TELOS TOPIC 03

Mobility

Content development led by
Universit Libre de Bruxelles

ULB Faculté d'Architecture La Cambre Horta

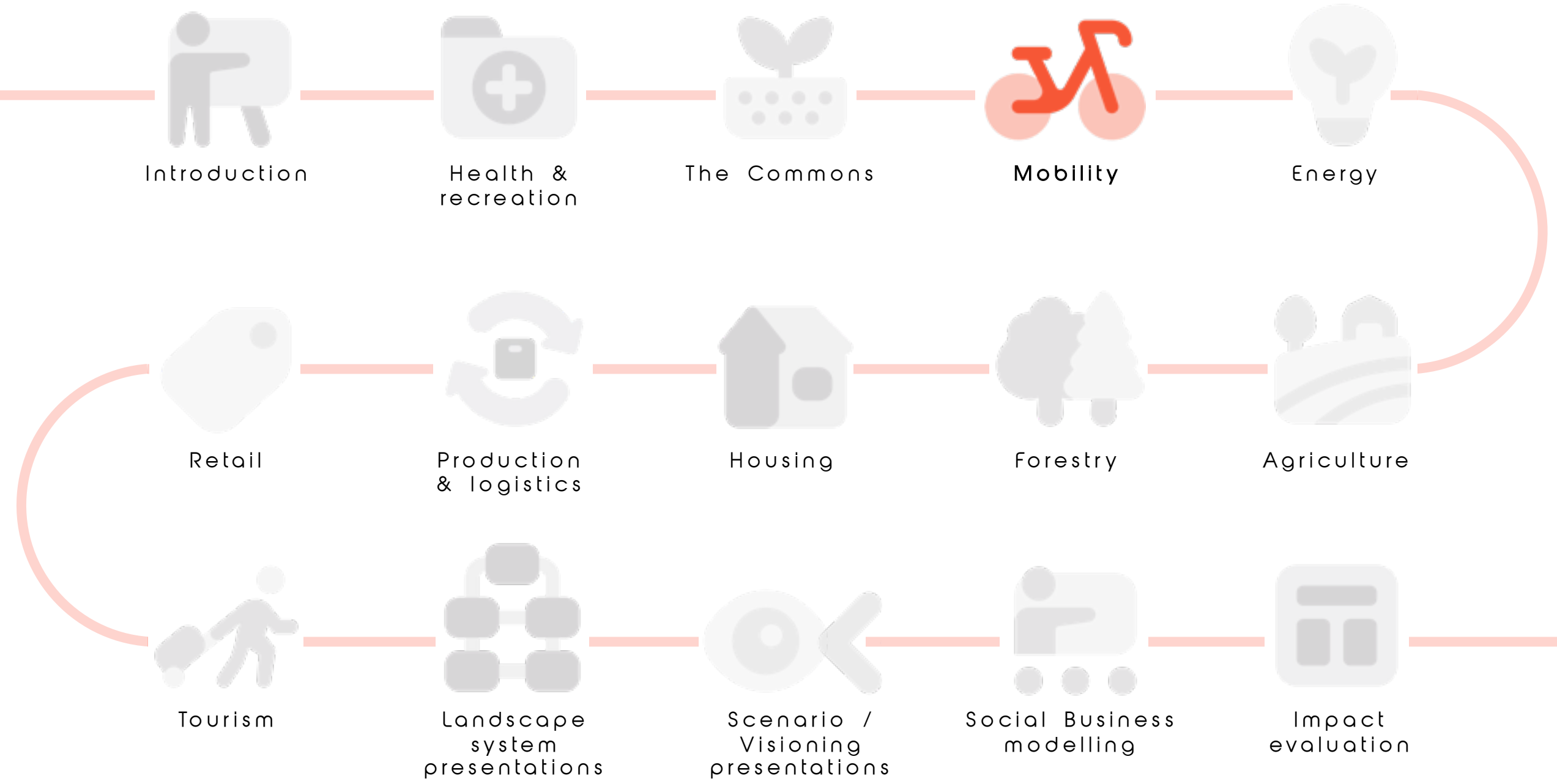
LE:NOTRE Institute
Linking Landscape Education, Research and Innovative Practice

SAPIENZA UNIVERSITÀ DI ROMA

POLITECHNIKA GDAŃSKA

Hochschule für Wirtschaft und Umwelt Nürtingen-Geislingen

Co-funded by the Erasmus+ Programme of the European Union


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

16.00 - 16.20	Trends, context, Key economic dimension (Land Value Capture), Stakeholders (Didier Vancutsem, ULB)
16.20 - 16.25	Q&A
16.25 - 16.45	Case Studies, Trade-Off and Synergies, Key concepts (Didier Vancutsem, ULB)
16.45 - 17.00	Exercise in breakout rooms
17.00 - 17.15	Feedback and closing

Main question for the exercise in breakout rooms
“What is your opinion in putting into practice the mobility principles for your study/project area or your work?”

Mobility & Landscape Economy in Europe

INDEX

#1 Context/ trends

#2 Key economic dimensions / Impacts / KPIs

#3 Stakeholders map and funding schemes & opportunities

#4 Case studies

#5 Recognizing Trade-off / Synergies

#6 Key concepts / Glossary

#7 Breakout Rooms

Context and Trends - Definitions

Context and Trends

01

Mobility

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

02

All-inclusive mobility

Encompasses the demand for integrated offers in a seamless mobility chain. Complementary trend to Mobility as a Service

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

Last Mile concept

The last mile is the last (or first) section of a chain of routes that directly connects users, particularly relevant for infrastructure and logistics.

05

Modal Split / Multimodal

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

06

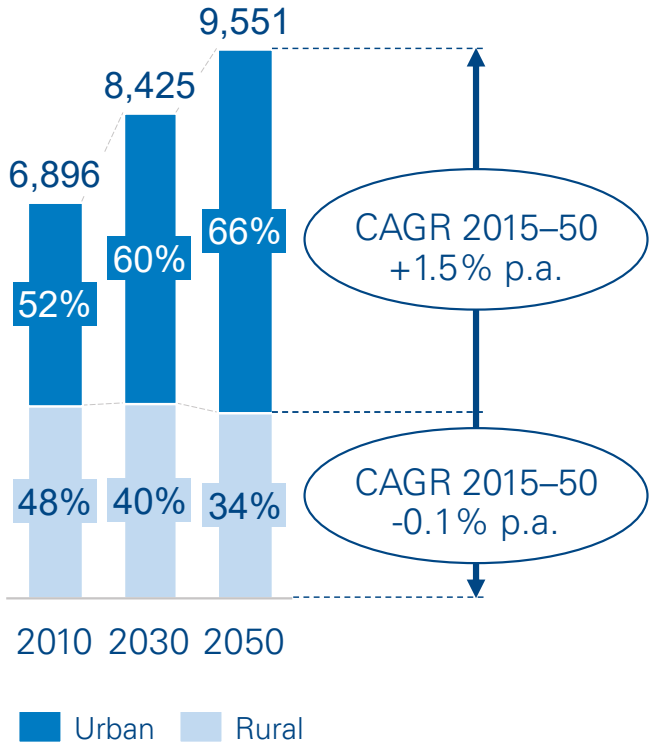
Twalking

is a play on words from Texting and Walking and describes the phenomenon of people writing texts on their smartphones in public spaces while walking slowly and inattentively.

Context and Trends

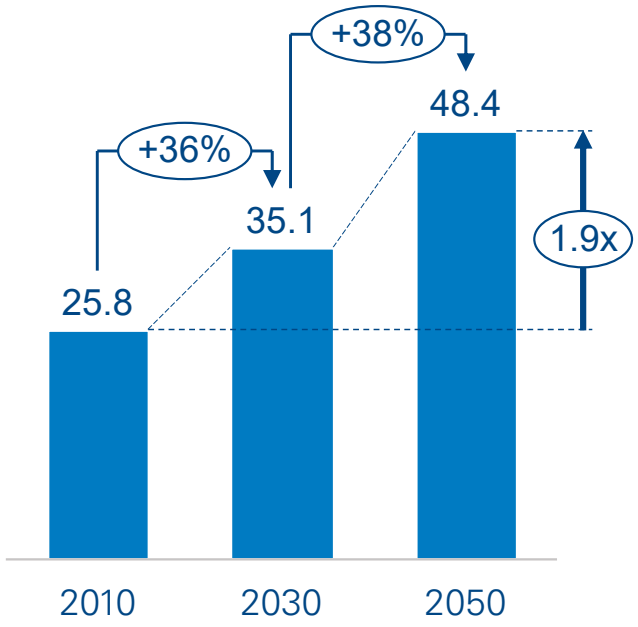
The world is becoming increasingly urban

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



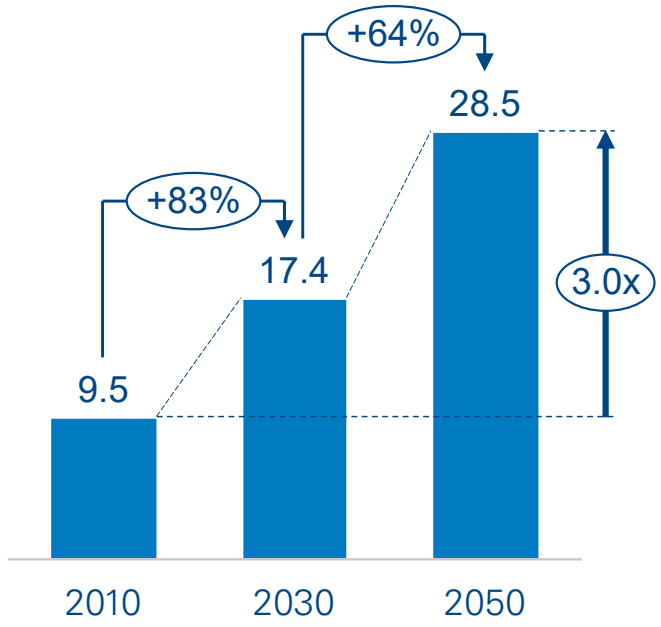
Urban passenger mobility demand is booming

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

Digital Revolution

1784

Steam Engine
Textile Industry

1874

Electrotechnology
Mass consumption

1969

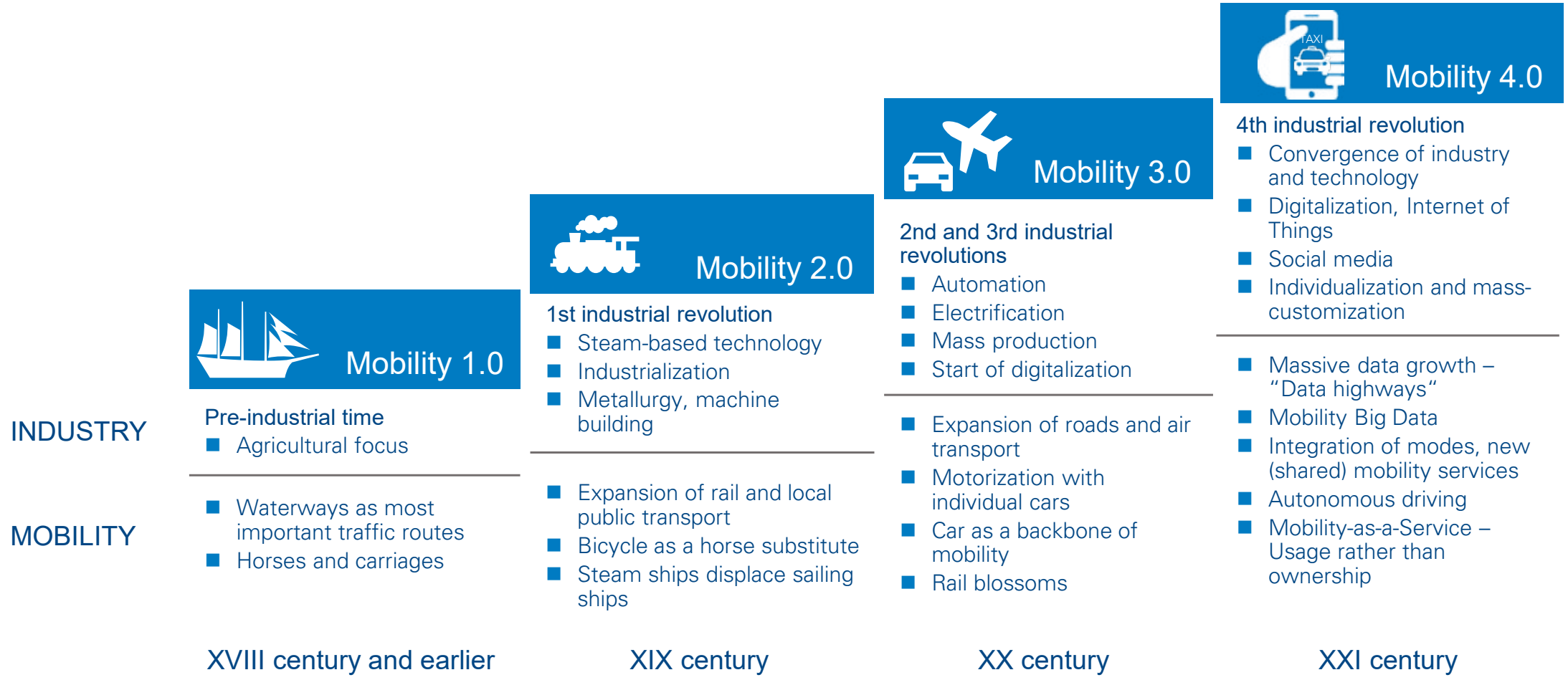
Information technology
Information Communication

2016

Integration digital and physical things
IoT

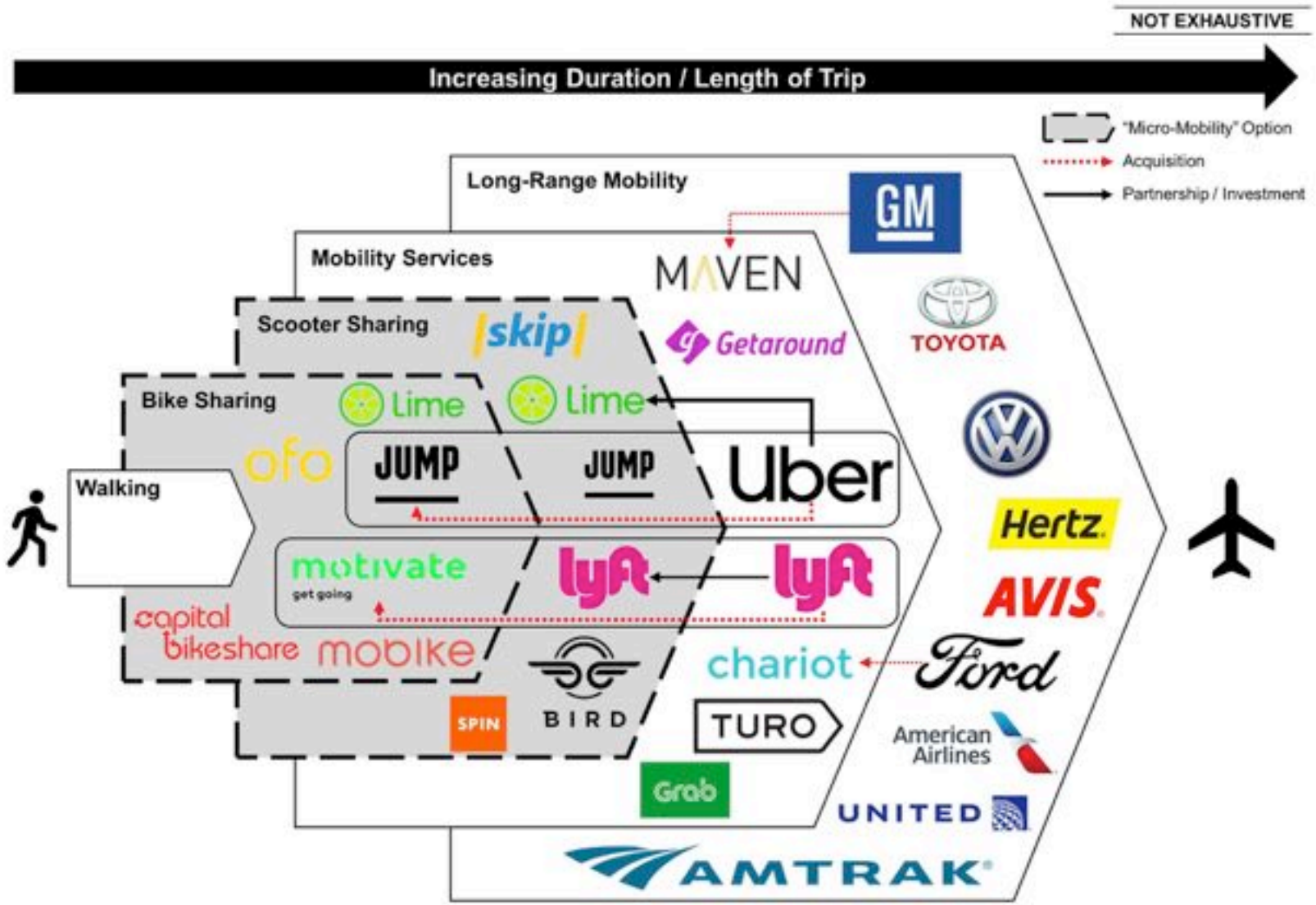
Context and Trends

Figure 2: Mobility is being redefined again, driven by the 4th industrial revolution



Source: Arthur D. Little

Context and Trends



#1 Artificial Intelligence
AI /Machine Learning / Deep Learning

#2 Internet of Things
IOT , IIOT, Sensors & Wearables

#3 Mobile/Social Internet
Advancements - Search/Social/ Messenging/Livestreams

#4 Blockchain
Distributed Ledger Systems, Cryptocurrencies & DApps

#5 Big Data
Apps, Infrastructure, Technologies + Predictive Analytics

#6 Automation
Information, Task, Process, Machine, Decision & Action

#7 Robots
Cons./Comm./Indus., Robots, Drones & Autonomous Vehicles

#8 Immersive Media
- #VR/ #AR/ #MR/ 360°/ Video?Gaming

#9 Mobile Technologies
Infrastructure, networks, standards, services & devices

#10 Cloud Computing.
SaaS, IaaS, PaaS & MESH Apps

#11 3D Printing
Additive Manufacturing & Rapid Prototyping

#12 CX
Customer Journey, Experience Commerce & Personalization

#13 EnergyTech
Efficiency, Energy Storage & Decentralized Grid

#14 Cybersecurity
Security, Intelligence Detection, Remediation & Adaptation

#15 Voice Assistants
Interfaces, Chatbots & Natural Language Processing

#16 Nanotechnology
Computing, Medicine, Machines + Smart Dust

#17 Collaborative Tech.
Crowd, Sharing, Workplace & Open Source Platforms & Tools

#18 Health Tech.
Advanced Genomics, Bionics & Health Care Tech.

#19 Human-Computer Interaction
Facial/Gesture Recognition, Biometrics, Gaze Tracking

#20 Geo-spatial Tech.
GIS, GPS, Mapping & Remote Sensing, Scanning, Navigation

#21 Advanced Materials
Composites, Alloys, Polymers, Biomimicry, Nanomanufacturing

#22 New Touch Interfaces
Touch Screens, Haptics, 3D Touch, Paper, Feedback & Exoskeletons

#23 Wireless Power

#24 Clean Tech.
Bio-/Enviro-Materials + Solutions, Sustainability, Treatment & Efficiency

#25 Quantum Computing
+ Exascale Computing

#26 Smart Cities
+ Infrastructure & Transport

#27 Edge/Computing
+ Fog Computing

#28 Faster, Better Internet
Broadband incl. Fiber, 5G, Li-Fi , LPN and LoRa

#29 Proximity Tech
Beacons, .RFID, Wi-Fi, Near-Field Communications & Geofencing

#30 New Screens
TVs, Digital Signage, OOH, MicroLEDS & Projections

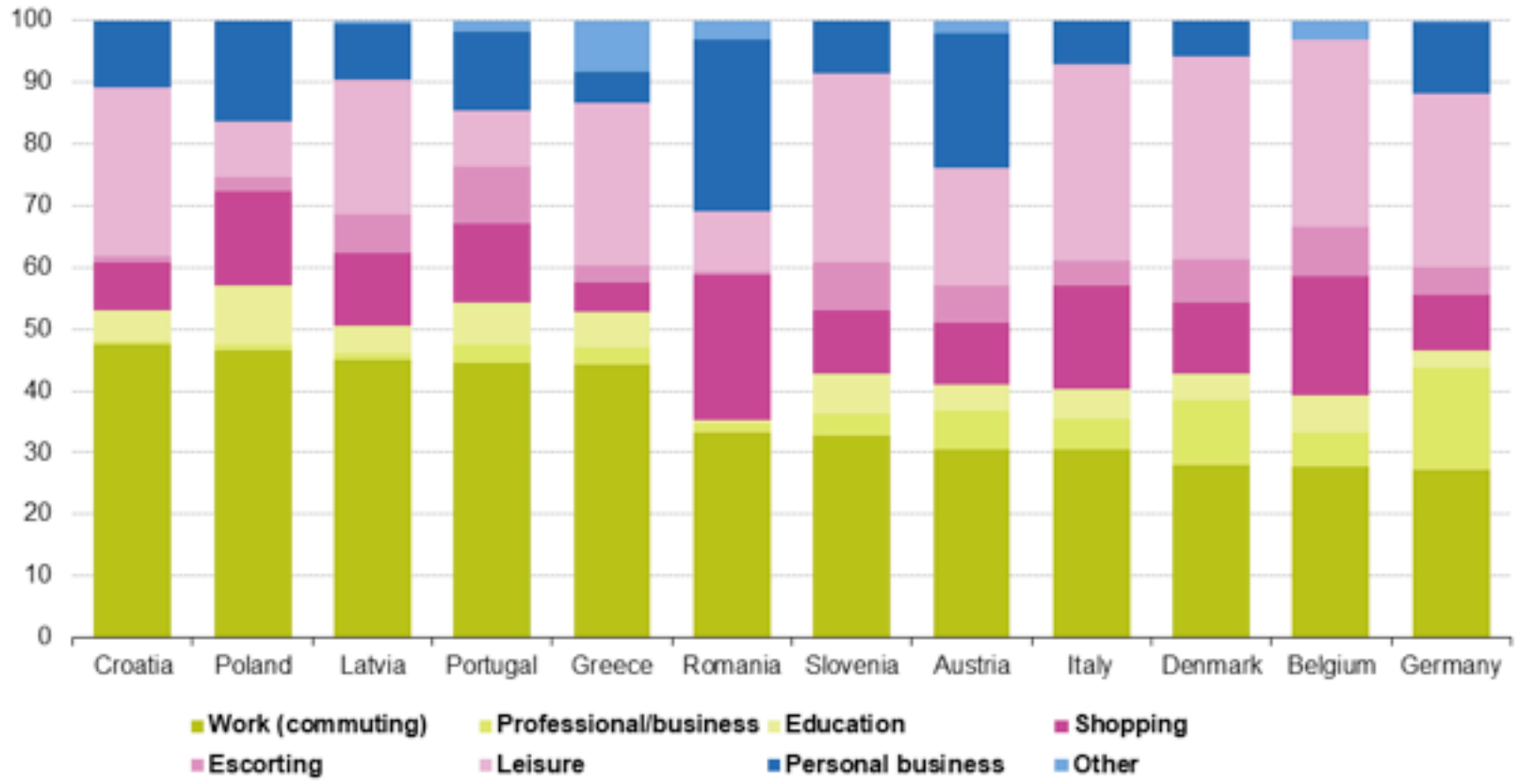
THE 30 TECHNOLOGIES OF THE NEXT DECADE

Created by: Sean Moffitt @seanmoffitt , Managing Director, @Wikibrands

WIKIBRANDS

Context and Trends

Distribution of distance travelled per person per day by travel purpose for urban mobility on all days
(%)



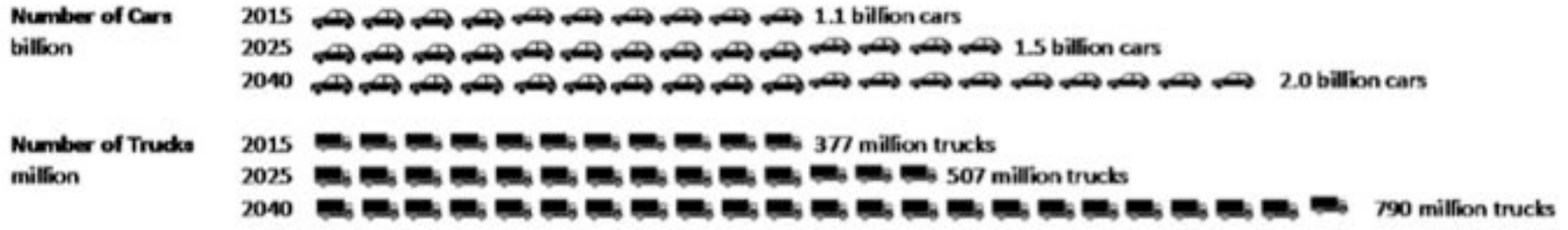
Source: Data from twelve Member States (eight pilot surveys and four national surveys on passenger mobility)

eurostat

Eurostat 2021

Urban mobility (congestion) trends worldwide

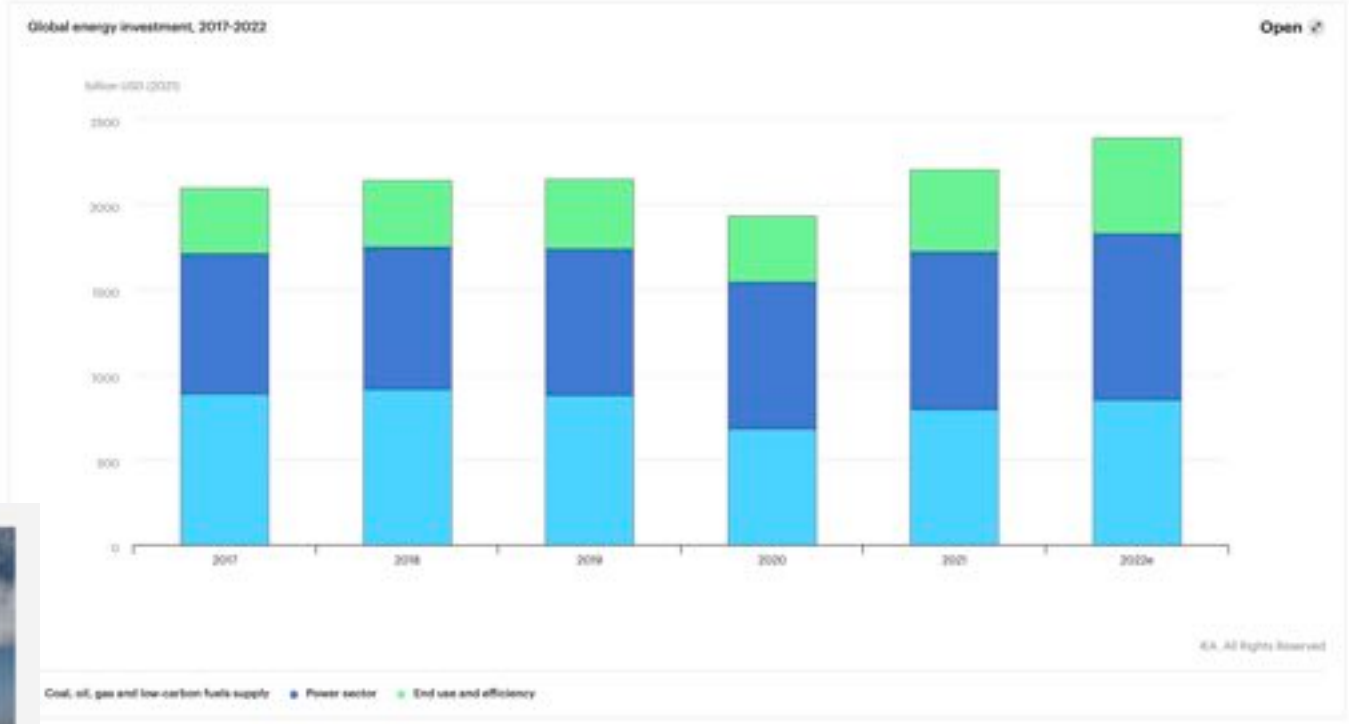
- Each year, the **number of vehicles** is still **increasing worlwide and urban traffic congestion** remains a major issue for our urban liveability and environmental sustainability**;**
- **Massive investments in urban road infrastructure and fossil infrastructure** in developing cities **come first**, 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"**



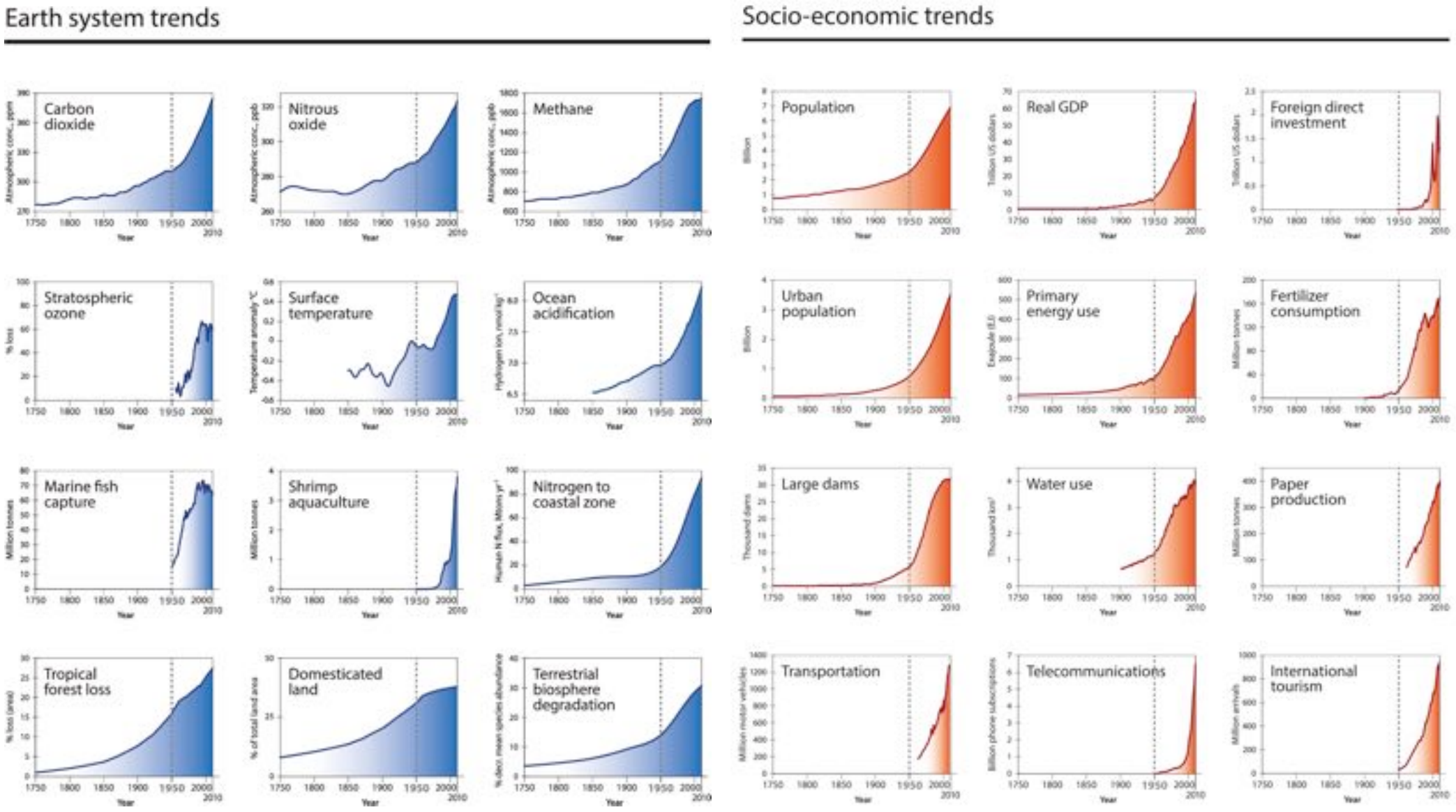
Energy investments 2022

Energy investment is set to pick up by 8% in 2022 against the backdrop of the global energy crisis, but almost half of the increase in capital spending is linked to higher costs

IEA International Energy Agency 2022



Context and Trends – Great acceleration



Source Steffen a. all 2020 (update)

Low impact mobility for healthy urban environments

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

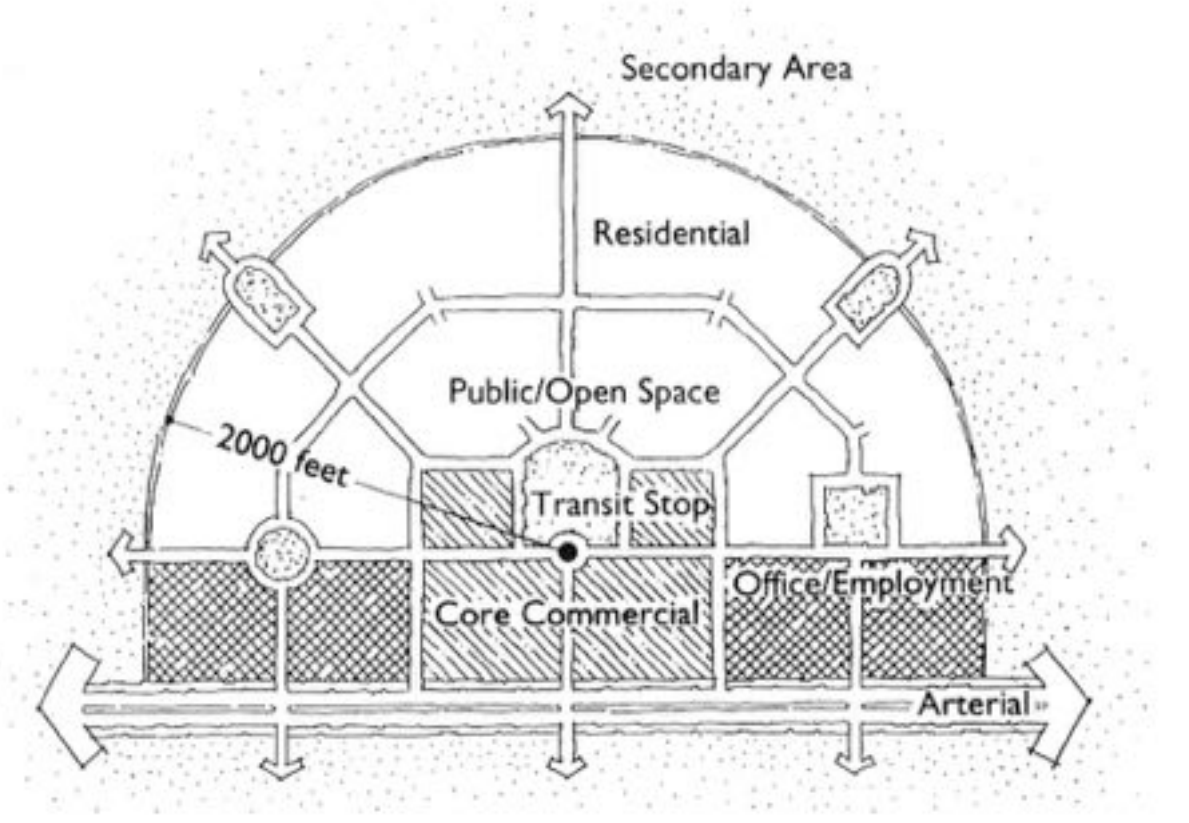
- **Modal share and multimodal connectivity**
- **Spatial footprint of traffic on streets and urban infrastructure**
- **Carbon footprint per person, per community and per city**
- **Shaping the urban environment with a people-centered design**
- **Spatial distribution of urban population and induced 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**

Low impact mobility for healthy urban environments

Low impact mobility for healthy urban environments

Transit-Oriented Development (TOD)

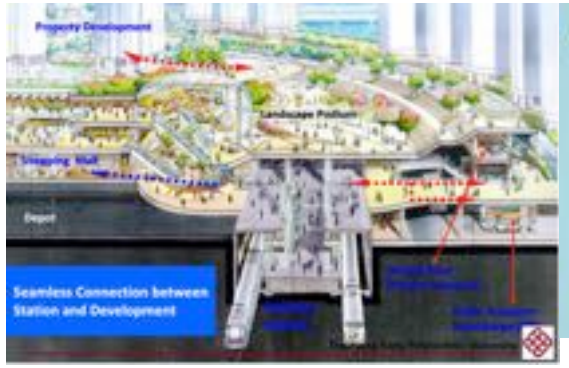
- 1960s → segmentation of technical cultures: network vs zoning
- The importance of the coordination in the transition toward sustainable mobility
- A concept from North America (Calthorpe, 1993)
- 1980s, Coordination but sectorial imaginaries still strong
    - Kębłowski, Wojciech, et David Bassens. 2017. « "All Transport Problems Are Essentially Mathematical": The Uneven Resonance of Academic Transport and Mobility Knowledge in Brussels ». Urban Geography 39 (3): 1-25.
- BOD, BRT, etc.

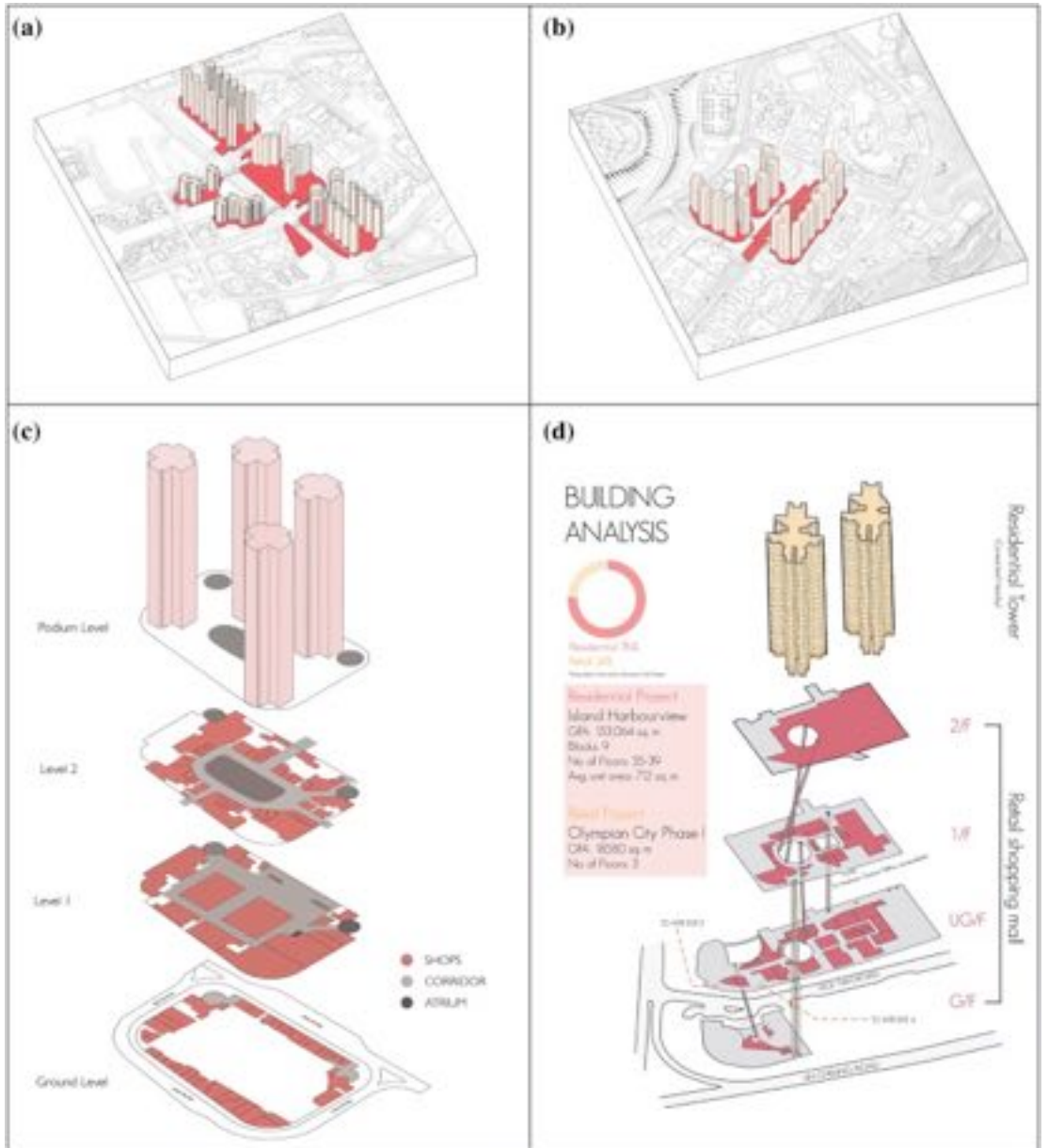


Calthorpe's TOD Conceptual Model

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

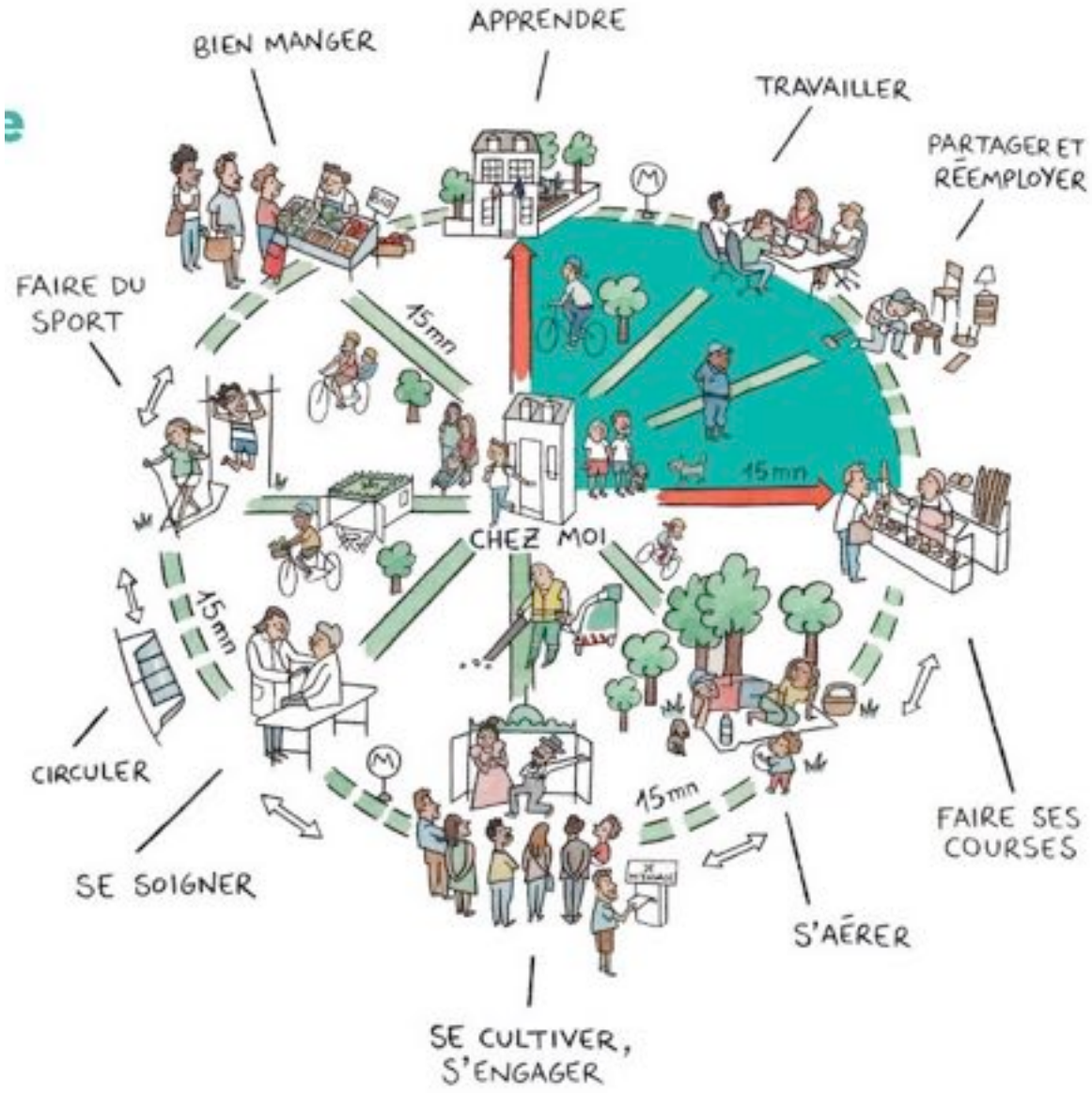
The Asian High-density TOD model



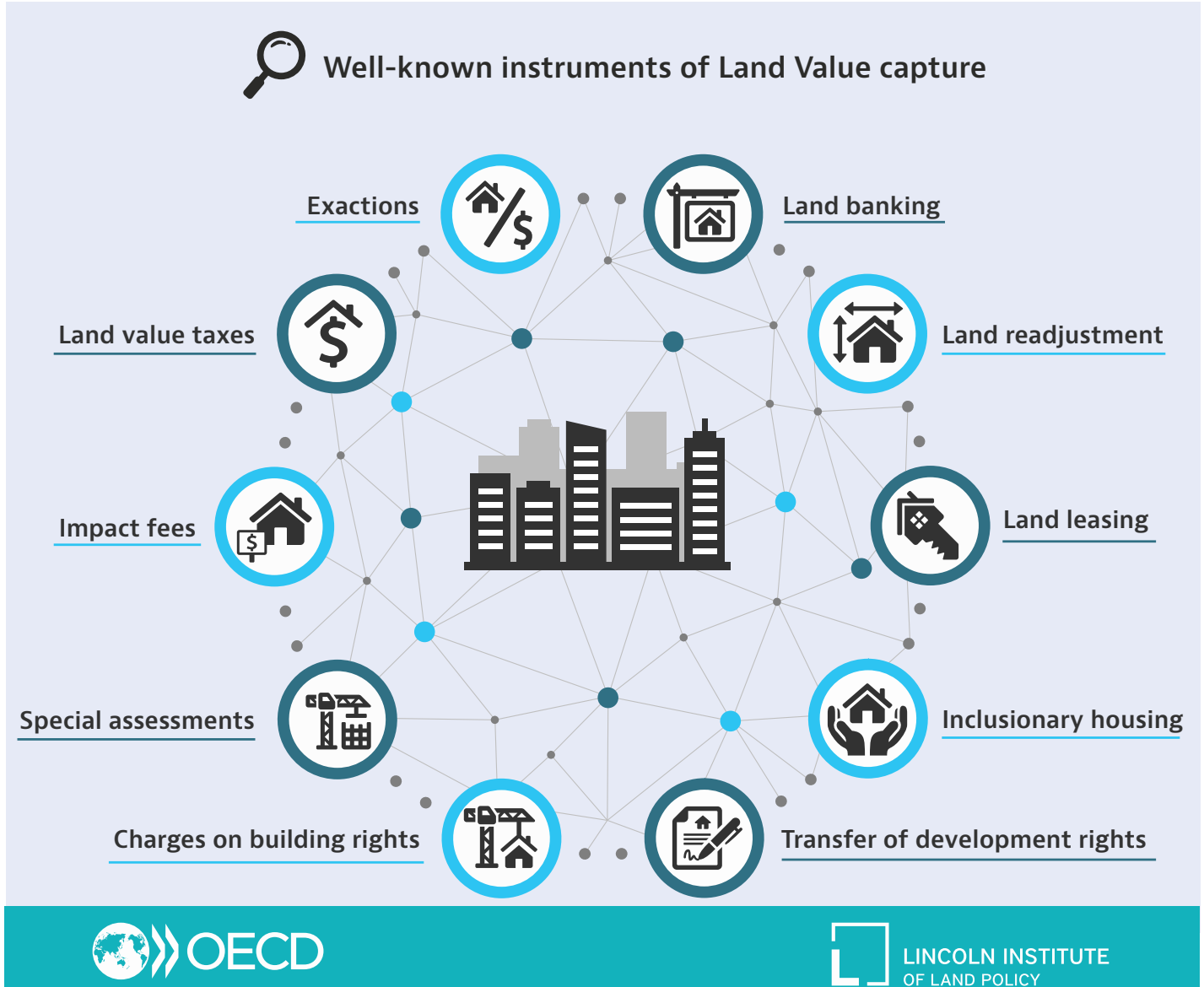


The quarter-hour city, the half-hour territory

- 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.



Key Economic Dimensions - Impacts



LAND VALUE CAPTURE (LVC)

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 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.

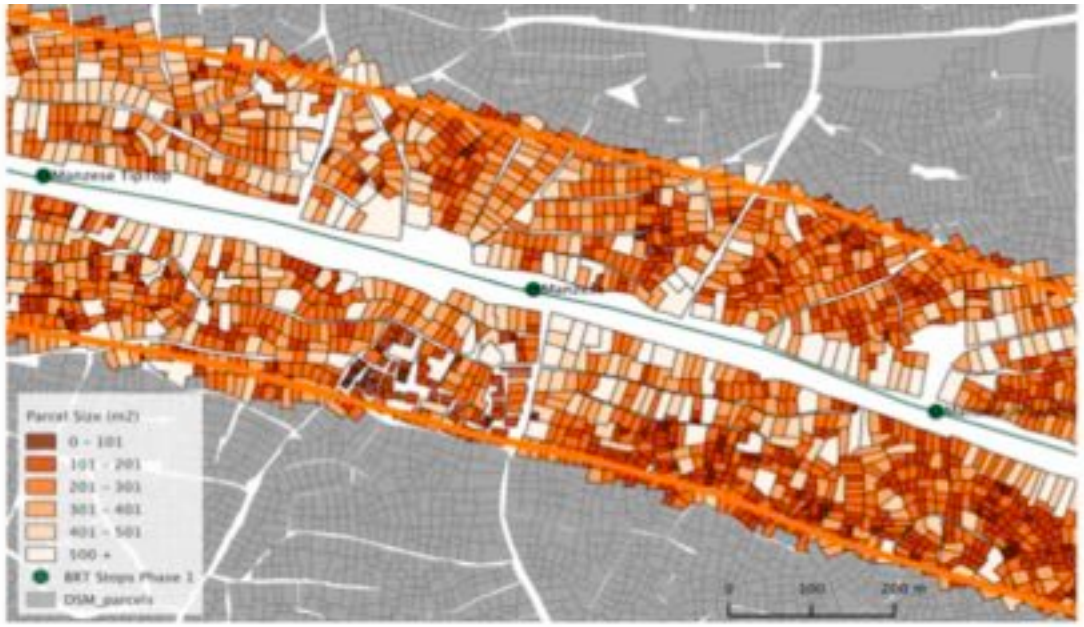
Land value capture (LVC) is rooted in the notion that **public action should generate public benefit.**

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.

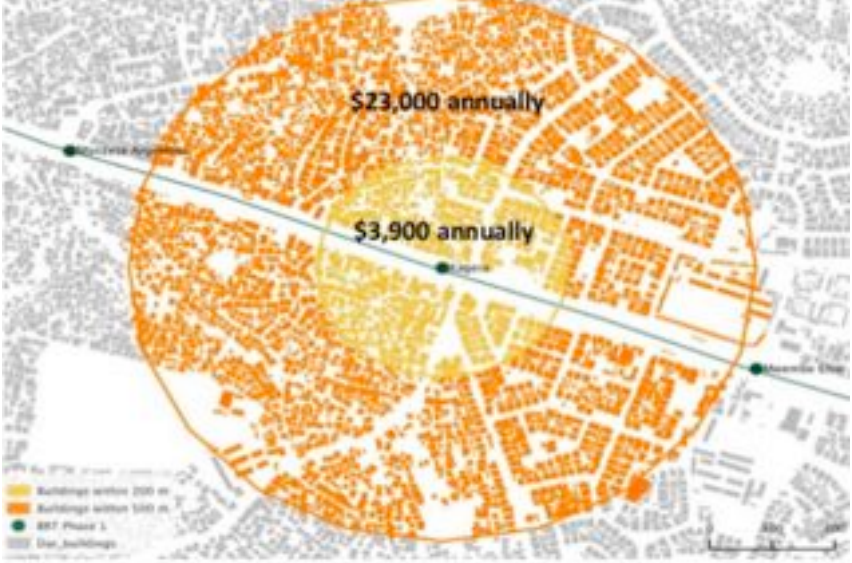
When used in conjunction with good governance and urban planning principles, land value capture can be an integral tool to help governments advance **positive fiscal, social, and environmental outcomes.**

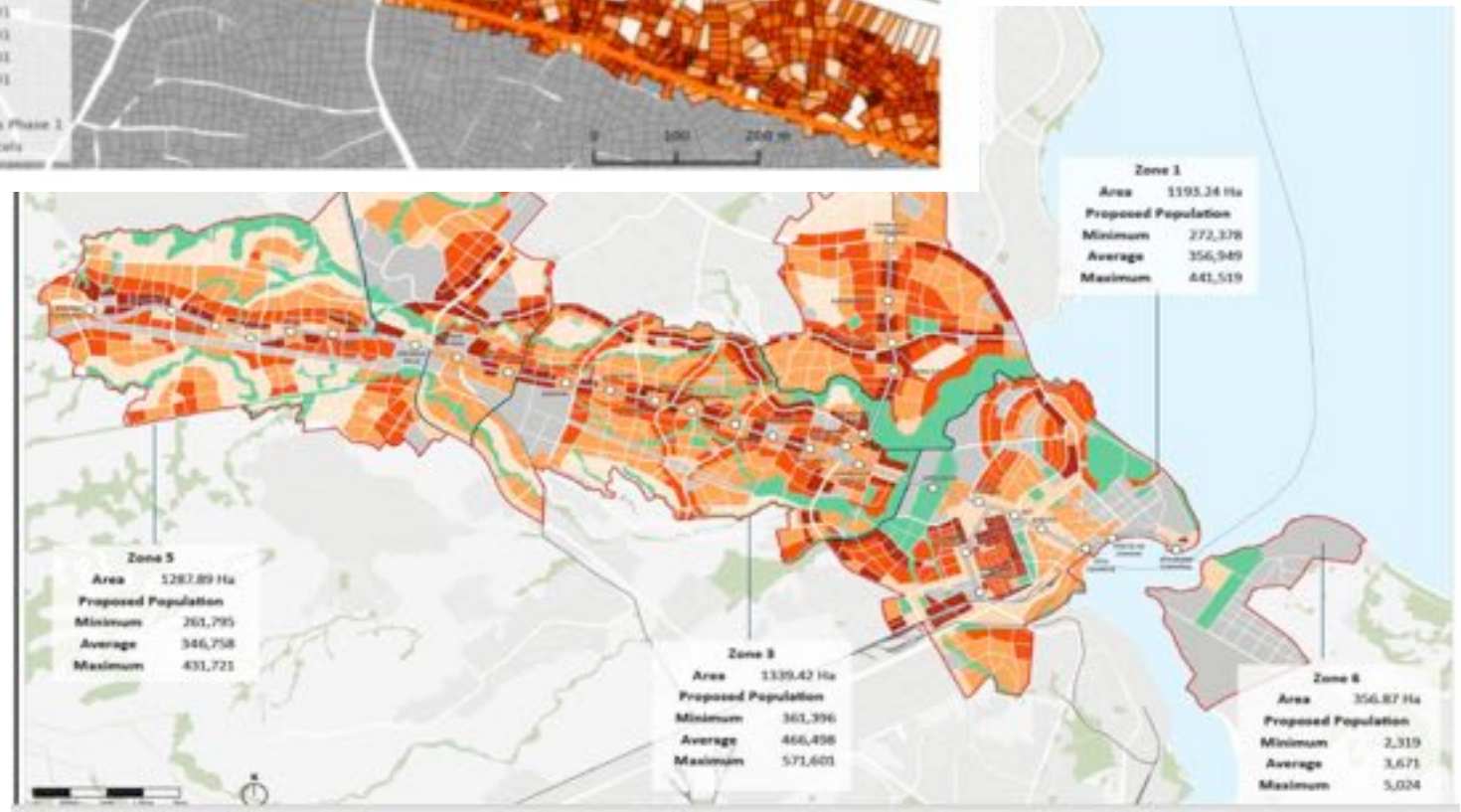
Reinvestment of land value increases can be applied to e.g. resilience to floods, green spaces, pedestrian linkages, better multimodal integration, social housing, etc.

Anticipating TOD with Land Value Capture (LVC)

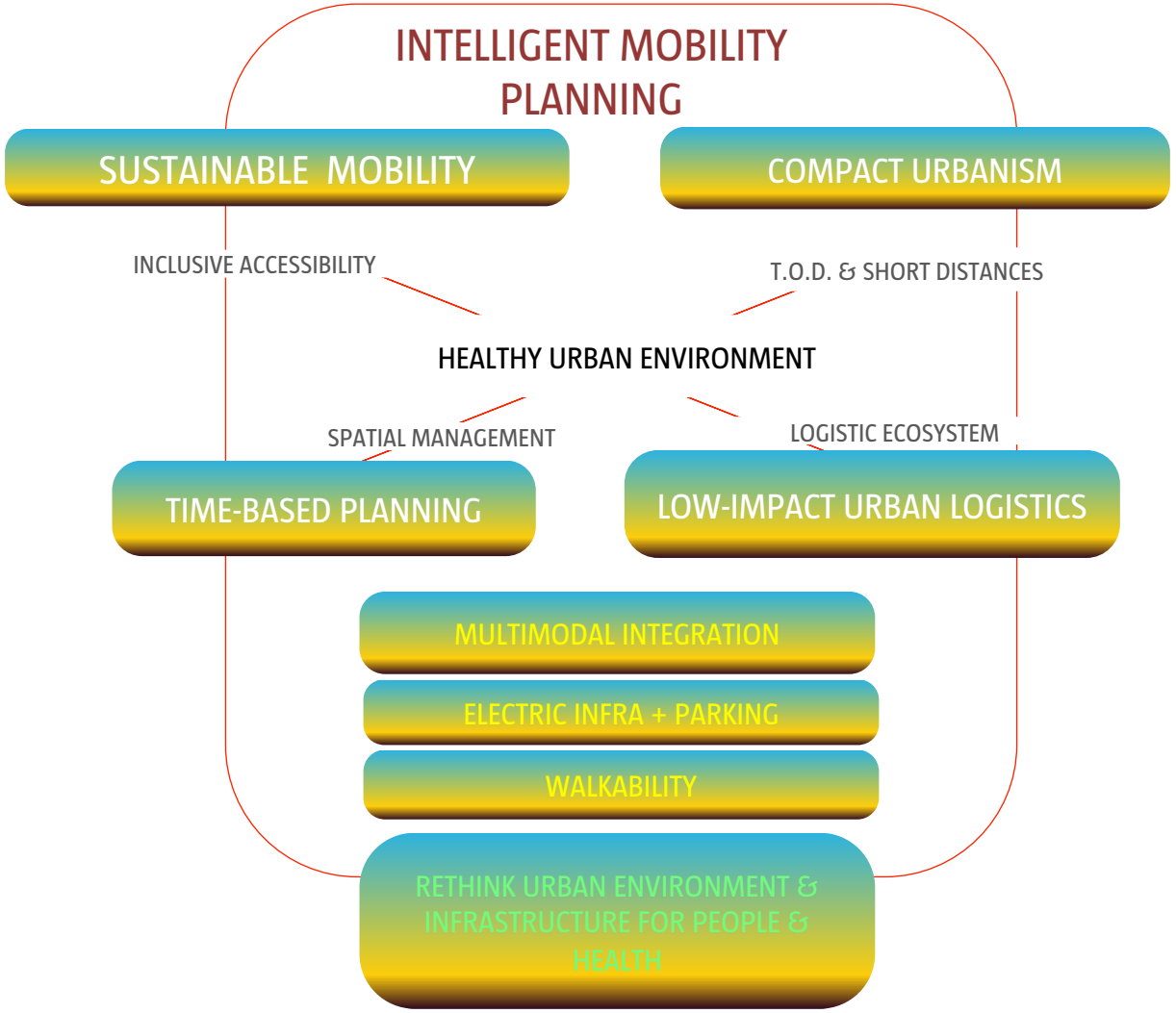


LVC and TOD strategy around the BRT project of Dar es Salaam, Tanzania





The essential link between mobility planning and urban governance



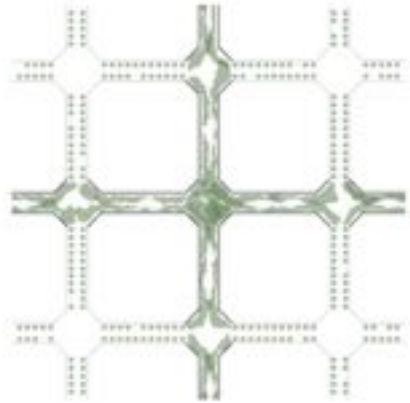
Q & A Session 5min

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)



Case Studies of positive mobility change

Putting the transit infrastructures in the underground

Barcelona, 2010

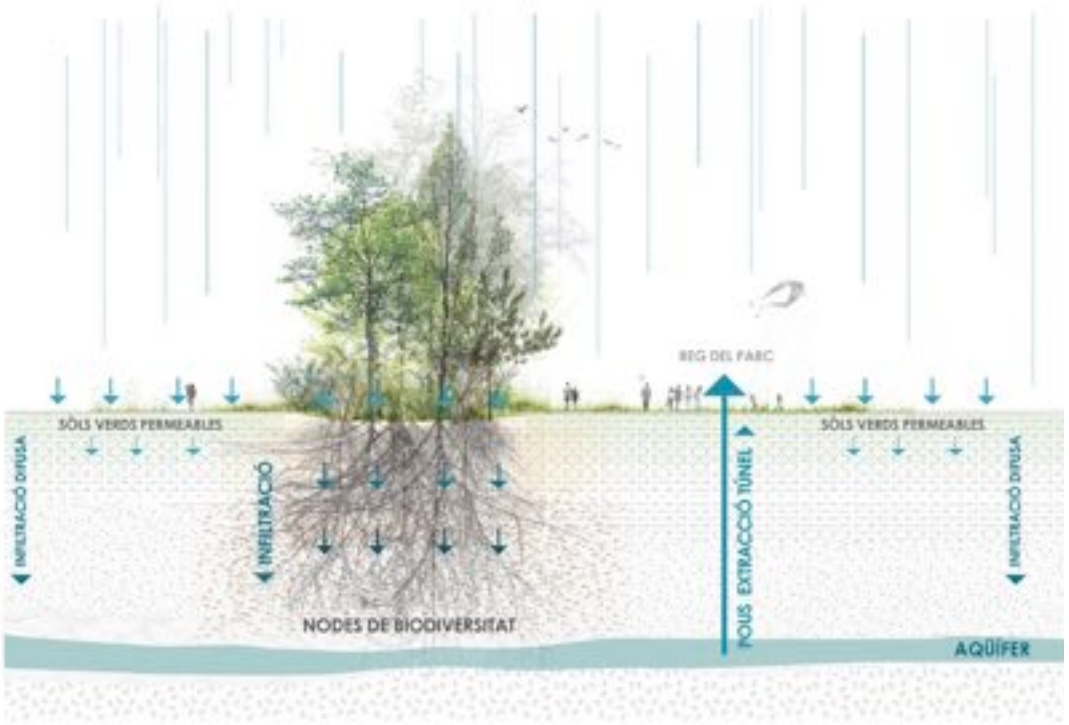
Case Studies of positive mobility change

Case Studies of positive mobility change

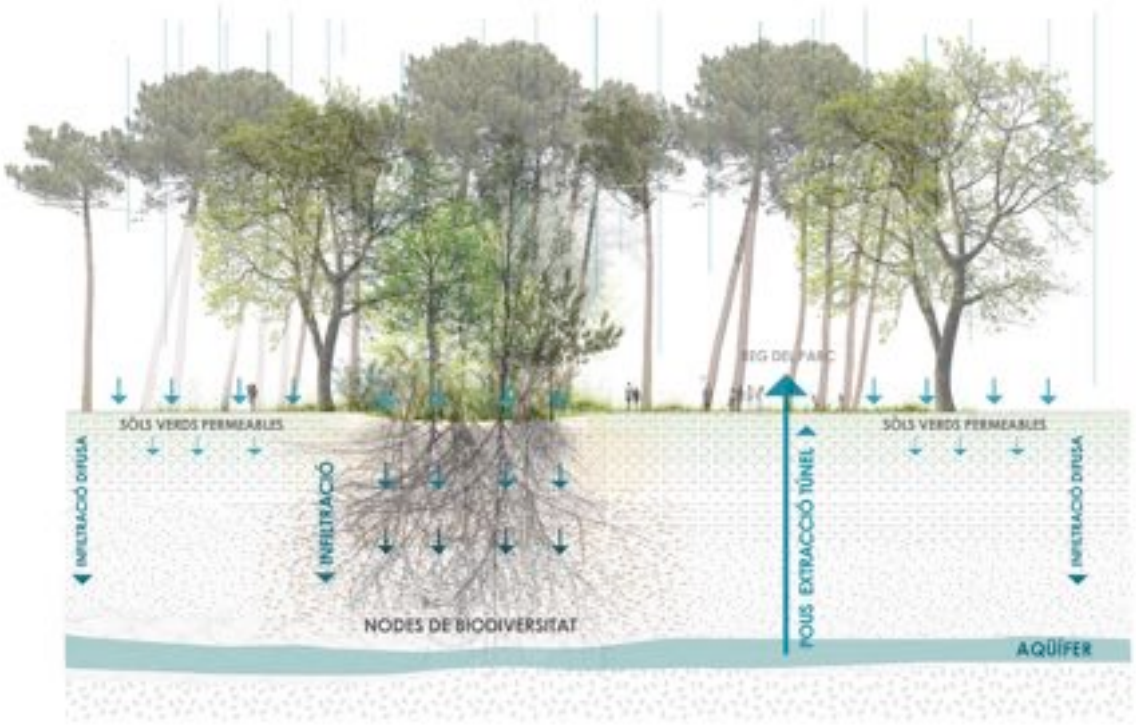
Creating by the way a central park area at he place of the former interchange

Case Studies of positive mobility change

INSTALLER LA CHAINE HYDRIQUE ET BIOLOGIQUE VERTICALE



INSTALLER LA CANOPEE



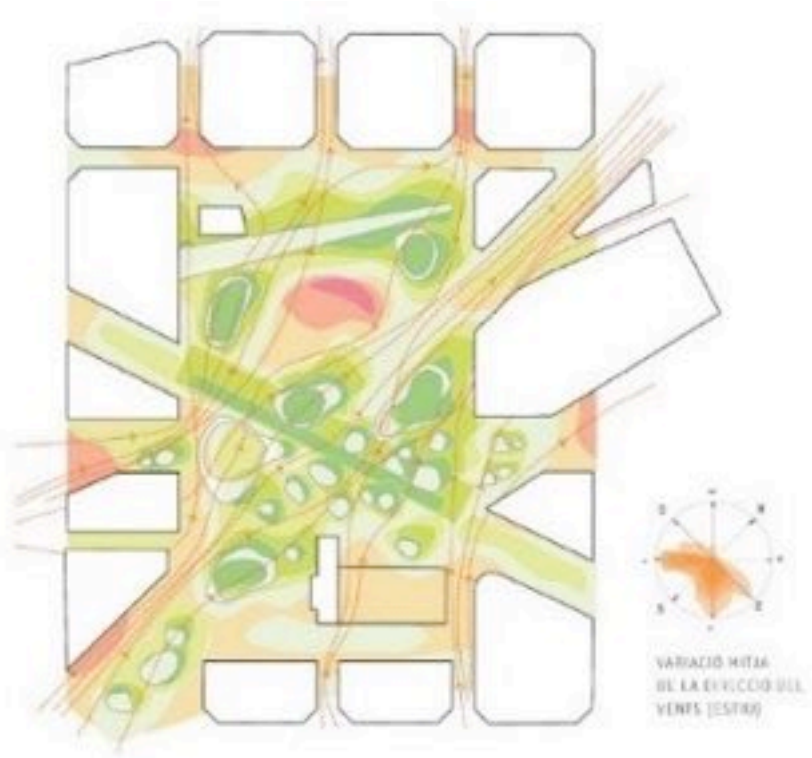
Case Studies of positive mobility change

PLACING TRANSIT MOBILITY IN THE UNDERGROUND, DEPAVING THE SOIL

Case Studies of positive mobility change

Case Studies of positive mobility change

BIODIVERSITAT



CONFORT CLIMÀTIC

Case Studies of positive mobility change

Case Studies of positive mobility change

Case Studies of positive mobility change

« DEUX RIVES » DISTRICT - 85HA -STRASBOURG-KEHL, RHINE METROPOLIS

the urban project interconnecting remaining alluvial forests

Case Studies of positive mobility change

Case Studies of positive mobility change

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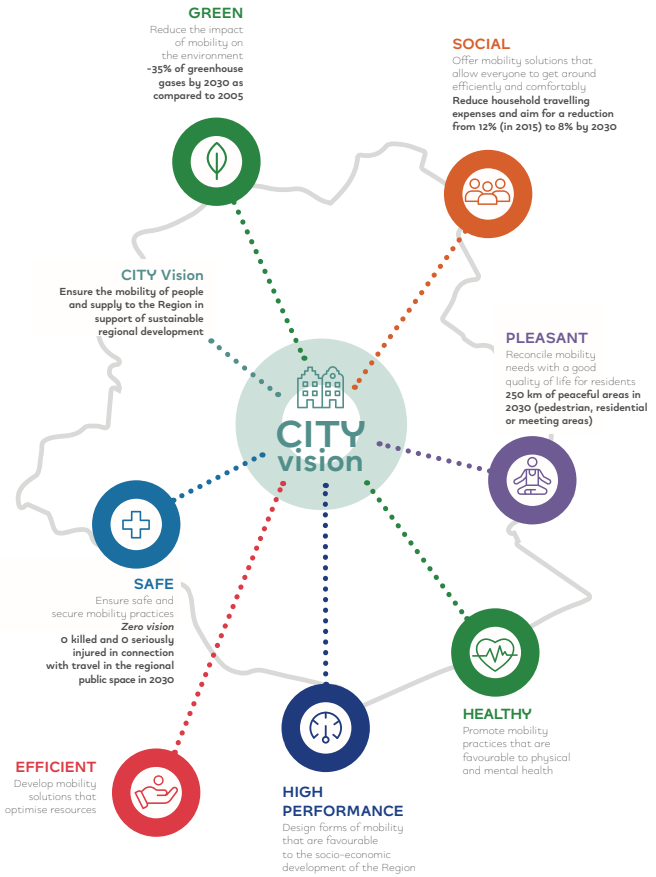
Case Studies of positive mobility change



Case Studies of positive mobility change

MOBILITY VISION
AN AMBITION FOR BRUSSELS

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

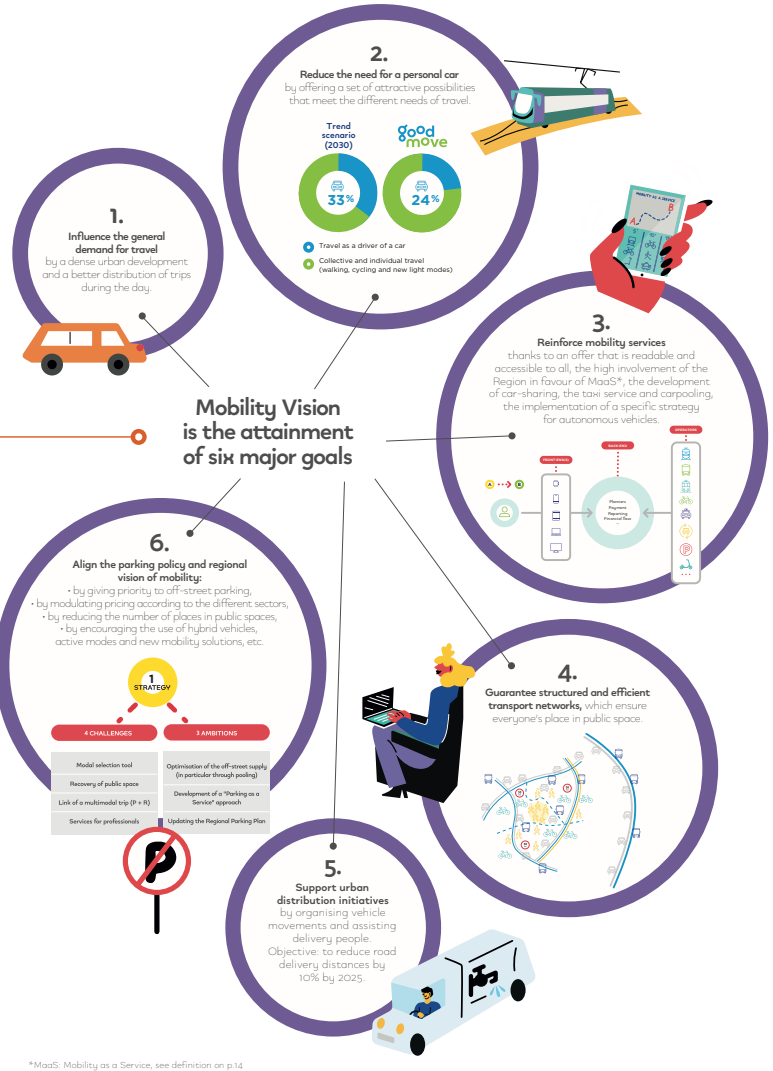
A significant improvement in the standard of living and the safety of the city's residents and users, which is based on a coherent design of efficient mobility networks, which contributes to:

- 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.



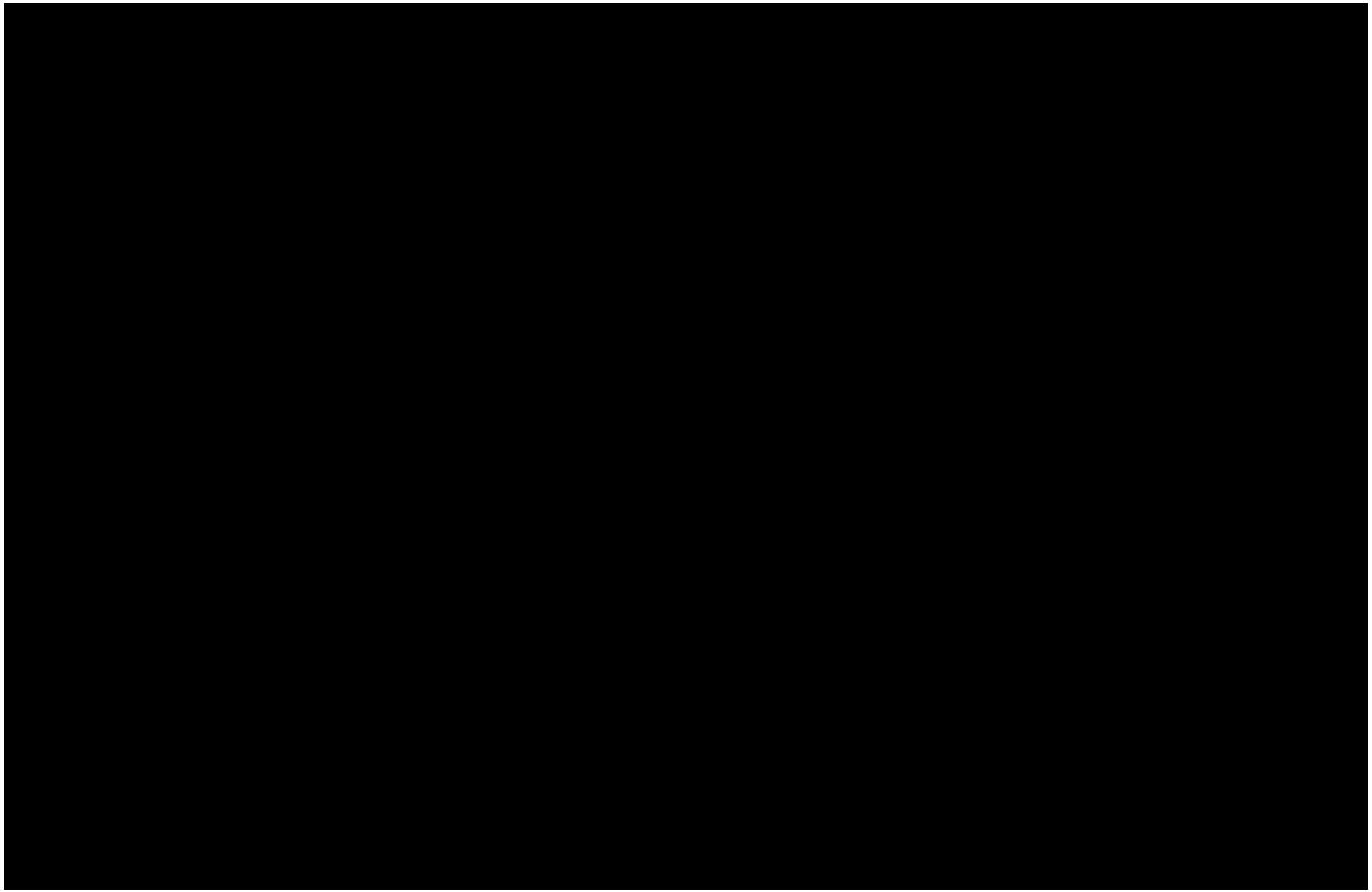
*MaaS: Mobility as a Service, see definition on p.14

Case Studies of positive mobility change

Case of positive change/successful transition

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

Case Studies of positive mobility change



https://youtu.be/qUe9R35jP2k

Trade-Offs and Synergies

Trade-Offs and Synergies

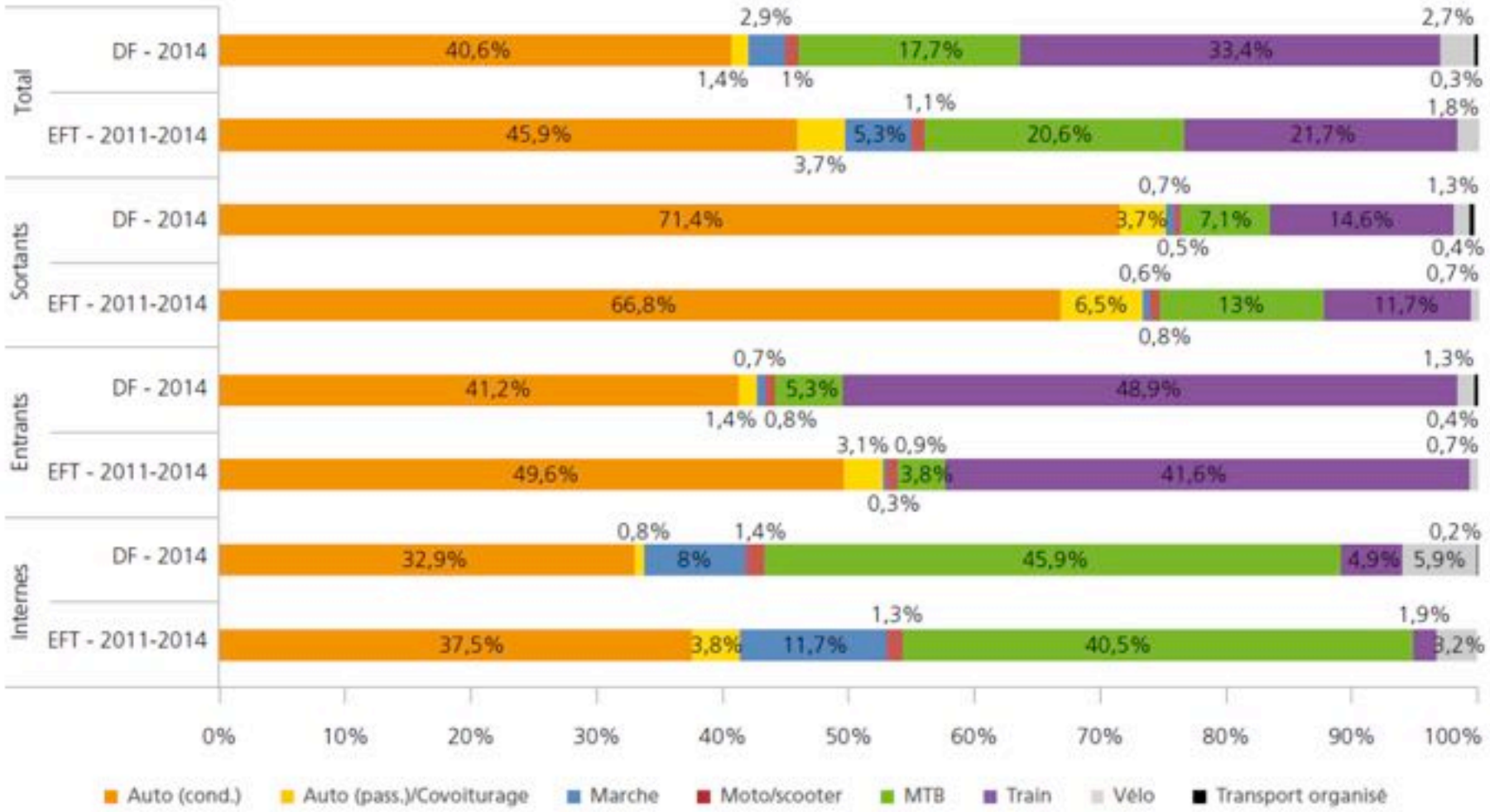
Modal shift: the development of active mobility

- **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**.

Trade-Offs and Synergies

Figure 62. Parts modales principales "selon la distance parcourue" pour les déplacements domicile-travail

Source : EFT 2011-2014 et Diagnostics fédéraux 2014



Trade-Offs and Synergies

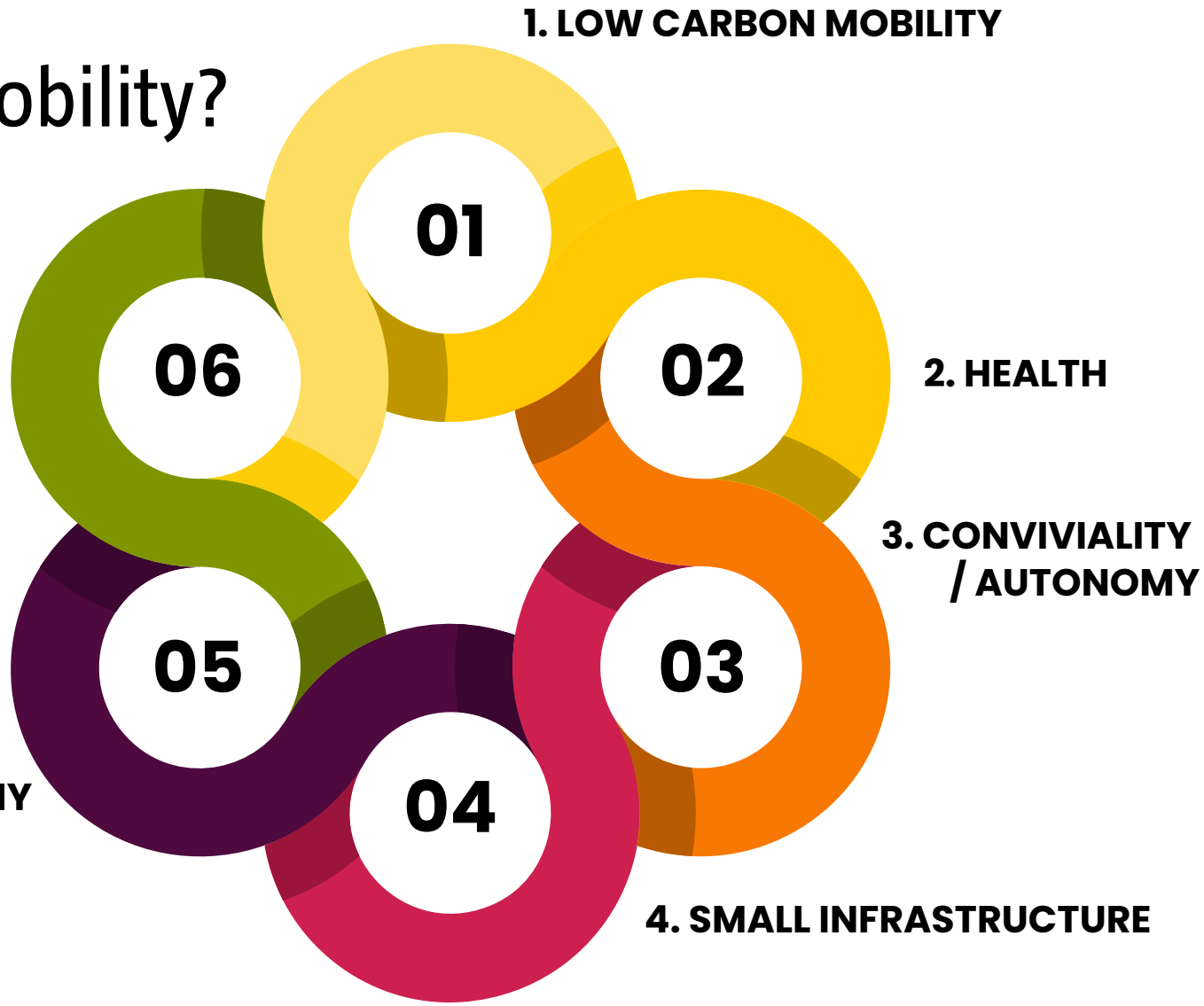
Use of car even for (very) short trip

- For the shortest journeys (less than 1.25 km), walking is obviously the preferred mode (76.6%). This does not, however, erase the fact that the ownership of one (or more) car(s), as well as the fact of having to share or not this car, influence the rate of car use, even for such short trips
- When they are made by individuals belonging to households with two adults and two (or more) cars, almost half of them are made by car.
- For trips between 1.25 and 3 km, walking remains the main mode, except for people in the age categories 18-24 and over 65, for whom the use of the STIB is dominant.
- For those aged 25-64, the use of the car as a driver exceeds the walking rate provided they have parking near their place of work or study.
- In the event that these facilities are lacking, owning a bicycle remains a determining factor to its use.

Trade-Offs and Synergies

Trade-Offs and Synergies

Why active mobility?



Key concepts

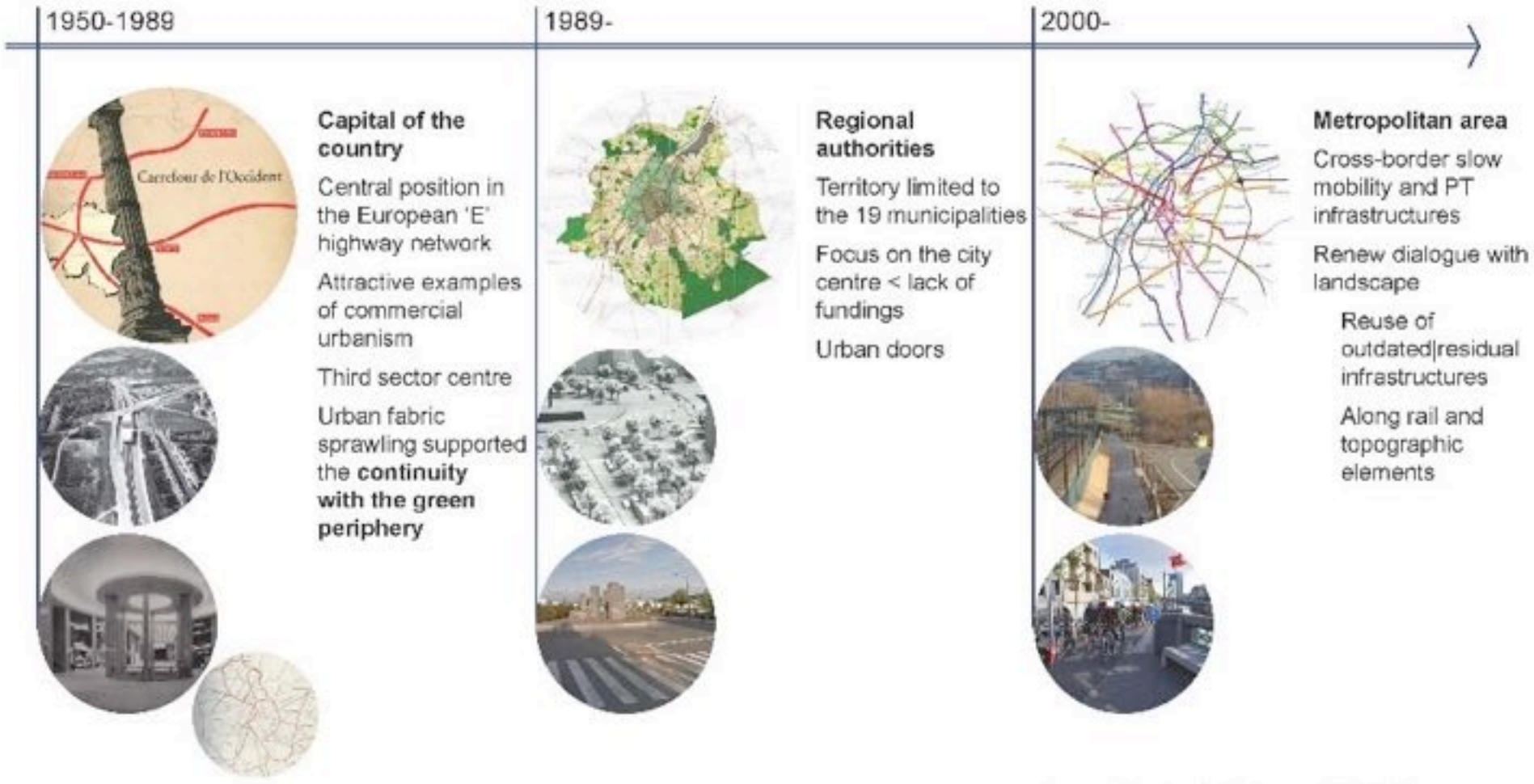
Beyond rationing: mobility ***justice*** and mobility ***commons***

- 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 ?

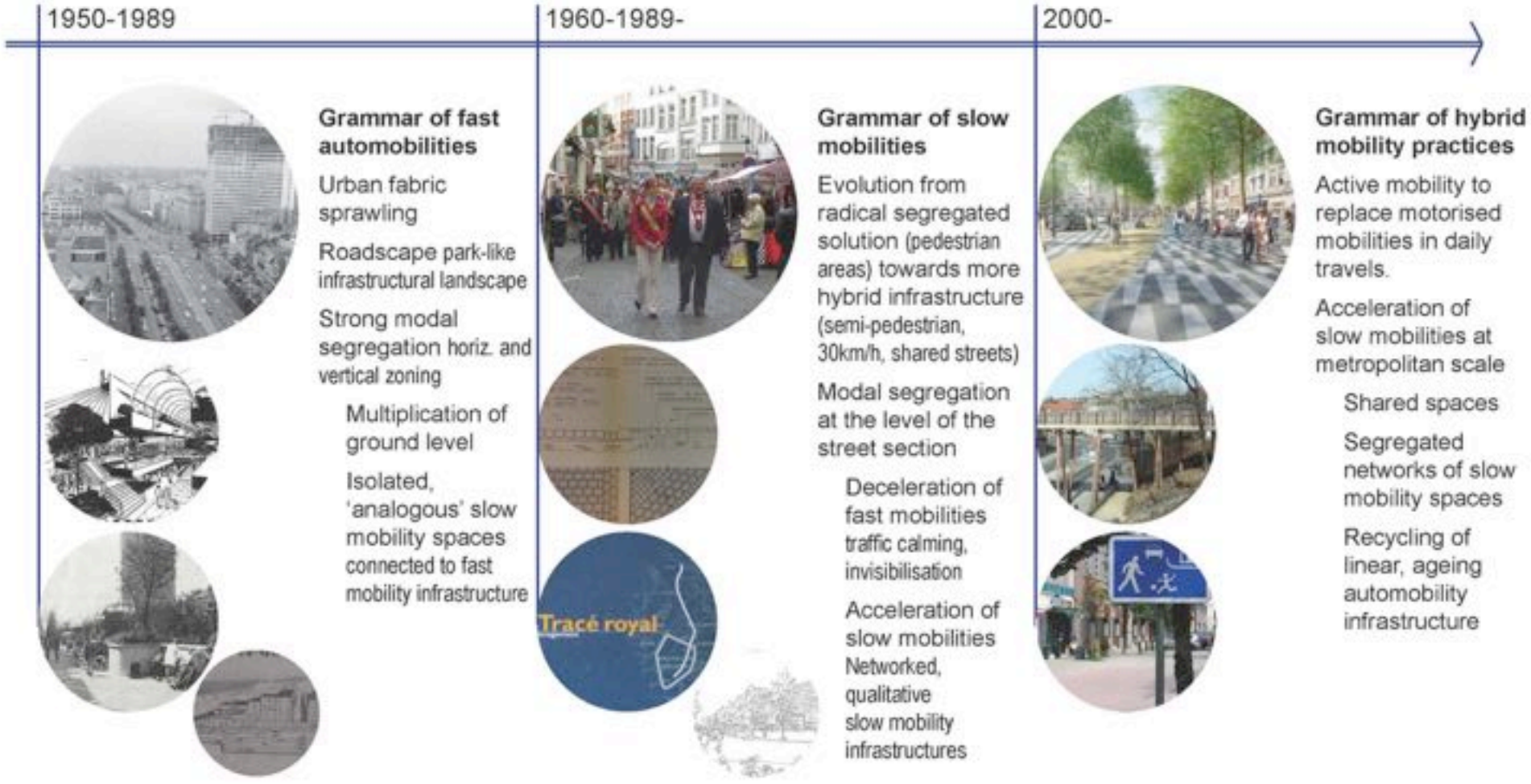
Key concepts

Scale of the designed city

The dominant social imaginaries of fast or slow mobilities impacts the limits and scale of the envisioned capital and its relation to the periphery.



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

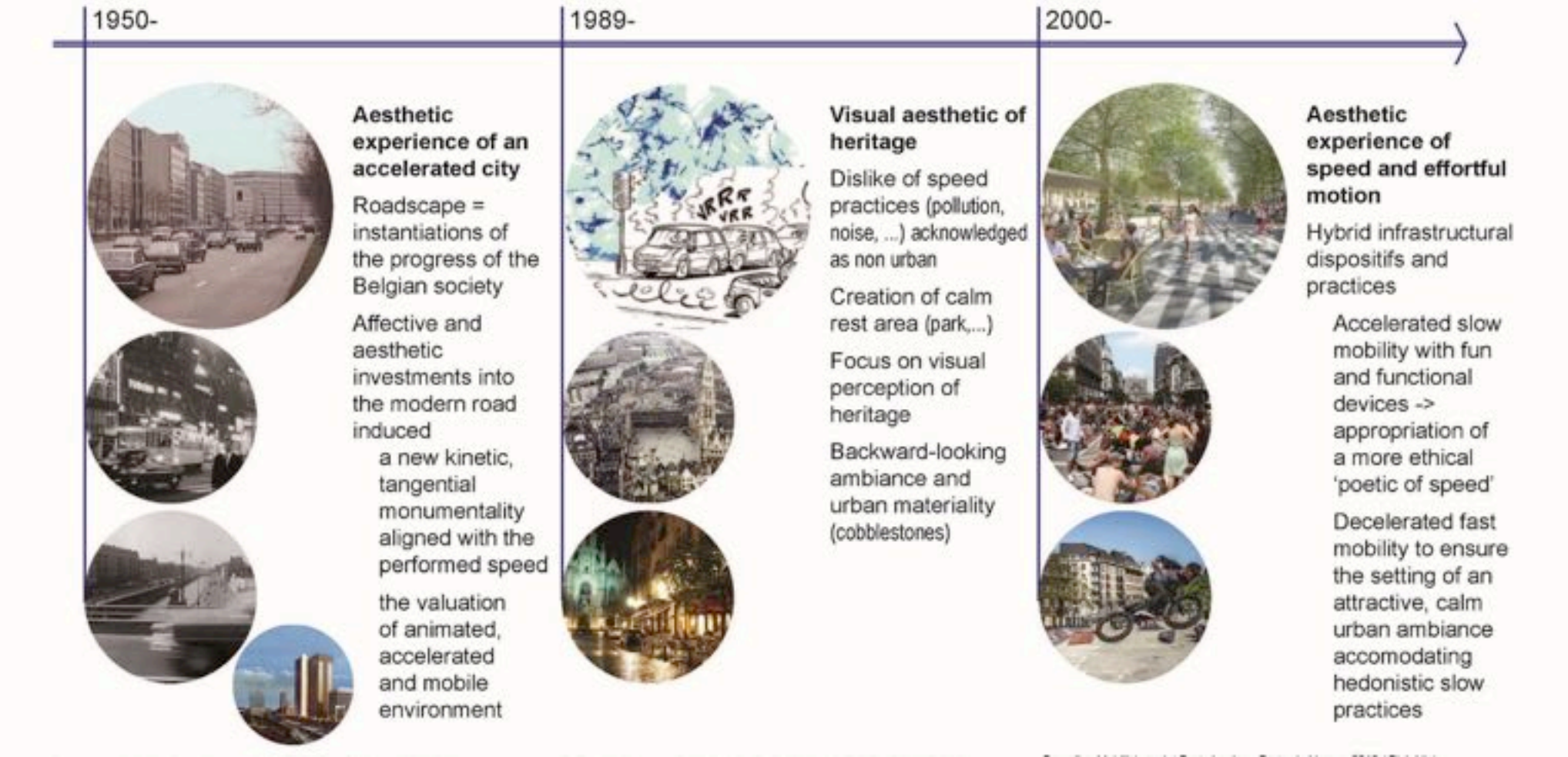


Key concepts

attractiveness of the city = recurrent argument, but evolution of promoted urban models and experiences

continuity and discontinuity of the type of urban environments which is valued, at the interface between *embellishment* and *animation*

Valued aesthetic in terms of ***ambiance***



Principles of equitable TOD

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.

Equitable Transit Oriented Development (eTOD)

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.

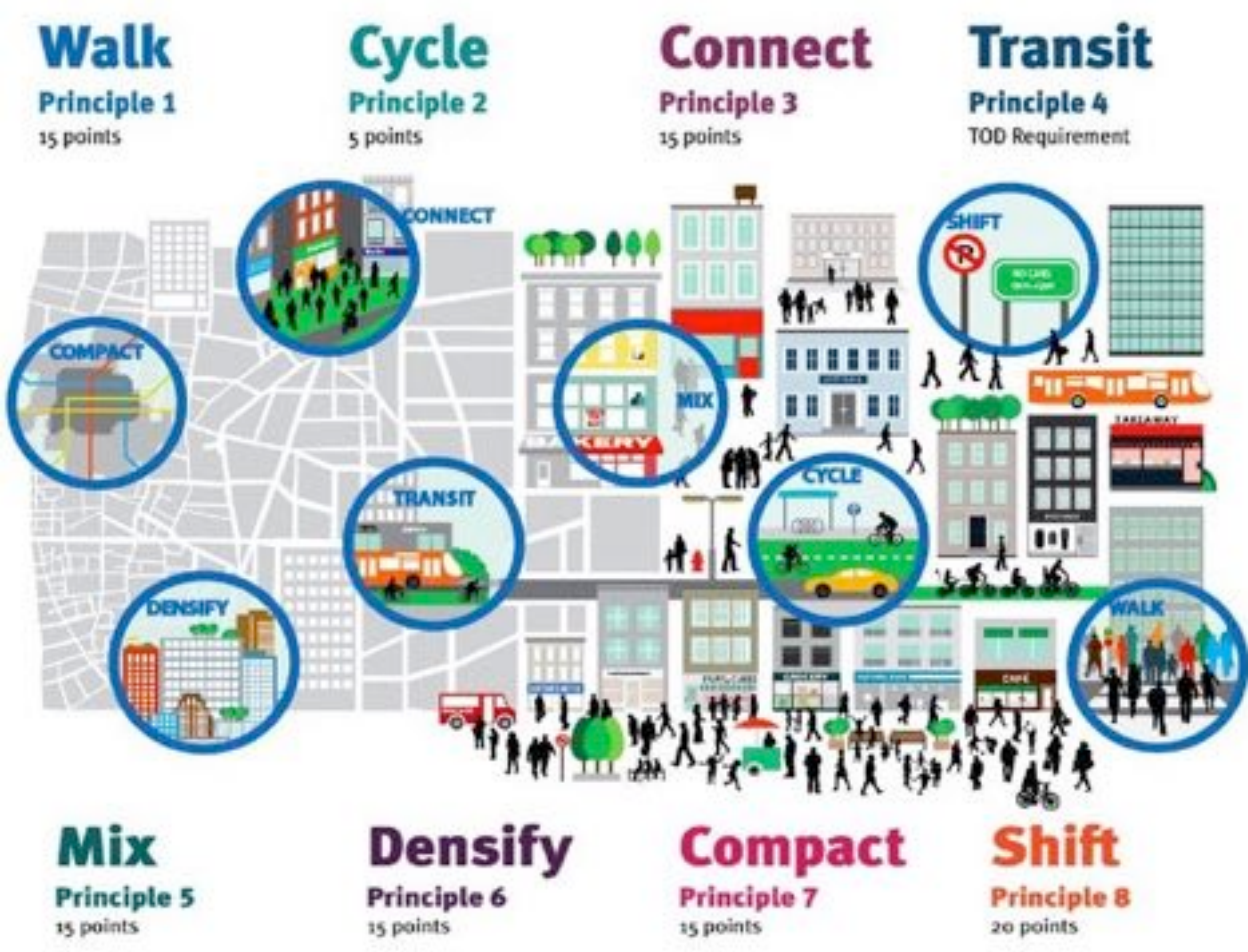
4.Transit: Locate development near high-capacity, reliable publ transit.

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 transi commutes.

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



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

Questions for the Breakout Rooms 16:45 – 17:00

- How far can Mobility Concepts influence the **Value of the Land** and how can you guide / manage the land value in your project?
- How to put the **Land Value Capture concept into practice** in your project?
- How can you **develop low impact mobility** for healthy environments in your project area ? What **kind of changes** are needed?
- How to implement the **mobility principles** for your study/project area or your work?

Breakout Questions & Room

THANK YOU

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