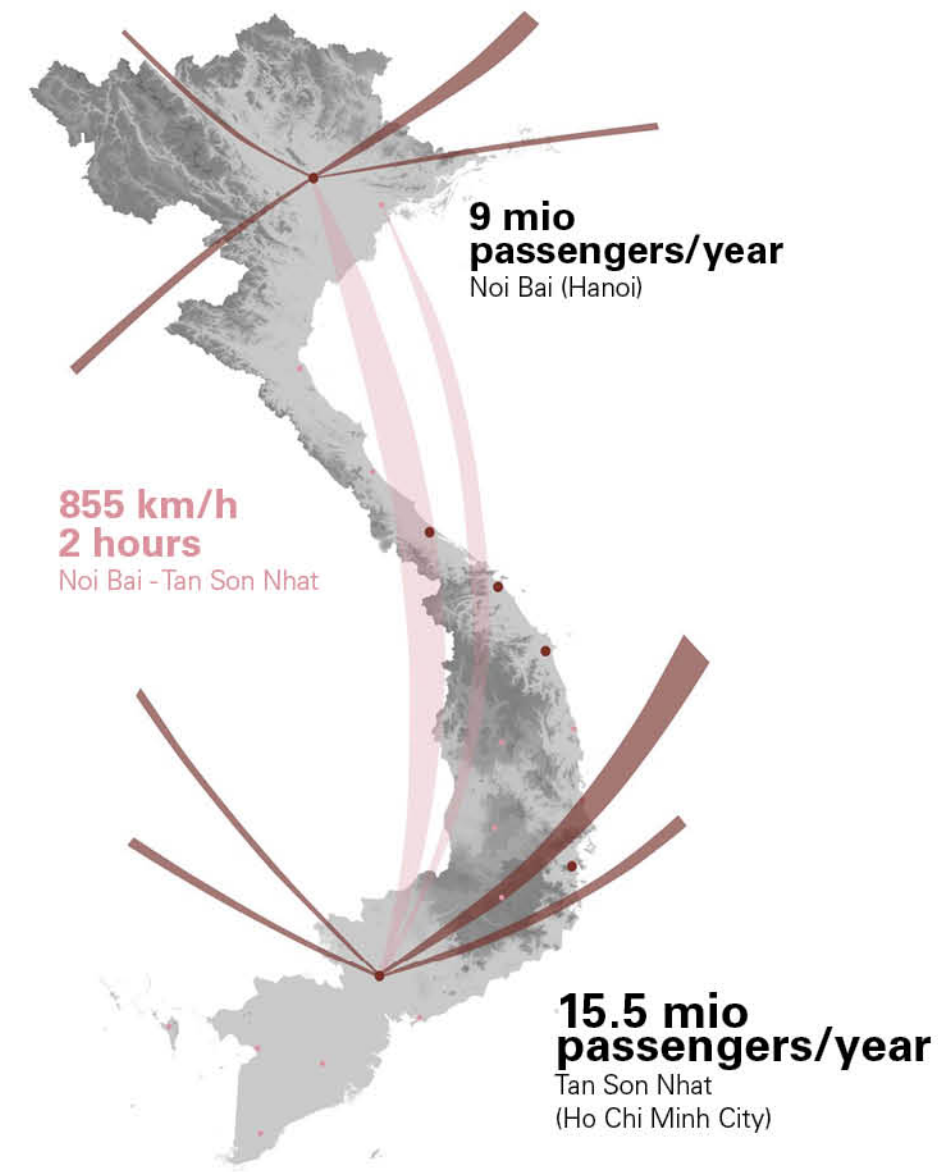


0.2%  
Transport of goods

Local Airport  
International Airport

### Express Airway Connection

Since the two deltas are separated by a very elongated mountainous region, flying is by far the most efficient way to connect them. The most used domestic flight is therefore between the two main cities airports, which are also the only really international airports out of twenty.



**31.4 mio passengers/year**  
Bangkok

**40.9 mio passengers/year**  
Singapur

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**0.6%**  
Transport of people

**2%**  
Transport of goods

**Rail - an Infrastructure of the Past**  
The railway network was implemented during the colonial time by the french engineers and haven't extended later on. Besides the connection between Hanoi and Ho Chi Minh City and two other more going to China, there are just very few train lines.

**Over 3000 trains/day**  
Tokyo Station



**Single Track Railway**

The tracks themselves are representative of the undeveloped state of the railways. Every line of the networks has just one track, which forces the trains to stop over "technical stations" to let other trains go by.



**Small Volume of Goods**

The train functions as a collector for the goods of the region and is used when the quantity to transport is not big enough to hire a truck. The small Long Bien train station, situated next to the main goods markets, neither have a storage room, nor a good access from the street. The goods have to be brought there with small transportations means.



**Obsolete Structure**

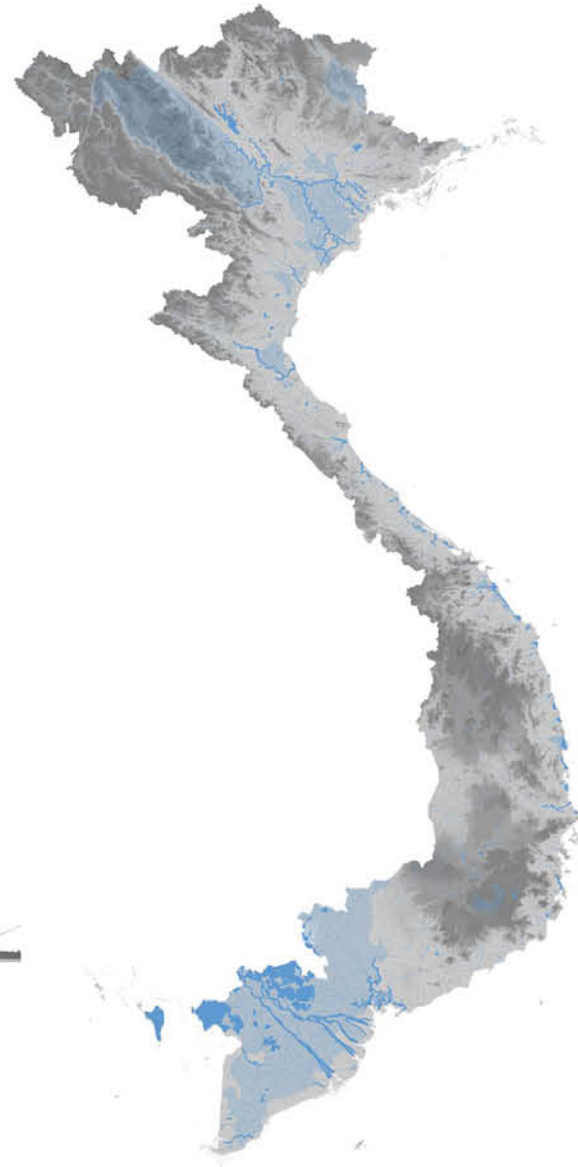
The Long Bien Bridge, built in 1903 from the Eiffel company, was the first steel structure crossing the Red River in Hanoi and offered the most important connection to Hai Phong and China. During the war, the bridge was bombarded from the americans. The structure was never completely destroyed but weakened despite some reinforcements and reparations.



**Unprotected Tracks**

In many places, the train tracks are unprotected, especially in the rural areas, where they are sometimes only one meter away from the house fronts.

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"You don't want to rely on the water."  
Dr. Huyen

**41'000 kms natural waterways**

**8'000 kms waterways used for commerce**



**7.8%**  
Transport of people

**15.7%**  
Transport of goods

**Two Deltas - two Perceptions**

In the Mekong River Delta the waterways use was since the beginning part of a comprehensive approach; the transportation on this network has been developed and is still well managed. In the north however, the waterways are underused, partly because of a certain mistrust of the inconstant water.



**Impracticability of the Waterways**

Some of the ports are totally unusable. Beside the natural conditions, the lack of water is worsened by the barrages recklessly built in China.



**The Inconstant Nature of the Red River**

During the dry season - from October to April - the exploitation of the waterways is difficult due to the low water level.

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**Networks**

- Inland waterways
- Railways
- Roadways

**Autonomous and Disconnected Networks**

By looking at the different transport infrastructures inside Greater Hanoi, the dominance of the roadways over the other networks is obvious. In such an uneven repartition, the notion of hub as a meeting point of different networks seems to lose its relevance. If there is no interference between the networks, is it possible to find nodes?



# Roadways



Inland waterways



Railways

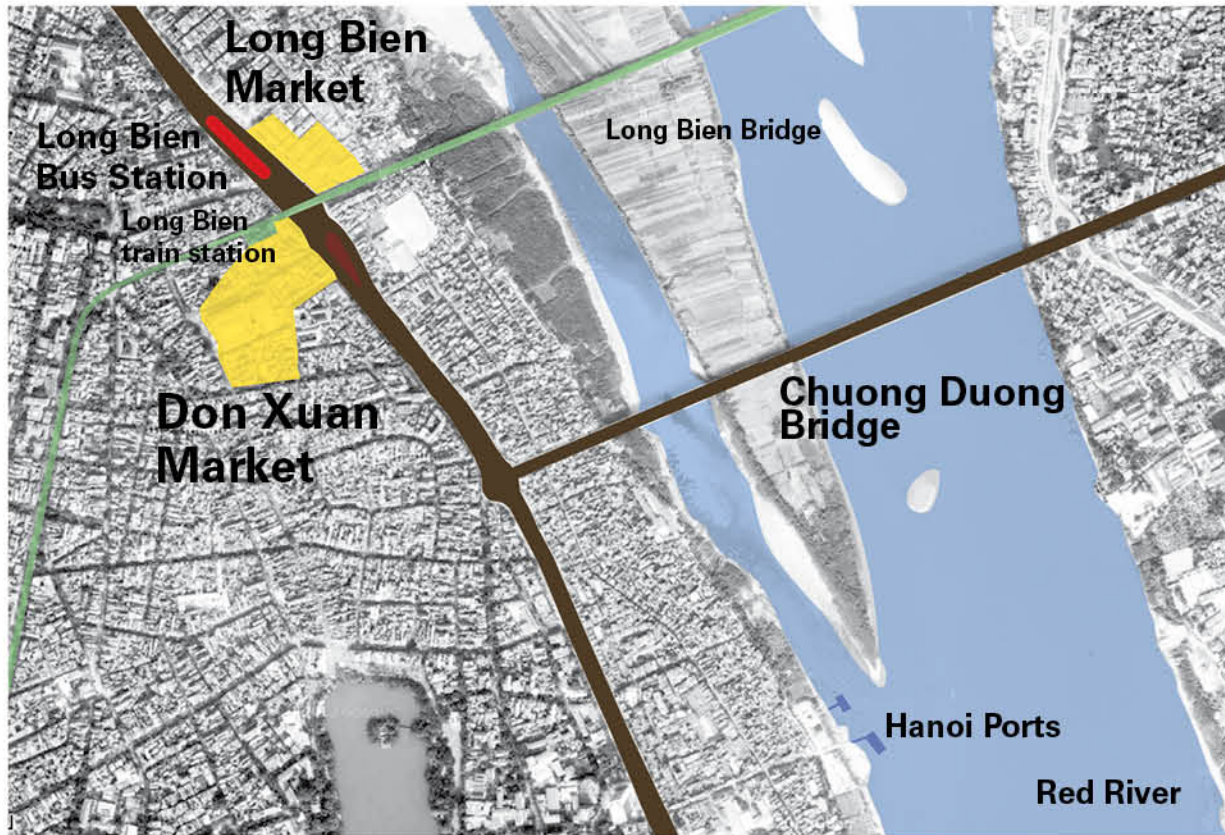


Airways

**Delta Transportation Coverage**

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Railway station of Long Bien



Double-track railway on the Long Bien bridge



Main road under the Long Bien bridge



Long Bien interchange bus station

### Infrastructure

- Inland Waterways
- Railways
- Roadways
- Parking
- Bus Station
- Markets

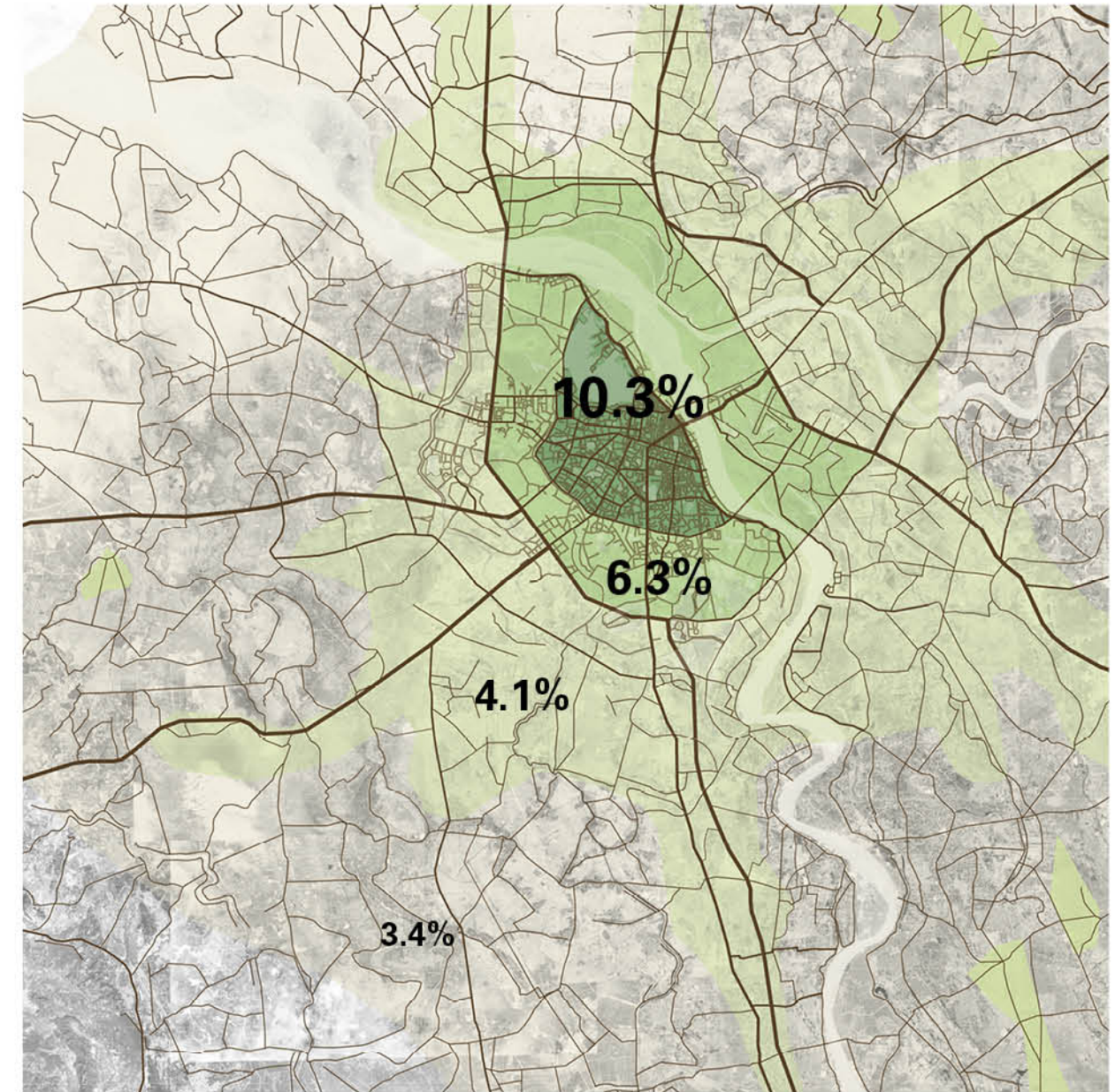
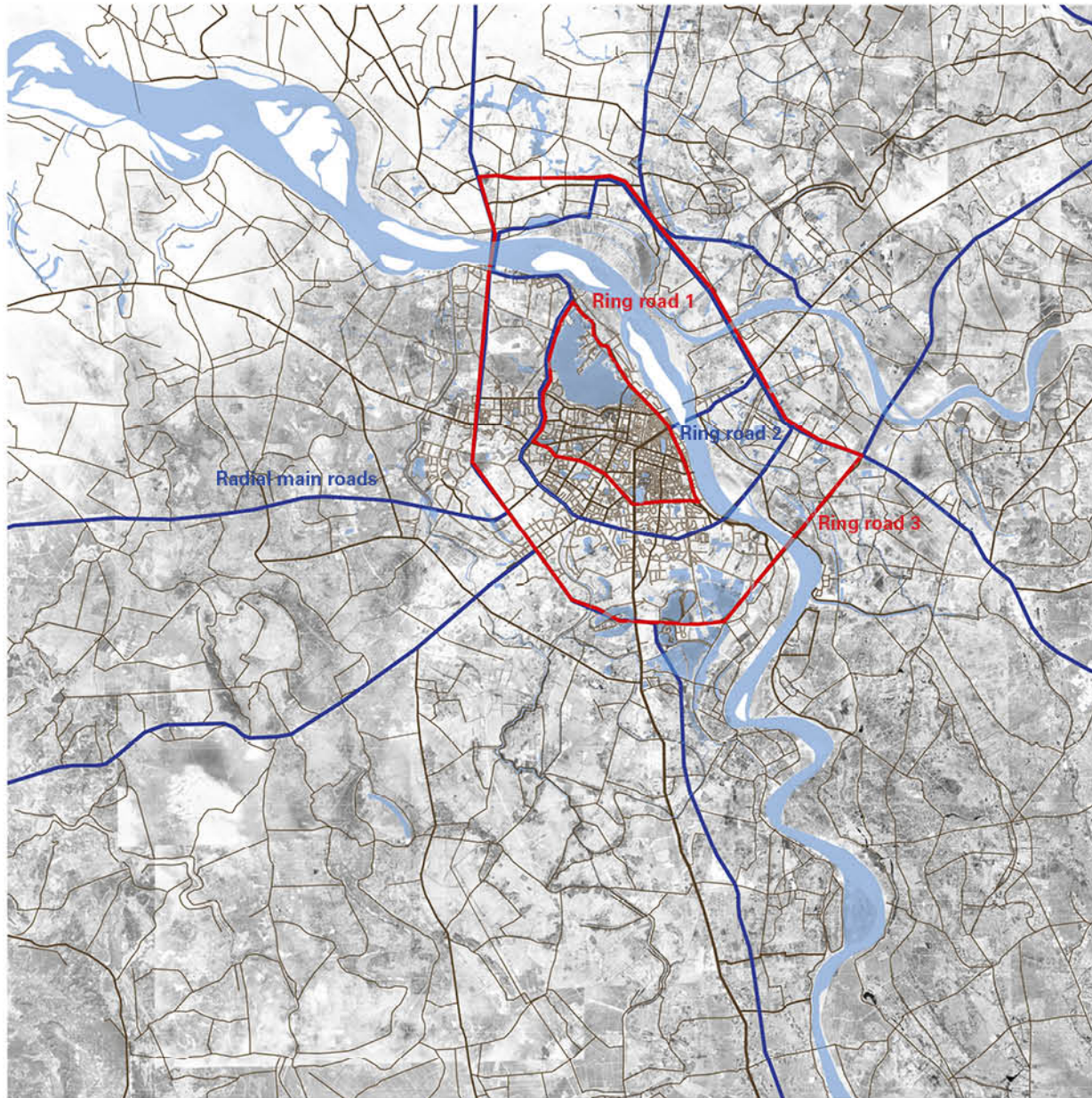
### Looking for Hubs in Hanoi . . .

The area around the Long Bien Bridge in the urban core has in many regards the appearance of a hub, combining port, train station, crossing of main roads leading to the north, bus interchange station and parking.

### Concentration without Interchange

There is however no real interchange between the modalities. The people mostly come and go from this crowded place with the same individual means of transport and mostly for the same reason: the two big wholesale markets, Long Bien and Don Xuan.

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### Land Use Problematic

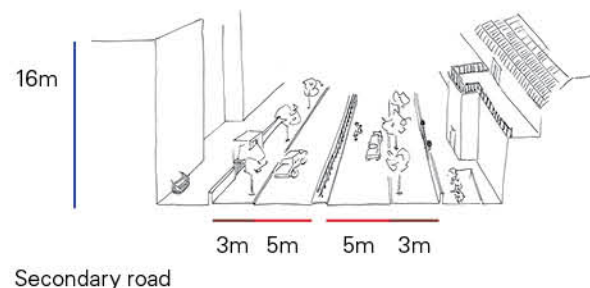
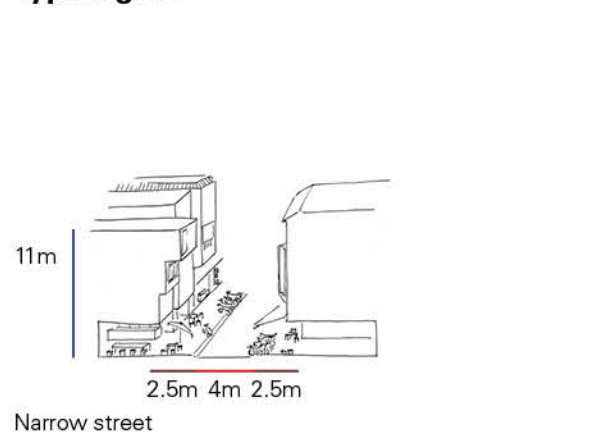
The structure of the road network is basically hierarchic organised, like a typical monocentric city, with ring roads and radial roads. However, it is a fragmented system, since some sections are still missing. In addition, the lack of crossroads makes it difficult to evade to other streets during traffic jam. An enlargement of the roads is needed to relieve the network, but its implementation is often inhibited through the invading informal settlements along the roads.

- Urban Core
- Urban fringe
- Suburban
- Rural

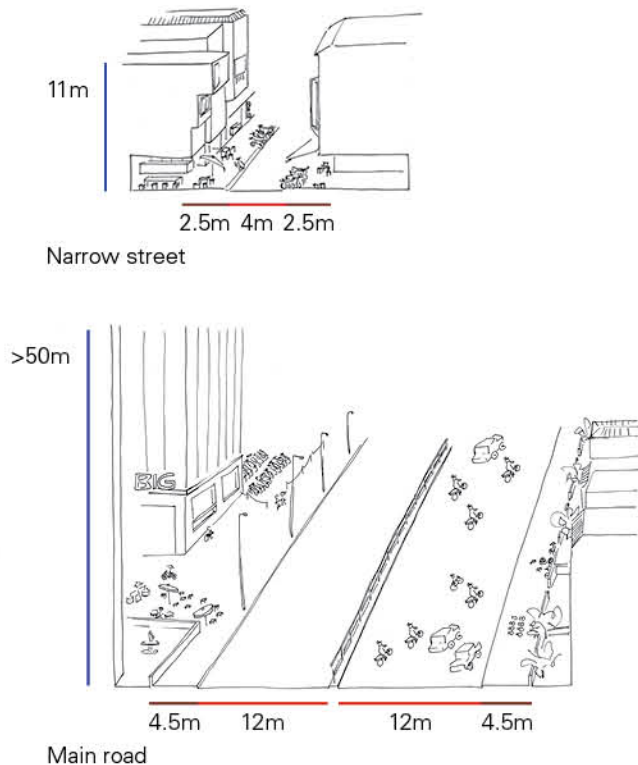
### Road Ratio inside Greater Hanoi

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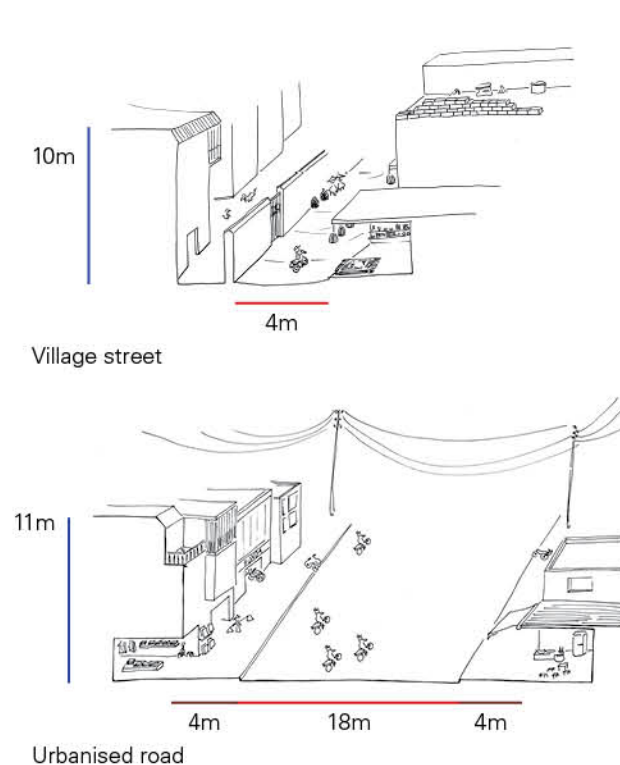
## Typologies



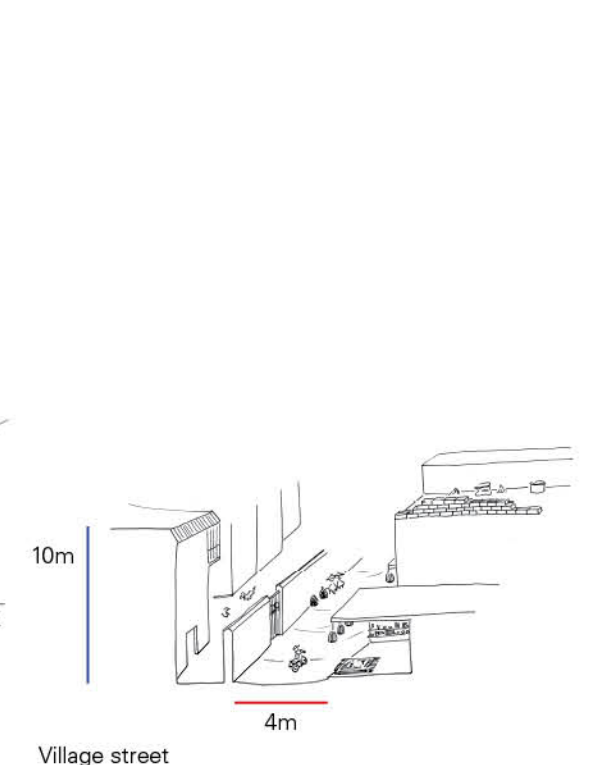
10.3%



6.3%



4.1%



3.4%



Main Road in Hai Ba Trung District



National Road Cau Giay District



Ho Tung Mau Road



Tay Tuu

### Urban Core

The density of the road network in the old quarter is very high, like in the french quarter, where the structure forms a grid. Because of the occupation of the sidewalks from commercial activities and parking of the motorbikes, the pedestrians often walk on the road, beside motorbikes, cars, bus and bicycles.

### Urban Fringe

The new development areas are situated between the 2<sup>nd</sup> and the 3<sup>rd</sup> ring road. There, the road network is less dense, but the main roads are wider and have often a barrier separating the two directions of the traffic. In the neighbourhood, the narrow streets typology of the Urban Core remind.

### Suburban

The urbanised roads are located between the urbanised city and the urbanised villages. The mobile vietnamese population settles to be near the city center at lower costs. The settlement are concentrated along the few but very wide roads. These streets have no traffic signalisation or separated tracks.

### Rural

A lot of traditional villages are parts of the city borders since the enlargement of Hanoi in 2008. Their street network have mostly a low density, because of the narrowness and the rarity of the roads. They also remain partly unpaved.

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### Lack of High-Speed Roadways

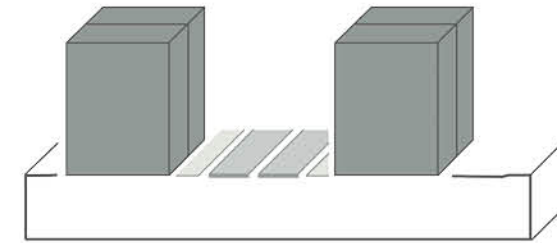
Since no roads have both separated tracks and signals, but big crossroads and often commercial activities on their side, none of them can be assorted as a highway.



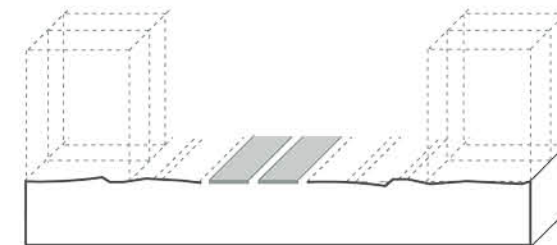
Crossover by national Road in Cau Giay District

### Elevated Roads

Because of the small road ratios, the solution to build elevated tracks was chosen to avoid the costs that an underground construction would cause in the specific condition of a delta. This strategy mainly doubles the road surface and sinks the number of accidents in the main crossroads of the urban fringes, where the vehicle goes faster.



**4** Informal private houses occupying land of the project



**3** Partial implementation due to limited budget



**2** Investition plan from the state



**1** Unpaved single road

### Informal Settlement

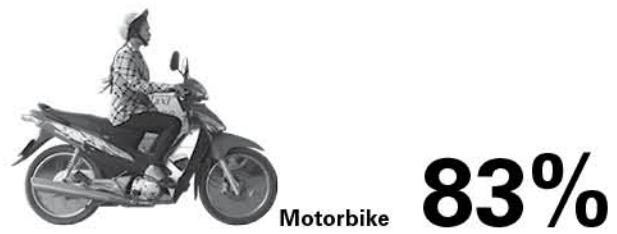
Right after the beginning of its construction, the new road attracts new settlers who want to benefit from the commercial opportunities given by a house next to the street. The settlement growth is faster than the road implementation, and therefore stops its completion.

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## THE REIGN OF THE MOTORBIKE

During the last decades, the face of Red River Delta's streets completely changed. Nowadays almost all the silently moving bicycles are replaced by motorbikes. The vehicle conquered Vietnam unbelievably fast and causes since recently increasing resistance reactions against its negative side effects.





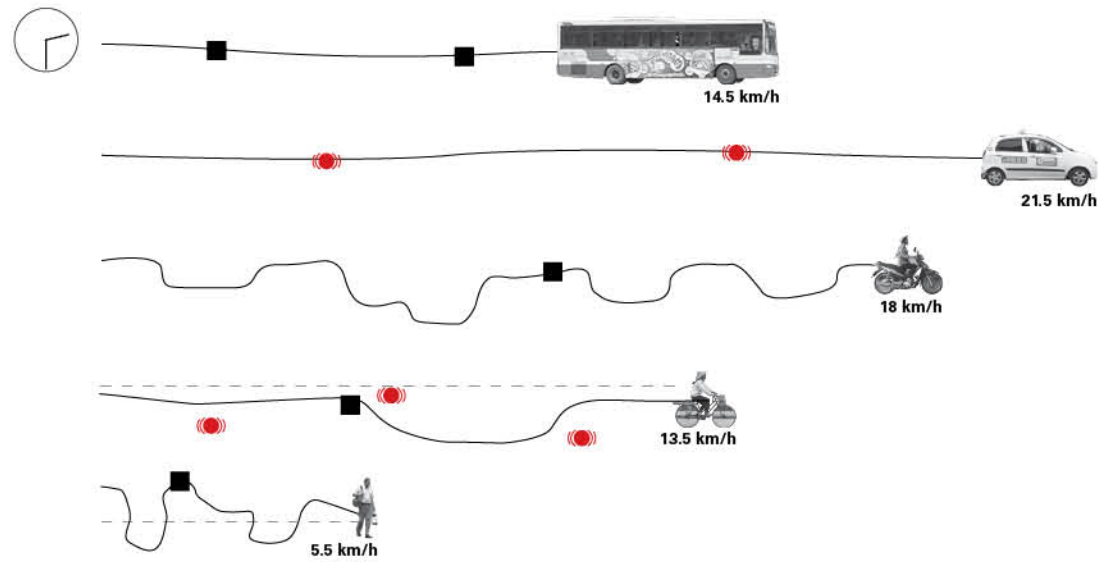
### How the Motorbike conquered Hanoi

Walking through Hanoi, one realises right away that everyone seems to ride a motorbike. What makes the motorbike this desirable, that almost everybody wants to have one? And how can this mushrooming motorbike development be this rapid?

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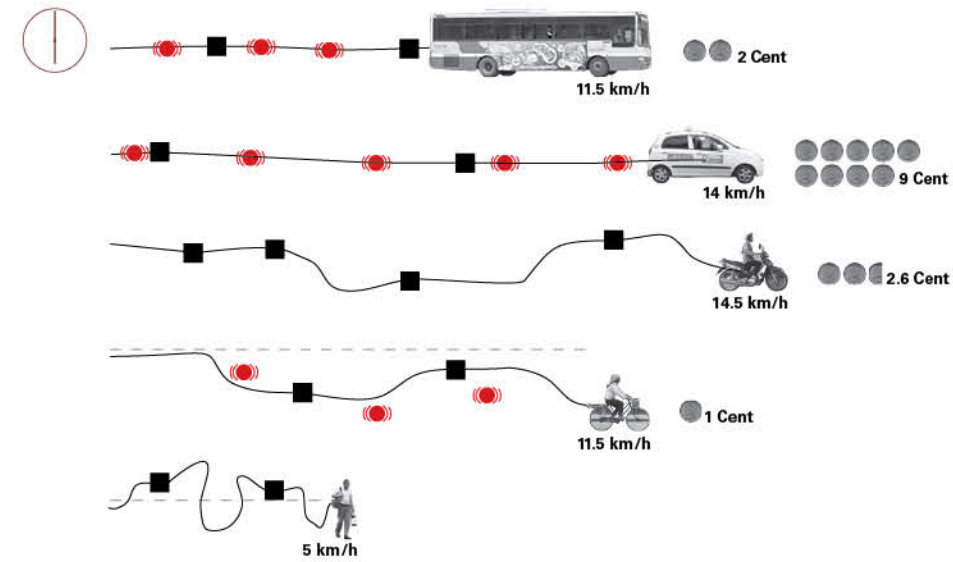
Lo Duc Street



- Stop
- Horn
- Sideway
- Cost for 1.2 km

### Testing all Modalities on the Street

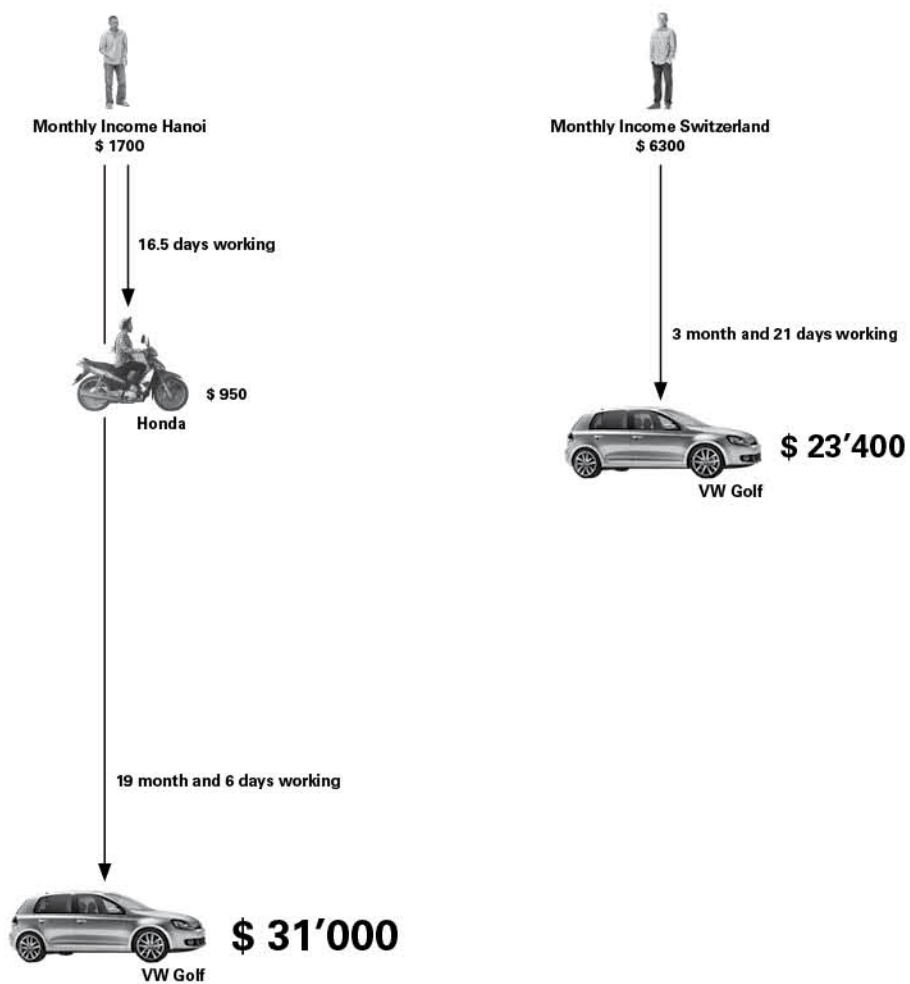
One time during rush hour and another time during non-rush hour on a distance of 1.2 km on the Lo Duc Street, which lies in the inner city of Hanoi and is one of the radial main axis.



### Moving Ability

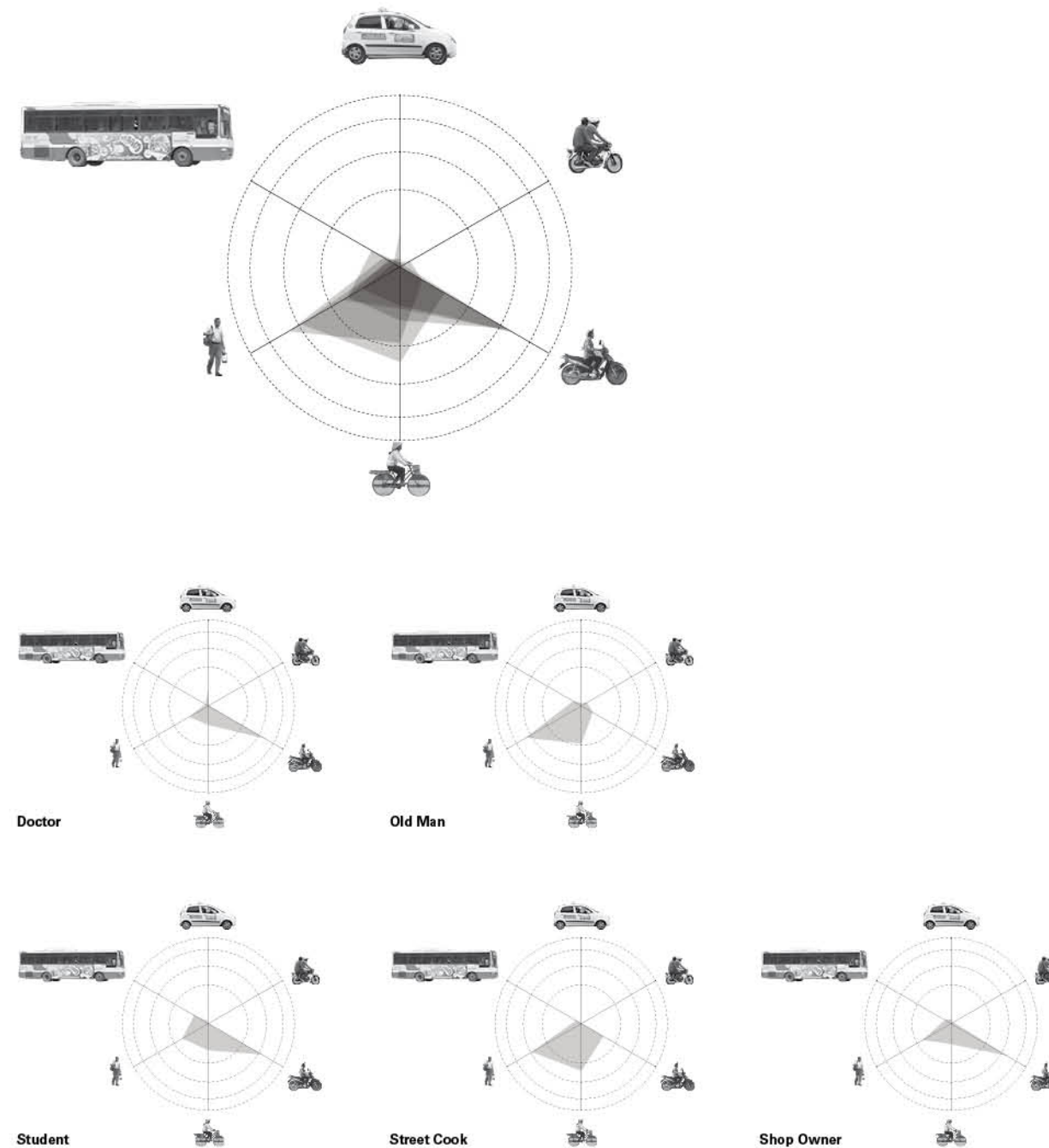
During the day the car is the fastest vehicle on the street. In the rush hour the motorbike barely outruns the car, because of its characteristic flexible movement contrasting with the straight path of the bus and the car, which get stuck among the numerous motorbikes. The bus persuades with its cheap tickets, but the costs of the motorbike are only slightly higher, standing in opposition with the mostly unaffordable car.

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### Affordability of the Motorbike

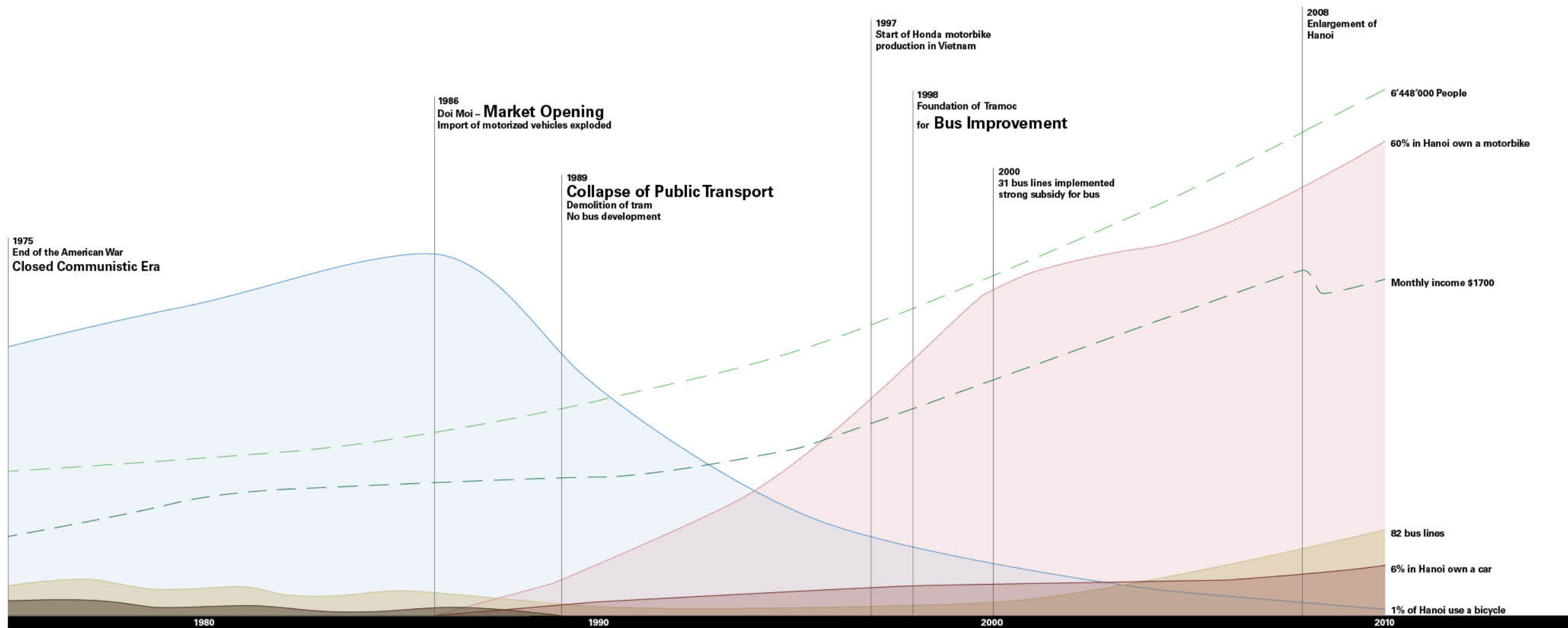
In Hanoi the motorbike reached the same status as the car in Switzerland. Almost every household owns one to two motorbikes. People from the rural areas of the Red River Delta possess less motorbikes, but at least one per family.



### Motorbike Users and the Others

As the use of motorbikes rises with the income, the walking declines. Cars are only affordable for the upper class and the bus is mainly used by students or old people.





**Public Transport**

- Bus
- Tram

**Private Transport**

- Bicycle
- Motorbike
- Car

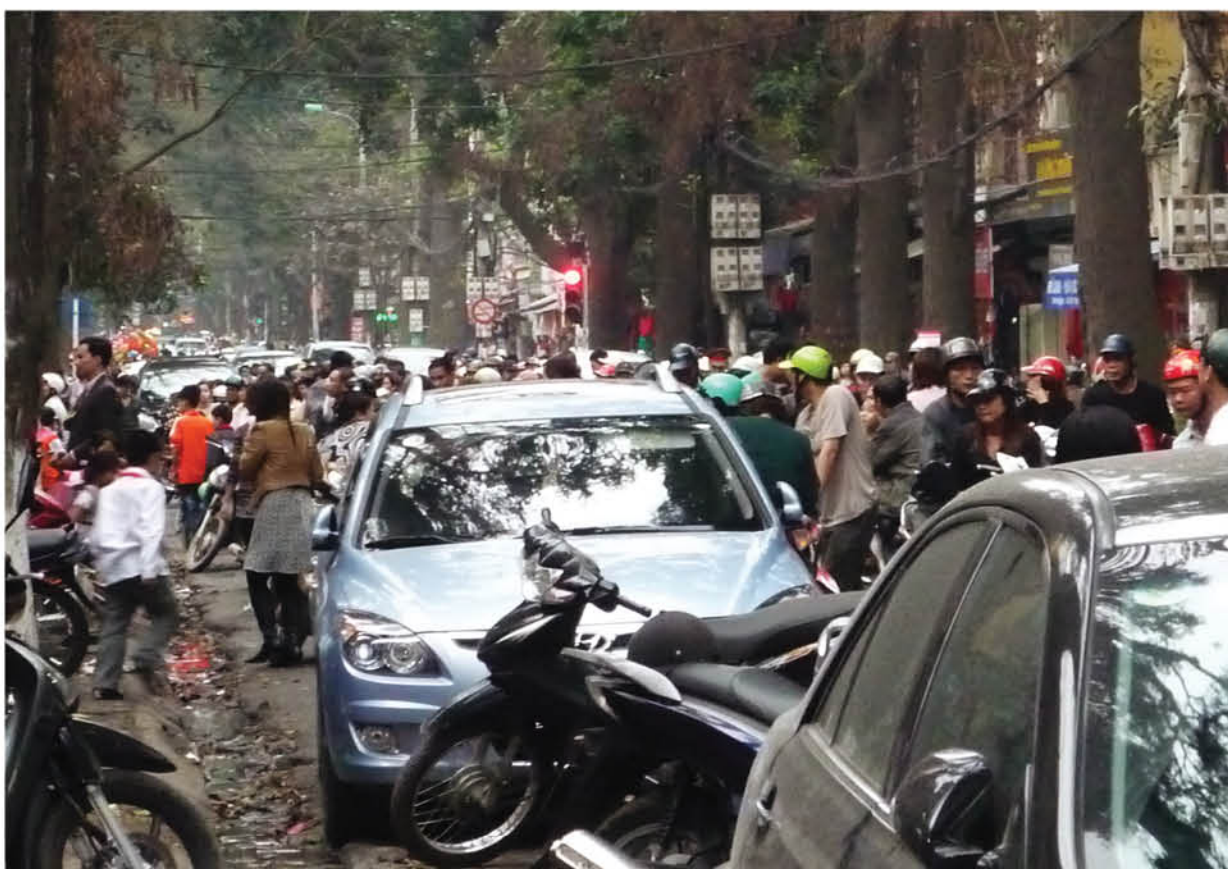
**Influences**

- Monthly income
- Population growth

**Private Motorisation Boom in Hanoi**

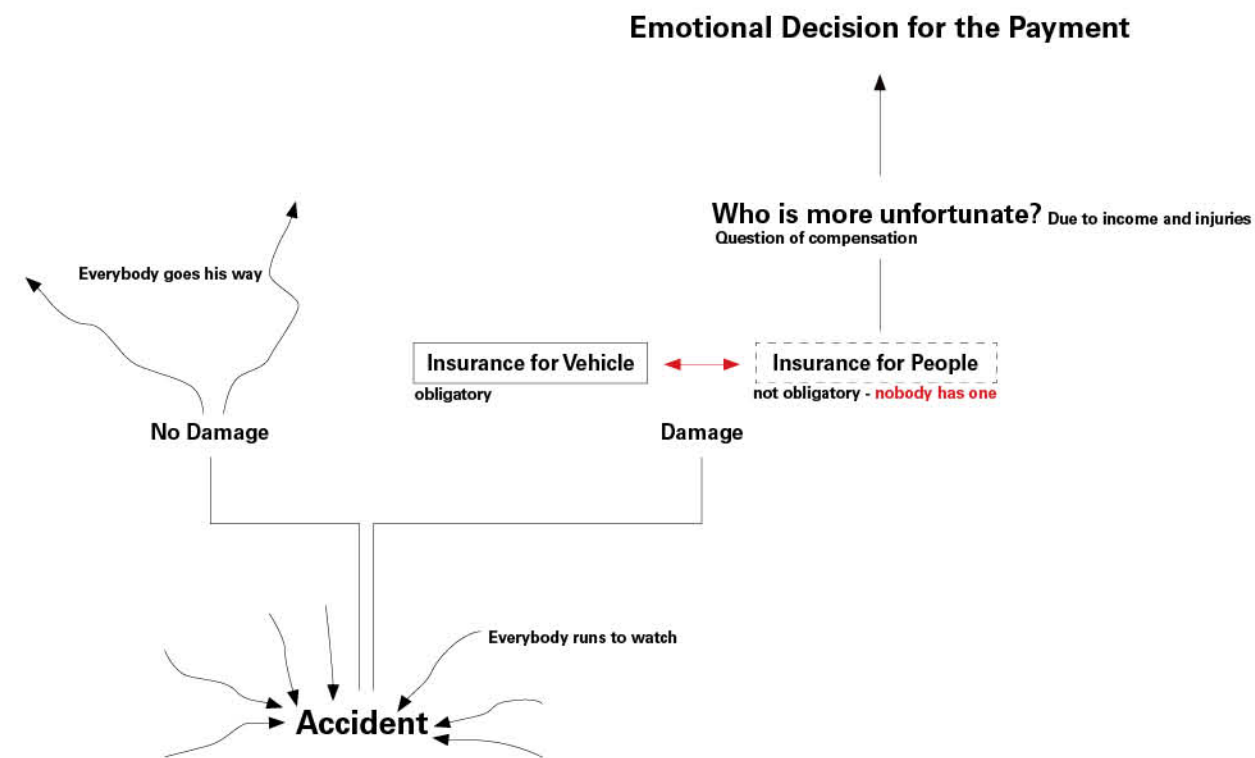
After the Doi Moi reform the GDP in Hanoi escalated rapidly as it became possible to import all kind of products. This led to a high increase of motorbikes and a simultaneous decrease of bicycles. Recently, the car imports also started to rise. The bus system improvement since 2000 has only brought a slight slowdown of private motorisation.




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### Fear of Overcrowded Streets calls for more Public Transport

Despite all the reasons speaking for the motorbike, it also has some negative externalities as the polluted air and the high accident rate in the Red River Delta. Nowadays the biggest problem is the lack of alternatives to the motorbike, which increases its popularity. As a result, the problem of congestion keeps growing.



Vietnam	16.1	→	11	
Cambodia	12.1	→	8	
Japan	5.0	→	1	

Death rate / 100'000 people

### Danger of the Road Congestion

The motorbike is all over the world one of the most dangerous vehicles. Through its wide use in the Red River Delta and the lack of traffic regulations, the accident rate is high. In the center less fatalities occur thank the low traffic speed, than in the urban arterial roads and the suburban main roads, which are very wide and uncontrolled.

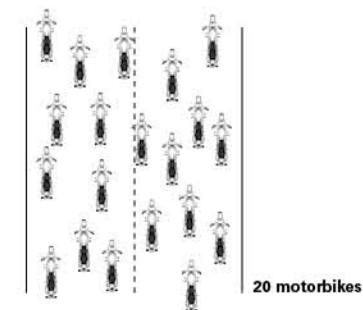
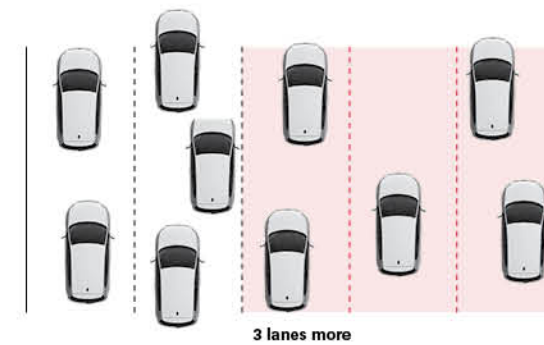
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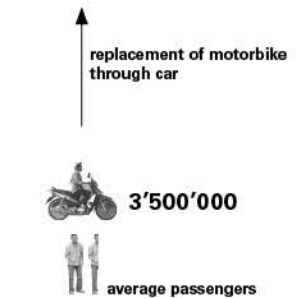
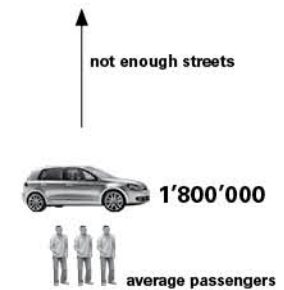
Average Tax

### Rejection of the Car...

One strong policy is to fix the car taxes this high, that only few people can afford one. In a communistic sense it is called a luxury tax, but the main reason is the lack of road area.



**+ 150 % road area required**



existing roads

### ...against a Catastrophal Scenario

What would happen if the motorbikes were replaced by cars?

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### Bus Network as an Urgent Measure

A fast implementation based on people's needs, combined with a low price strategy with subsidies are the main characteristics of Hanoi's Bus Network. Nevertheless the system is still developable. During rush hour the buses are highly crowded, but it is difficult to implement more lines in the inner city because of the traffic jam. In the outer areas the line density gets rapidly lower and most of places are not connected with the bus.

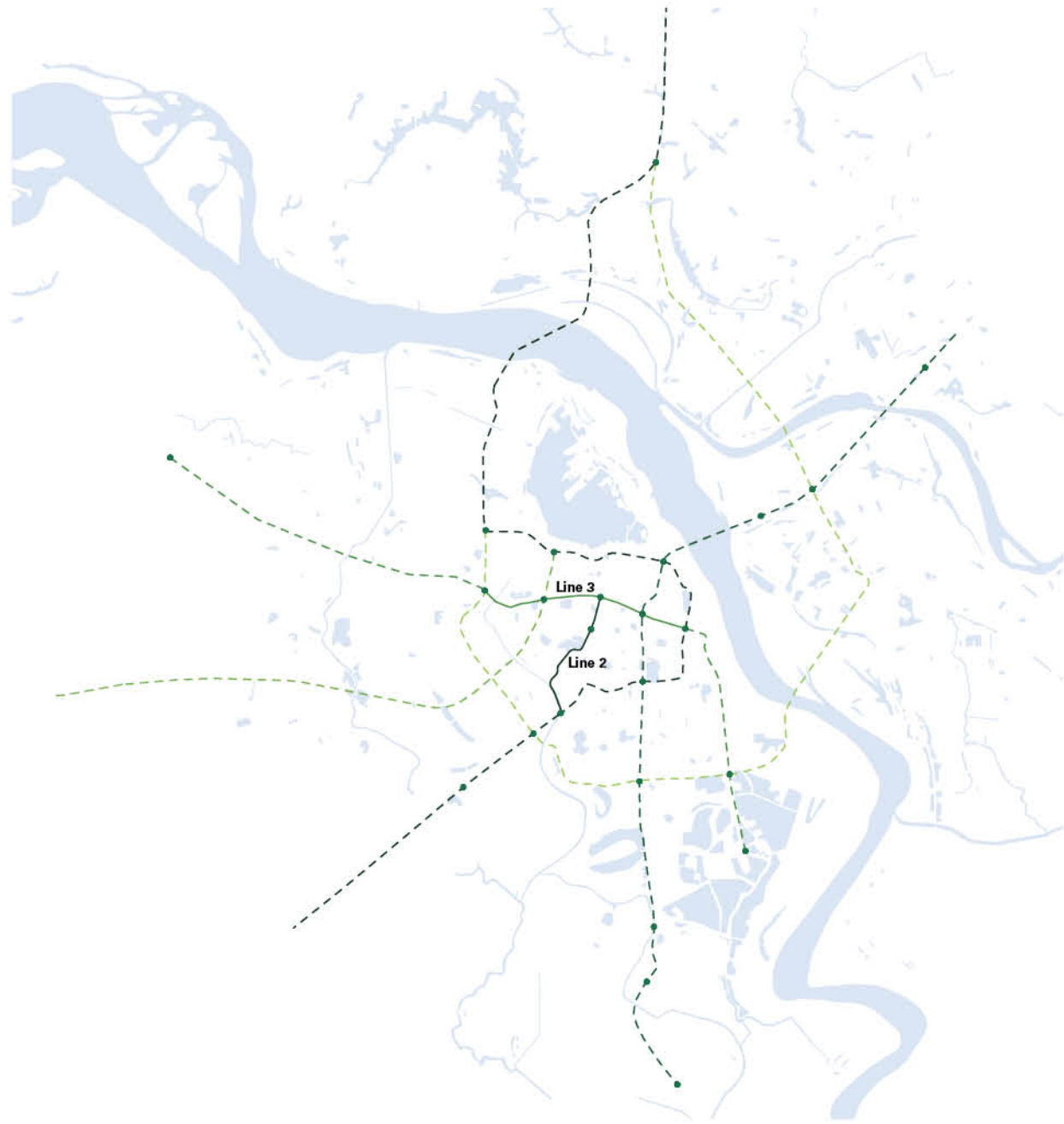


Bus station in the suburban area



Bus interchange node - Long Bien bridge

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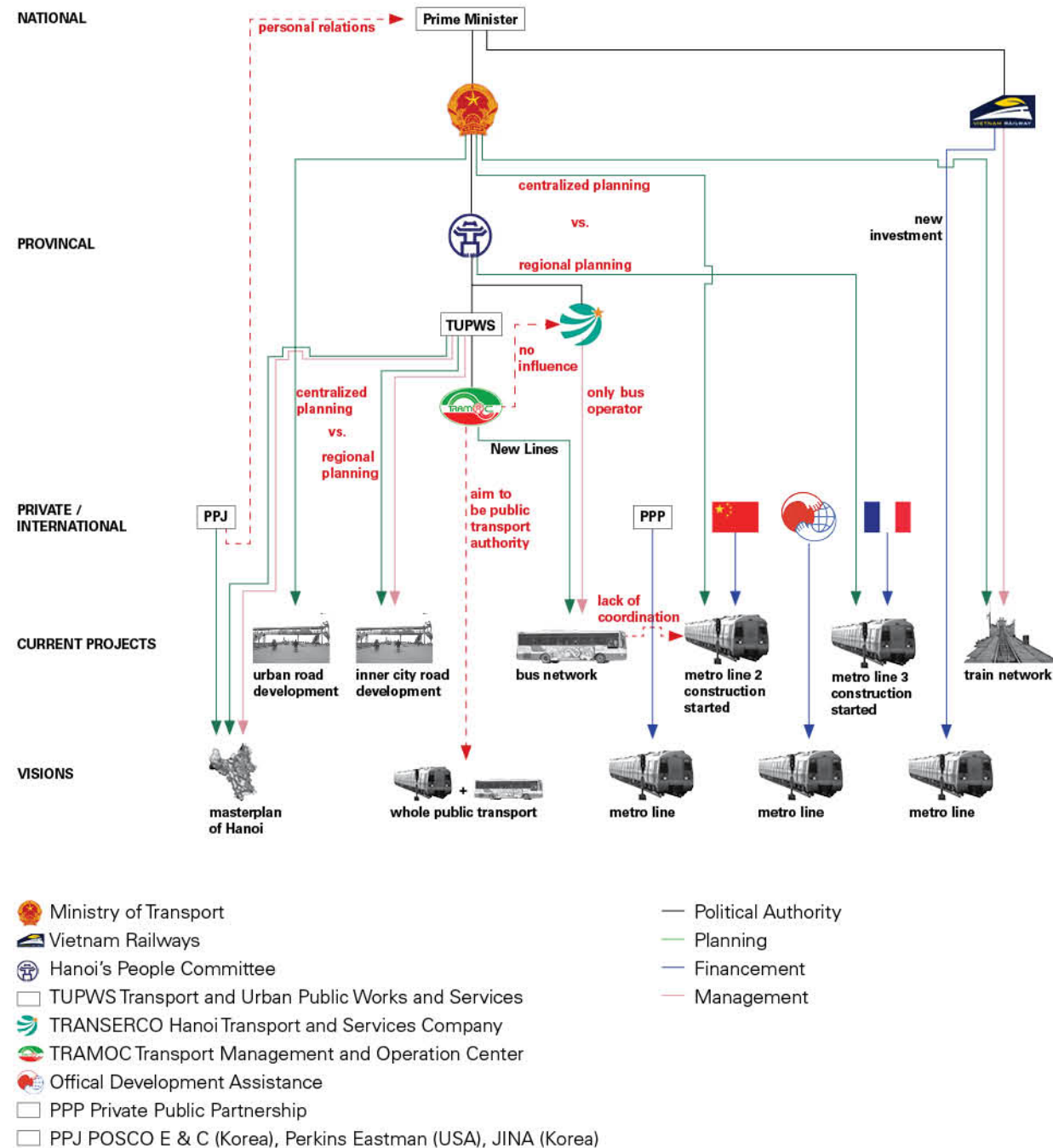
— under construction  
- - - planned

### Mass Rapid Transit "Soon"

The project aims to implement five metro lines until 2030. At the present time only fragmented parts of two metro lines are under construction. The enormous costs, as well as the numerous different "personal interests," are big hurdles in the planning.



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### Different Interests and Actors

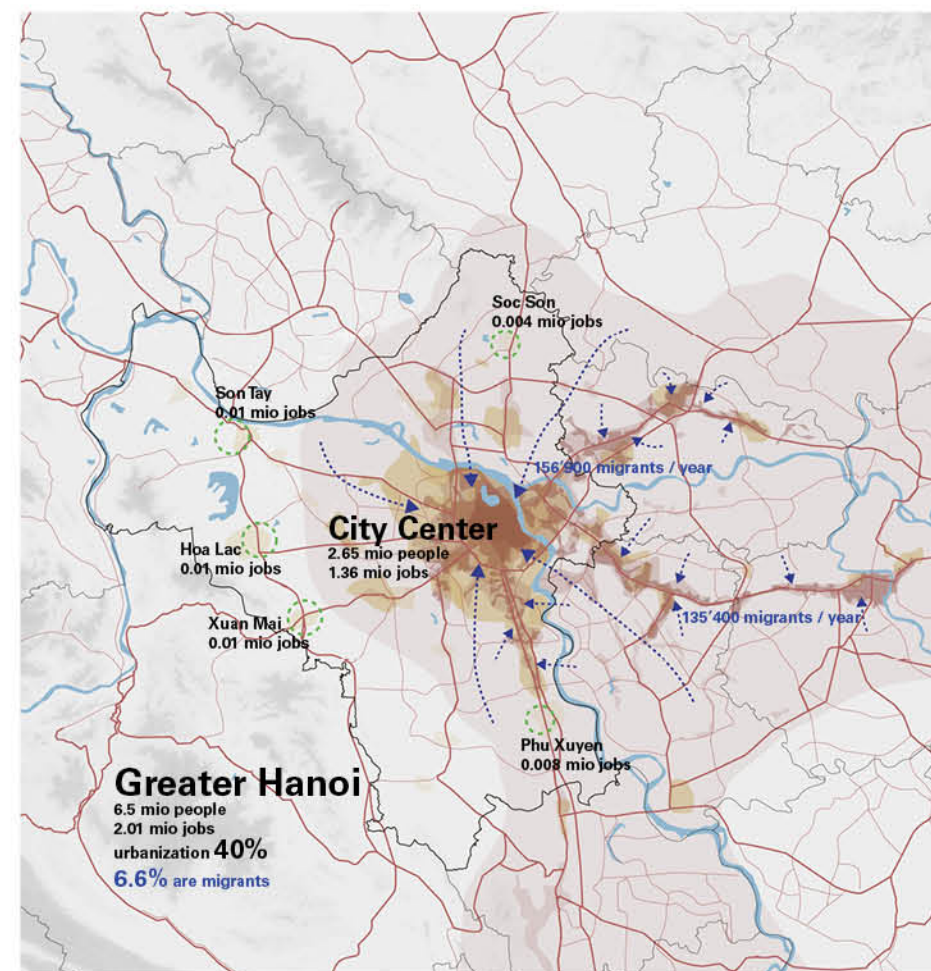
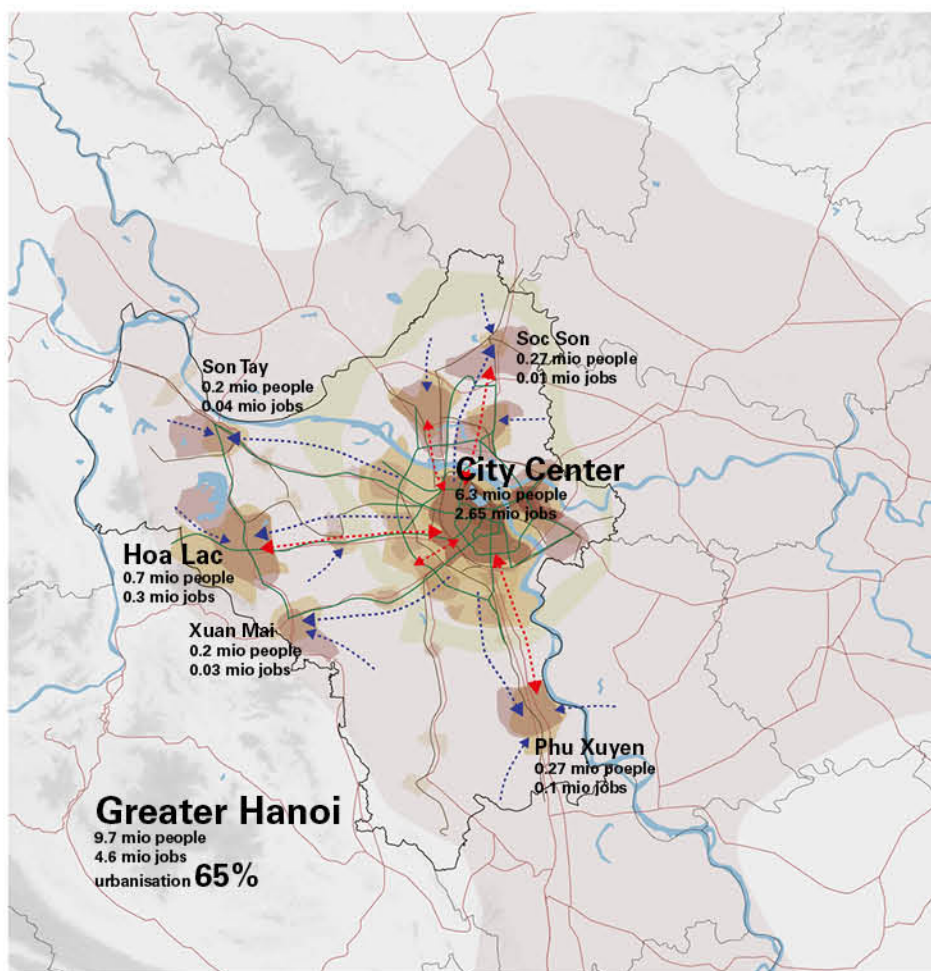
There are no clear separation between the duties of the national ministry and the ones of the provincial authorities; some metro lines are planned by the Ministry of Transport and others by the Hanoi's People Committee. The lack of logical hierarchies and the too big influence of personal interests preclude the achievement of the goals.



### Discrepancy between Planning and Reality

Though a lot of visions exist, one can ask himself if these long-term plans, which are mainly based on foreign models, coincide with the actual movement habits of the people. Reciprocally, the strong phenomenon of informal street use is a reaction of the individuals to the lack of down-to-earth plans from the government.

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- Population density
- Working density
- Metro
- Bus
- ▶ Migration from Hanoi
- ▶ Migration form around
- ▶ Daily commuter from satellite cities
- ▶ Daily commuter from small cities

- Population density
- Working density
- ▶ Migration to city center
- ▶ Migration to main road axis

### Satellite Cities – Relief of Center...

The expansion of the inner city of Hanoi is fast. To control this impressive growth, several satellite cities are planned around the center. The rising question is if these new satellite cities can achieve independence from Hanoi or if their implementation would even enforce the daily commuter phenomenon.

### ...versus the Demographic Reality?

In reality, the migration and population growth is clearly higher in the city center, but also at the three main road axis to the south and to the east. On the contrary, the planned satellite cities are all placed in the western areas.

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### Fees and Regulations...

To help the development of the bus network, there is a need to improve the walking condition and to relieve the crowded streets. The policies focus on strict parking regulations, high fine and on a limitation of the commercial activities on the streets.

### ...against the Traditional Street Use

The sidewalks are full of parked vehicles because of the numerous commercial and social activities everywhere along the streets. It is thus not convenient to make longer distances by foot. On the road it is difficult for a slightly bigger vehicle to find its way among the many flexible and freely moving motorbikes.

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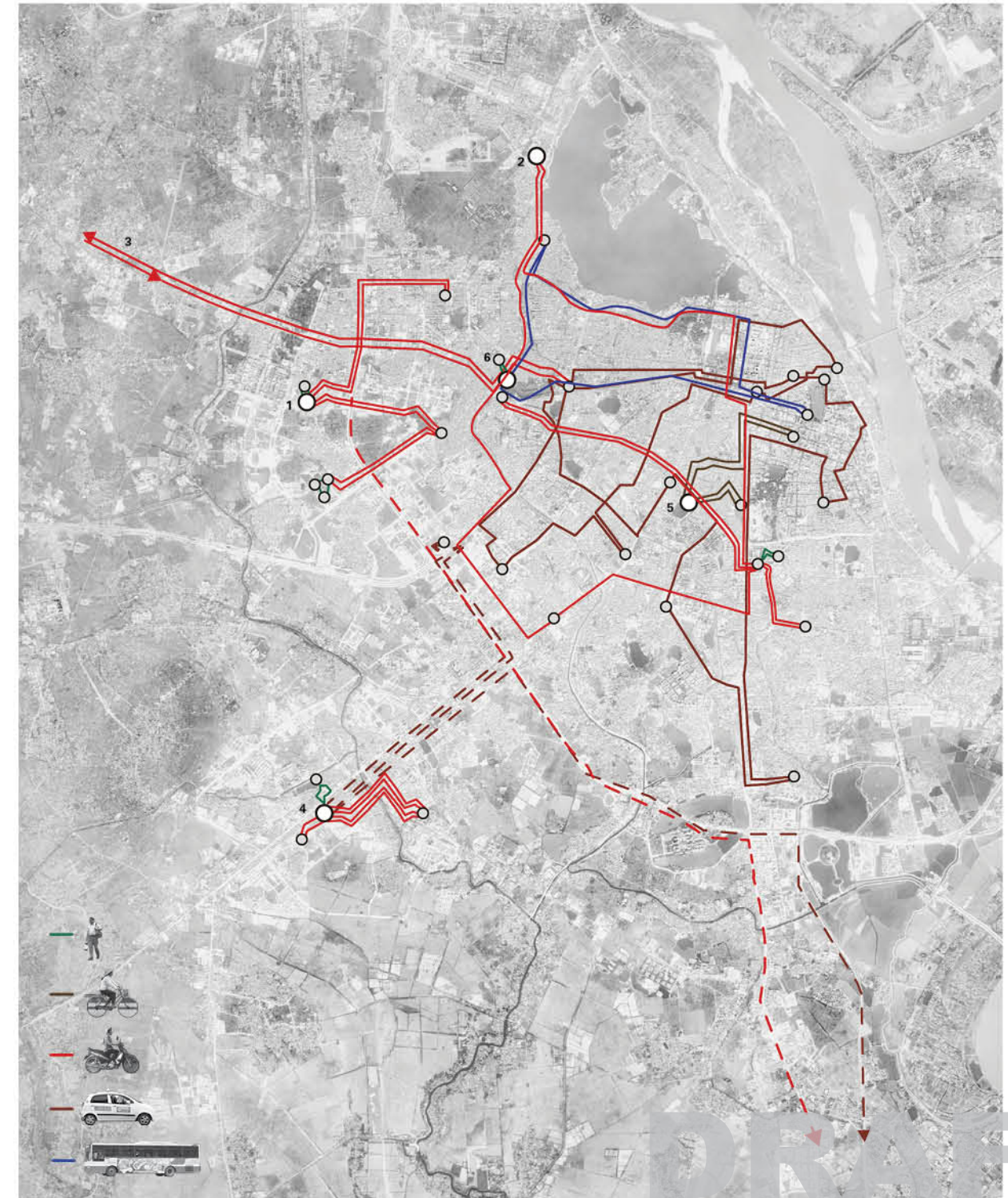


## A SOCIETY ON WHEELS

Vietnamese streets are crowded with people moving. Who are these people? Why do they appear to be always on the way? Where are they going, where are they coming from? For an outside observer the fluxes seem to be a matter of the hazard. The following shows that the movements of people and goods are not random, but they are influenced by the motobike lifestyle, which allows a big mobility and flexibility.



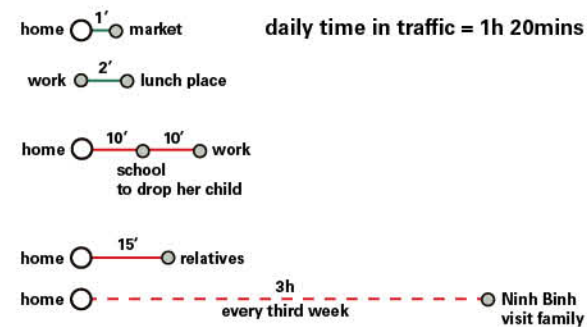
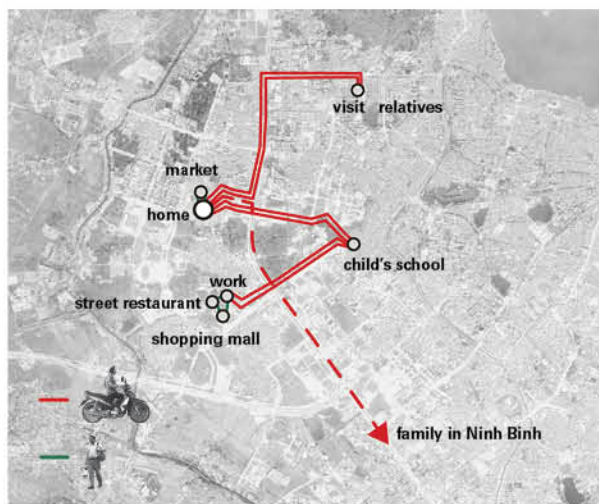
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- 1. Hairdresser
- 2. Very Mobile Student
- 3. Daily Commuting Taxi Driver
- 4. Car Owning Doctor
- 5. Street Cook
- 6. Retired Woman

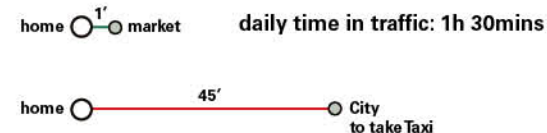
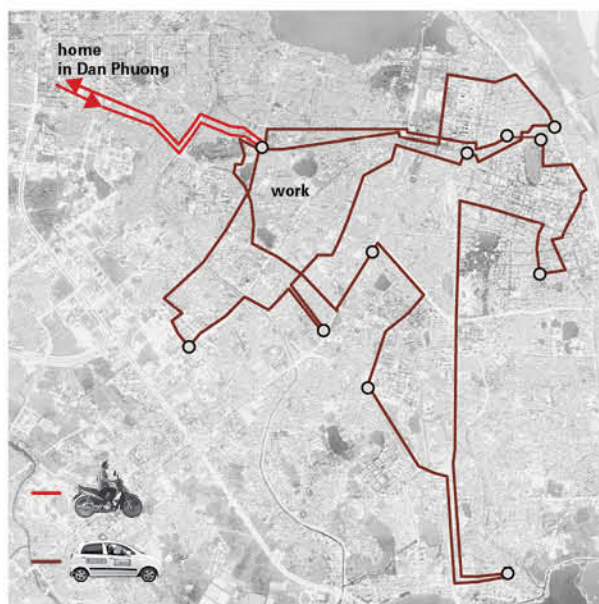
### Movement Habits

Tracing the daily activities of people in Hanoi with different backgrounds, ages and lifestyle, in order to find the specificities of their transport behaviour..



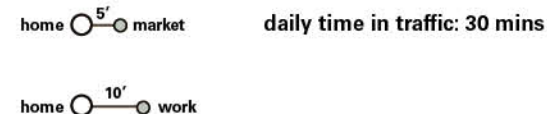
### Hairdresser

The twentyfive years old woman uses daily motorbike for small distances, but also for distances up to 100 km while visiting her family. The food market is directly in her house.



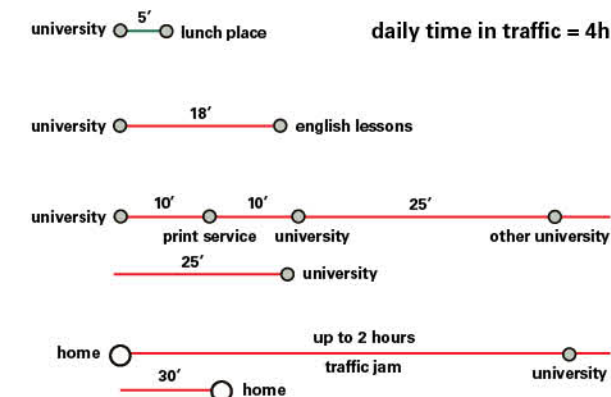
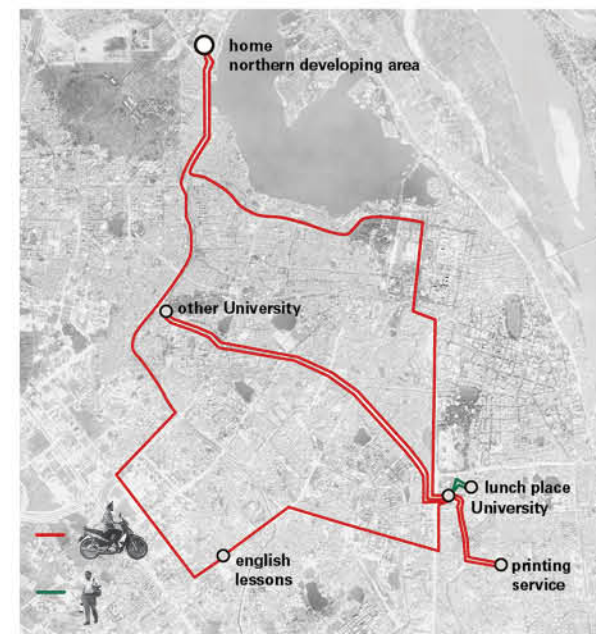
### Daily Commuting Taxi Driver

The thirty years old man comes daily with the motorbike from a distant village to the city center to work as a taxi driver. He does the food shopping in his village, in the market next to his house.



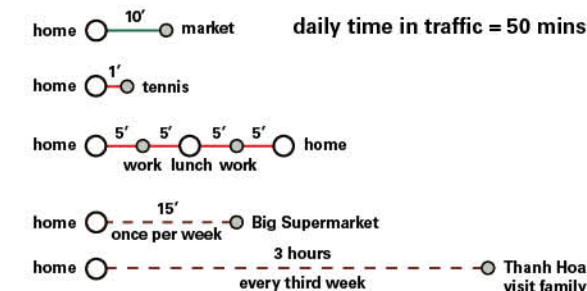
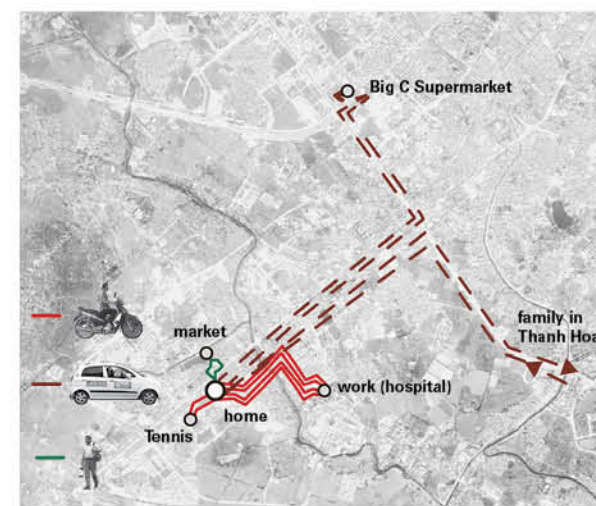
### Street Cook

The fifty years old woman with a lower income does not own a motorbike. She lives close to her working place, her family and goes to the market in the direct neighbourhood. The bicycle fulfills her transportation needs.



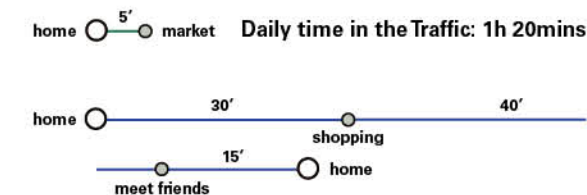
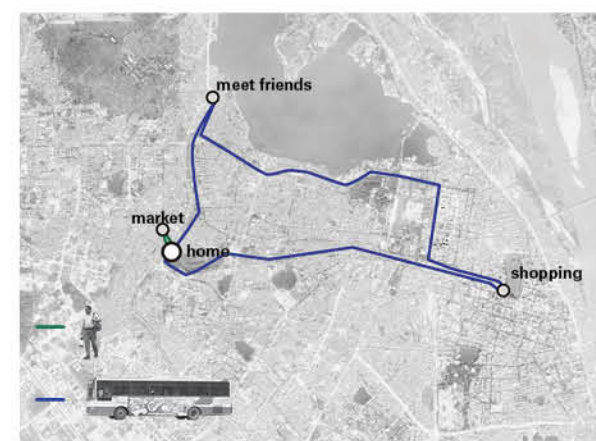
### Very Mobile Student

The student moves a lot, because he lives far from his university and has to move a lot while working for university and during his spare time.



### Car Owning Doctor

Ha Dong was a small city, now part of the greater Hanoi. It has its own hospital and facilities, which allows the doctor to usually stay in this area, for work or leisure-time activities, mostly using the motorbike although he owns a car.



### Retired Woman

The recently retired woman moves with the bus. At a younger age, she was using the bicycle and never learned to ride a motorbike, which seems too dangerous to her. The bus is rather convenient even if it is often crowded and not always very clean.

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### The Motorbike Lifestyle

The motorbike is convenient for many uses. While its small size allows very individual and flexible movement patterns, it can also carry more than one person and big loads. The freedom in its use, enhanced by the lack of implemented regulations, impacts on daily habits, and thus on the physical repartition of activities in the urban fabric.

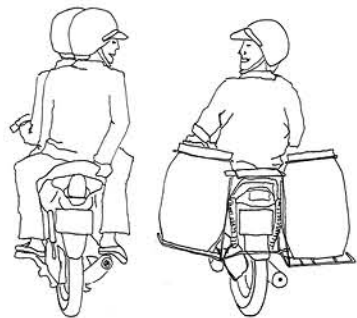
### Xe Om – Individual Taxi Service

To assure mobility at any time and for everybody, the Xe Om was invented. It is a kind of cheap taxi, which heads for almost every location. The Xe Om is most frequently used by customers who are not able to ride or afford a motorbike, or that do not have a safe parking place for their own one, for example in the case of one-way trips. The drivers are only men and often daily commuters or seasonal migrants from suburban and rural areas.

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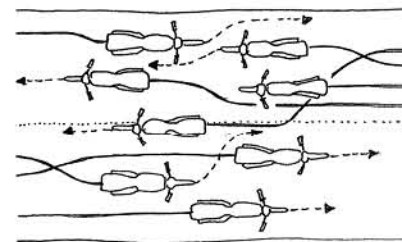
Multi-tasking on the motorbike



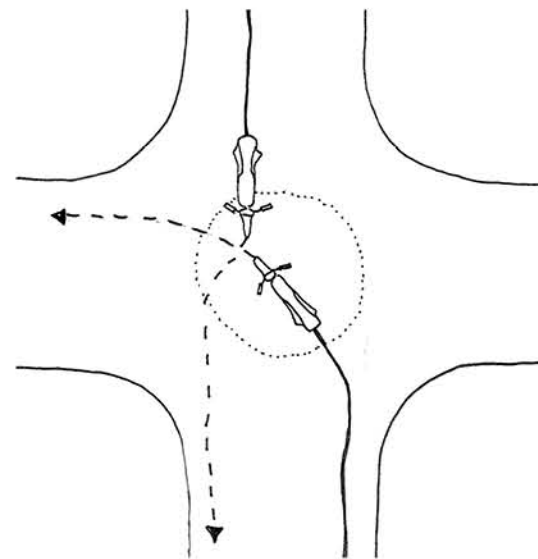
Communication among the motorbikes



Relaxed driving



Flexibly adapting to the vehicle crowd



Movement habits without limitations

### Freedom through the Motorbike

Driving on the motorbike in the Red River Delta seems to be a special way of life. The motorbike has reached the state of a cult object, which enables one to do everything. The driving itself is relaxed and one can adapt easily to the traffic with highly flexible movements, like a fish in a shoal.



### Parking Everywhere

Solutions to park the motorbike can be easily found individually, which is an important fact in a city that just counts very few official parking places. Offices and shops of Hanoi often use the ground floor as a parking. Private people bring the motorbike inside the apartment, or they park on the sidewalk.



### Impact on Even Spread Commerce

The ability to stop everywhere to pick up somebody or buy something results in a flexibility, which enables the people to be overall very mobile. This means that the commercial activities do not have to be concentrated on the same area. Fresh goods especially are covering all areas, even the most unexpected places.

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## INDIVIDUAL WAYS OF GOODS

In all areas of the Red River Delta one can find daily delivered fresh products and several shops with all kinds of products. In opposition to the movements of people, that do not converge on hubs, tracing the ways of goods reveals some nodes, where similar goods flow together, are sold, resold and finally distributed to the consumers. However the way of one good never equates another one.

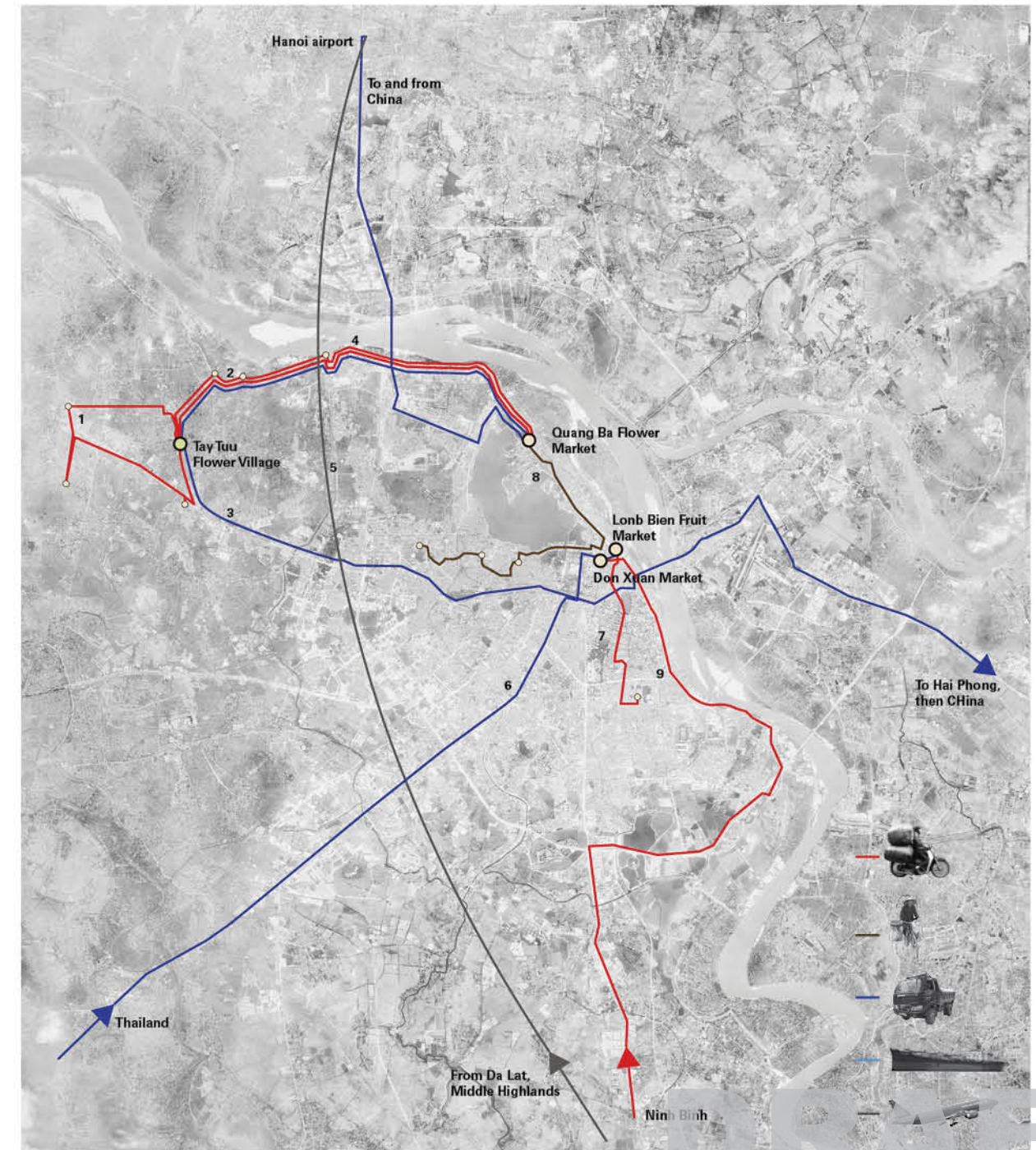


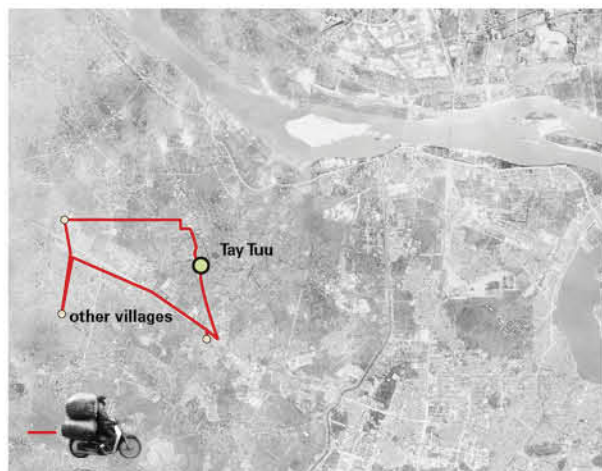
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- From Tay Tuu Flower Village
  - 1. To Surrounding Villages
  - 2. To Quang Ba Market Individually
  - 3. To China by a Wholesaler
- 
- To Wholesale Markets
  - 4. Flower from Tay Tuu Flower Village
  - 5. Flower from Dalat
  - 6. Mango from Thailand
- 
- Distribution from the Markets
  - 7. To a Shop in Hanoi
  - 8. To the Streets of Hanoi
  - 9. To a Shop in another Province

### Flat Repartition through Flexibility

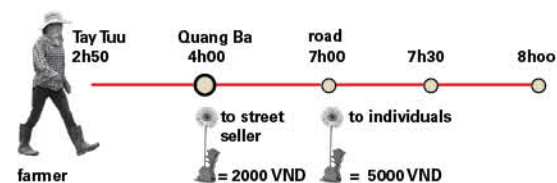
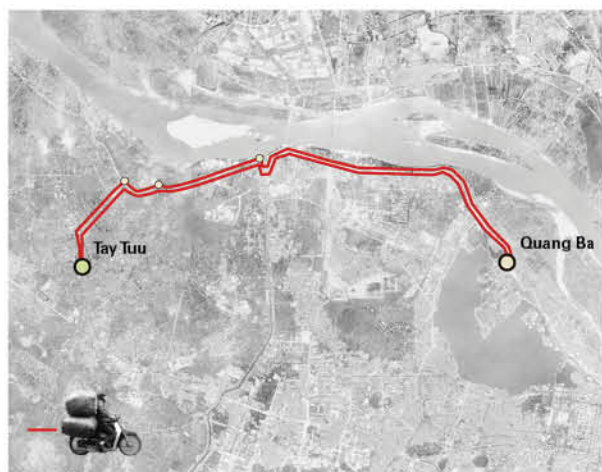
How are the fresh goods daily distributed all over the Red River Delta? Here again, the flexibility and diversity of the movements plays an important role. To understand it, we focused on a flower producing village of Hanoi, the Quang Ba wholesale market for flowers, the Long Bien wholesale market for fruits and the Don Xuan wholesale market for industrial products.





### To Surrounding Villages

Some flowers are produced for a regional scale. They are destined to be sold in the surrounding villages, to shop owners, or during festivities on special markets organised there to supply the bigger demand.



### To Quang Ba Market Individually

The villagers producing relatively small quantities of flowers go to Quang Ba market two or three times a week. On the way back, they sell the remained flowers on the street.



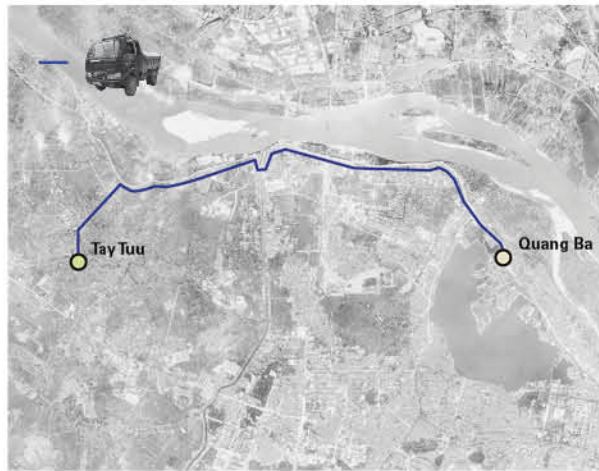
### To China by a Wholesaler

The families producing a bigger amount of flowers sell them to wholesalers who come to Tay Tuu to collect them. When the demand is too low, they go by themselves to sell the flowers at Quang Ba market.

## Flowers from Tay Tuu Village

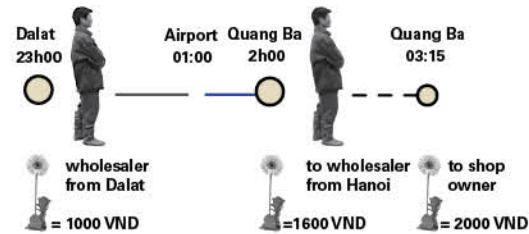
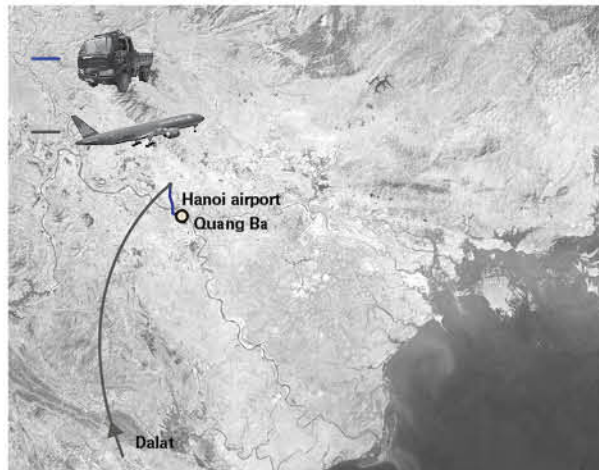
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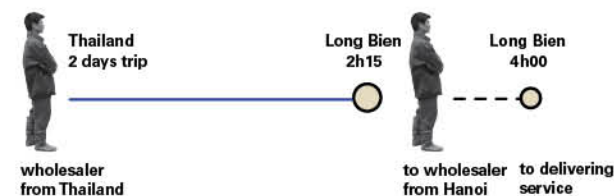
### Flowers from Tay Tuu Flower Village

Regional wholesalers collect flowers in Tay Tuu with small trucks to bring them in the Quang Ba flower market. The quantity sold by these wholesalers are usually smaller than the merchandise coming from further regions or abroad.



### Flowers from Dalat

Dalat is a big flower producing city in the central highlands, where the climate conditions are ideal for cultivation. In Quang Ba market the flowers are first sold to a hanoian wholesaler in big quantities, before being sold and distributed into Hanoi.

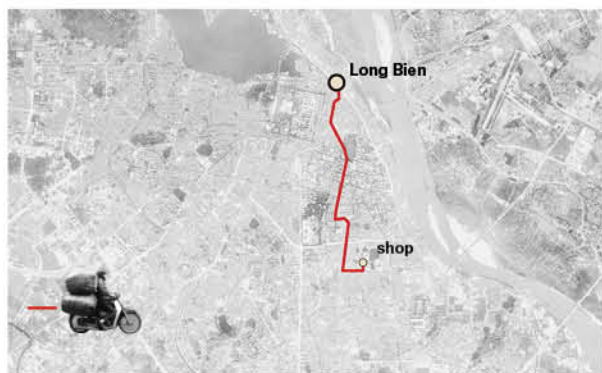


### Mango from Thailand

Since the wholesalers from abroad do not dispose at a parking place inside the Long Bien fruits and vegetables market, most of their trucks are unloaded in a very short time by wholesalers from Hanoi with an own market stall.

## To the Wholesale Markets

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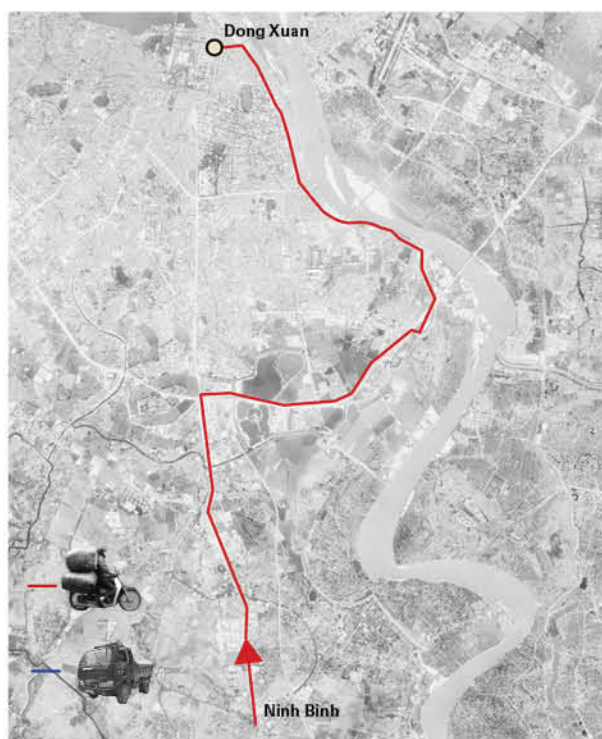
### To a Shop in Hanoi

Sellers go themselves to the wholesale markets every night to supply their shops with fresh products, which therefore cover all Hanoi with a high density and even spread till the urbanised roads.



### To the Street

The traditional street sellers, with bike or with the baskets suspended from wooden poles, are still common. The products are brought from the wholesale market, or the street seller is the farmer coming from a surrounding village selling his own products.



### To a Shop in another Province

The Dong Xuan market supplies not only Hanoi with industrial goods, but also the whole north and middle Vietnam.

## Distribution from the Markets

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Long Bien market - fresh goods

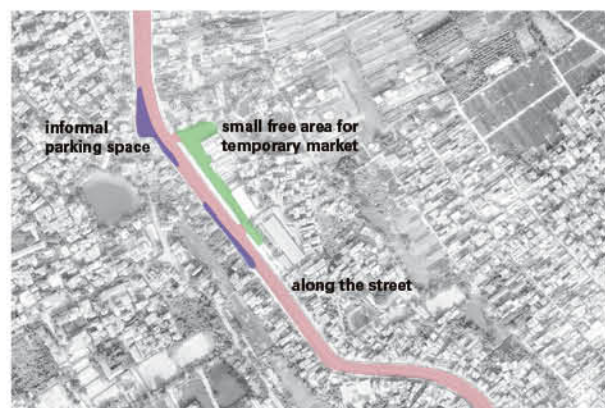
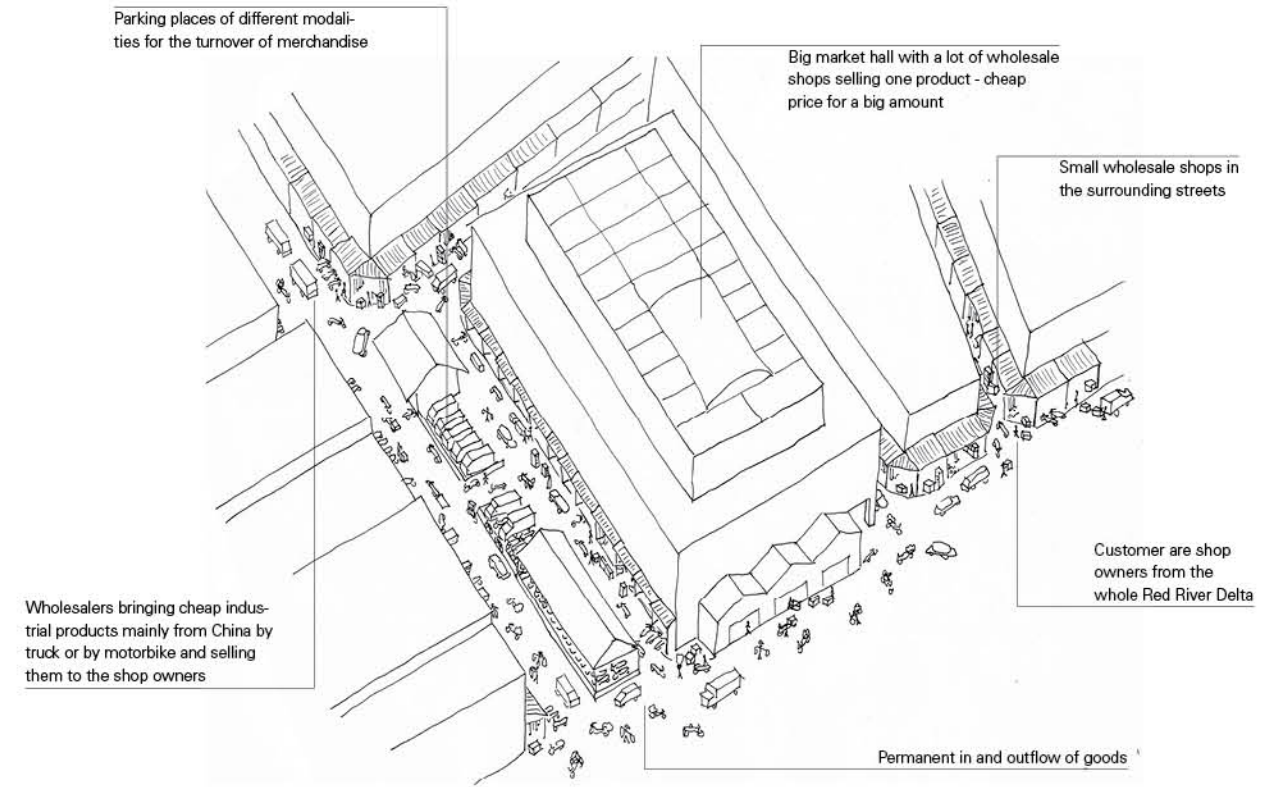
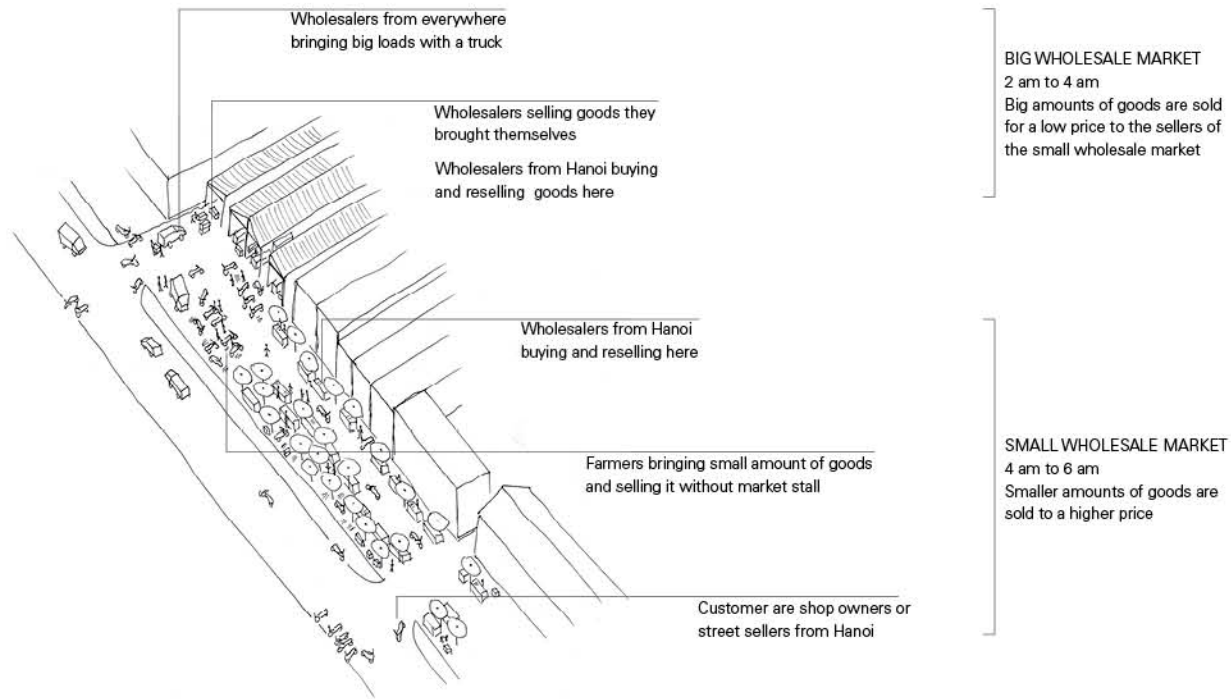


Don Xuan market - industrial products

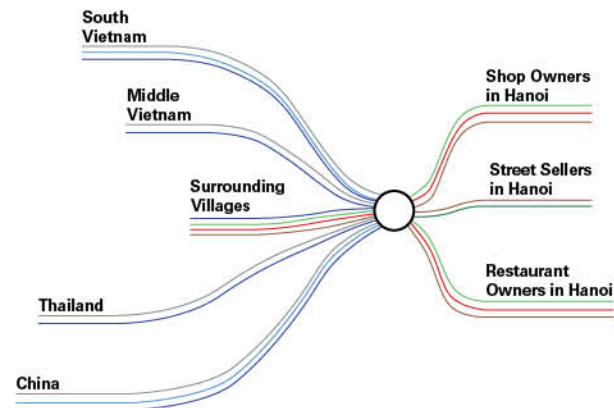
### Wholesale Markets: The Junction of Multiple Fluxes

The independent ways of the goods mostly need to go through the interchange places, which are the wholesale markets, to be distributed again individually. Every market is specialised in a product and has his own suppliers – from villages in the Red River Delta to big producers from South Vietnam or from abroad. The functioning differs between the industrial and the fresh products markets.

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Situation

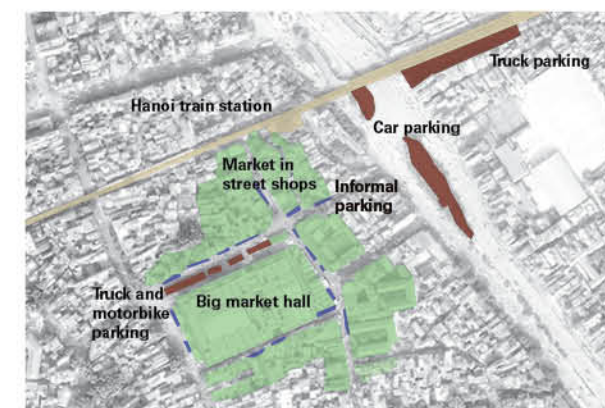


Distribution

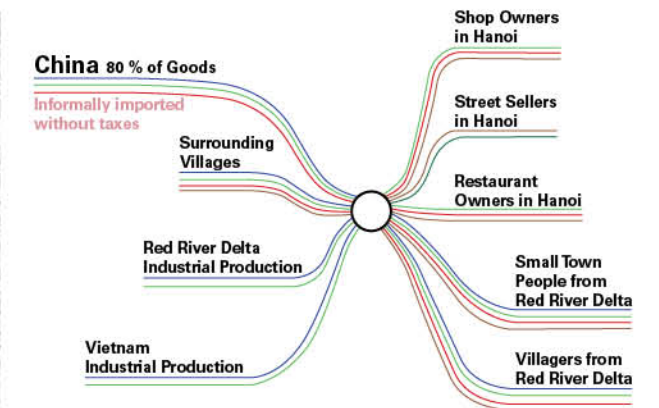
### Temporary Fresh Goods Market

During the night, a previously empty place next to a bigger road can change into an intensive distribution node for fresh goods. Over a short time, a huge amount of goods from everywhere is collected, sold and reselled again to the distributors, which spread them all over Hanoi.

- Airplane
- Ship
- Big Truck
- Small Truck
- Motorbike
- Bicycle
- By Foot



Situation



Distribution

### Permanent Industrial Goods Market

The Don Xuan Market covers a quiet large area. Also its distribution area is much bigger than Hanoi - the whole Red River Delta. This makes the market to an important "hub of goods," through which people and goods flow constantly.

- Airplane
- Ship
- Big Truck
- Small Truck
- Motorbike
- Bicycle
- By Foot

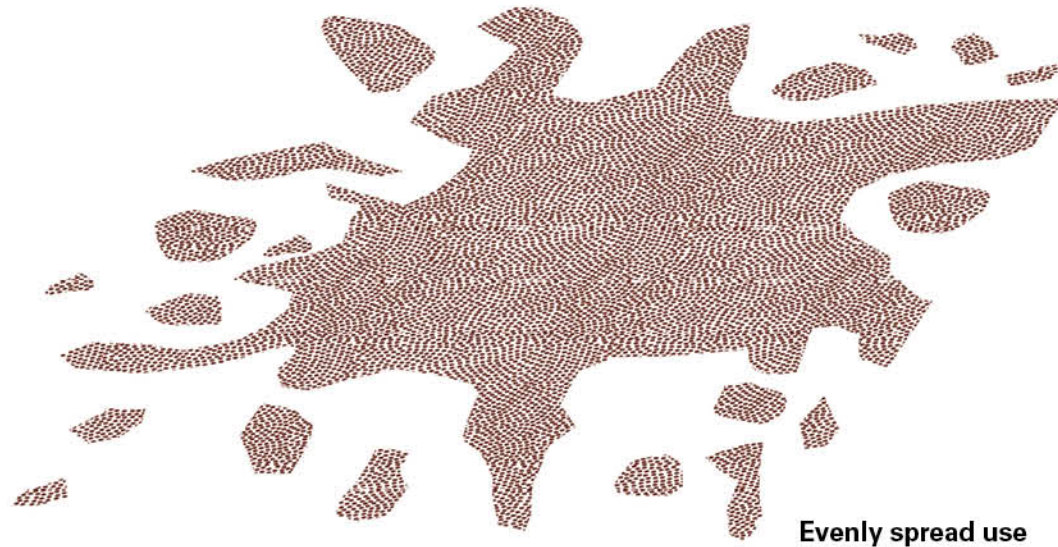
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## EVENLY SPREAD MOBILITY

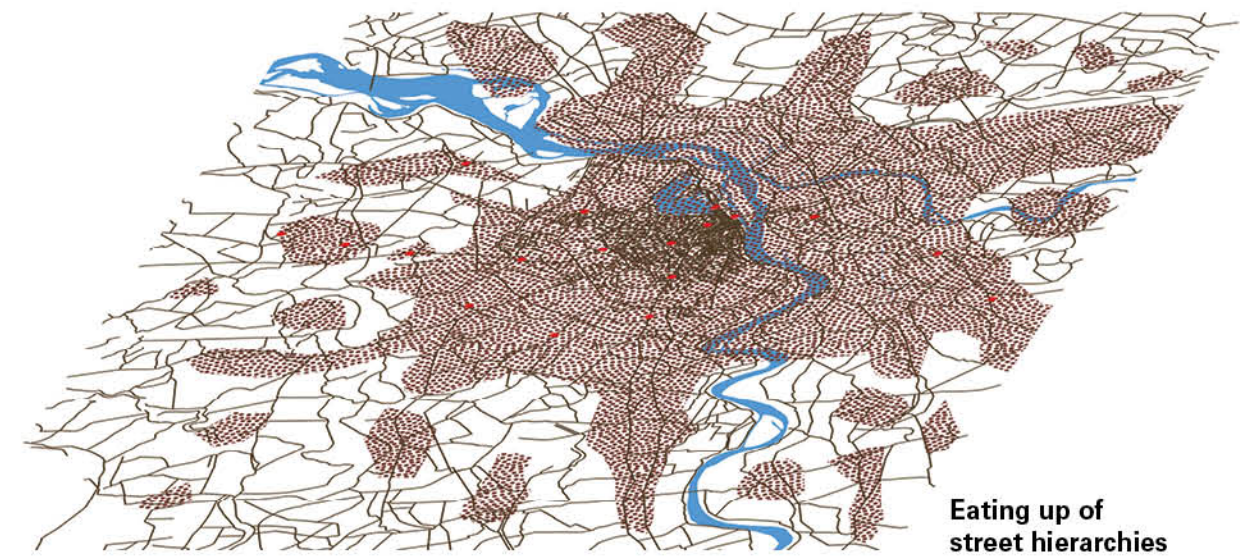
The flexible and diverse character of mobility plays an active role in the society. By opening many possibilities, it allows adaptability to the evolving urban conditions. In this regard it is a catalyst for the bottom-up economy.



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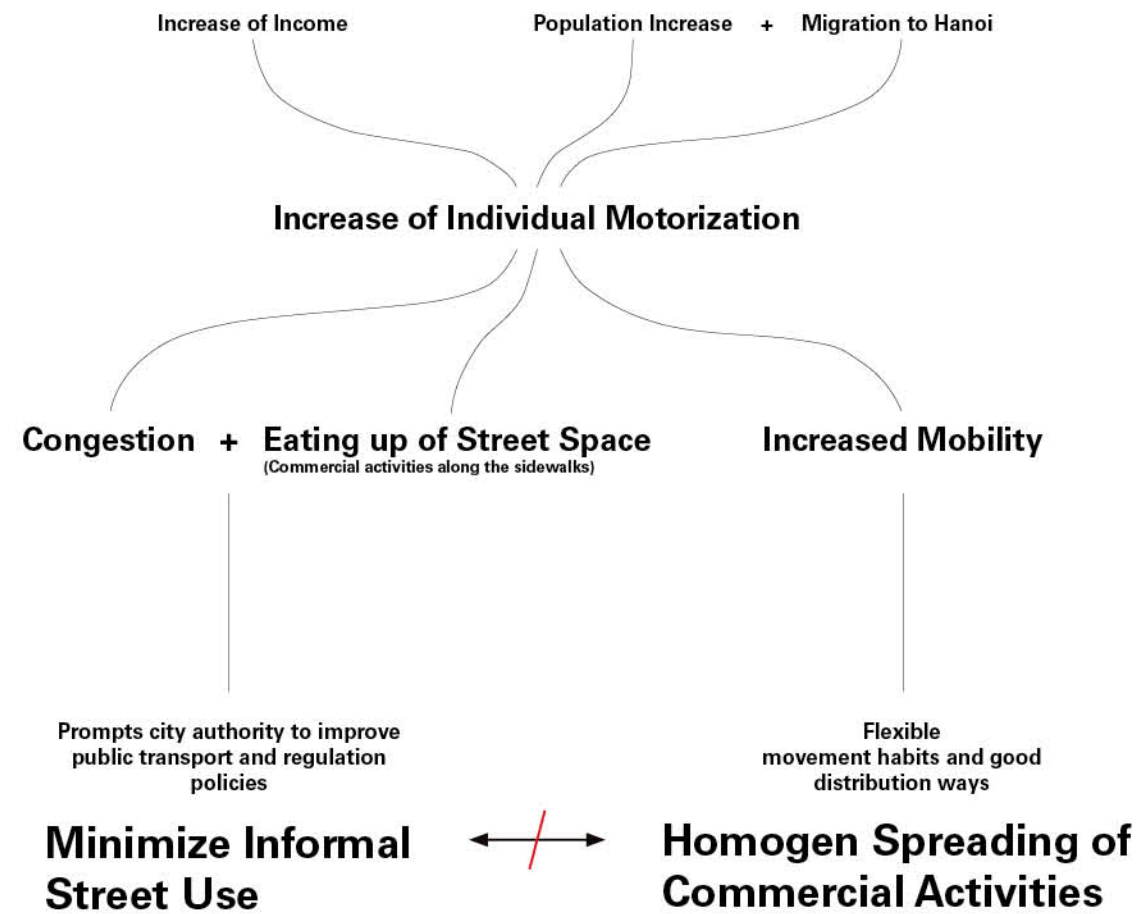


● Location of following pictures

### The Homogenizing Energy of the Street Use

The flexibility provided by the individual transport means leaves its mark on the city fabric. Most of the ground floors, sidewalks and streets, from the old quarter to the suburban roads, are occupied with restaurants, cafés, markets, shops and every other kind of commercial activity. It results in a flat, non-hierarchical use of the urban network, without clearly defined hubs or main streets.





### Transport and Economy: a Developing System

The high mobility and flexibility of movement patterns, provided by the increasing individual motorisation, allows widespread commercial activities, which works hand by hand with the informal street use and represents a bottom-up economical energy.

On the other hand, the booming economical development requires new visions for Hanoi to become a competitive metropole. This intention calls for order and hierarchy, and therefore needs to minimize the dense activities on the streets.



## SOURCES

### PAPERS

Japan International Cooperation Agency, Hanoi People's Committee (2007), "Final report: Urban Transportation Subsector. The Comprehensive Urban Development Programme in Hanoi Capital City of the Socialist Republic of Vietnam (HAIDEP)"

Dr.-Ing. Khuat Viet Hung (2008), "Transport Sector in Vietnam: Current Issues and future Agenda"

Dr.-Ing. Khuat Viet Hung (2012), "Urban Transport Planning in Vietnam, Issues and Perspectives"

Institute for Transport Policy Studies, Japan, Dr. Vuh Anh Tuan (2012), "Long-term strategies for motorcycle management in Asian Cities"

University of Twente, Nguyen Ngoc Quang (2012) "Kha nang tiep can cong viec o Ha Noi: qua khu-hien tai-tuong lai (Accessibility work in Hanoi: Past – Present – Future)"

University of Twente, Mark H. P. Zuidgeest (2012), "Cau truc do thi va kha nang tiep can: Tuong tiep can mo hinh GIS (Urban Structure of Accessibility: Modelling Approach for GIS)"

Center for Transport Development, University of Transport and Communications (2010) "De an Phat trien BTHKCC bang xe buyt o thu do Ha Noi den nam 2011 - Dinh huong den nam 2020 (Development Scheme for Bus in Hanoi 2011 - 2020)"

POSCO E & C, Perkins Eastman, JINA (2009), "The Capital Hanoi Construction Masterplan to 2030 and vision to 2500"

### MAPS

Center for Transport Development, University of Transport (2012) "Digital Map of Hanoi Transportation Master Plan"

### INTERVIEWS

Stephanie Geertman, PhD, Health Bridge, Personal Interview (19/20 March 2012)

Dr.-Ing Le Thu Huyen, Lecturer, Institute of Transport Planning and Management, University of Transport and Communications, Personal Interview (23 March 2012)

Dr.-Ing. Khuat Viet Hung, Director of IREC, University of Transport and Communications, Personal Interview (23 March 2012)

Mr. Tung, Landscape Architect, Personal Interview (24 March 2012)

Nguyen Hoang Hai, Director of TRAMOC, Transport Management and Operation Center, Personal Interview (26 March 2012)

Phd. Msc. Nguyen Ngoc Quang, Lecturer, Urban Transport and Public works Lab, University of Transportation and Communications, Personal Interview (30 March 2012)

### INTERNET

<http://maps.google.com>

<http://data.worldbank.org>

<http://www.gso.gov.vn>

<http://www.cnnngo.com>

<http://www.cia.gov>

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<http://www.flickr.com/photos/13476480@N07/6514079523/in/photostream/>

<http://a21.idata.over-blog.com/2/21/35/41/GUERRE-DU-VIETNAM/Nich-Ut-Photo-bombardement.jpg>

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