TELOS TOPIC 08

Mobility

Content development led by
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LE:NOTRE Institute
Linking Landscape Education, Research and Innovative Practice

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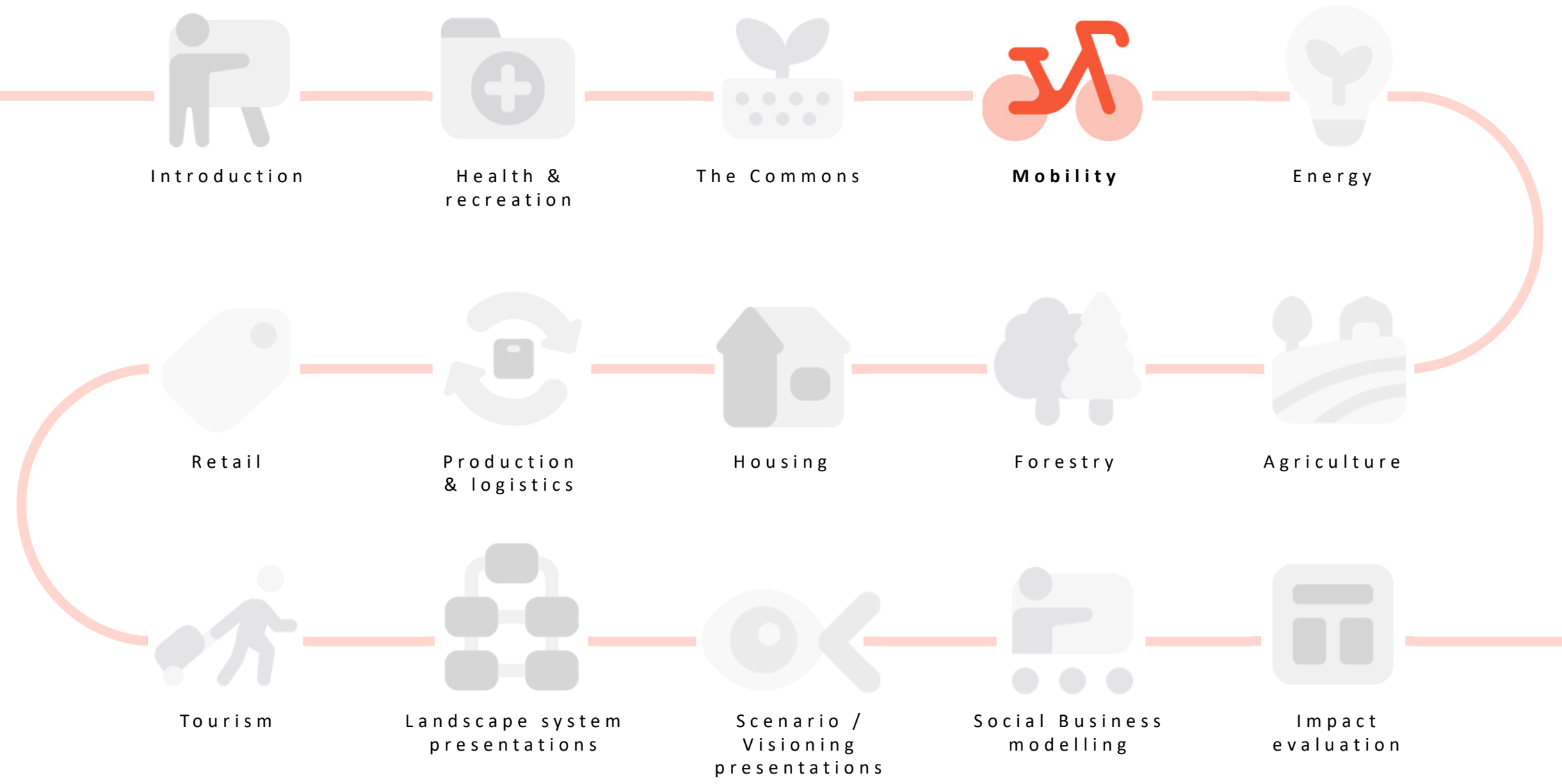
Introduction
Health & recreation
The Commons
Mobility
Energy
Retail
Production & logistics
Housing
Forestry
Agriculture
Tourism
Landscape system presentations
Scenario / Visioning presentations
Social Business modelling
Impact evaluation

Mobility & Landscape Economy in Europe

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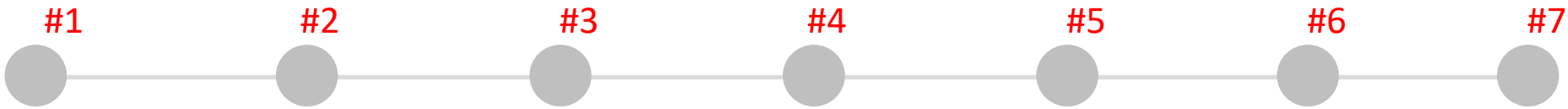


Context and Trends / GHG emissions of transport and mitigation strategies

History of transport and mobility

Transport infrastructures and landscape : a historical articulation

Case studies

Key economics dimensions

Key concepts / Glossary

Q&A sessions

Key concept : mobility

Definition of « mobility »: social, professional, **spatial** mobility

The 4 main forms of movement in space
(Gallez & Kaufman, 2009)

	Short temporality	Long temporality
Inside the living area	Daily mobility	Residential mobility
Outside the living area	Journey	Migration

Context and Trends

Greenhouse gases emissions of transport and mitigation strategies

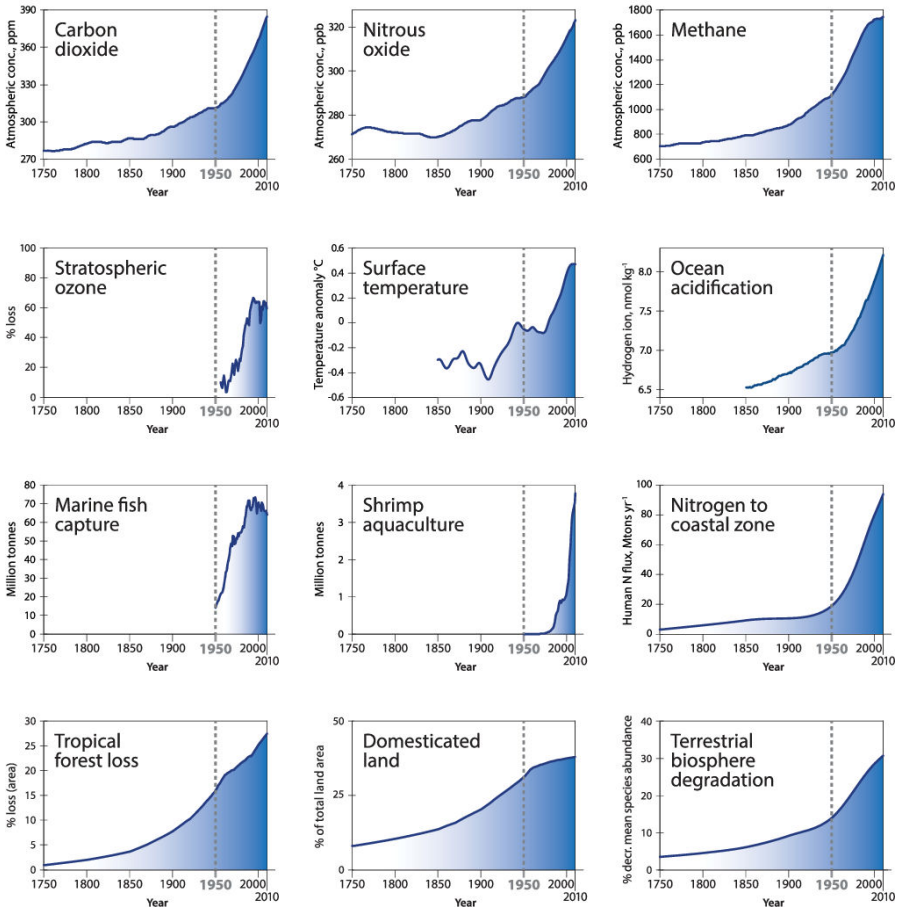
#1 The myth of technological solutions

Claire Pelgrims

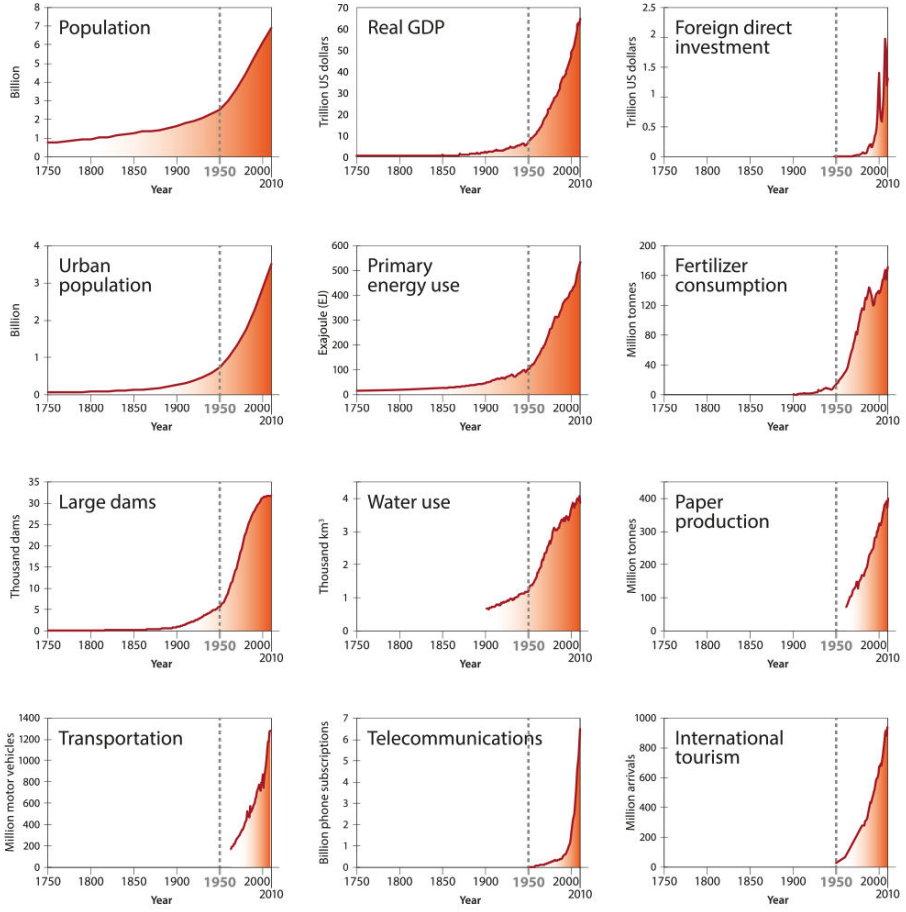
Great acceleration

Context and Trends

Earth system trends

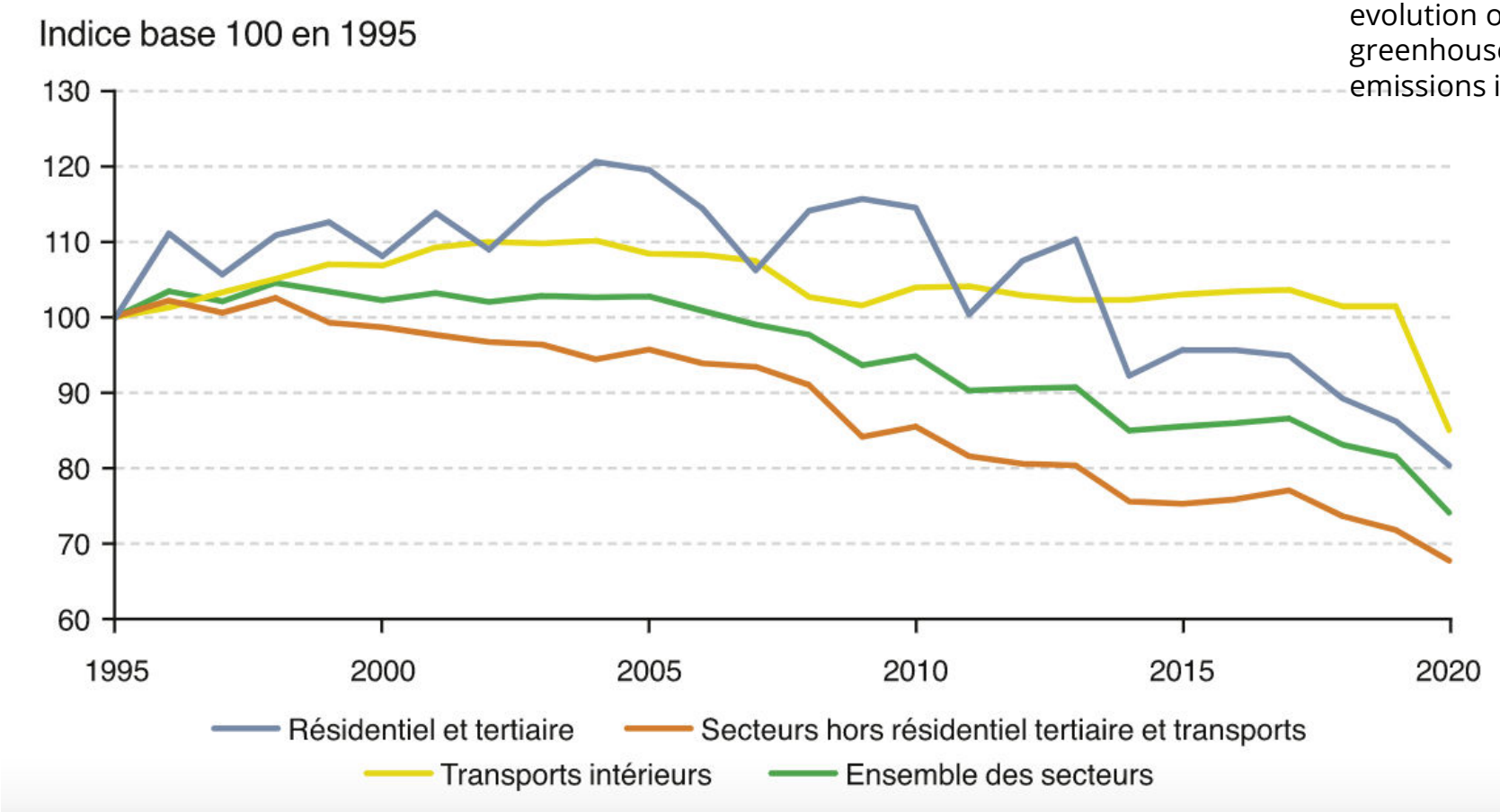


Socio-economic trends



Source Steffen a. all 2020 (update)

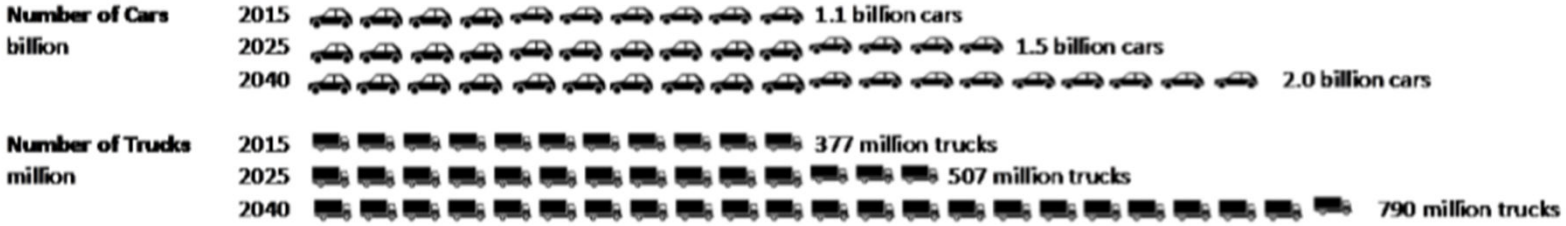
Mitigation strategies in the global North



evolution of greenhouse gases emissions in France.

Urban mobility trends worldwide

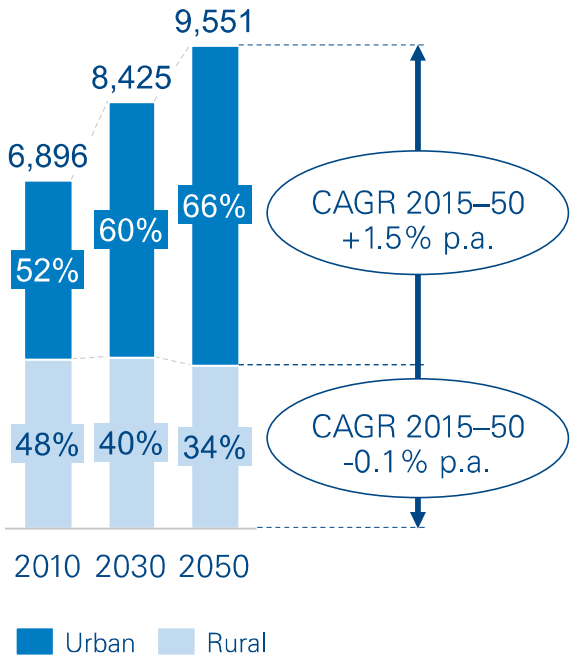
- Each year, the **number of vehicles** is still **increasing worlwide and urban traffic congestion** remains a major issue for our urban liveability and environmental sustainability**;**
- **Massive investments in urban road infrastructure and fossil infrastructure** in developing cities **come first**, while investments in public transport and walkable public space come second or last;
- The **economy of urban mobility** worldwide is still **driven by demand for private vehicles**, although it's more diversified than 10 years ago, with the **emergence of electric and shared vehicles and bicycles**;
- The **size and the form of cities** increasingly matter, as **growing commuting distances** increase the demand for both mass transit (public transport) and cars;
- **Electrification, automation and sharing** are the **3 revolutionary trends** that will transform the transport sector and the way we design streets and transport infrastructure;
- **Digitalisation and the 4th Industrial Revolution** will dramatically **modify the landscape of mobility** and logistics in our environment. Spatial planning requires new methods of **"City's Time Planning"**



An increasingly 'urban' world

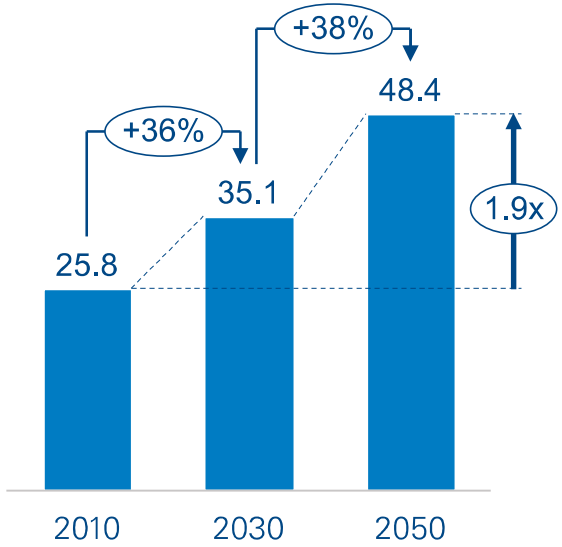
The world is becoming increasingly urban

Urban and rural population, 2010–2050 [m people; %]



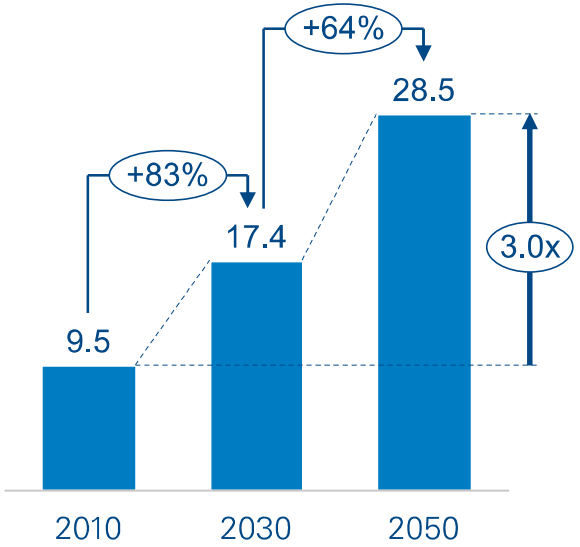
Urban passenger mobility demand is booming

Urban mobility demand, 2010–2050 [trillions passenger-km p.a.; %]



Urban goods mobility demand explodes

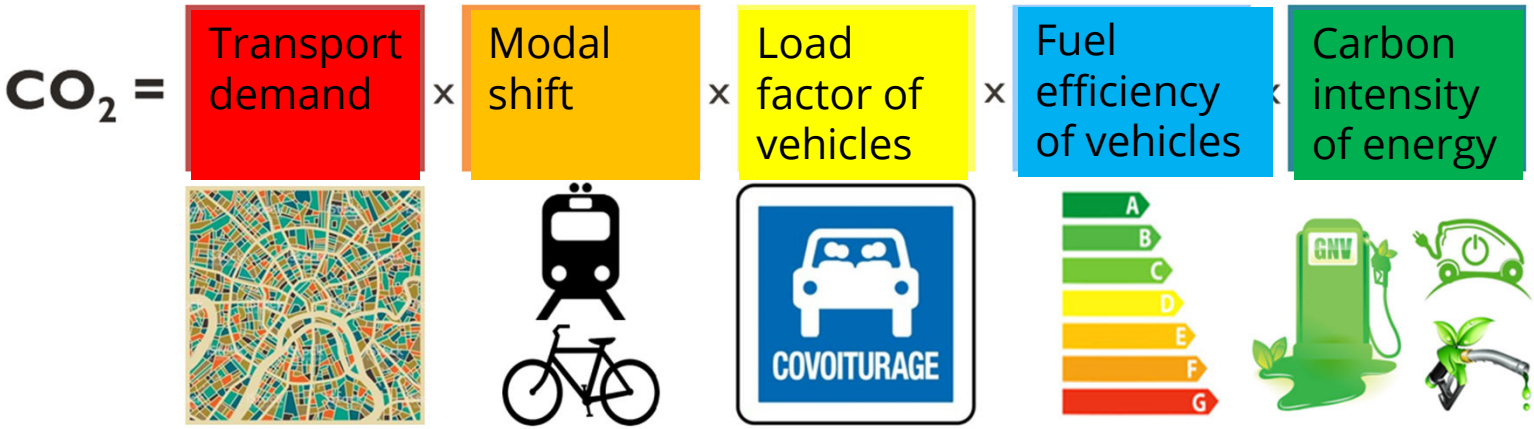
Urban goods mobility demand, 2010–2050 [trillions of ton-km p.a. %]



Source: UN Department of Economic and Social Affairs, OECD/ITF, Arthur D. Little

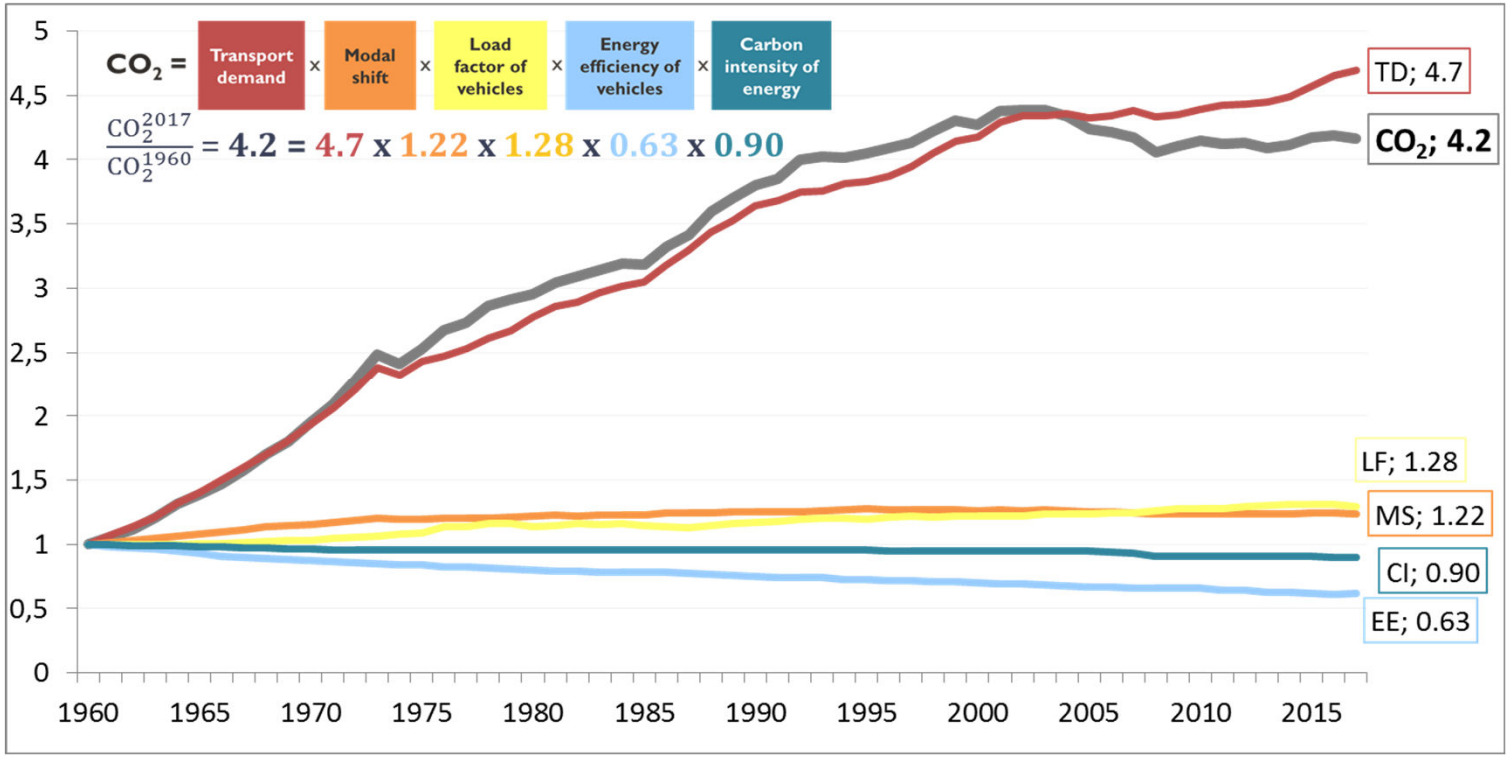
The example of the French National Low-Carbon Strategy (horizon 2050) – 2°C

- Lower CO2 emissions by a factor of 5.7 between 2015 and 2050 (from 458 to 80 million tons per year).
- As part of this strategy the transport sector must aim to be almost entirely carbon-free. Land transport in particular, which currently accounts for more than 90% of the sector's oil consumption, has to end its reliance on fossil fuels. = **huge challenge.**
- To achieve this goal, the SNBC has established five levers:



Bigo, Aurélien, 2020. "How to decarbonize transport by 2050?", PhD Thesis (in French). http://www.chair-energy-prosperity.org/

The evolution of transport emissions since 1960



- Demand for transport has been the main driver of emissions.
- The decreased since the 2000s, is not achieved by public policies but due to the stabilization of demand (peak travel)

1. Improving the fuel efficiency of vehicles and decreasing the carbon intensity of energy

The SNBC relies almost exclusively on technology, which it claims will enable it to reach its climate goals both in the short and long term. The expected progress in terms of energy efficiency seems all the more difficult to achieve

- The stagnation of CO2 emissions from new vehicles between 2015 and 2019, undermines short-term climate goals.
- No measures to significantly reduce the weight of vehicles or to limit speeds on the fastest roads, (two major levers in this area to reduce the consumption of internal combustion vehicles, but also limit the battery size of electric cars, thus lowering the environmental impact of manufacturing them).

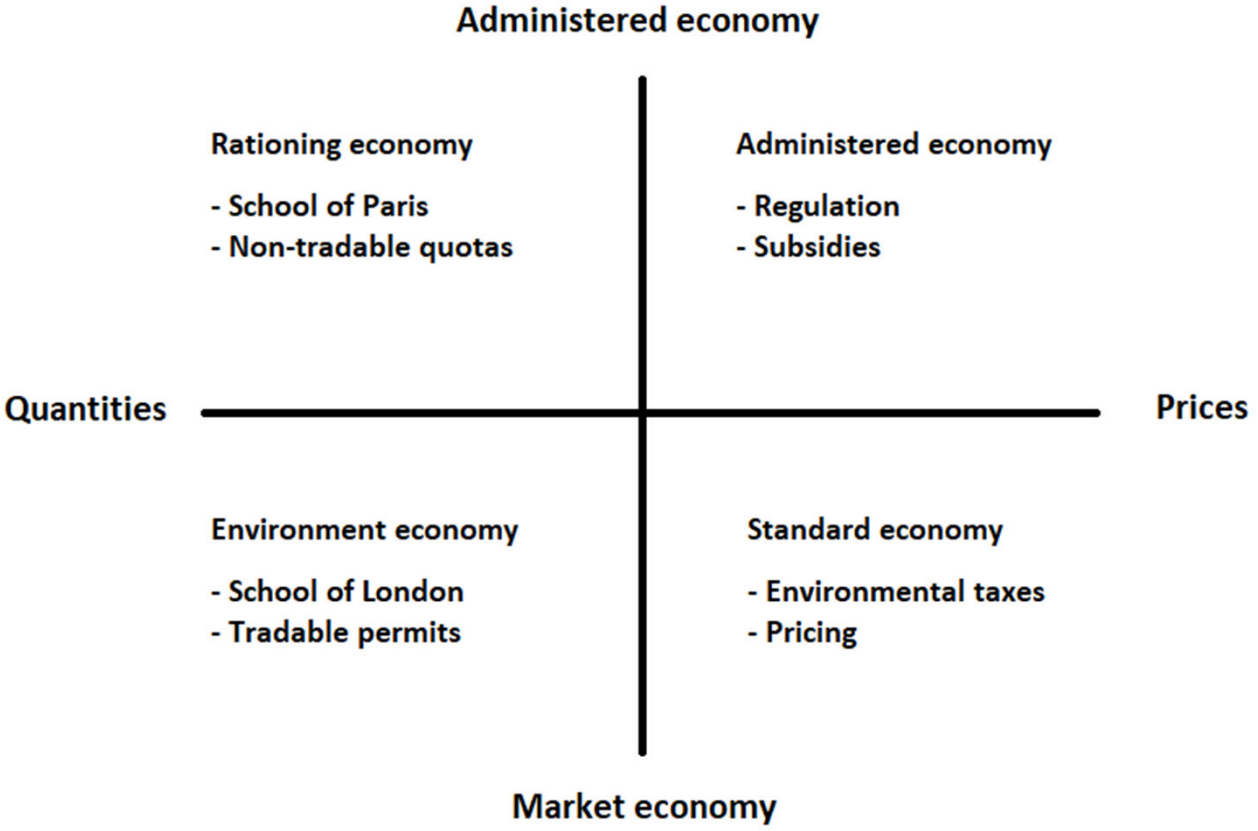
2. Moderating the demand in transport

Recent trends indicate that **demand has had the greatest influence on emissions** in the short term, being very reactive in particular to fuel price fluctuations.

Yet, very little discussed solution (e.g. in the Mobility orientation Law, 2019)

- Greater share of active travel and public transport trips if total decreases
- Limited resources of technologies
- No modal shift alternative (e.g. for international air transport)

Moderating transport demand



Positive image of mobility

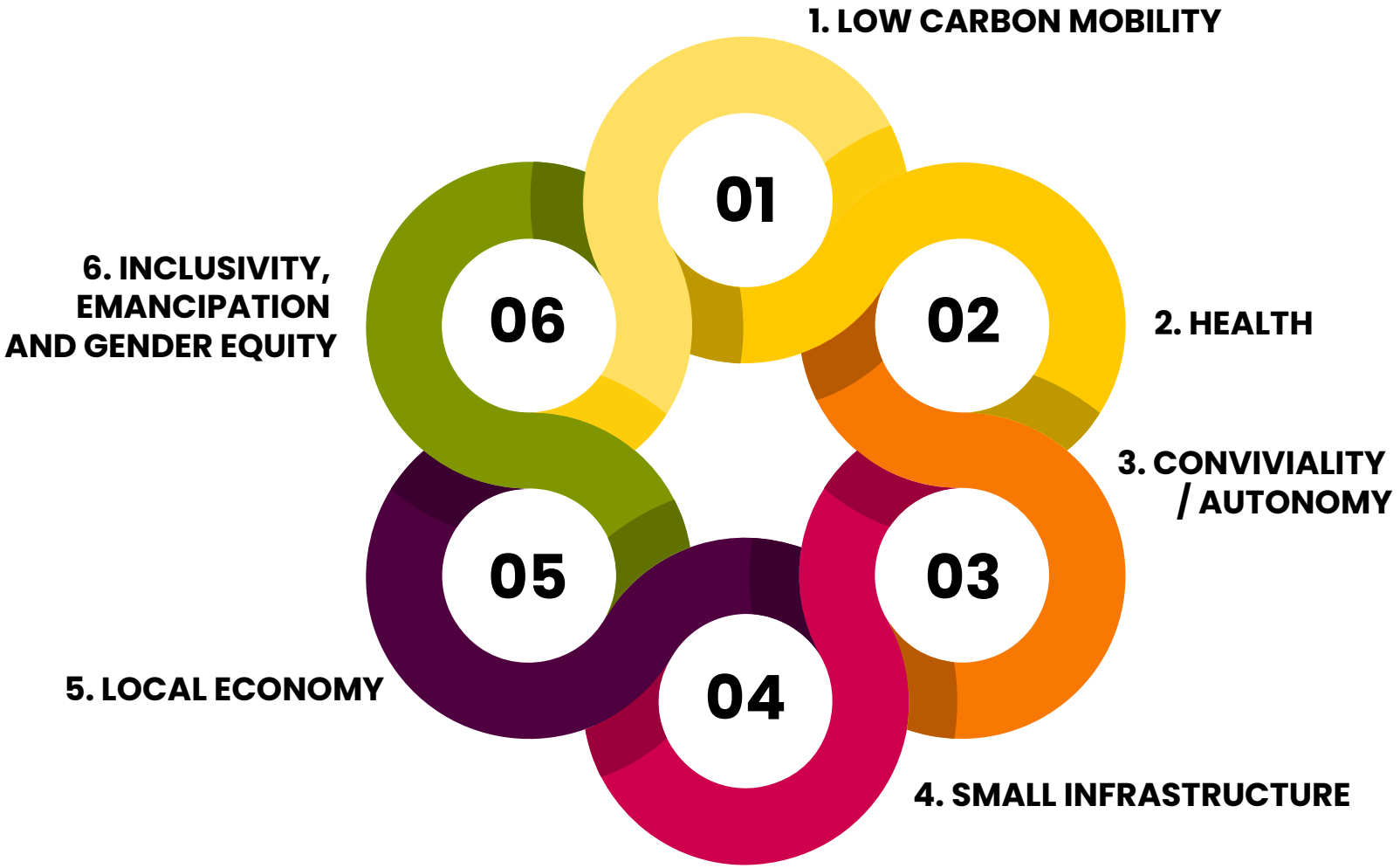
Mincke, C. 2018. « From Mobility to Its Ideology. When Mobility Becomes an Imperative ». In *The Mobilities Paradigm. Discourses and Ideologies*, 11-33. London: Routledge.

"a 'mobility turn' has placed mobility at the heart of our social practices, both concretely and in discourses (Sheller and Urry 2006).

evolution of the social constructions of what mobility is, of the meaning it should hold and the value it confers on mobile entities

- the articulation between description and prescription (social normativities): what social norms are linked to mobility's central role in the way we relate to the world?"

Why active mobility?



Beyond rationing: mobility *justice* and mobility *commons*

Mobility infrastructure

As social infrastructure to assemble, gather and share in the movement

- i.e. bike communities: communities of practice that build relationships within local communities and international networks focused on sustainable transition.

Mobility disparities reveal gender, race and class inequalities. **We are part of a mobile elite.**

- compensation and rebalancing processes in the future ?

History of transport and mobility

History of transport and mobility in a nutshell

#2 The myth of technological determinism

Claire Pelgrims

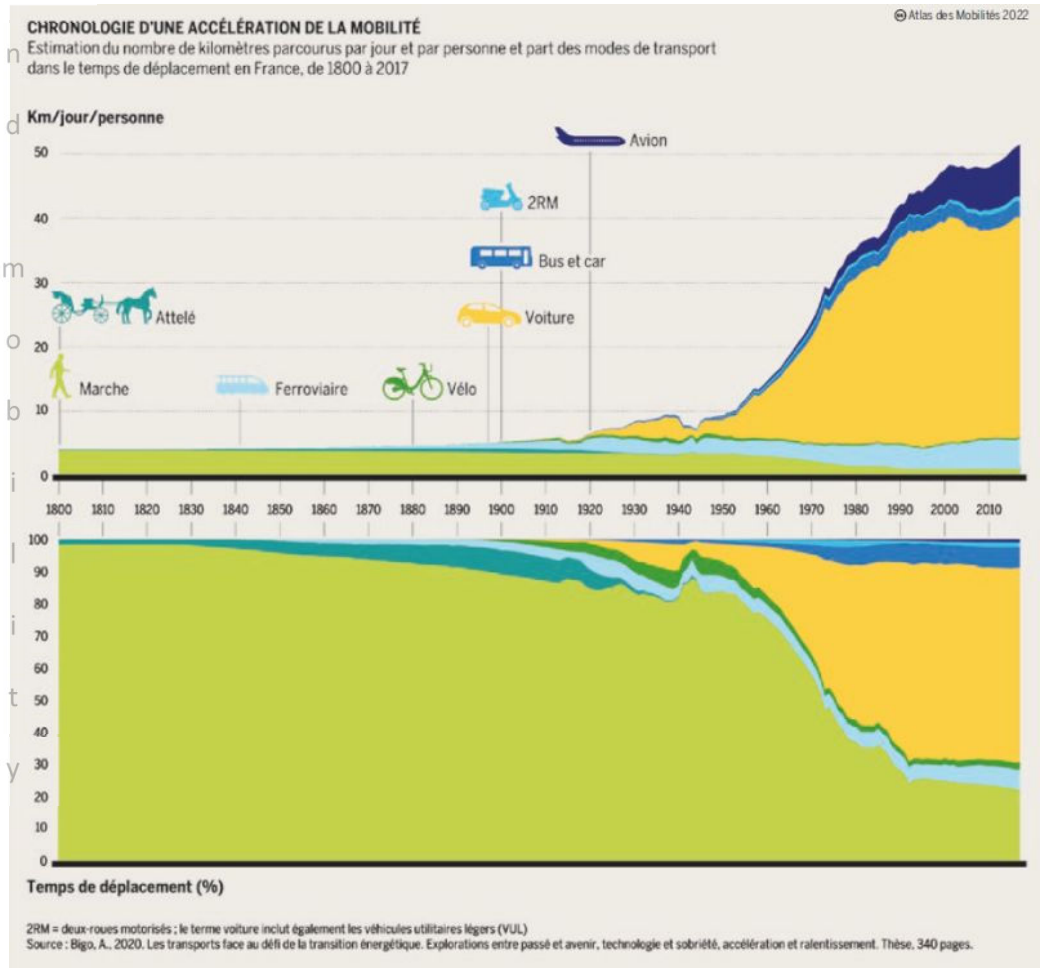
History of transport and mobility

Before and after the Industrial Revolution

	XVIII century and earlier	XIX century	XX century	XXI century
	Mobility 1.0	Mobility 2.0	Mobility 3.0	Mobility 4.0
INDUSTRY	Pre-industrial time ■ Agricultural focus	1st industrial revolution ■ Steam-based technology ■ Industrialization ■ Metallurgy, machine building	2nd and 3rd industrial revolutions ■ Automation ■ Electrification ■ Mass production ■ Start of digitalization	4th industrial revolution ■ Convergence of industry and technology ■ Digitalization, Internet of Things ■ Social media ■ Individualization and mass-customization
MOBILITY	■ Waterways as most important traffic routes ■ Horses and carriages	■ Expansion of rail and local public transport ■ Bicycle as a horse substitute ■ Steam ships displace sailing ships	■ Expansion of roads and air transport ■ Motorization with individual cars ■ Car as a backbone of mobility ■ Rail blossoms	■ Massive data growth – “ Data highways“ ■ Mobility Big Data ■ Integration of modes, new (shared) mobility services ■ Autonomous driving ■ Mobility-as-a-Service – Usage rather than ownership

Source: Arthur D. Little

Slow progress despite the development of transport technologies until the 1950s



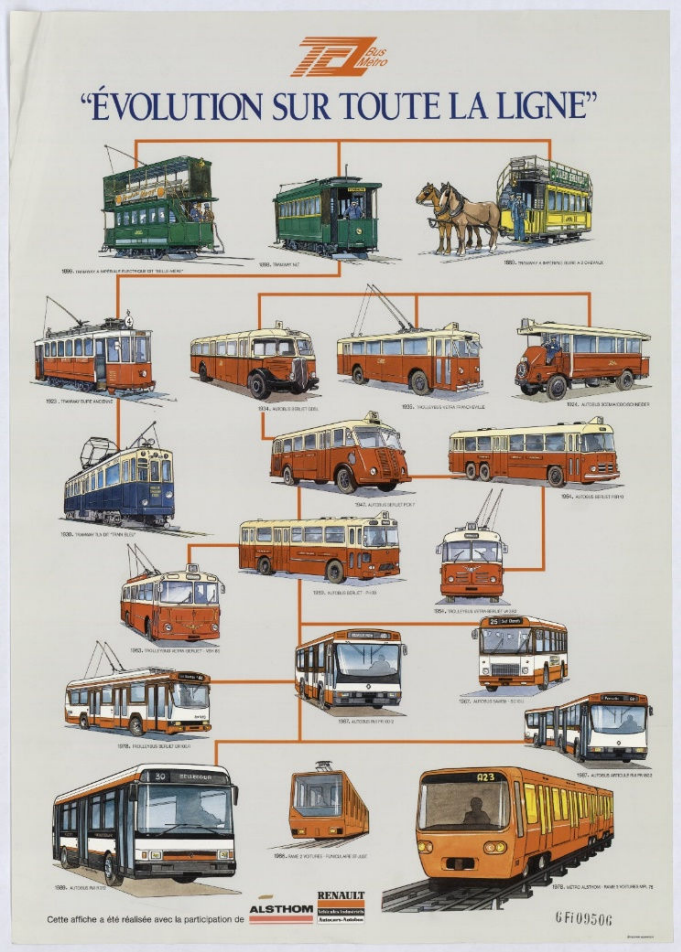
From the 1950s onwards, a sharp increase in mobility

Sharp increase in spatial mobility driven by

- Progressive upward social mobility
- Rise in living standards
- Increased car ownership by households
- Access to individual property due to distance from urban centres (cheaper land) and the use of private cars

Increase in touristic mobility driven by

- Rising living standards
- Development of faster modes of mass transport (air travel)



In the Global South : a global increase of transport emissions and car ownership

Car development and roadbuilding as part of the 'development' narrative of the Western block to reaffirm its superiority in the context of the Cold War and the independence of former colonies.

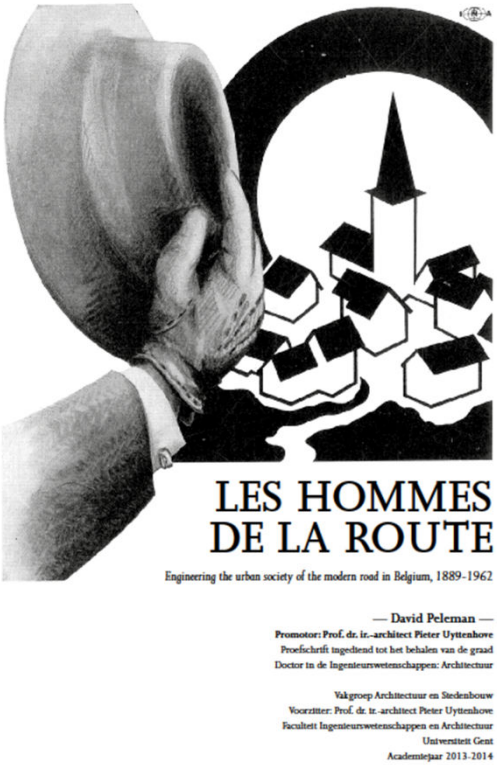
- Knowledge transfers
- International fundings geared towards the development of car systems
- Power relationships
- Huge inequalities → "layered mobilities" (Mom 2020) with informal/traditional/old mobility systems and car systems

The naturalisation of mobility infrastructure /vehicles

- Transforming the environment: the 'all-for-the-car' as the exclusion of alternative transport technologies (and policies)
  - Alternative modernization by rail transport: the Soviet model
- Transforming collective representations: manufacturing information, colonising the imaginary and naturalising motoring

Technological fetichism

- Pelgrims, Claire. ‘Fetichising the Brussels Roadscape’. *Journal of Transport History* 41, no. 1 (2020): 89–115. https://doi.org/10.1177/0022526619892832.



History of transport and mobility

Placing the development of infrastructure in the culture of its time, the imaginary of mobility, the values that support it, the crystallization of a specific relationship to time

- Social meanings, cultural, sensitive and landscape dimensions, and the agency of infrastructure
- ‘Mobile' infrastructures: meanings that evolve, materialities that constrain

1. Nomological problematisation

The natural state of road order is a state of conflict between occupants of the street (pedestrians, cyclists, horse-drawn vehicles, motorists), social classes and traffic flows.

- constitution of a set of scientific-technical tools and knowledge standardised within the engineering community, aimed at unifying and formalising the traffic phenomenon and improving its performance.

Traffic engineering

"Code du roulage", highway code

2. Ethological problematisation

The number of cars on the road and the number of accidents are constantly increasing

Two concerns are therefore on the agenda: the question of the road network, its size and development, and the question of how to combat the *scourge of traffic*.

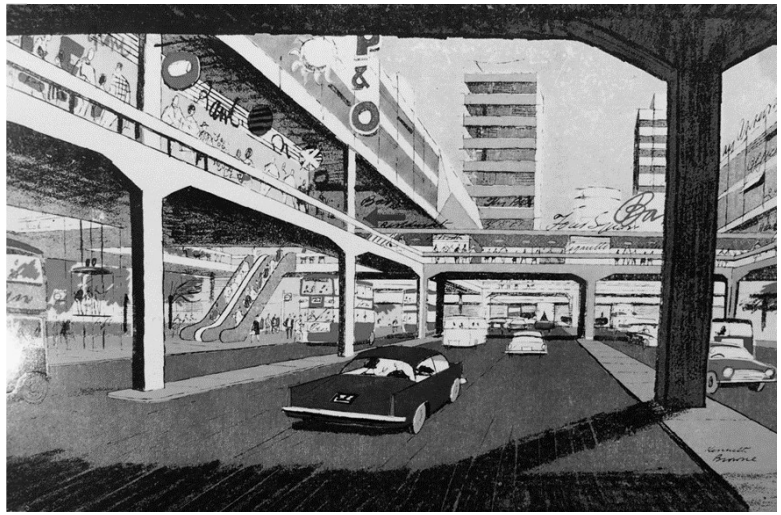
A. Traffic is perhaps less a site of conflict than a *complex system*.

The presence of behavioural factors in driving: (moral problematisation -> human factor (scientific, neutral, objective)

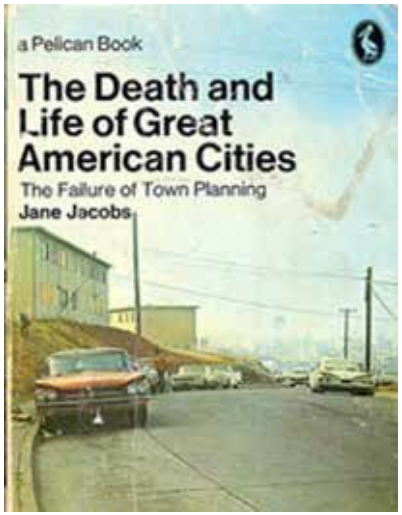
Accident-prone car equipment and killer roads

-> Development of a scientific accidentology: accident as an object of knowledge (>< judgement) to understand, list the factors that caused it in order to make the fight against the accident more effective.

To combat them effectively, it is necessary to have a better understanding of the respective behaviour of the elements of this system, i.e. man, vehicles and traffic areas.



Buchanan Report *Traffic in Towns* (1963)



Jane Jacobs, *The Death and Life of Great America* (1961)

b. Unavoidable growth in traffic volume

- All-for-the-car: major development works, traffic modelling methods
- Criticism of extensive road culture: limitations, disadvantages

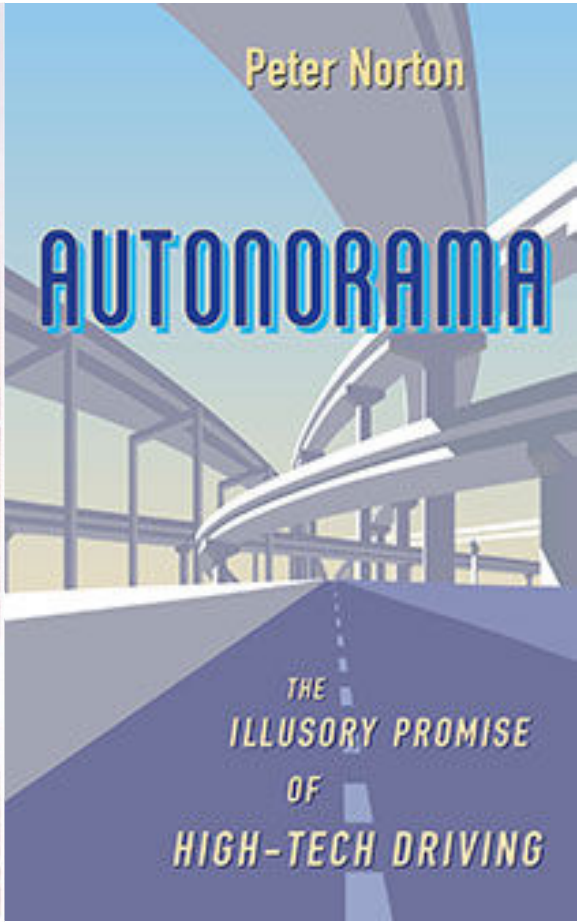
3. Technological problematisation

which establishes technology (telematics) as the main vector for the realisation of an acceptable/sustainable road order (1985 -)

The potential of information and communication technologies for traffic management and driving

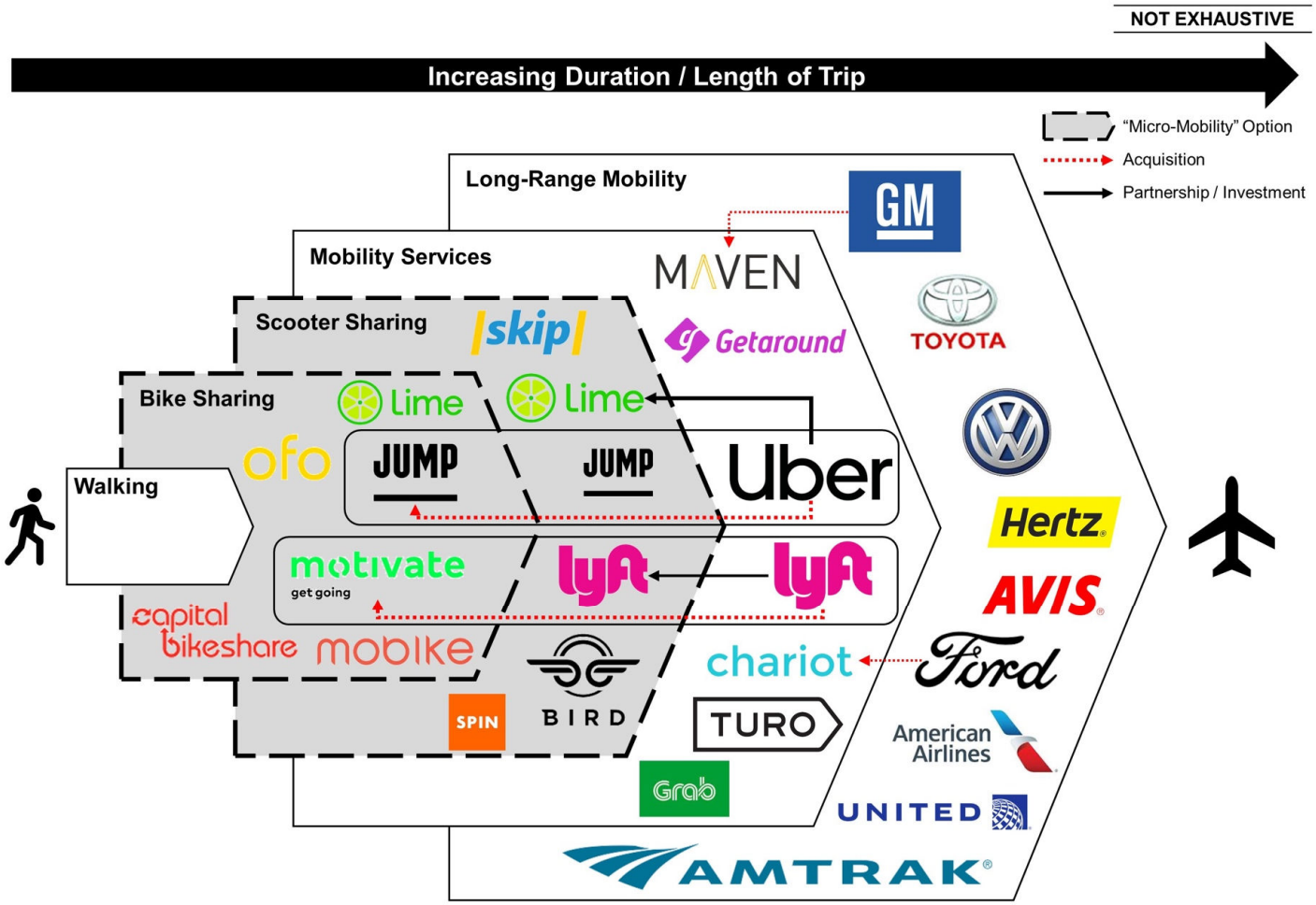
“Intelligent roads", "autonomous cars", etc.

Promise of a new age of motoring in which optimised travel goes hand in hand with safety and user comfort (fluidity, safety, cleanliness)



History of transport and mobility

Smart and MaaS mobilities



Contrasting trends from 2000 onwards

Sharp rise in tourist mobility

31% of French people went on holiday in 1951; 60-65% in 1989 and 73% in 2016

Daily mobility

Local (less than 80km as the crow flies or 100km network distance) since 1970s

- Decline in number of journeys per day (-8%)
- Increase in travel time per day (+11%)
- Sharp increase in average distance per day: 18.1 km in 1974 (main mode of transport: walking) and 31 km in 2008 (car) [+71.3%].

Zahavi's conjecture: "The time saved by an increase in travel speeds (thanks to technological progress), which could theoretically result in an average reduction in journey times, is not actually saved by individuals, but reinvested in the journey itself, so as to travel further" (Wenglenski, 2003).

Long distance (over 80 km): 1.3% of journeys but 40% of distances travelled → little change compared with local journeys

Estimation des coûts moyens de transports, assurances et frais annexes
(en % de la valeur CAF des importations mondiales)

	1830	1840	1850	1860	1870	1880	1890	1900	1910
En %	17-20	16-19	14-17	13-15	12-14	11-13	10-11	9-10	8-9

Source : Bairoch (1974)

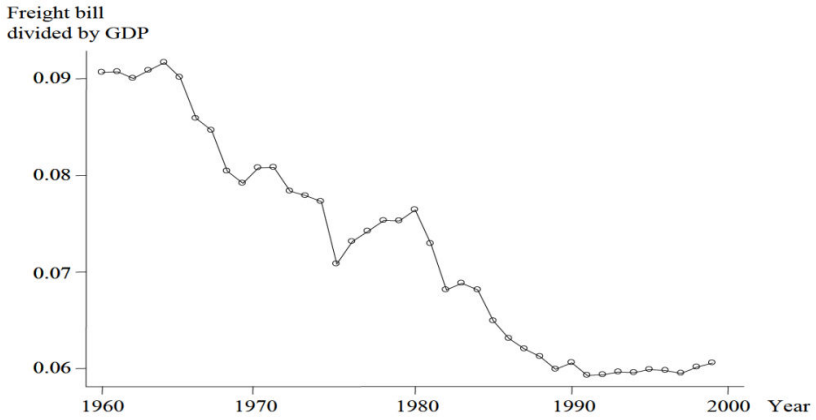


Fig. 2. Transportation bill (freight only) divided by GDP
Source: Bureau of Transportation Statistics Annual Reports.

What about goods?

A very sharp rise in freight transport since the 1980s

- Transport costs have plummeted (fewer barriers to international trade, invention of the container, etc.)

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Transport infrastructures and urban landscape : a historical articulation

#3 The myth of the structuring effects of transport

Claire Pelgrims

The myth of the structuring effects of transport

Offner, Jean-Marc. 'Les « effets structurants » du transport : mythe politique, mystification scientifique'. *L'Espace géographique* 22, no. 3 (1993): 233–42. https://doi.org/10.3406/spgeo.1993.3209.

Positive role of mobility infrastructure in solving urban problems

" 'Mechanical' consequences (i.e. repetitive and predictable) of the implementation of certain types of infrastructure on certain types of spaces" (Offner 1993, 236)

Forgets the general context of urban change in which the infrastructures are only part of:

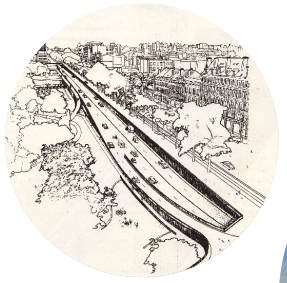
- Wider structural dynamics
- Strategies of actors who position themselves in relation to these projects

= "Political, economic and social conditions which have made it possible to carry out the project and the phenomena of appropriation which it entails" (Offner 1993, 238)

However, infrastructure development **amplifies and accelerates pre-existing trends**, whether or not they are favourable to the territories where they are located.

The urban and movement intersections

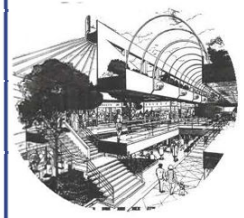
- Strong link between transport modes and form and implantation of cities in history
- Movement as an essential element of the theory of urbanism (Cerdà, Le Corbusier, …)
- Better circulation of air, water, goods and people
- Construction of traffic engineering as separate scientific knowledge
- The question of infrastructures is still considered by the design disciplines mainly from a technological point of view, “without grasping all the social significance, the spatial scope and the strategic territorial stakes of these networks”, thus leaving it up to the technicians to decide (Dupuy 1991, 40).




PARKWAY BRUSSELS

Spatial segregation and articulation between infrastructures of speed, slowness and overlaps

1950-1989 | 1960-1989- | 2000-



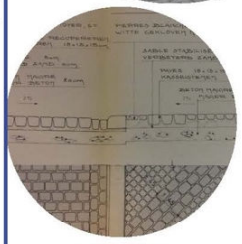
Grammar of fast automobilities

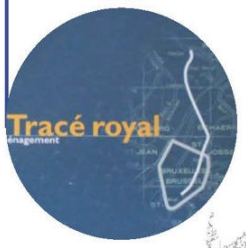
Urban fabric sprawling

Roadscape park-like infrastructural landscape

Strong modal segregation horiz. and vertical zoning

- Multiplication of ground level
- Isolated, 'analogous' slow mobility spaces connected to fast mobility infrastructure



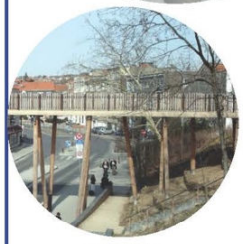


Grammar of slow mobilities

Evolution from radical segregated solution (pedestrian areas) towards more hybrid infrastructure (semi-pedestrian, 30km/h, shared streets)

Modal segregation at the level of the street section

- Deceleration of fast mobilities traffic calming, invisibilisation
- Acceleration of slow mobilities Networked, qualitative slow mobility infrastructures



Grammar of hybrid mobility practices

Active mobility to replace motorised mobilities in daily travels.

Acceleration of slow mobilities at metropolitan scale

- Shared spaces
- Segregated networks of slow mobility spaces
- Recycling of linear, ageing automobility infrastructure

The development of active mobility

Re-articulation of the issues of connectivity and attractiveness: redefining proximity in the city of the future

new issues of attractiveness specific to cultural capitalism < competition between globalised cities = ability to reconcile

- the need for slowness (slowing down the pace of life, tourism, aestheticisation of consumerism) with
- arrival and communication speeds (good accessibility < centrality in the network of cities)

Accessibility of the capital remains an issue, but once there, it is the urban practices that are favoured.

car / pedestrian ~~dialectic~~ → diversification of slow active mobility as an alternative to the car

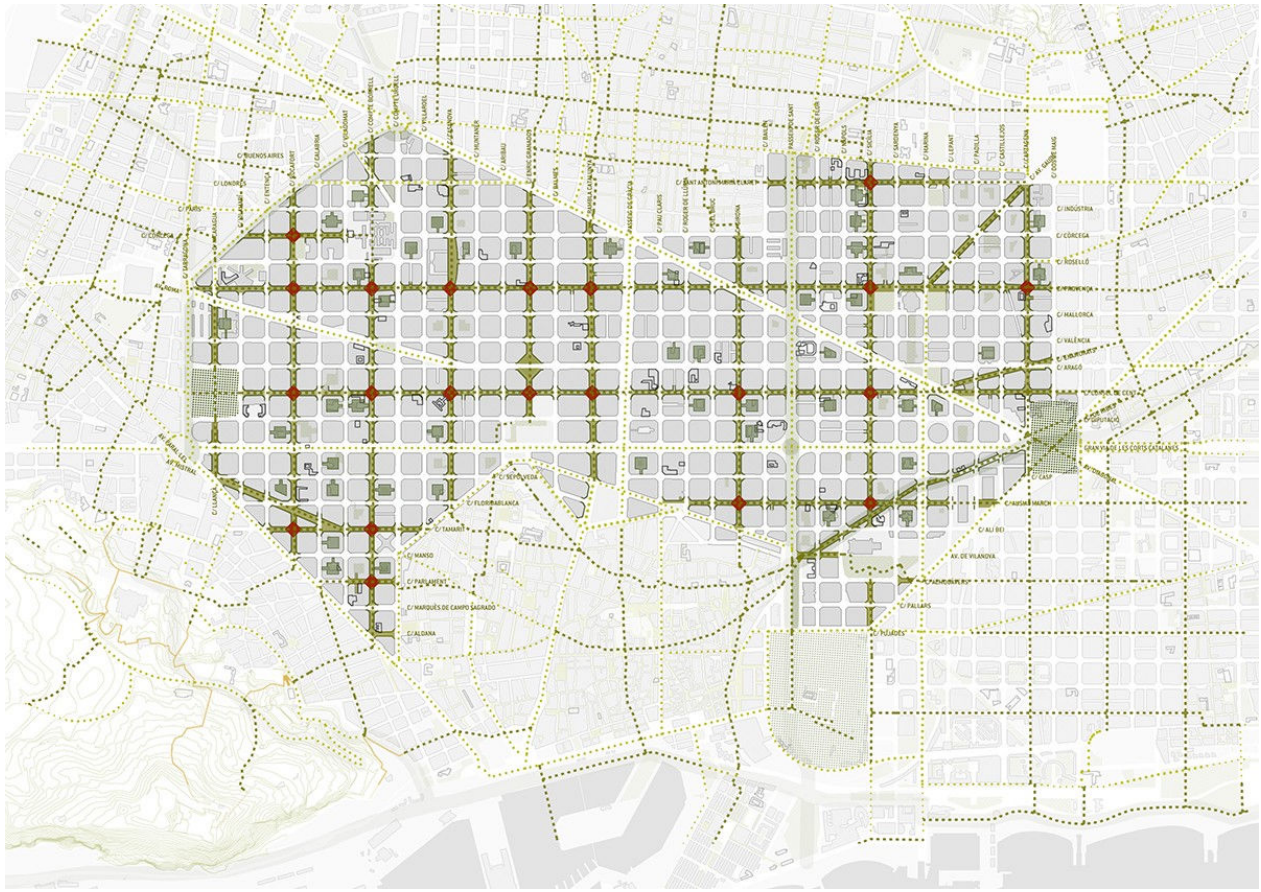
- acceleration and 'functionalization' of slowness

The layout of mobility infrastructure is currently explicitly seeking to reconcile functionality and aesthetics. They are geared to hybrid practices - functional, active and playful - that allow the **speed of travel to be reconciled with an enriching experience of the environment**.

Case Studies of positive mobility change

Case Studies of positive mobility change

THE « SUPER BLOCKS » STRATEGY (« superilles »): A PEDESTRIAN METROPOLITAN NETWORK



Each superblock consists of 3×3 blocks (approx. 400m x 400m)

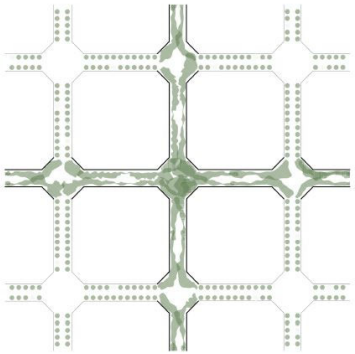
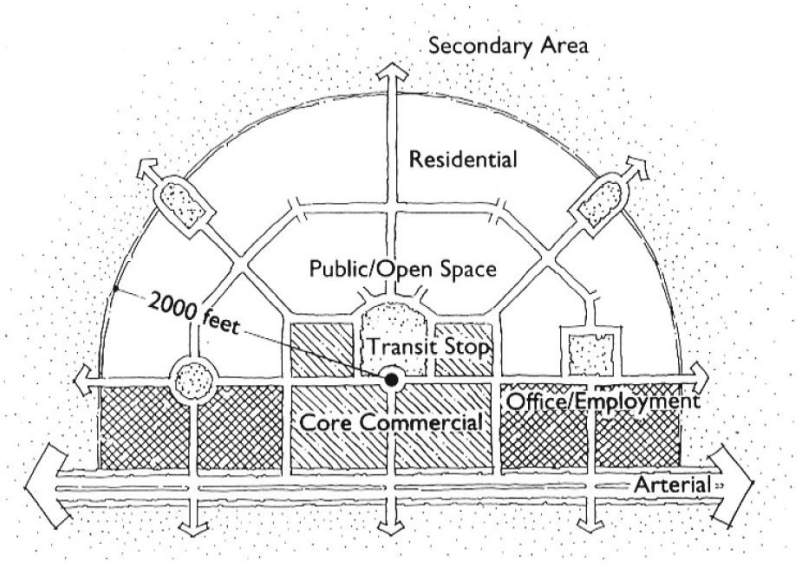


Diagrama de la natura als Eixos Verds

Transit-Oriented Development (TOD)

- The importance of the coordination in the transition toward sustainable mobility
- A concept from North America (Calthorpe, 1993)



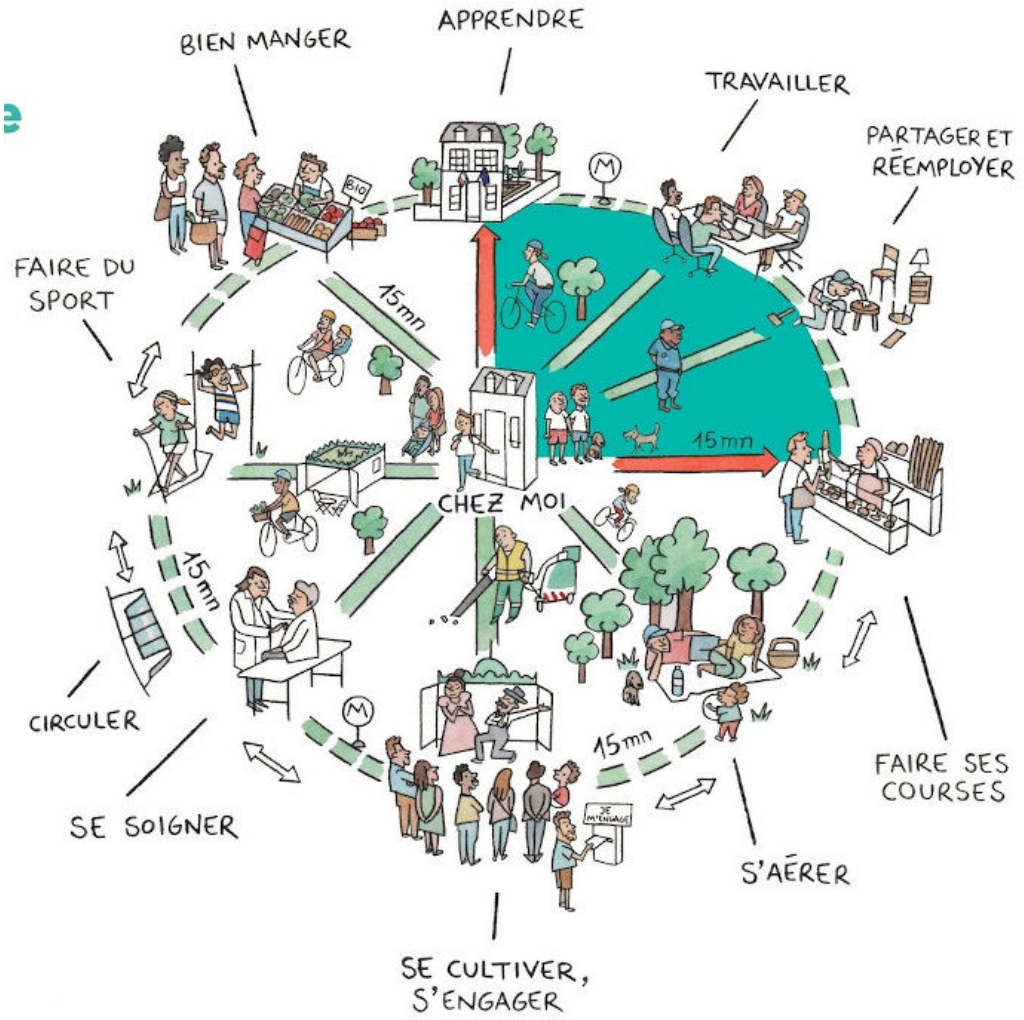
Calthorpe's TOD Conceptual Model

Source: Calthorpe, P. 1993. *The Next American Metropolis*. Princeton: Princeton Architectural Press.

1. The quarter-hour city, the half-hour territory

Key Concepts

- Relocalisation of activities and services
- Redeployment of active mobilities
- The historical depth of the notion of "proximity" highlighted around the contemporary figures of "the 1/4 hour city ”/15min city, "the 1/2 hour territory", the village regained, the medium-sized city, etc.
- Inclusivity as a challenge for thinking about proximity in order to imagine our ways of living together and inhabiting the Earth.



2. The equitable TOD (eTOD)

Key concepts

Initiated by the City of Chicago, the concept of equitable TOD is not far from the 15 minutes city concept (popular in Europe). eTOD aims to make the ensure social and economic inclusion around public transport nodes and multimodal hubs, by:

- Improve the **pedestrian accessibility** to PT and **safety for disabled people and children**
- Align TOD strategies with **social housing** development policies
- Limit consequently the amount of **parking supply** around public transport stations
- Ensure that mixed-used urban blocks are **not threatened by real estate speculation**

AFFORDABILITY: Equity-focused policy ensures affordable housing options near transit, low-cost transit fares and tenant protection.

DENSITY: Compact development connects people to jobs and commerce, and supports transit infrastructure.

TRANSIT: Transit contributes to equitable development by expanding access to opportunities and providing convenient, reliable transportation services.

WALKABILITY: Pedestrian-friendly elements create vibrant and active spaces, which lead to health, environmental and economic benefits.

MIXED USE: A mix of land uses within a building, block or neighborhood encourages fewer car trips and creates dynamic spaces.

The 8 principles of compact urbanism in synergy with equitable TOD are:

1.Walk: Develop neighbourhoods that promote walking.

2.Cycle: Prioritise non-motorised transport networks with safe spaces and facilities for cyclists, such as cycle lanes and parking.

3.Connect: Create dense networks of streets and paths.

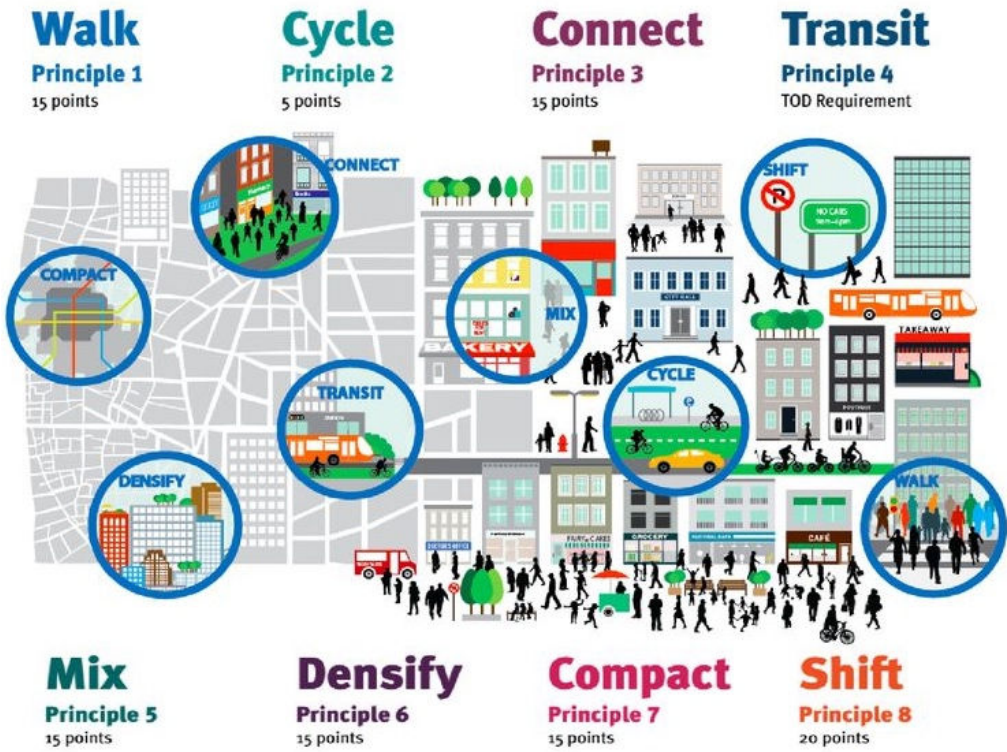
4.Transit: Locate development near high-capacity, reliable public transit.

5.Mix: Plan for mixed income, uses and demographics.

6.Density: Optimise density, including by absorbing urban growth with taller buildings.

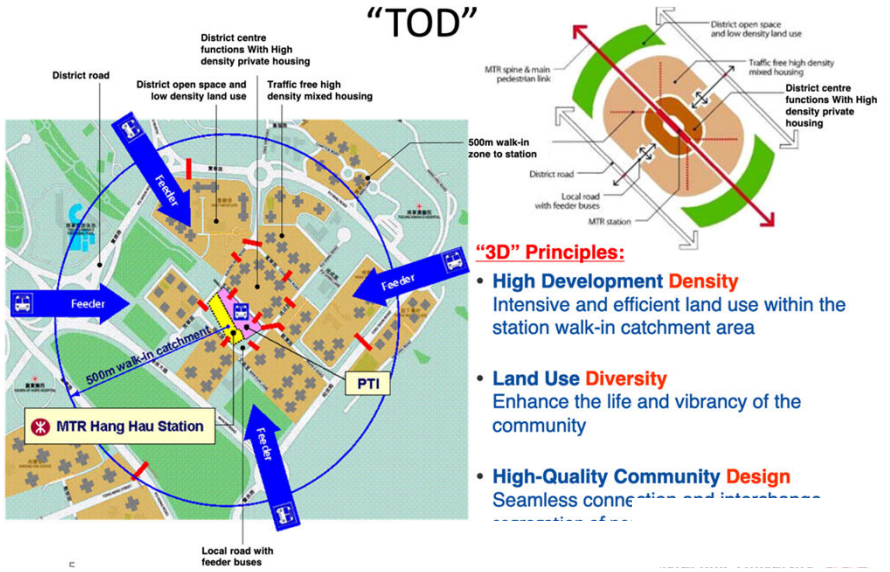
7.Compact: Create areas or within-city regions with short transit commutes.

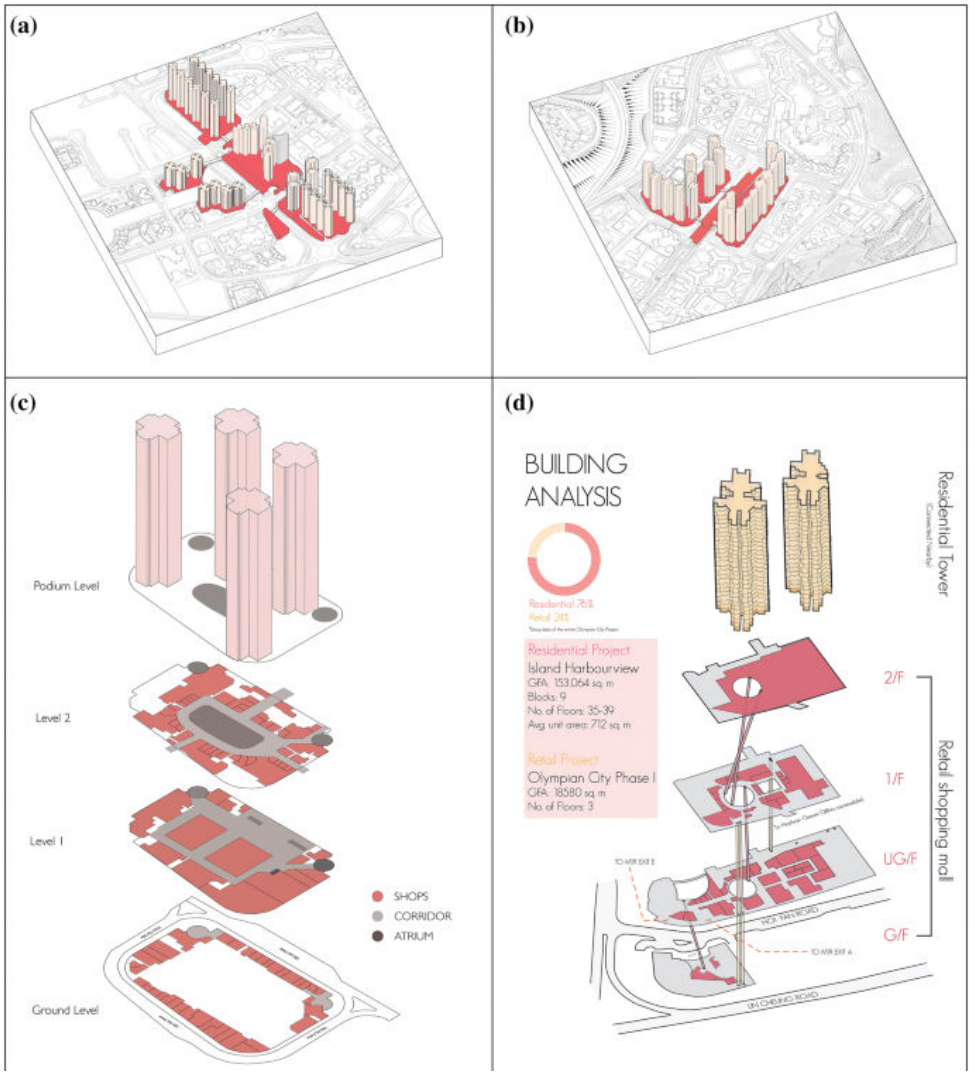
8.Shift: Increase mobility by regulating parking and road use.



But what happens if such area becomes too successful…and unaffordable?

The Asian High-density TOD model





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Putting the transit infrastructures in the underground

Barcelona, 2010

Case Studies of positive mobility change

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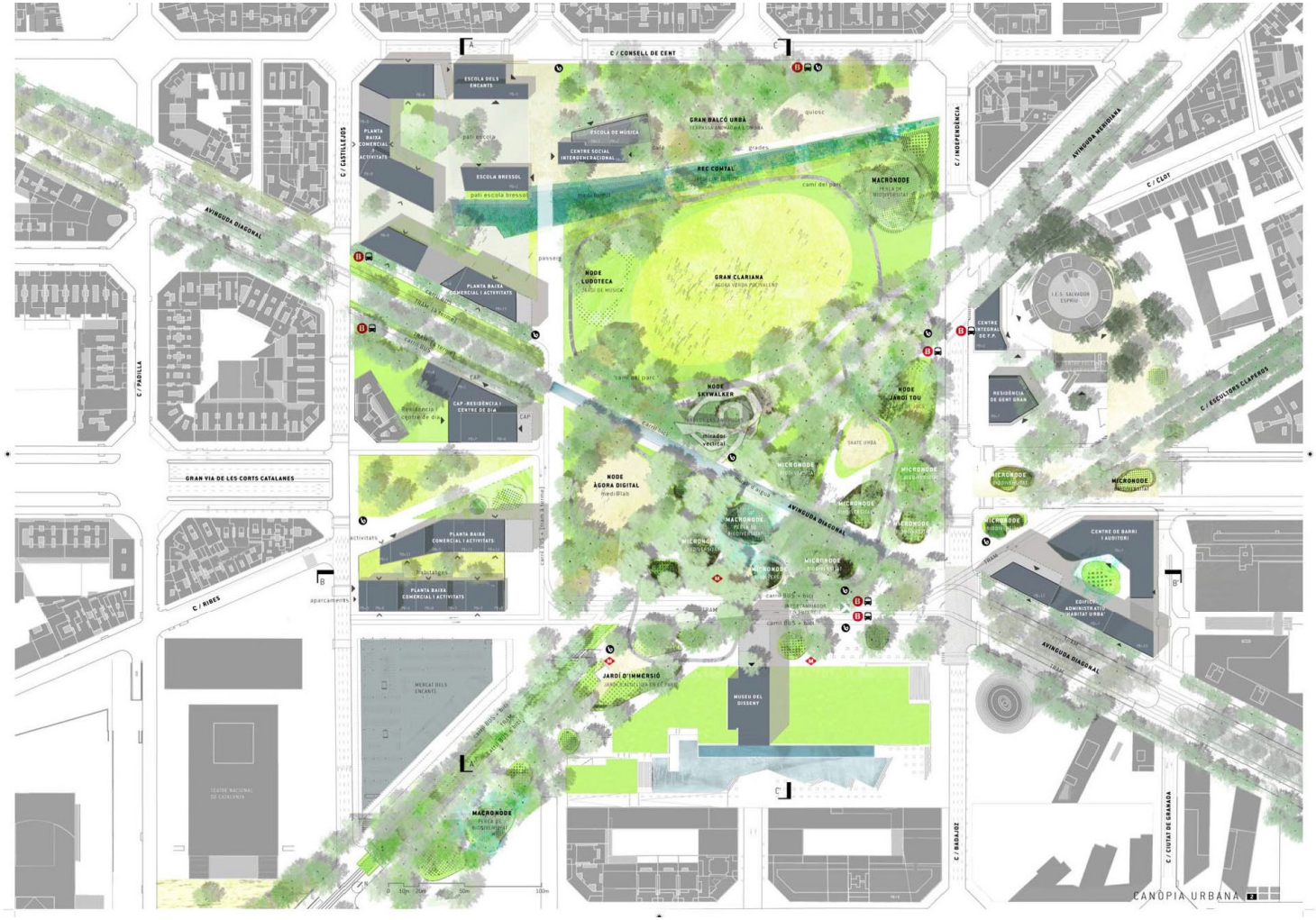

Creating by the way a central park area at he place of the former interchange

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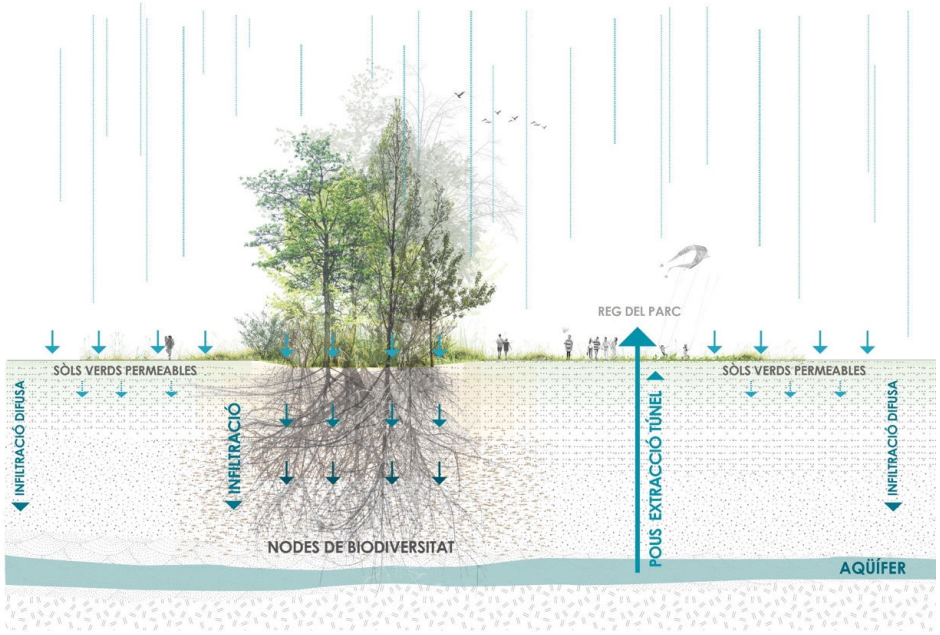
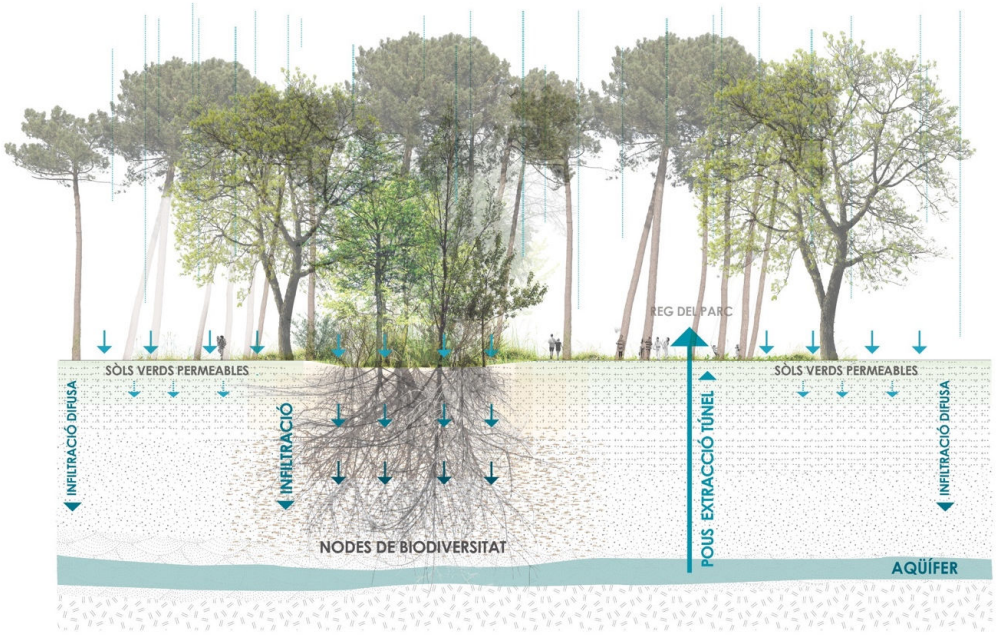
INSTALLER LA CHAINE HYDRIQUE ET BIOLOGIQUE VERTICALE



INSTALLER LA CANOPEE



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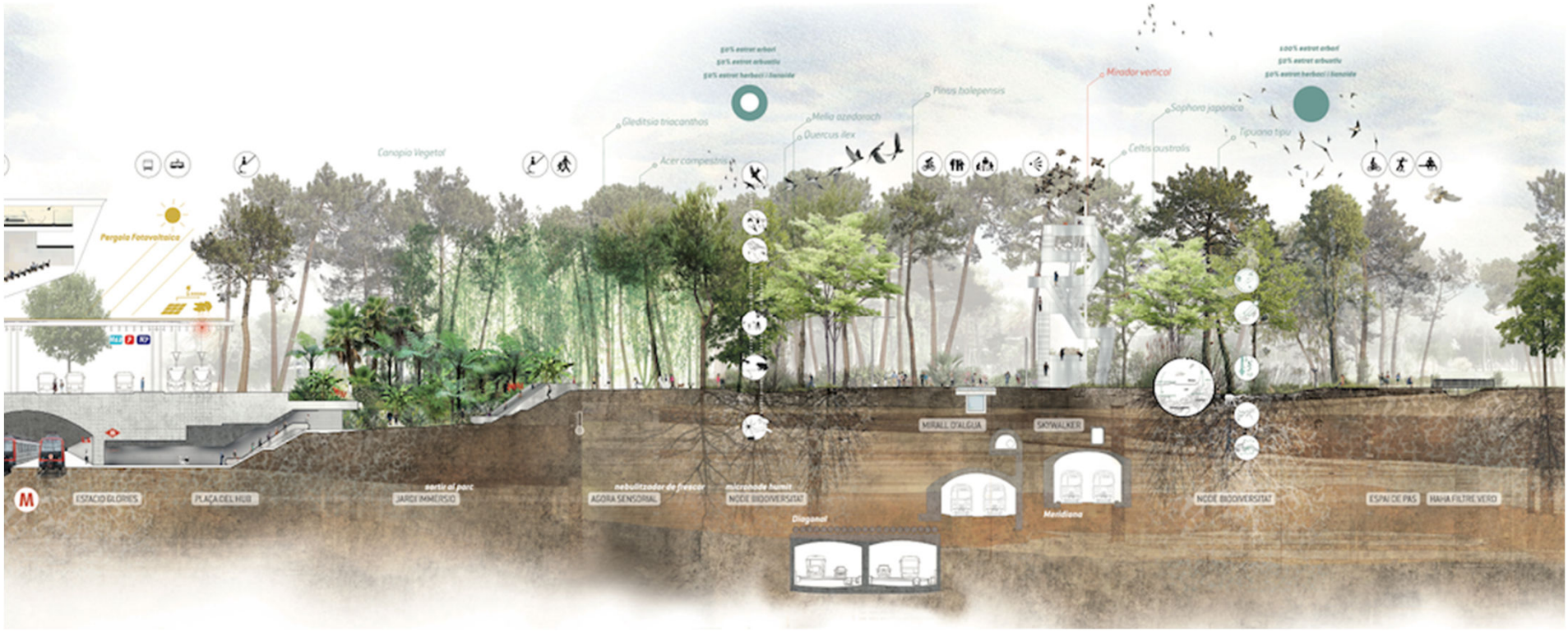
PLACING TRANSIT MOBILITY IN THE UNDERGROUND, DEPAVING THE SOIL



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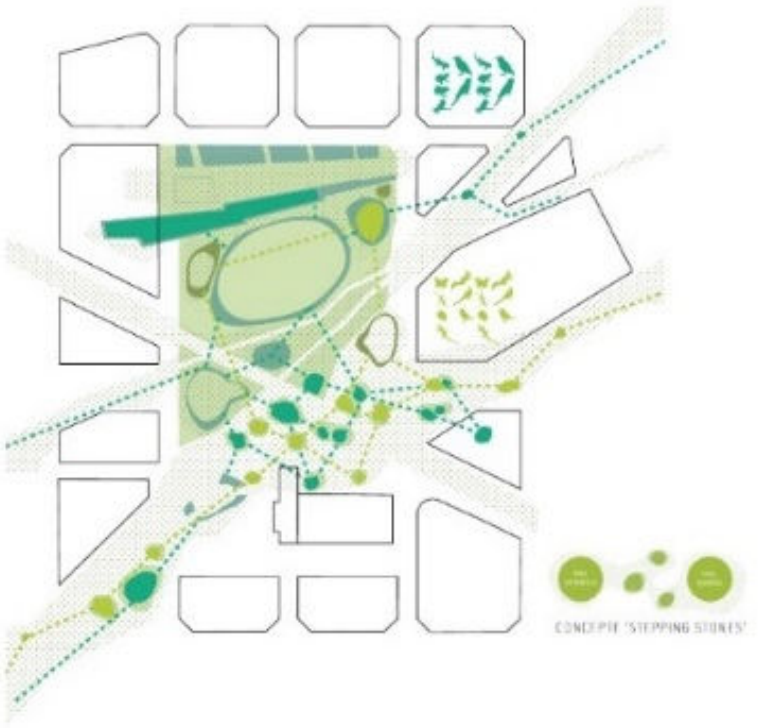
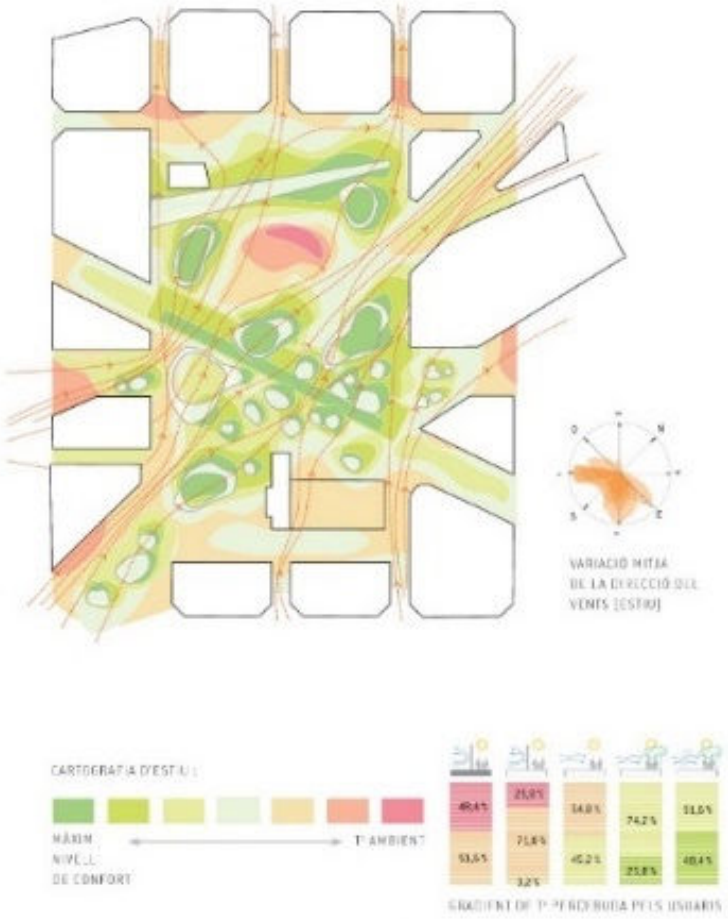


BIODIVERSITAT



CONFORT CLIMÀTIC

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the urban project interconnecting remaining alluvial forests

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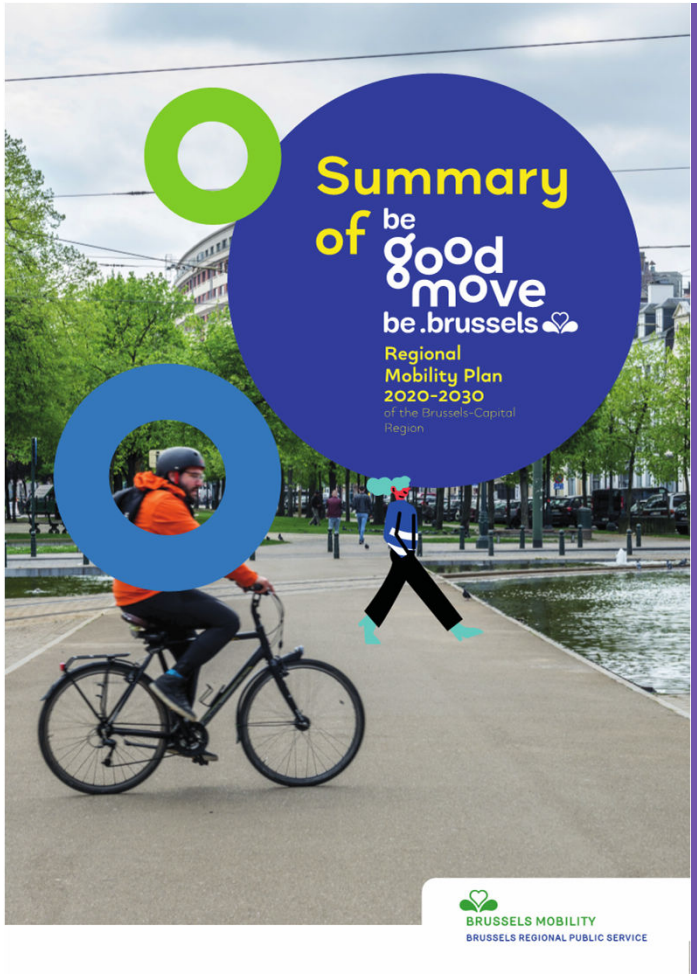

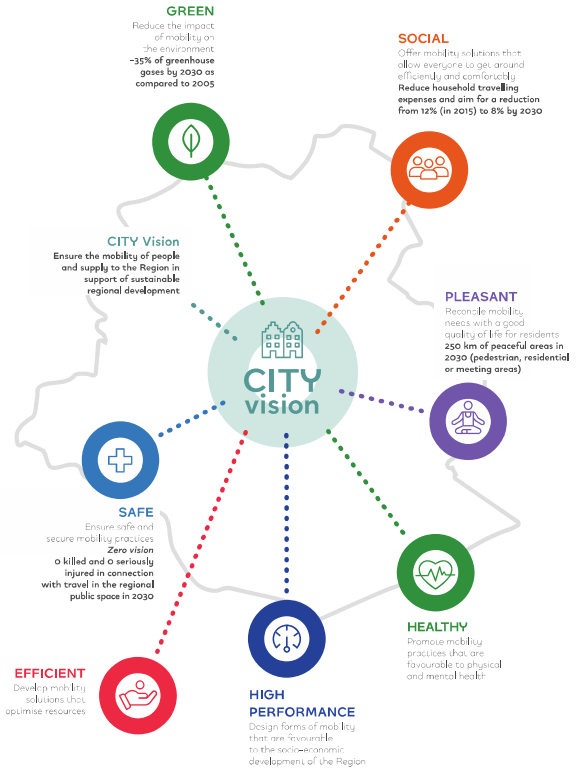

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MOBILITY VISION
AN AMBITION FOR BRUSSELS

Mobility Vision **proposes a guided evolution of the mobility system on a metropolitan scale, which is based on:**

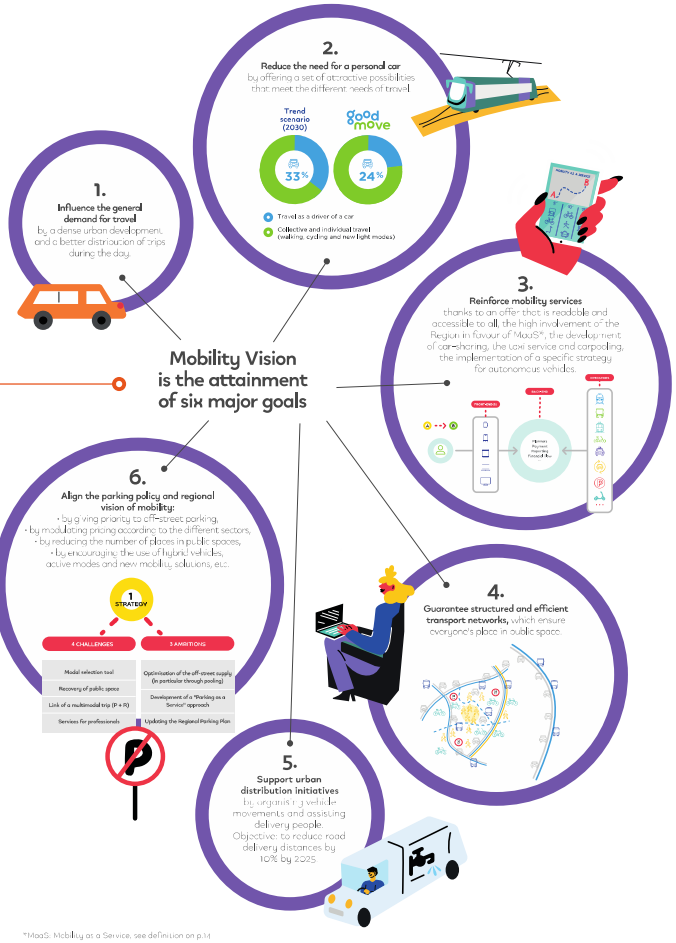
A significant improvement in the standard of living and the safety of the city's residents and users, which is based on a coherent design of efficient mobility networks, which contributes to:

- Creating more peaceful neighbourhoods with lesser automobile traffic and more active modes and local public transport and ensuring that they offer a full range of public and private services;
- Strengthening the structuring lines of public transport and the development of a quality pedestrian and cycling network;
- Regulating the flow of traffic on the structuring axes of the ring road and penetration.

An integrated mobility system focused on user needs via a welldefined deployment of a service-based mobility and parking offer for the movement of goods and people (including public and private transport operators) in order to:

- Encourage the users to choose the most suitable mode for each trip, while avoiding the use of private cars as much as possible, in urban environments;
- Promote walking and the use of a bicycle for short and medium distance travel;
- Make it easier for the people of Brussels to no longer own their own vehicle;
- Modulate the demand for travel in space and time, aiming to significantly reduce the number and length of individual car trips.

Strengthened and transparent public governance via the clear affirmation of the roles of the Brussels-Capital Region, its interventions and cooperation with other levels of power and its authority vis-à-vis private and public mobility operators.



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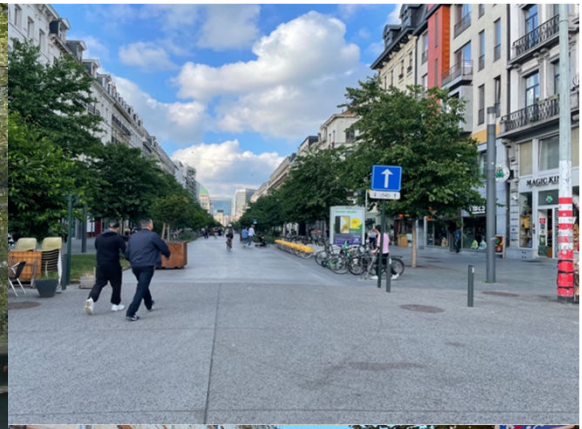
Case of positive change/successful transition

Brussels transformation of Central Boulevard with huge economic impact on catering and tourism



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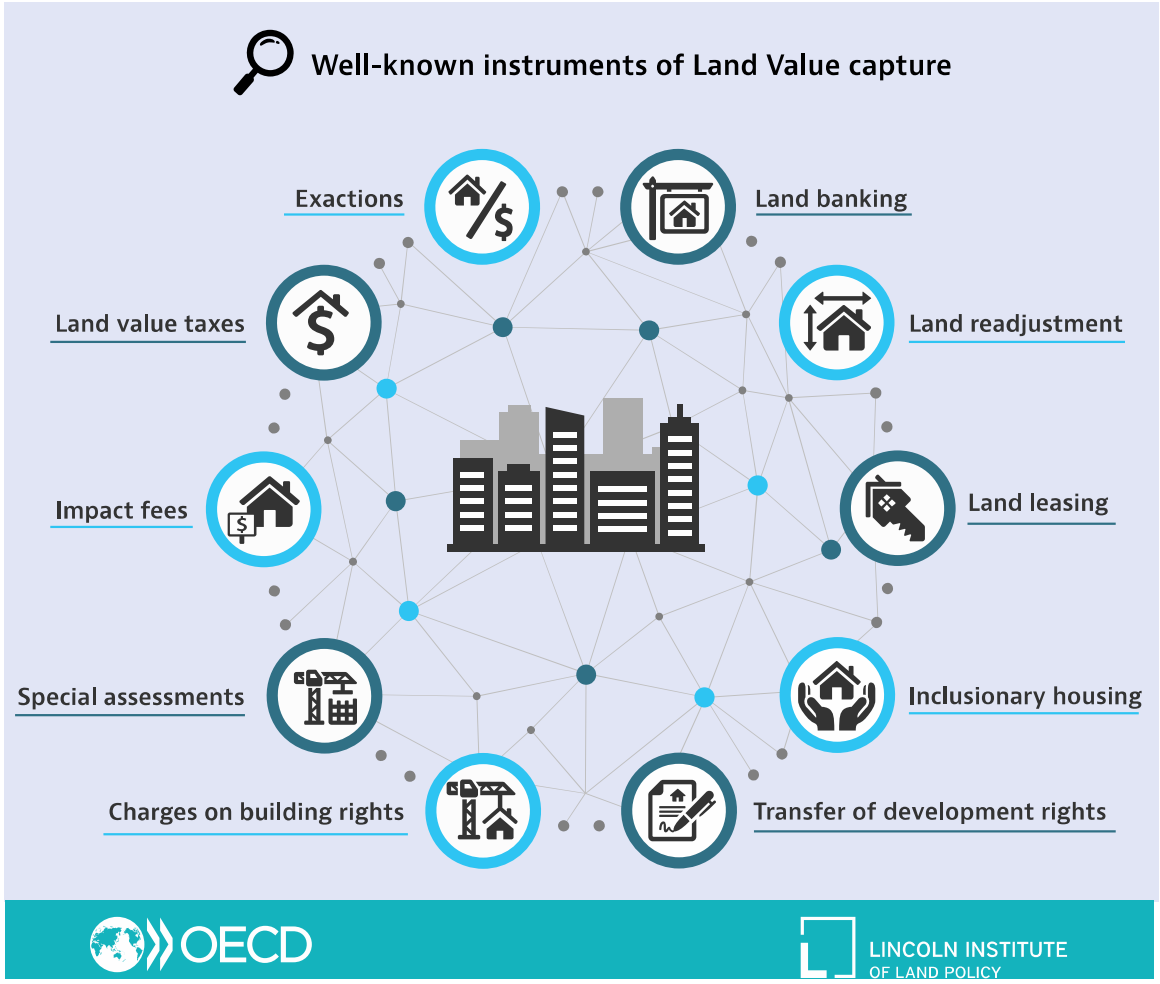
https://youtu.be/qUe9R35jP2k

Key economic dimensions

Didier Vancutsem

Key economic dimensions

Key Economic Dimensions - Impacts



https://www.lincolninst.edu/publications/books/value-capture-land-policies

LAND VALUE CAPTURE (LVC)

Land Value Capture (LVC) is a financial policy mechanism that helps governments to:

- ✓ Finance public investment in infrastructure to reduce physical vulnerabilities due to floods, environmental degradation, etc, thereby unlocking land values that are then captured by the city
- ✓ Secure (or reimburse) upfront infrastructure funding by recouping real estate value gains generated by infrastructure upgrades
- ✓ Levy direct beneficiaries of public improvements, which would otherwise benefit from such improvements as “windfall gains”
- ✓ Unlock additional funding in conditions of limited access to traditional sources of public sector financing
- ✓ Promote infrastructure cost-sharing with win-win outcomes to public and private stakeholders
- ✓ Incentivize wider policy measures that increase land value, e.g. reduction of local risks

City Resilience Program

Key Economic Dimensions - Impacts

https://youtu.be/vEZOGF2jSW8

Key Economic Dimensions - Impacts

Anticipating Transit Oriented Development (TOD) with Land Value Capture (LVC)

Land value capture (LVC) is a policy approach that enables communities to **recover and reinvest land value increases** that result from public investment and government actions.

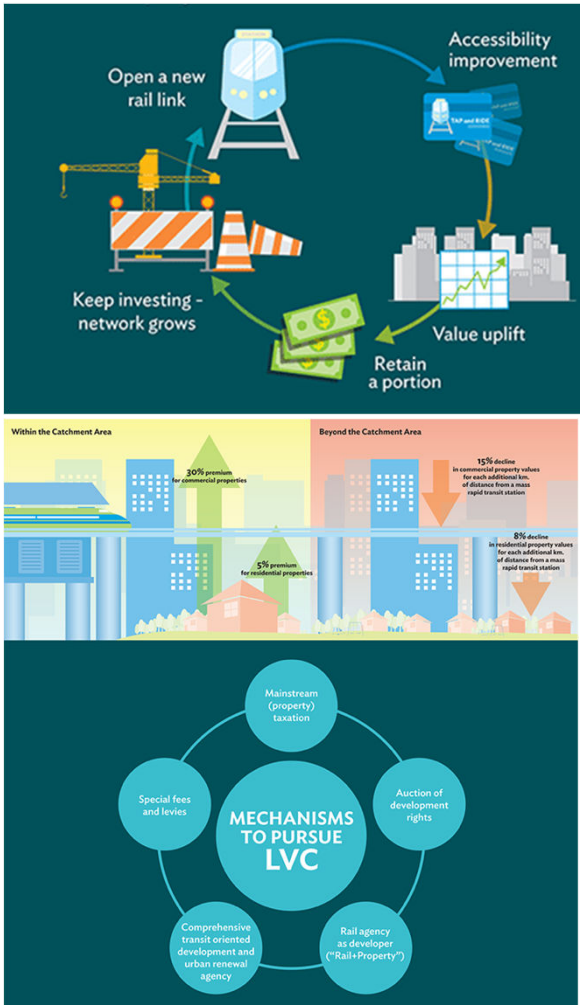
Land value capture (LVC) is rooted in the notion that **public action should generate public benefit.**

As challenges mount from rapid urbanisation, deteriorating infrastructure, climate change, and more, this **funding source** has never been more important to the future of municipalities.

When used in conjunction with good governance and urban planning principles, land value capture can be an integral tool to help governments advance **positive fiscal, social, and environmental outcomes.**

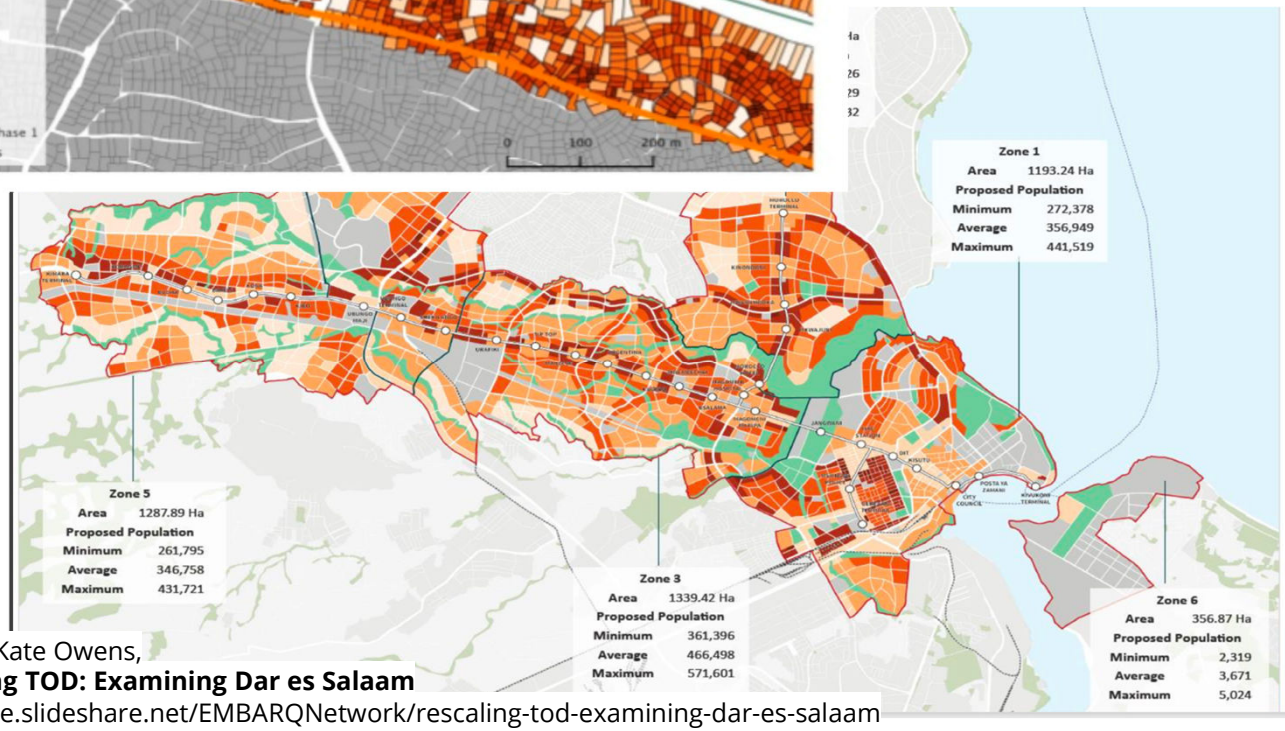
Reinvestment of land value increases can be applied to e.g. resilience to floods, green spaces, pedestrian linkages, better multimodal integration, social housing, etc.

Infographic: https://www.adb.org/news/infographics/land-value-capture-financing-infrastructure-asias-cities

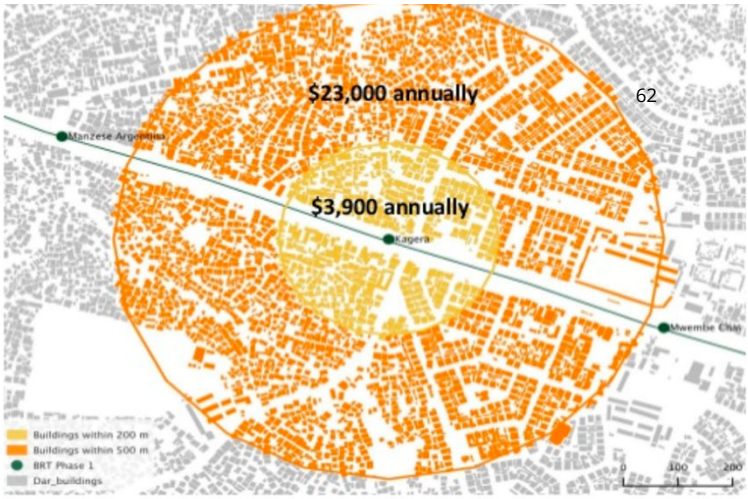


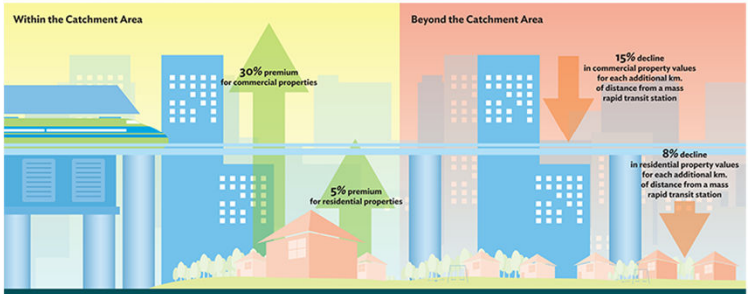
Anticipating TOD with Land Value Capture (LVC)

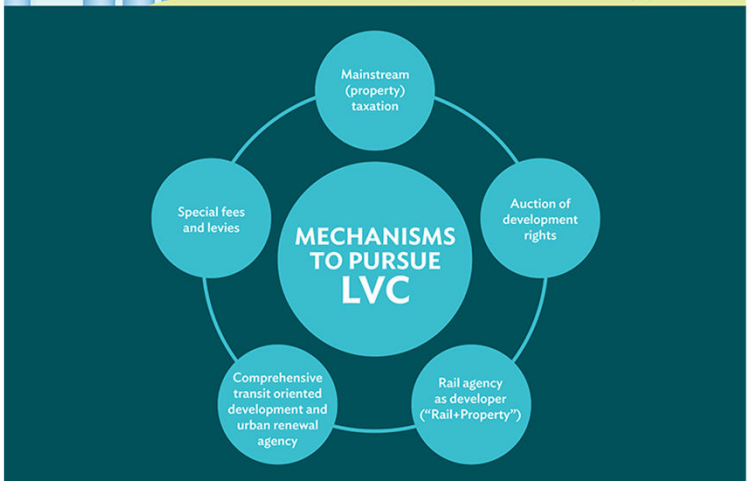
LVC and TOD (Transit Oriented Development) strategy around the BRT project of Dar es Salaam, Tanzania



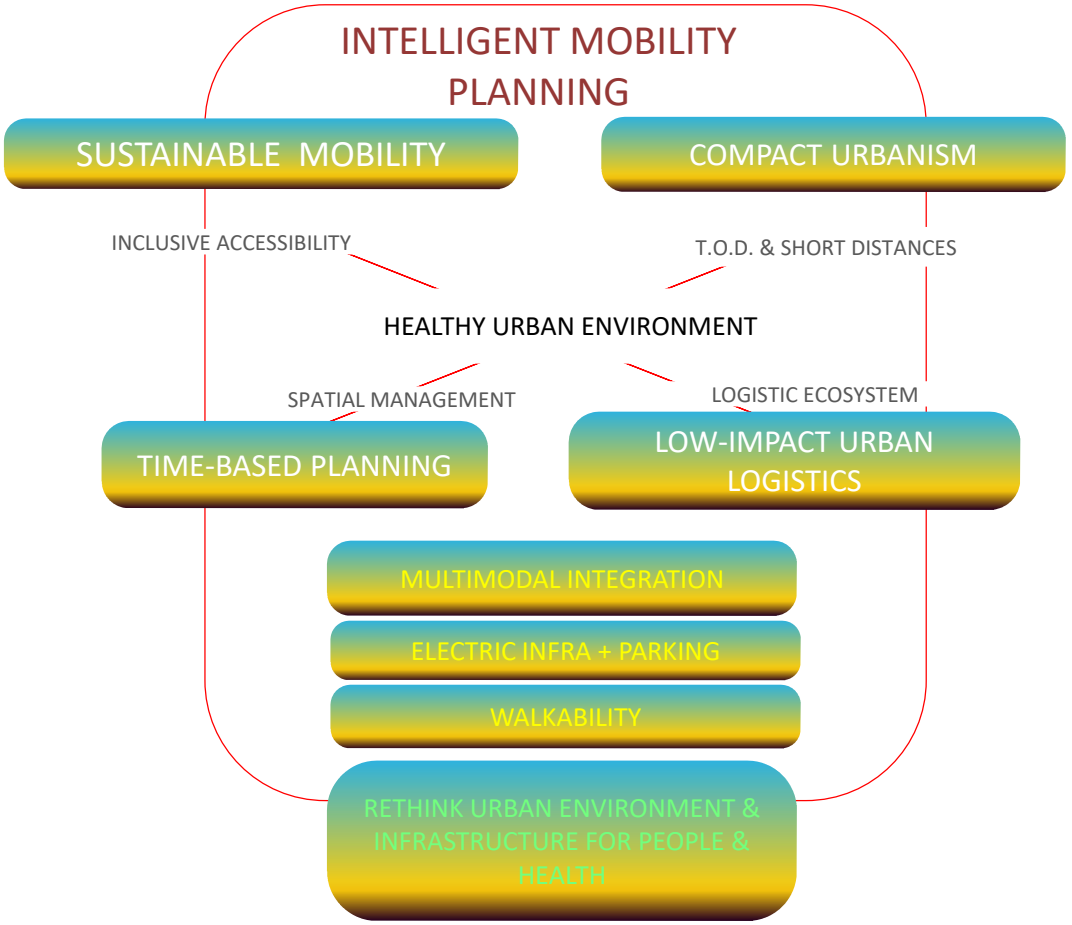
Source: Kate Owens,
Rescaling TOD: Examining Dar es Salaam
https://de.slideshare.net/EMBARQNetwork/rescaling-tod-examining-dar-es-salaam





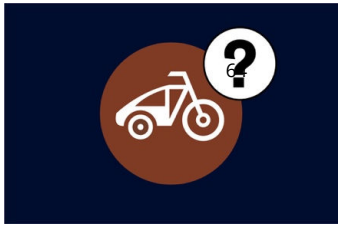


The essential link between mobility planning and urban governance



Glossary

Key concept



01

Mobility

The ability to move or be moved freely and easily / physically, or between classes and occupations

02

Inclusive accessibility

Differences in accessibility between individuals or social groups // the effects of level of resources, social category, ethnic origin or gender on accessibility to employment, healthcare, shops, etc.

03

Mobility as a Service (MaaS)

Includes mobility services that make it possible to use different means of transport seamlessly as required without having to invest directly in availability and operation of vehicles

04

Modal Split

refers to the distribution of the transport volume across different modes of transport.

Low impact mobility for healthy urban environments

Key concept

Low impact mobility implies that human movements and transportation in a city are balanced in terms of:

- **Modal share and multimodal connectivity**
- **Spatial footprint of traffic on streets and urban infrastructure**
- **Carbon footprint per person, per community and per city**
- **Shaping the urban environment with a people-centered design**
- **Spatial distribution of urban population and induced human movements**
- **Spatial and time-based distribution of urban logistics and freight**
- **Diversity of transport modes in order to allow inclusive accessibility for all and social justice**
- **Equitable urban densification in line with healthy urban lifestyles**

Q & A Session