INTEGRATED PLANNING APPROACHES IN HIGHER EDUCATION:
COLLABORATIVE EDUCATIONAL PROTOTYPE TOWARDS
INTEGRATED APPROACHES IN THE PLANNING OF INCLUSIVE,
PEOPLE-CENTRIC AND CLIMATE-RESILIENT CITIES

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Project: 2022-1-EL01-KA220-HED-000089374 Erasmus+
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Sustainable mobility

Date (to be modified by partners)

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What is (urban) MOBILITY?

Mobility <>Transportation
Mobility: **the ability to freely move or be moved**
Transportation: **the act of moving something or someone**

Hence, *transportation* is something *you do*, but *mobility* is something *you have*

Source: https://www.delab.uw.edu.pl

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Why is significant to study (urban) mobility?

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- Mobility focuses on the satisfaction of (social) needs
  - Understanding and improving mobility, thus contributes to better quality of life
  - New mobility cultures will lead to livable and vivid cities

- Mobility affects natural and built environment
  - Transforming the existing urban mobility paradigm, means preservation, growth and prosperity
  - Successful (urban) mobility schemes lead to a congenial relationship between natural and built env.

- Mobility plays a considerable role in economy
  - New forms of economic activities might emerge
  - Optimal mobility solutions, lead to reduced costs and more efficient ways to manage urban env.

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Crossing over: sustainability + mobility
What is “sustainable mobility”? (1/2)

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Sustainable mobility indicates a system that

- Recognizes the importance of the 3 sustainable dimensions: environment, society and economy
- Allows individuals and societies to meet their access needs safely, respecting the ecosystem and the without compromising future generations
- Is affordable, operates efficiently and seemingly, supporting a vibrant economy

Source: https://www.nrso.ntua.gr/

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Crossing over: sustainability + mobility
What is “sustainable mobility”? (2/2)

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Sustainable mobility indicates a system that

- Gives renewed emphasis on human experience, and not just on efficiency and effectiveness
- Acknowledges the threat of climate change, the impacts on natural and social environment and the serious effects on human health; seeks to mitigate and adapt to the above
- Reflects realities of resources and energy constraints

Source: https://www.nrso.ntua.gr/

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Basic characteristics

Sustainable mobility involves:

- Innovative and clean (low-impact) transport modes
- Actors, social and physical systems predominantly experience the positive effects o different spatial scales
- Integration of transport, land use and environmental policies
- Proportional positive and negative effects for al actors;
- Financial and societal effects are transparent and measurable
- No environmental, social and financial burden put on future generations
- Adequate management and governance

Traditional Transport Planning		Sustainable Urban Mobility Planning
Focus on traffic	→	Focus on people
Primary objectives: Traffic flow capacity and speed	→	Primary objectives: Accessibility and quality of life, as well as sustainability, economic viability, social equity, health and environmental quality
Modal-focussed	→	Balanced development of all relevant transport modes and shift towards cleaner and more sustainable transport modes
Infrastructure focus	→	Integrated set of actions to achieve cost-effective solutions
Sectorial planning document	→	Sectorial planning document that is consistent and complementary to related policy areas (such as land use and spatial planning; social services; health; enforcement and policing; etc.)
Short- and medium-term delivery plan	→	Short- and medium-term delivery plan embedded in a long-term vision and strategy
Related to an administrative area	→	Related to a functioning area based on travel-to-work patterns
Domain of traffic engineers	→	Interdisciplinary planning teams
Planning by experts	→	Planning with the involvement of stakeholders using a transparent and participatory approach
Limited impact assessment	→	Regular monitoring and evaluation of impacts to inform a structured learning and improvement process

Source: ELTIS, 2013

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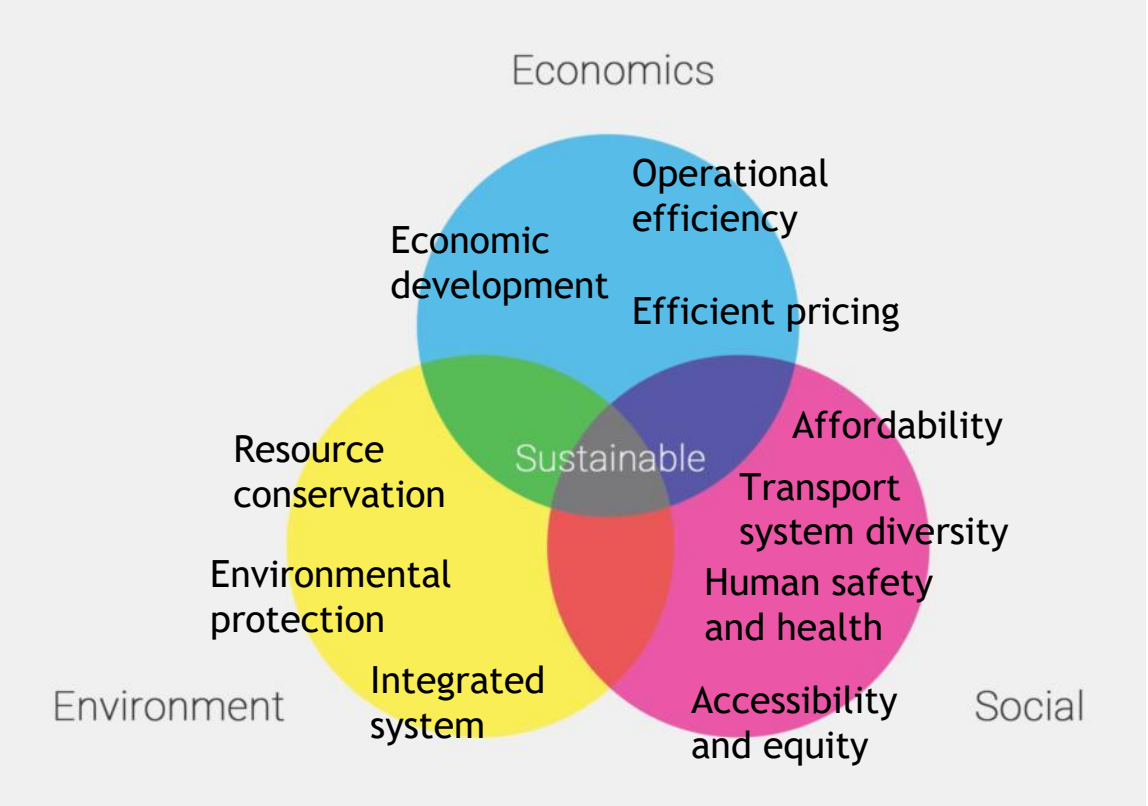
Basic characteristics

Sustainable mobility goals:

- Transport system diversity
- System integration
- Affordability
- Resource (energy and land) efficiency
- Efficient pricing and prioritization
- Land use accessibility (smart growth)
- Operational efficiency
- Comprehensive and inclusive planning
- Environmental protection
- Economic development
- Human safety and health
- Social equity



Source: https://www.pozzoni.co.uk/practice/sustainability

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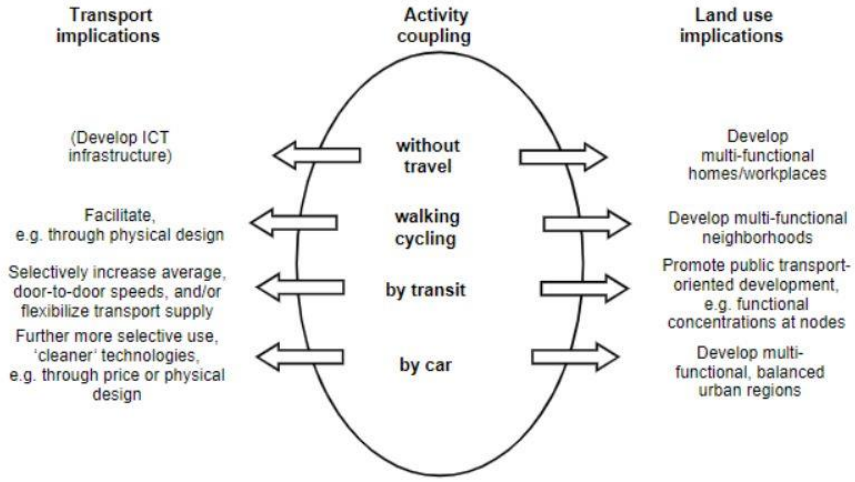
Sustainable mobility principles (1/12)

- Principle 1: Integrate transportation and land use planning

  - Conduct transportation planning and land use planning concurrently
  - Use transportation plan policies to encourage supportive land use form and design



Source: Bertolini et al., 2005

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Sustainable mobility principles (2/12)

- Principle 2: Protect environmental conditions

  - Recognize efficient ways that transportation systems can contribute to environmental protection

  - Use environmental criteria (e.g., GHG emissions, air pollutants, etc.) in the evaluation of existing mobility conditions and future mobility scenarios

Source: https://www.iddri.org/en/project/autonomous-mobility-clean-mobility

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Sustainable mobility principles (3/12)

- Principle 3: Incorporate social objectives

  - Promote inclusiveness
  - Identify strategies to improve accessibility levels for all users
  - Strengthen social cohesion
  - Enhance vitality and livability of urban environments

Source: https://www.dmagazine.com/

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Sustainable mobility principles (4/12)

- Principle 4: Support economic development

  - Strategies to support economic activity
  - Freight transportation management that utilizes all types of modes

Source: https://www.hks.harvard.edu/educational-programs/executive-education/admissions-fees/executive-certificates/economic

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Sustainable mobility principles (5/12)

- Principle 5: Adopt a strategic approach

  - Establish a comprehensive strategic framework with a vision, goals, indicators, and show in a transparent linkages to other community goals
  - Consider alternative futures for mobility systems, and evaluate their requirements and implications

Source: https://www.analytico.ca/a-systematic-strategic-approach-to-growing-your-business/

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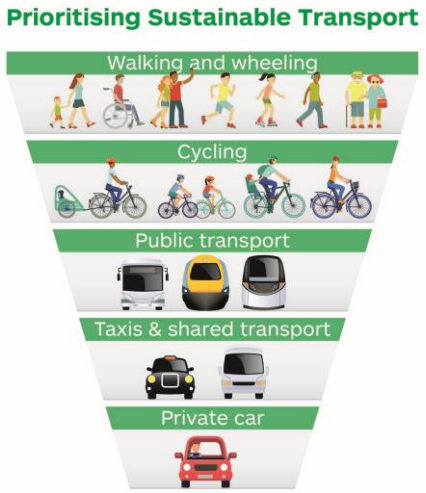
Sustainable mobility principles (6/12)

- Principle 6: Consider all transport modes

  - Identify strategies to increase walking, cycling, public transport and micromobility
  - Promote clean mobility solutions like electric vehicles
  - Examine innovative alternatives to the conventional car use (e.g., ridesharing, car-sharing, car-pooling, etc.)



Source: https://www.transport.gov.scot/active-travel/developing-an-active-nation/sustainable-travel-and-the-national-transport-strategy/

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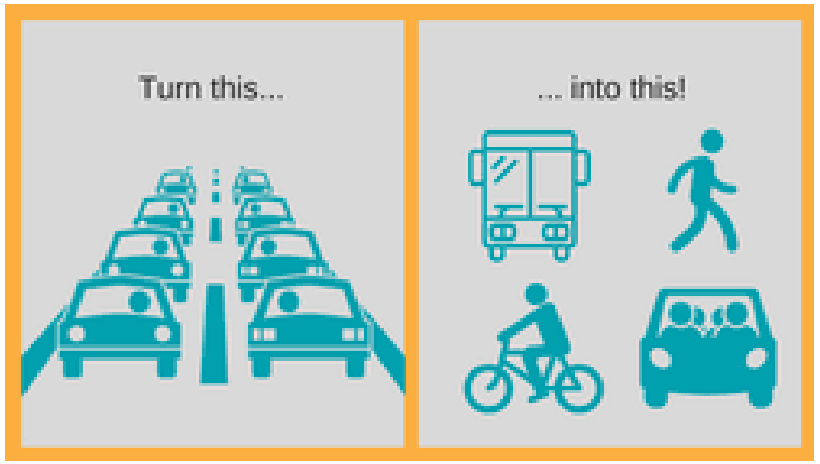
Sustainable mobility principles (7/12)

- Principle 7: Manage transportation demand efficiently

  - Give strategic priority to transportation demand management (TDM) solutions
  - Set transparent spatial-based goals related to the demand in the future (e.g., Congestion pricing zones, incentives for walking)



Source: https://www.portlandoregon.gov/transportation/80160

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Sustainable mobility principles (8/12)

- Principle 8: Manage transportation supply efficiently

  - Identify strategies to maximize the multimodal capacity of current infrastructure
  - Employ strategies to manage recurring and non-recurring congestion
  - Examine innovative strategies to manage transportation assets

Source: https://www.stantec.com/en/markets/transportation/smart-mobility

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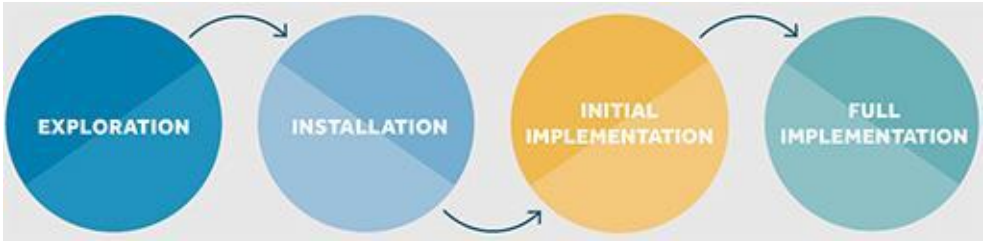
Sustainable mobility principles (9/12)

- Principle 9: Provide implementation guidance

  - Develop a long-range implementation strategy that is based on favored outcomes and explains key priorities, development and management directions

  - Incorporate a short-term implementation strategy that describes early actions needed to build momentum and build the foundations for a long-term strategy



Source: https://www.who.int/reproductivehealth/mec-spr-implementation-guide-toolkit/en/

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Sustainable mobility principles (10/12)

- Principle 10: Provide financial guidance

  - Identify expected future transportation revenues and operating costs
  - Examine alternative options for overcoming funding gaps
  - Utilize solutions for an efficient financial management
  - Adopt low-cost solutions

Source: https://reba.global/content/why-workplace-financial-guidance-is-more-important-now-than-ever

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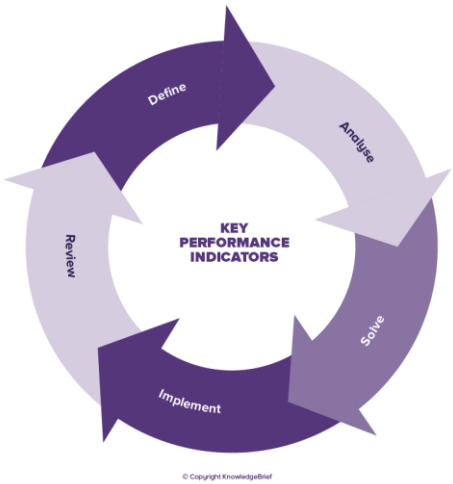
Sustainable mobility principles (11/12)

- Principle 11: Measure performance

  - Highlight the need for a performance measurement framework to monitor progress
  - Use a multitude of indicators
  - Formulate an effective communication plan and an adequate dissemination strategy



Source: https://www.kbmanage.com/concept/key-performance-indicators

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Sustainable mobility principles (12/12)

- Principle 12: Create a multidimensional plan with public engagement

  - Involve social groups, stakeholders, citizens, organizations in the planning process through innovative and attractive ways

  - Employ a dynamic process for informing the public about the implementation progress

Source: https://rring.eu/public-engagement-in-the-time-of-covid-19/

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Relation with other disciplines (1/2)

- Urban planning

Source: https://www.friendsofeurope.org/

- transportation planning

Source: https://priceschool.usc.edu/

- Environmental studies

Source: http://greenubuntu.com/

- Geography

Source: https://amt-lab.org/

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Relation with other disciplines (2/2)

- Marketing

Source: https://www.nepocket.com/service/Marketing/169

- Computer science

Source: https://nwc.edu/academics/programs/computer-science

- Management

Source: https://www.zambianguardian.com/

- Economic science

Source: https://medium.com/

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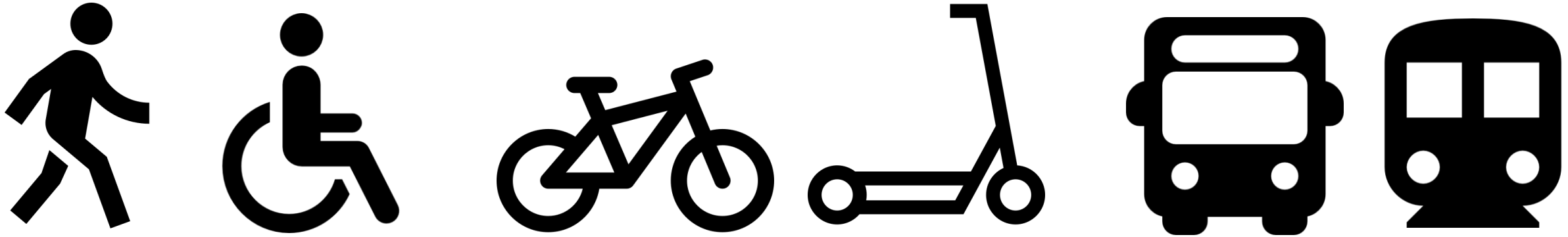
Sustainable transport modes



Walking + Wheelchair movement

Cycling + Micromobility

Public transport
(road + fixed route)

Active movement

Motorised movement

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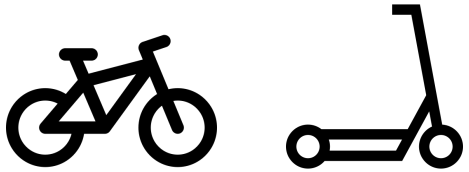
Sustainable transport modes

Walking + Wheelchair movement



Cycling + Micromobility

Main and general benefits

- Public health
- Enhance human interaction and communication
- Affordable
- Environmental friendly
- Cost-effective
- Reduce (indirectly) traffic congestion
- Improve the quality of urban environment
- Increase human-oriented activities (like shopping, recreation, etc.)
- Physical exercise
- Flexible
- First and/or last mile solution

Main and general challenges

- Road environment can hinder active mobility
- Physical conditions may pose some difficulties
- Weather conditions play a critical role in supporting or inhibiting active mobility
- Serious safety issues
- Insufficient for long-distance trips (as a standalone solution)

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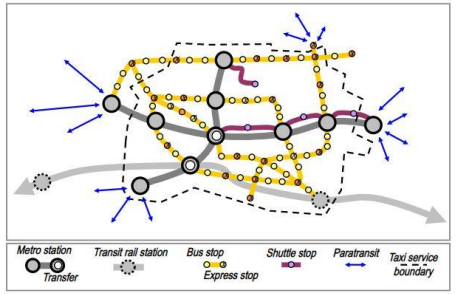
Sustainable transport modes

Public transport (road + fixed route)



Source: https://slideplayer.com/slide/1581194/

Main and general benefits

- Road safety
- Enhances accessibility
- Inclusive
- Environmentally friendly
- Encourages social interaction and communication
- Affordable and low cost (often)
- Time-effective (especially rail-based)
- Flexible (especially road-based)
- Driver for urban and transformation
- Reduces traffic congestion

Main and general challenges

- Traditional public transport maybe rigid, thus lacking flexibility
- Door-to-door solutions could be costly or difficult to implement
- Fares could raise inequities
- Fixed route transport demands significant residential or jobs density to operate efficiently
- Conventional vehicles do not mitigate pollution as well as GHG emissions

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Urban mobility system users

Source: https://etsc.eu/projects/pin/

USERS

~VARIETY~

~COMPLEXITY~

~INTERACTION~

~MULTIPLICITY~

~DIFFERENCE~

~CONFLICTS~

~COOPERATION~

Source: https://www.roadwise.asn.au/news/details.aspx?newsid=483

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Urban mobility system users

Healthy and able-bodied users

Source: http://koreabizwire.com/

Source: https://www.todayonline.com/

Children

Source: https://www.fareast.mobi/

People with

Source: https://www.elperiodico.com/es/

Women

Source: https://thecityateyelevel.com/

Elderly

Source: https://www.aarp.org/

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Urban mobility system users

Immigrants

Source: https://www.luzernerzeitung.ch/

Public transport users

Source: https://indonesiainside.id/

Pedestrians

Source: https://hazardperceptiontest.net/

Cyclists

Source: https://www.nuevamujer.com/

Car drivers

Source: https://automotivesol.com/

Car passengers

Source: https://gulfnews.com/ /

Professionals

Source: https://www.iru.org/

Micromobility users

Source: https://www.smartcitiesworld.net

Towards an integrated approach

- Traditional planning approaches are monothematic, being incapable of dealing with cities in a holistic way
- This rationale which gives almost absolute priority to the transport aspect and especially motorized traffic, has created several problems mainly after the 1950s (Marshall and Banister, 2007), both in the macro and micro scales.
- Under these circumstances, the necessity for new integrated transport concepts, and therefore strategies, underpinned by sustainability goals has naturally emerged (Holden et al., 2019)
- Why strive for integrity?
  - Integrated approach□ Sustainable future!

Source: https://www.gov.uk/government/news/integrated-transport-innovation-apply-now-for-business-funding

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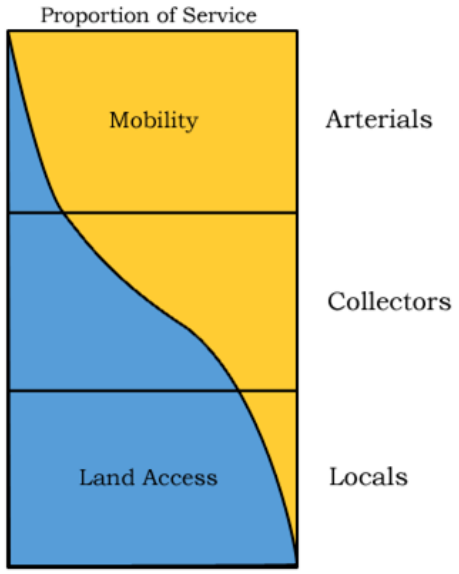
Sustainable mobility planning

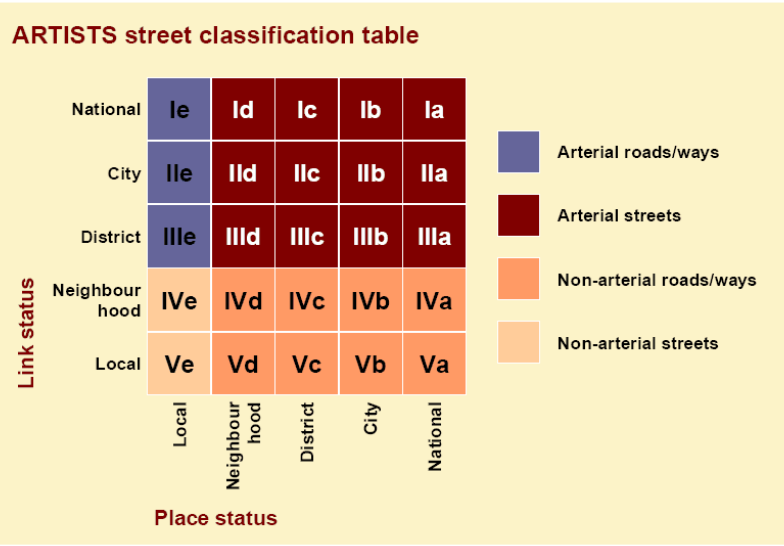
Road hierarchy or street classification

- Fundamental component of both transport and urban planning procedure (Huang et al., 2016)
-
- Highlights the role of each road segment in the whole transport system (FHWA, 2013)
- Basic planning tool towards sustainability and efficient mobility

Conventional vs Alternative



Source: http://pedshed.net/



ARTISTS Functional Classification

Source: Svennson, 2004

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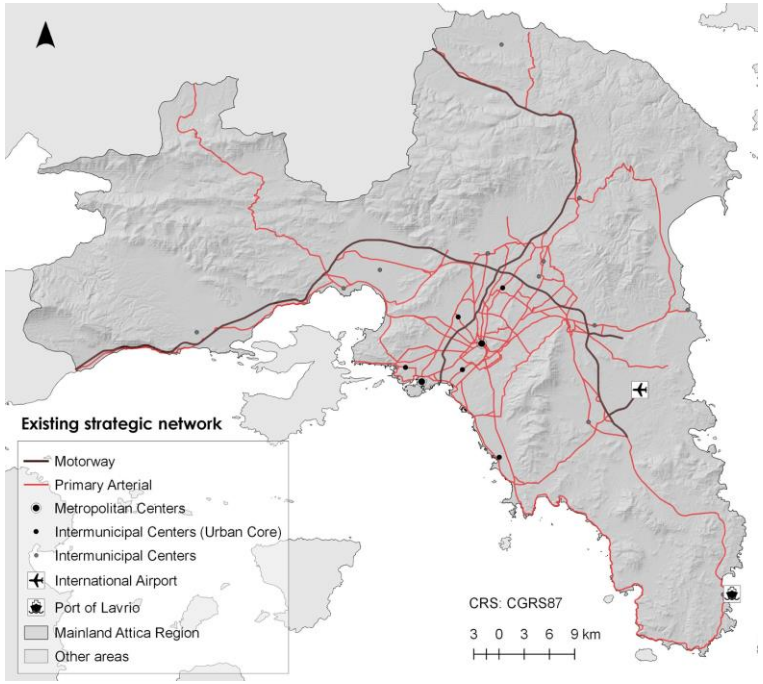
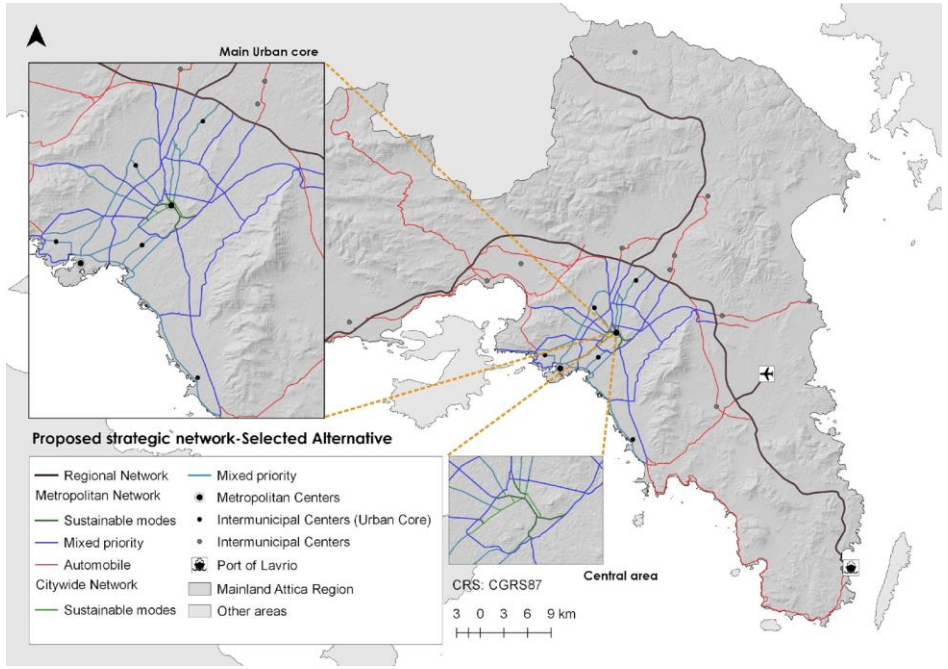
Sustainable mobility planning

Road hierarchy or street classification

Conventional



Alternative



Source: Tsigdinos and Vlastos, 2021

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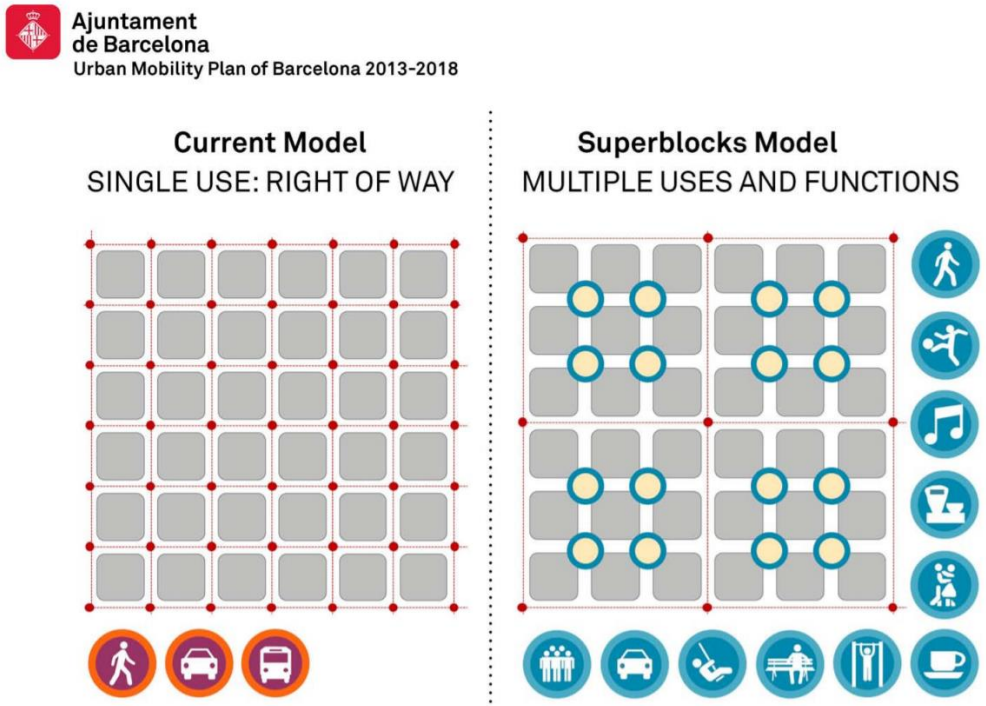
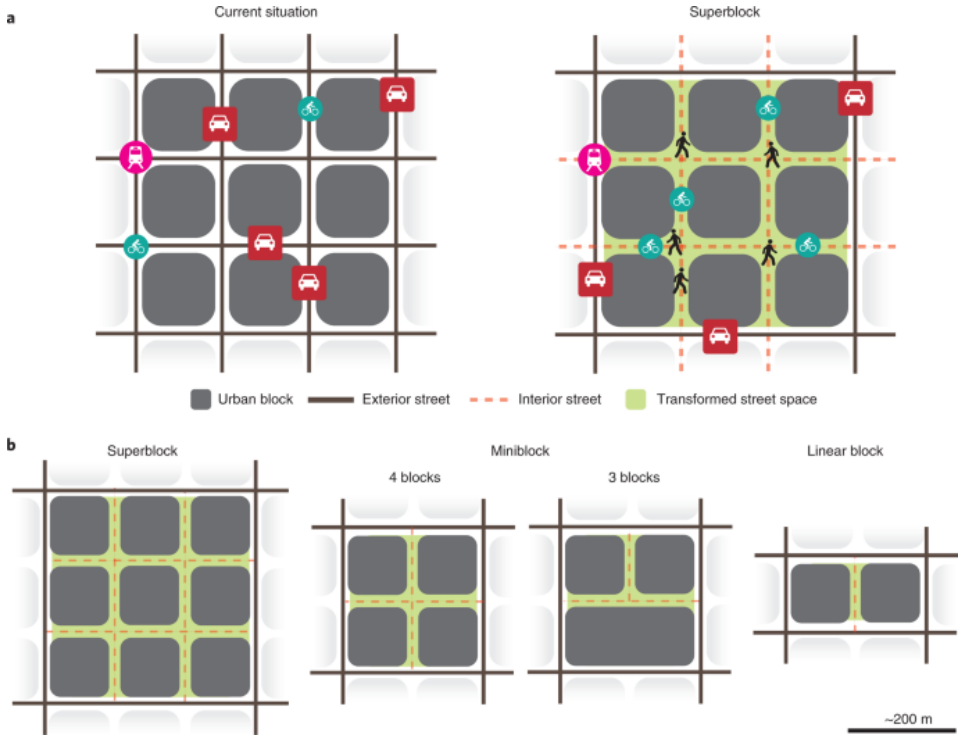
Sustainable mobility planning

Superblocks



Source: https://www.uni-med.net/



Source: Eggimann, 2022

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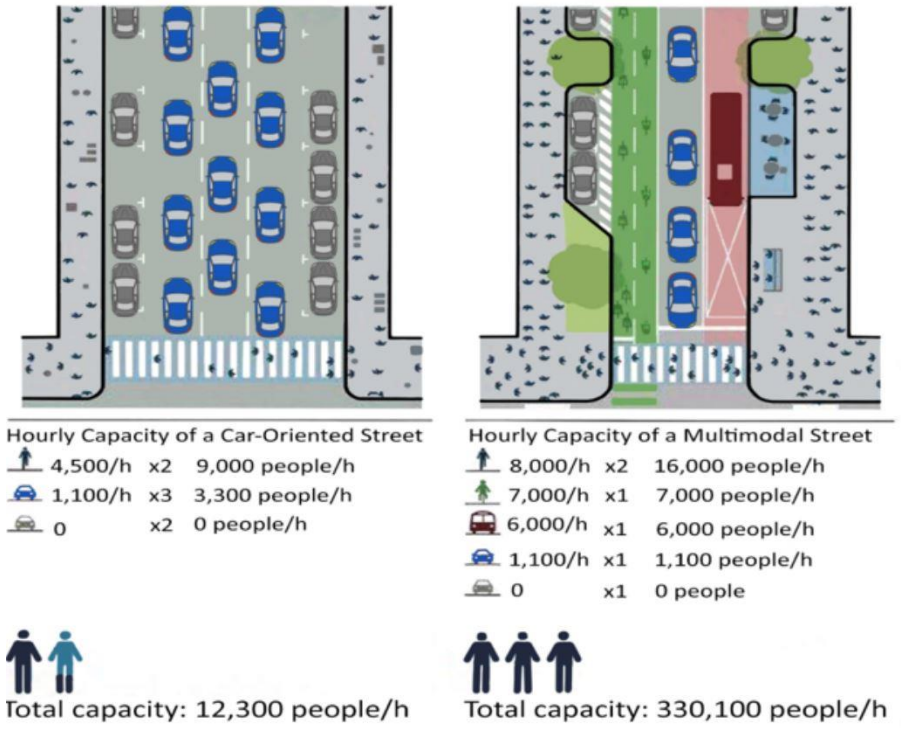
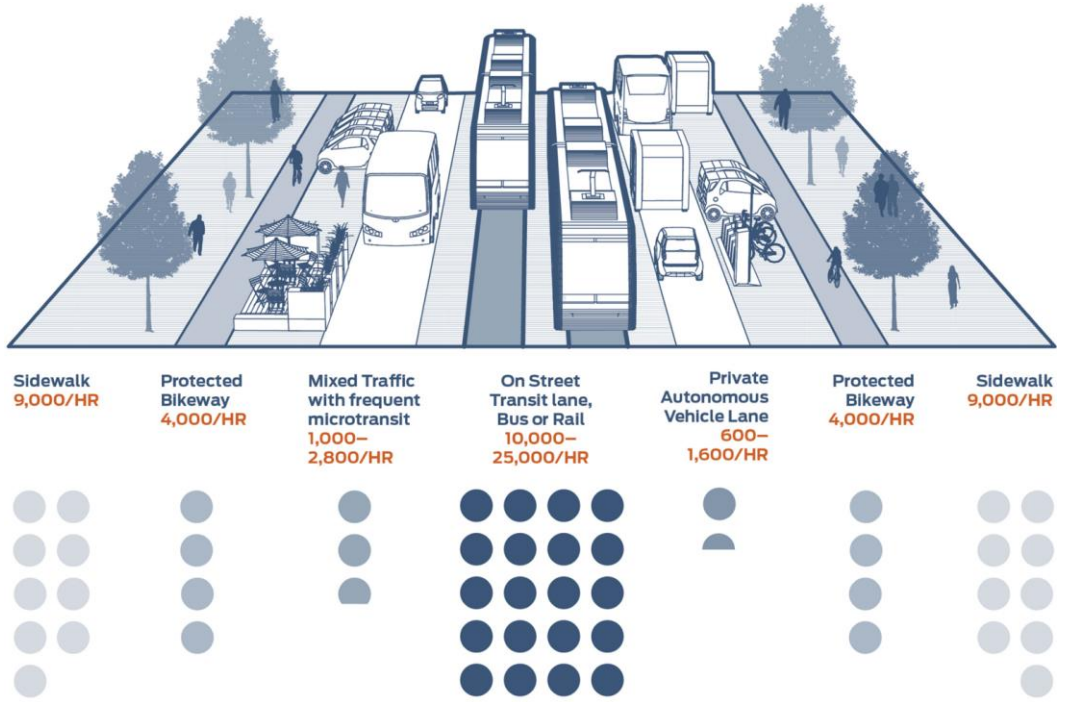
Sustainable mobility planning

Complete streets or multimodal corridors



Source: Daubayev et al., 2017



Source: https://www.remix.com/blog/in-the-era-of-new-mobility-the-streets-of-the-future-must-change

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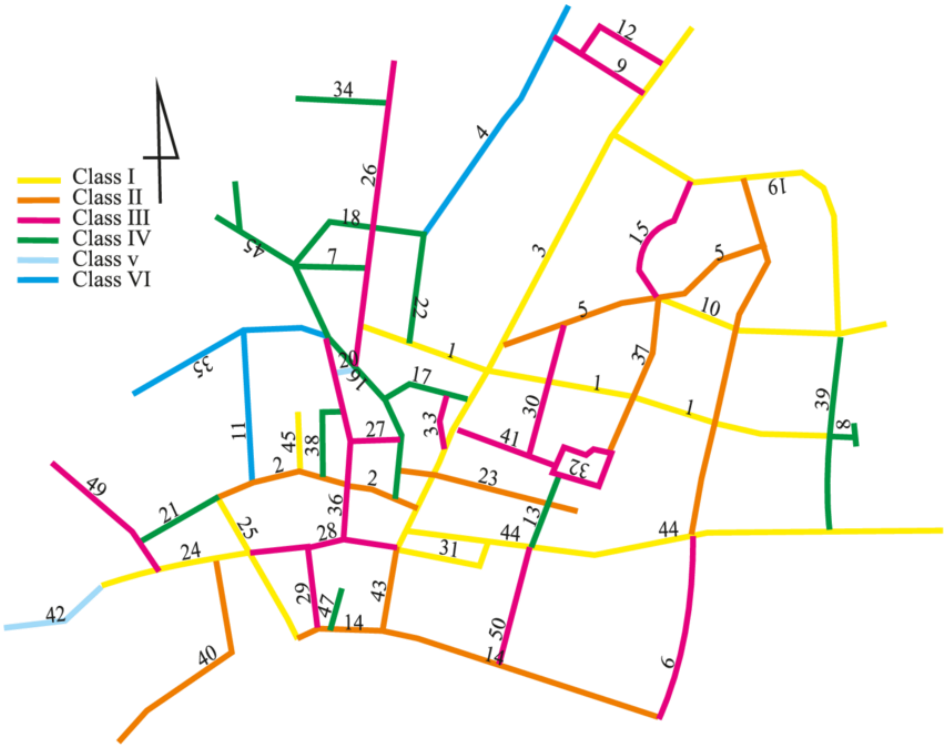
Sustainable mobility planning

Walking routes

Critical criteria for walking suitability (Paraskevopoulos et al., 2020; Cervero & Kockelman, 1997; Frank et al., 2005)

- Street connectivity
- Amenities destined for people with reduced mobility (curb ramps, tactile paving)
- Sidewalk width
- Crosswalks
- Streetscape features
- Land use diversity and non-residential uses density
- Built and natural environment



Source: Cieslak and Szuniewicz, 2015

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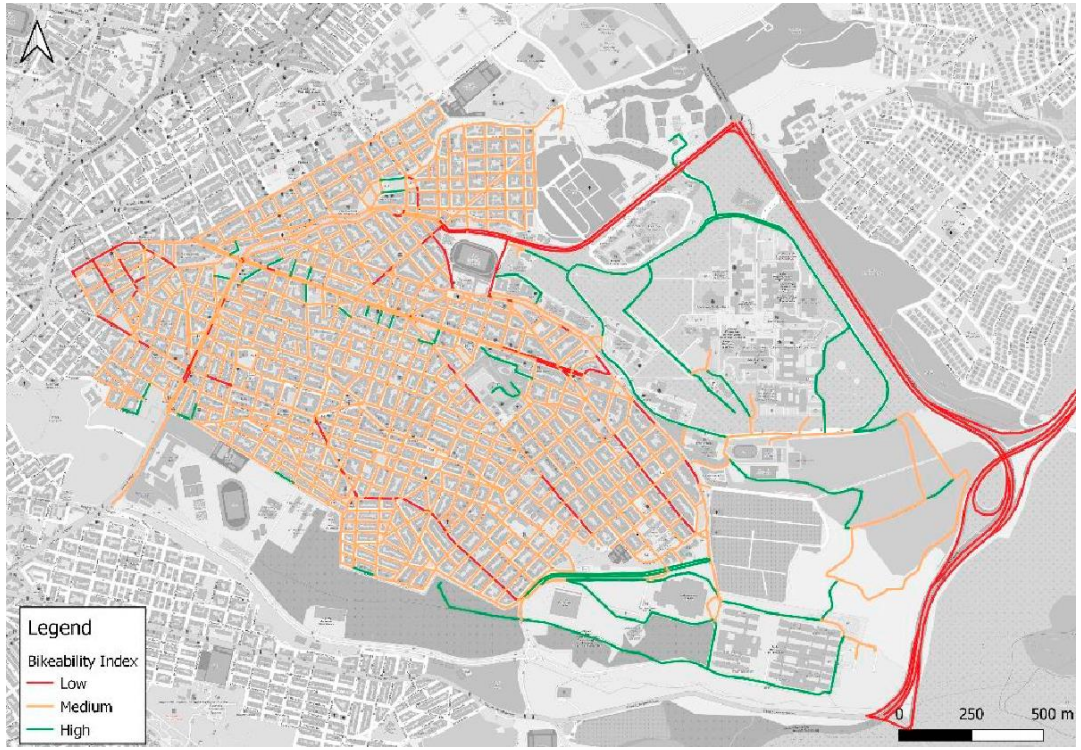
Sustainable mobility planning

Cycling routes

Critical criteria for cycling suitability (Milakis et al., 2012; Karolemeas et al., 2022)

- Road network
  - Slope
  - Junction density
  - Traffic density
  - Traffic speed
- Urban environment
  - Natural environment
  - Built environment
  - Centrality
- Level of service
  - Activities' coverage
  - Accessibility to Public Transport stations



Source: Karolemeas et al., 2022

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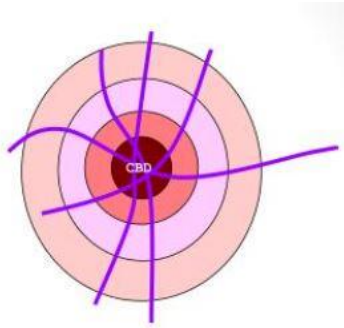
Sustainable mobility planning

Public transport routes

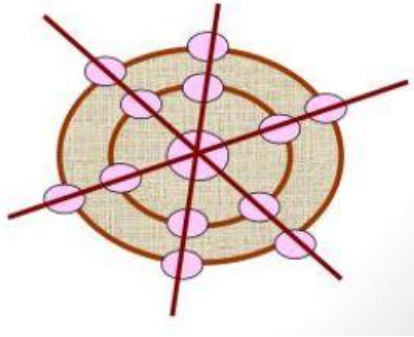
Public transport lines need to be:

- Readable
- Cost-effective
- Prioritized (if possible)
- Seamless
- Direct
- Cooperating with each other (e.g., transport hubs)

Radial

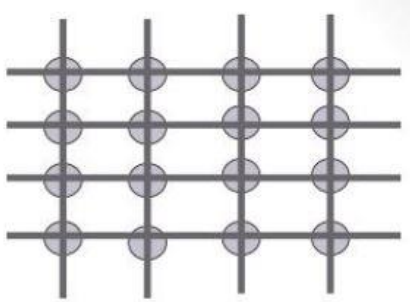


Radial and circular

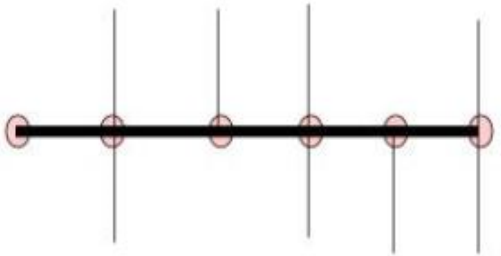


Source: https://www.slideserve.com/pelham/public-transport-powerpoint-ppt-presentation

Grid



Trunk and feeder



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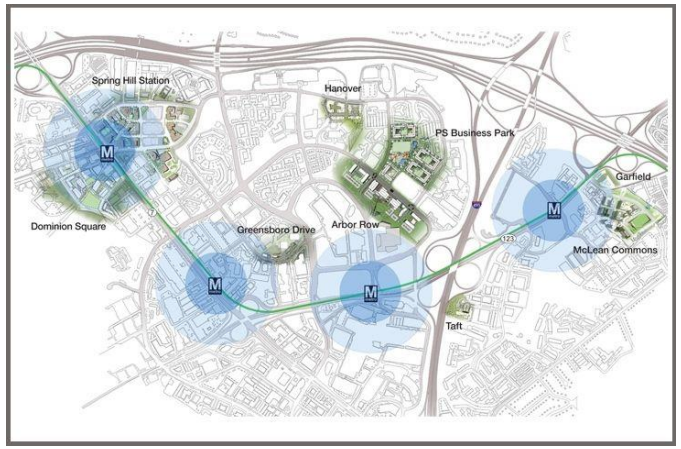
Sustainable mobility planning

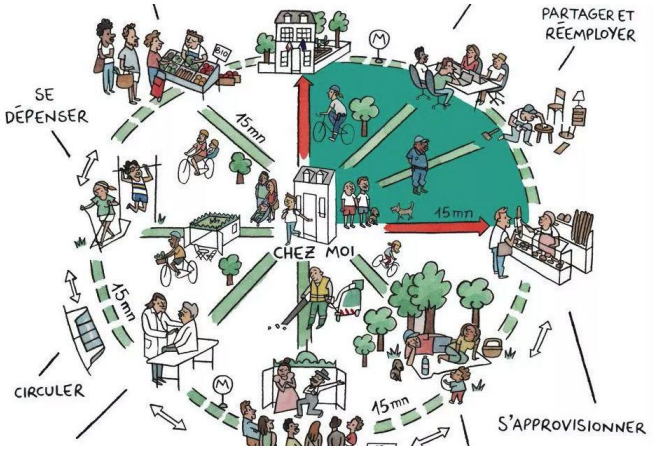
Urban planning solutions

Transit oriented development



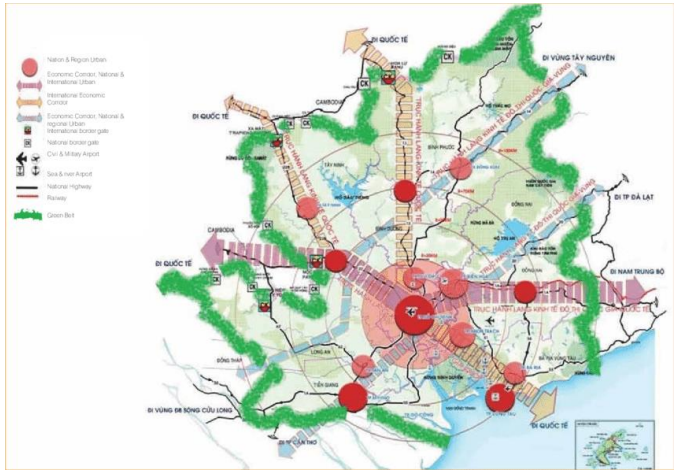
Source: https://www.pinterest.es/

15-min city



Source: https://www.treehugger.com/

Green Belt



Source: Hoang and Wessels, 2011

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Sustainable mobility planning

Urban design solutions

Shared space

Source: https://planetradio.co.uk/

Traffic calming measures

Source: https://roadsafetygb.org.uk/

Open and play streets

Source: https://nyc.streetsblog.org/

On-street parking

Source: https://www.opentownhall.com/

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thank you!

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