2050 CliMobCity

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Developing Transition Pathways towards Climate-Neutral Mobility in European Cities

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1 December 2021

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CliMobCity 2050 project meeting, 1 December 2021

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Focus of the SUMP-PLUS project

- Directly oriented at contributing to SUMP 2.0 (and 3.0) through producing new guidance
- **Pathways:** Accelerating SUMP implementation
- **Links:** coordination between transport and other urban sectors

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Development of SUMP Topic Guide

- **New SUMP Topic Guide** on how cities can develop transition pathways to achieve carbon-neutral mobility (while also meeting other objectives). To be submitted to EC in autumn 2022.

- **New policy context.** To enable cities to achieve EU Green Deal and DG MOVE Strategy, need to emphasise centrality of climate targets, in relation to SUMP process. To achieve climate-neutrality, 90% reduction in transport emissions must be achieved by 2050 – requires much more radical measures and strategic planning processes.

- **Transition Pathways:** developing 20-30 year vision, policy mix and strategic policy timeline (while accelerating implementation in the shorter term)

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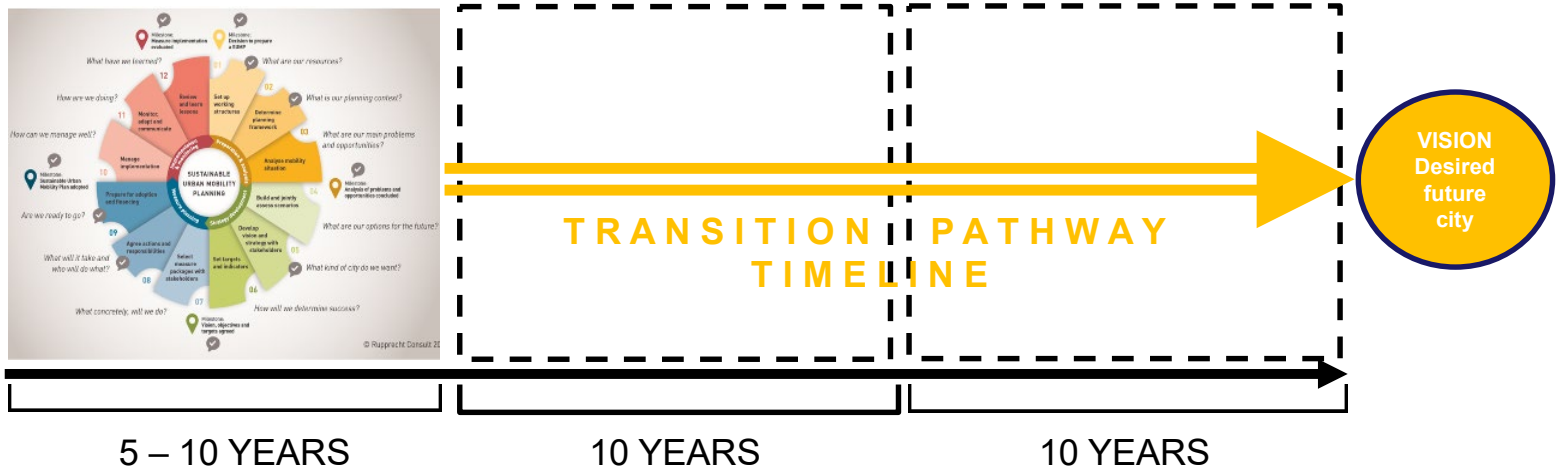
Strategic planning for a 20 to 30-year horizon



SUMP 2.0 Guidelines

SM**A**RT targets – **A**chievable based on existing competences and partnerships

Planning for growth – measure packages based on **forecasting**

SUMP+ Transition Pathway

Targets that must be **A**chieved – long-term and interim CO_2 emission reduction targets

Vision-led planning – measure appraisal based on **backcasting**

Backcasting method based on 'Vision & Validate'

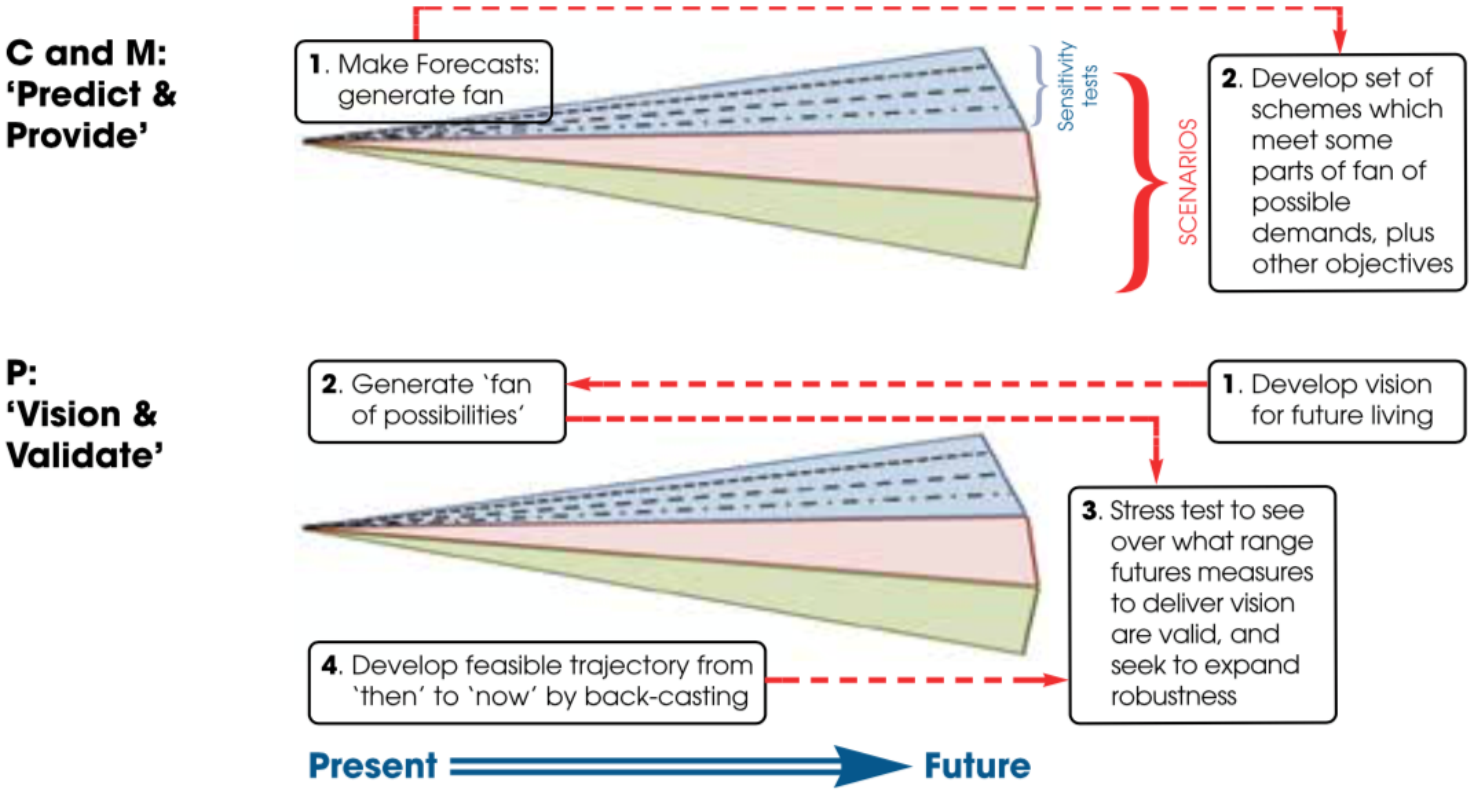


Figure 2.9 (see SUMP-PLUS D1.2, p.55). Contrasting the traditional 'Predict & provide' approach reliant on forecasting, with the 'Vision & Validate' approach reliant on backcasting from a desired future. © CREATE project. Source: D5.3 CREATE Guidelines (p.39).

Backcasting method – previous applications

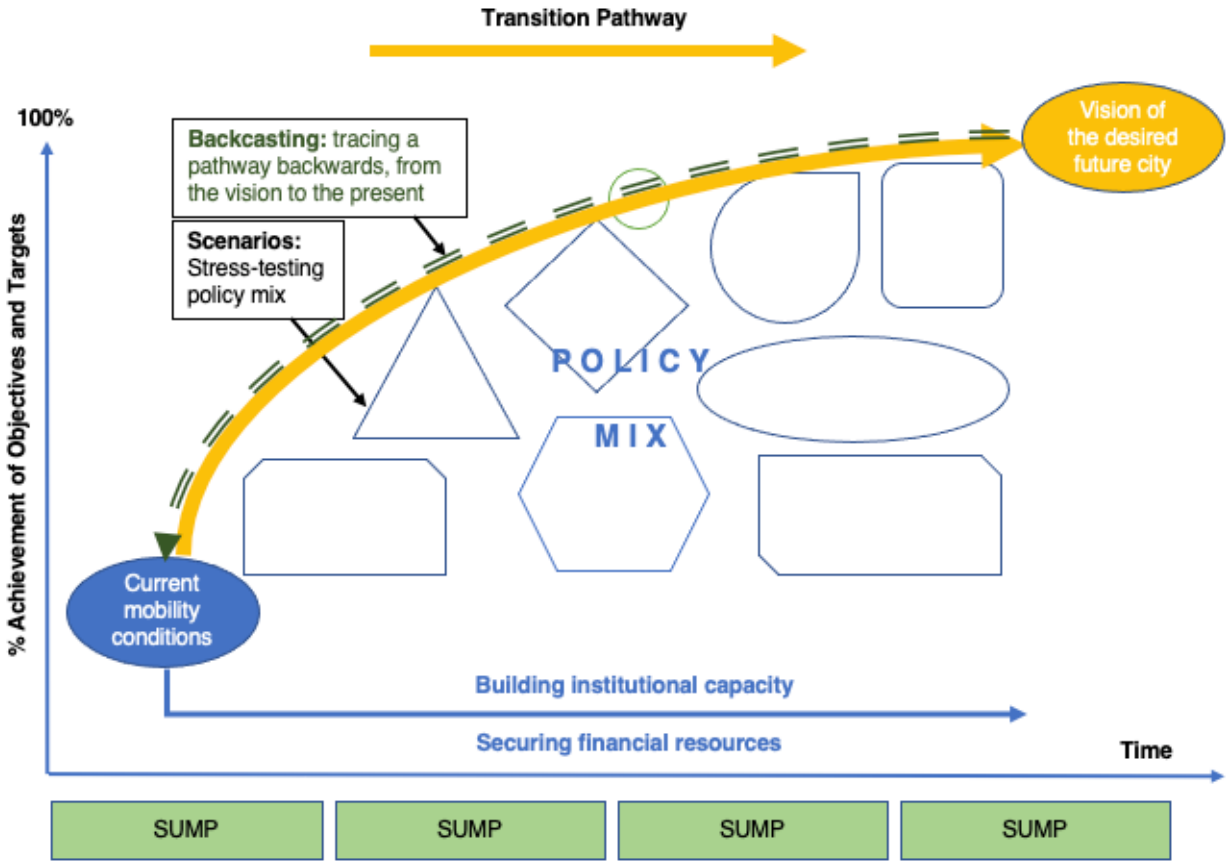
- A normative methodology that takes visioning as a starting point, originating in foresight studies; applied in EU projects since 2000 (Miola 2008)

- Application led by researchers to analyse how different policy packages could help achieve transport emission reductions in the Netherlands (Geurs and van Wee 2000), Sweden (Åkerman and Höjer 2006), Finland (Tuominen et al. 2014), and London (VIBAT project); and at the EU level (Hötl et al. 2018)

- Two issues: 1) “implementation gap” between optimal policy packages and action taken by participating policy-makers; 2) ”competence gap” between researcher-led and modelling-intensive backcasting and the competences of city planning departments.

- **Challenge for SUMP-PLUS:** how to go beyond researcher-supported and *city-specific* backcasting exercises → to develop *practitioner-friendly*, *general* guidelines (strategic planning steps) for a *range* of European city types

Pathway for realising the desired city by 2050



- **New strategic planning approach**
- **Vision of the desired future city:** anchored in a holistic long-term strategy for urban development
- **Climate-neutrality:** Achieving 2030 and 2050 EU climate targets
- **While meeting other objectives:** e.g. Vision Zero, well-being, air quality

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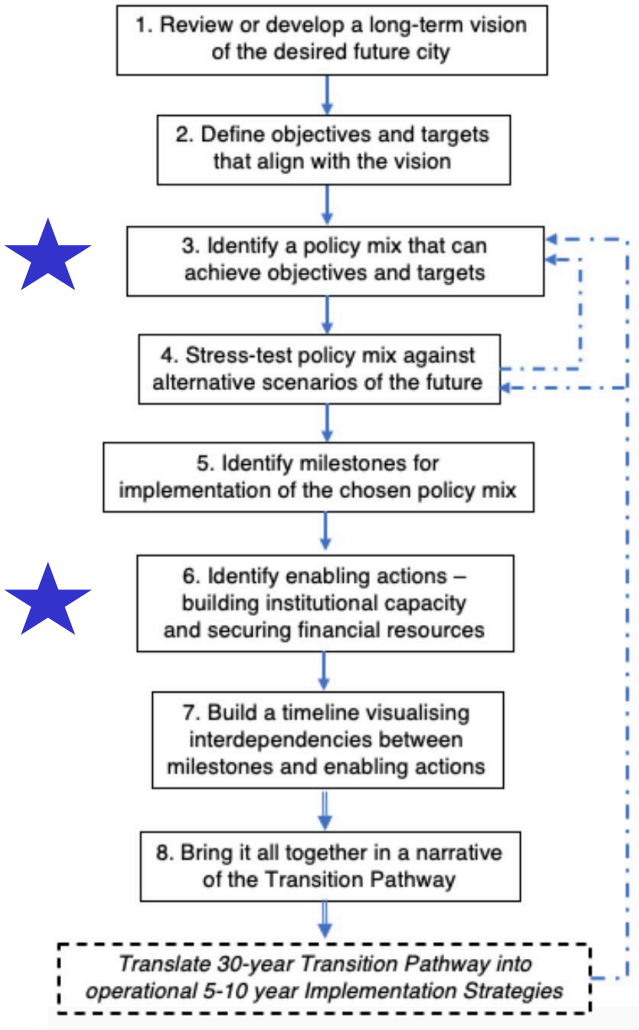
Transition Pathway: development process



8 steps to develop a 20-30 year

policy mix and **strategic timeline** for

how to build the capacity to implement it

Concrete output: long-term strategic plan, complemented by SUMPs or shorter-term Implementation Strategies

Step 3: Establish policy mix that can achieve targets

- **Carbon reduction is the primary objective**
  - Main focus of the policy mix assessment
  - But cities have other objectives that must also be considered in the transition
  - For example:
    - Vision zero fatalities
    - Eliminate congestion
    - Fair and equal society (access to all)
  - Secondary assessment of impacts of carbon reduction policies on other objectives

    → revision of carbon reduction policy mix

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Basic principles for carbon reduction

2 fundamental factors that influence carbon emissions from transport:

3 key policy areas

1. Vehicle distance travelled (km)
   - AVOID the need to travel
     - by substituting physical travel with digital access to services / home delivery / avoid the need to travel long distances through localisation
   - SHIFT mode of travel
     - to active, public and shared forms of transport
2. Amount of carbon emitted from travelling a km
   - IMPROVE fuels
     - by improving conventional vehicle efficiency;
     - switching to alternative fuels (e.g. BEV);
     - decarbonising electricity generation;
     - improving battery efficiency

Reducing carbon requires reducing distance travelled and/or improving engine efficiency/carbon intensity of fuel

- What is the mix of these policies required to meet carbon reduction targets
- How does the mix vary over time → transition pathway

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Developing a City-specific policy mix

- **Wide variation in city context**
  - Mode share
  - Relative significance of passenger and freight movements
  - Spatial form (urban to rural)
- **Different levels of technology readiness and speed of adoption**
- **Variation in energy sources for electricity**
- **Often limited capabilities for detailed emissions modelling**

To help cities build their transition pathway →

Provide guidance and information to support cities in choosing suitable **policy mix**

- **AVOID policy – 4 strategies**

1. **Avoid** the need to travel by substituting physical travel with digital access to services/home delivery
   a. commuting trips avoided due to home working
   b. personal business trips avoided due to digital access to services (GP's, banking)
   c. shopping trips avoided due to home delivery
2. **Avoid** the need to travel long distances through localisation
   a. daily trips for shopping, leisure, education activities localised within 15-minute walkable neighbourhood

- **SHIFT policy**
  - **Shift** mode of travel from car to sustainable modes.
    - <3km: from car to walk / cycle
    - 3km-8km: from car to cycle / PT
    - >8km: from car to PT / carpool

- **IMPROVE policy - impact on average gCO2e/km**
  - **Improving** fuel efficiency of conventional petrol/diesel engines,
  - **Improving** fuel emissions by switching vehicle fleet to battery electric,
  - **Improving** electricity generation by switching to renewables,
  - **Improving** energy efficiency of electric batteries.

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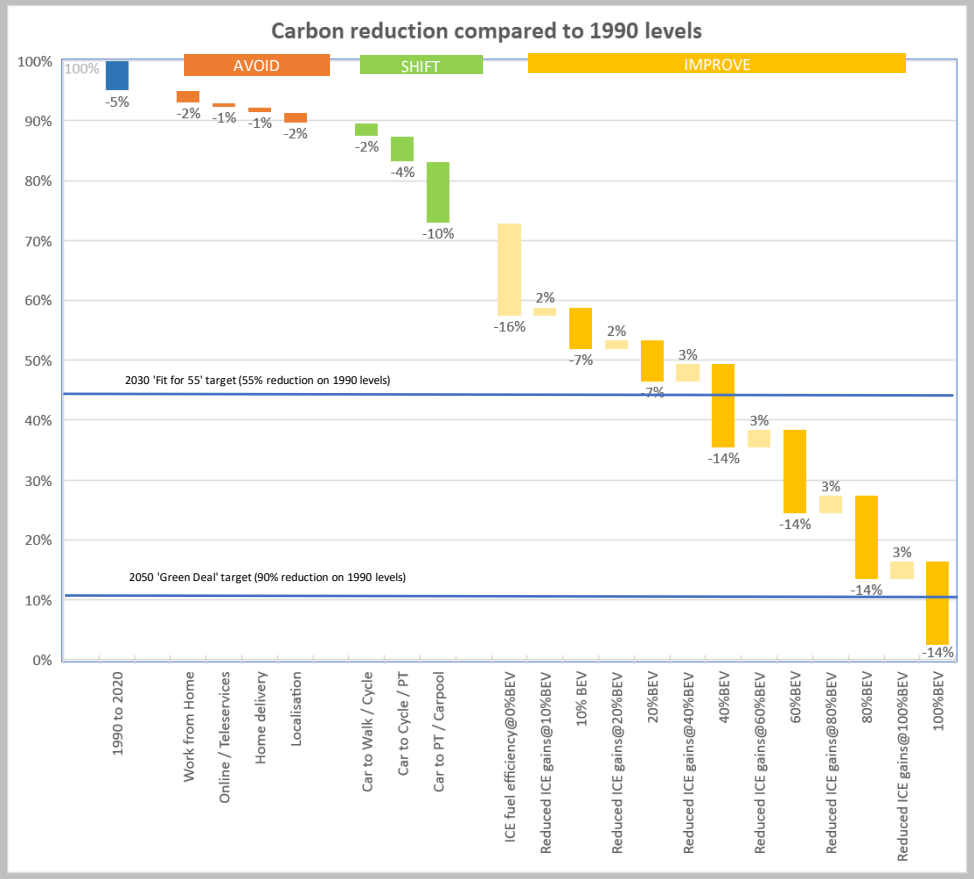
Example 1

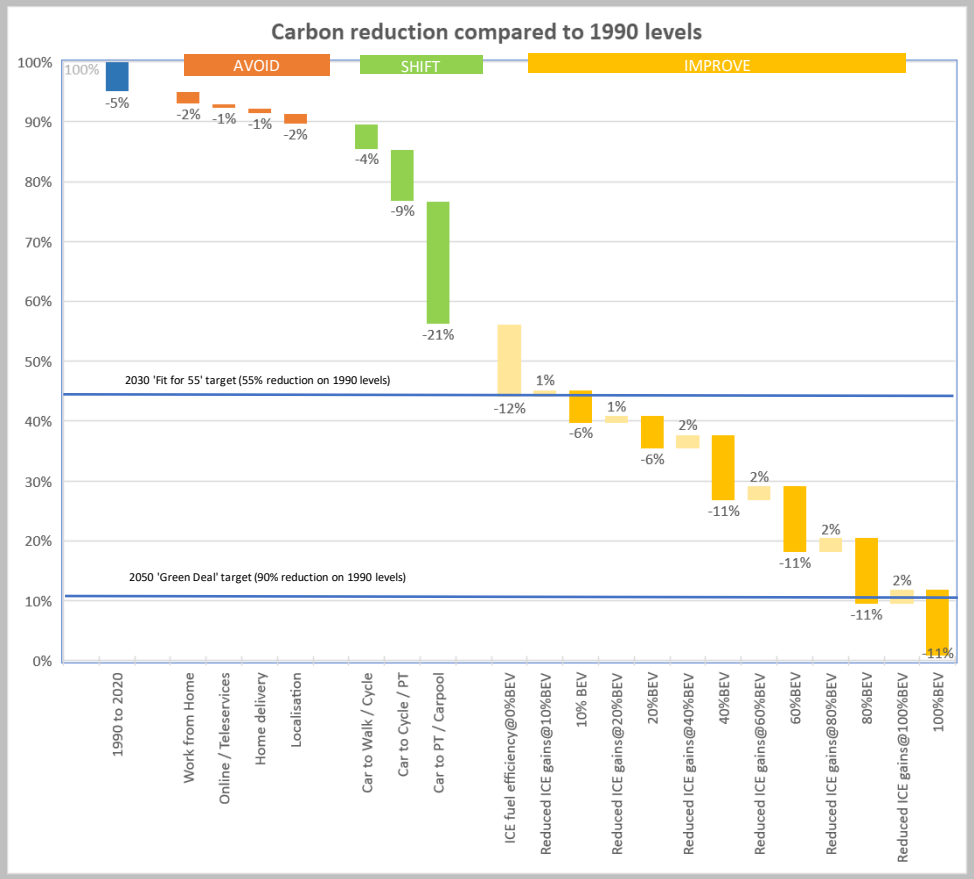
2050 POLICY MIX impacts



INPUT PARAMETERS	
Background data	
Enter % change in car surface transport carbon emission from 1990 to 2019	5%
What type of area best describes your city	Urban
What is the % mode share for car driver trips (all trips)	30%
What is the % mode share for car driver trips (commuter trips)	40%
AVOID policy	
Enter the % point increase in working from home by 2050 (from 2019 base case)	20%
Enter the % point increase in personal business trips (e.g. banking, health) that are digitised or become telephone consultation by 2050 (from 2019 base)	40%
Enter the % point increase in shopping delivered to the home by 2050 (from 2019 base)	40%
Enter the % point increase of trips for shopping, leisure and education localised within a 15 minute walk from home, by 2050 (from 2019 base)	20%
SHIFT policy	
Enter the % point shift from car driver mode share to alternative modes by 2050 (from 2019 base case)	5%
IMPROVE policy	
Enter the % of electricy generated from renewables (including nuclear) by 2050	80%
Enter the % improvement in ICE fuel efficiency of conventional cars on the road by 2050 (from 2019 base case) - [expected to be 30%]	20%
Enter the % improvement in electric battery efficiency by 2050 (from 2019 base case) - [expected to be 40% by 2050]	40%

Example 2

2050 POLICY MIX impacts



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Background data	
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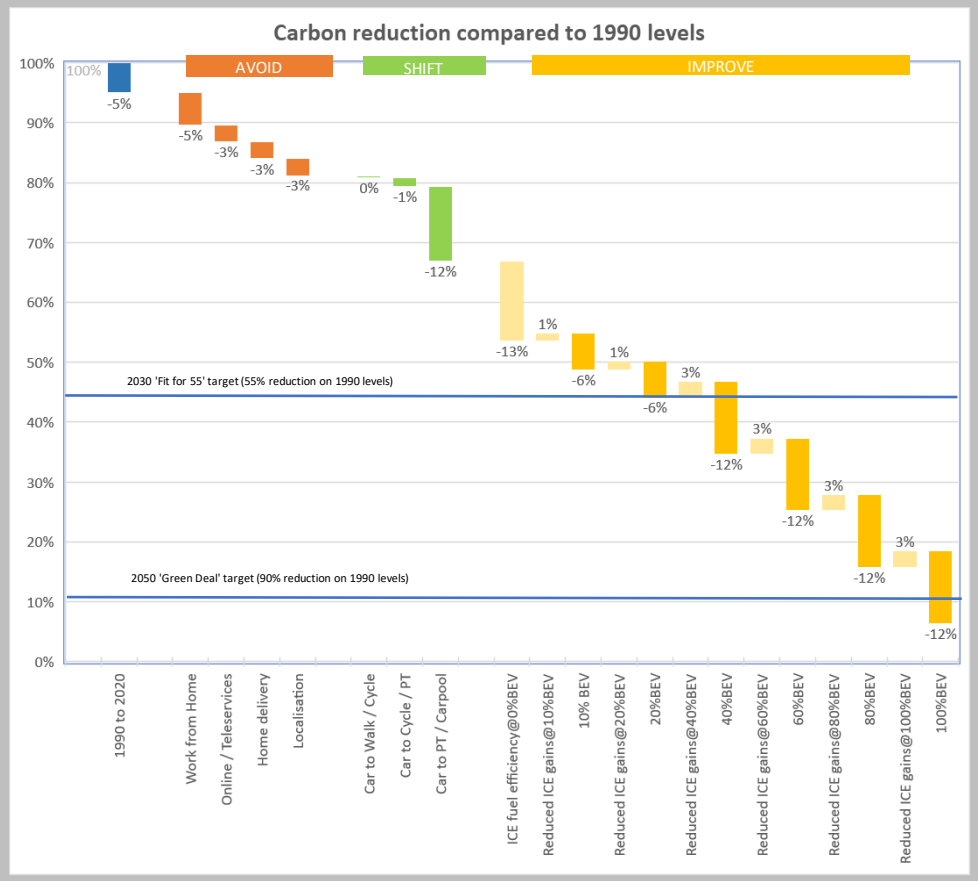
Example 3

2050 POLICY MIX impacts



INPUT PARAMETERS	
Background data	
Enter % change in car surface transport carbon emission from 1990 to 2019	5%
What type of area best describes your city	Rural
What is the % mode share for car driver trips (all trips)	70%
What is the % mode share for car driver trips (commuter trips)	80%
AVOID policy	
Enter the % point increase in working from home by 2050 (from 2019 base case)	30%
Enter the % point increase in personal business trips (e.g. banking, health) that are digitised or become telephone consultation by 2050 (from 2019 base)	40%
Enter the % point increase in shopping delivered to the home by 2050 (from 2019 base)	40%
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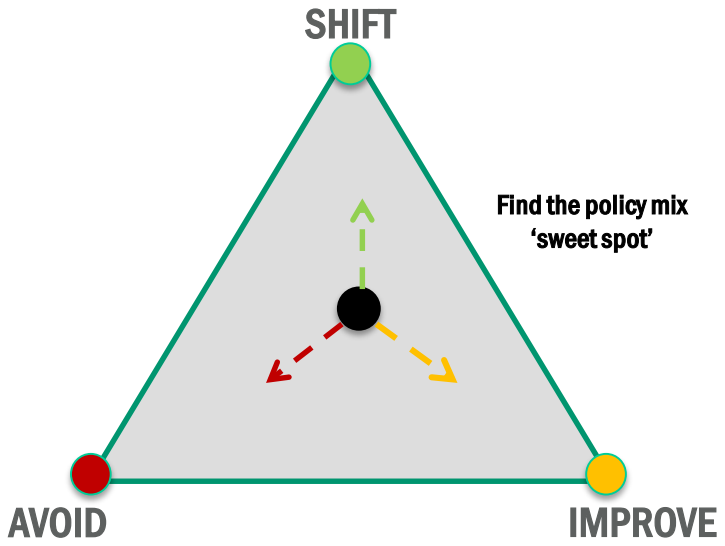
Step 3 guidance – helping cities answer questions and make decisions

- **Guidance will allow cities to explore 'what if' variations in policy mix around an initial case.**
  - This helps to understand what mix can achieve the targets and allows the city to visualise the relative significance of each policy.
  - It helps to understand the actions/milestones needed to achieve the targets and to establish a schedule for implementing policies.
- **For example:**
  - If localisation measures cannot be fully delivered by 2030, how much more uptake of electric vehicles would be necessary to still reach the 2030 targets?
  - If more shift from car to other modes can be achieved, can I delay the need for large scale electric vehicle uptake or the need for energy transition to renewables?
  - Do I need full renewable energy transition to renewables and 100% electric vehicle uptake to achieve 2050 targets



Next tasks in Step 3

Not just about cars!
Also need to consider how to reduce emissions from freight and PT.

Not just about achieving carbon targets by a certain date!
The timing at which a policy strategy takes effect influences the total carbon emissions. Which strategies can deliver biggest carbon benefits by bringing forward delivery?

Not just about carbon!
Cities have many other concerns and objectives.

- Reduce congestion
- Improve safety
- Fair and equal society (access for all)
- Healthy lifestyles

For each of the other city objectives an assessment should be made against these of the impacts from the AVOID, SHIFT and IMPROVE strategies within the policy mix.

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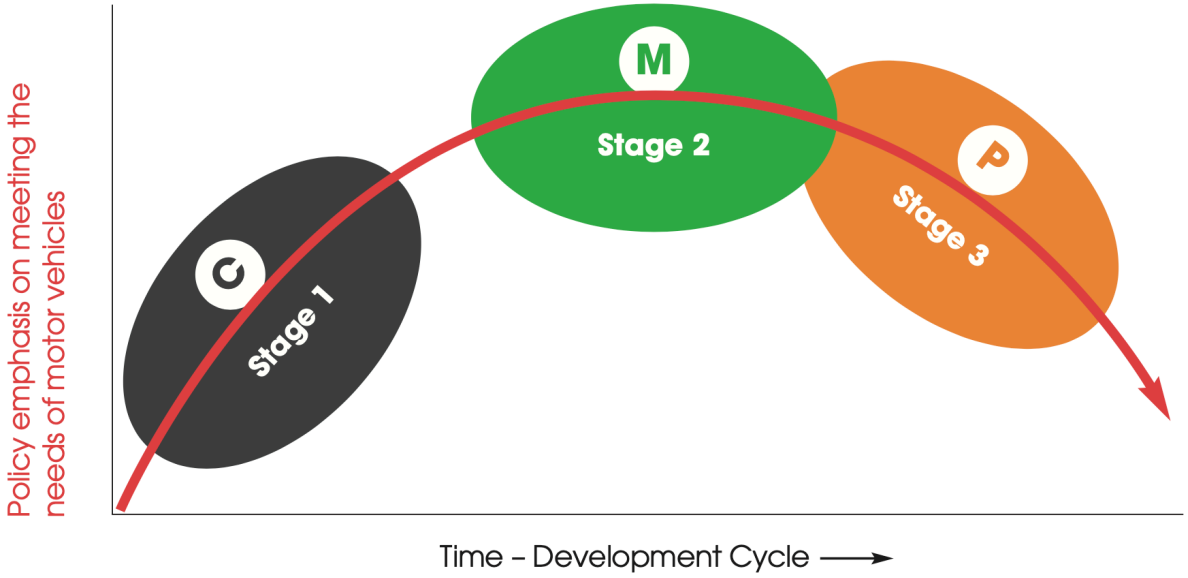
Achieving mobility transitions: existing evidence

Transitions are not only about WHAT to implement (measures), but crucially about HOW to implement (timing, politics, finance, governance).

CREATE project – transition to sustainable mode split in London, Paris, Vienna, Copenhagen, Berlin since the 1960s



C car-oriented city

M sustainable mobility city

P city of places

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Achieving mobility transitions: existing evidence

CREATE project – 8M success factors for mobility transition

Political dynamics

Financial resources

Implementation approaches

Organisational capacities

Measures

Mood	Public, political and professional acceptability	**M**echanisms	Engagement, enforcement, administrative, delivery: cooperation and coordination
Motivation	Trigger for change (e.g. deterioration in traffic conditions)	**M**easures	PT and cycling investments reallocate road space
Mass	Capacity building deepen and broaden the skills base	**M**ethods	Better forecasting and appraisal methods
Momentum	Building on success: pilots and policy windows	**M**oney	Funding mechanisms

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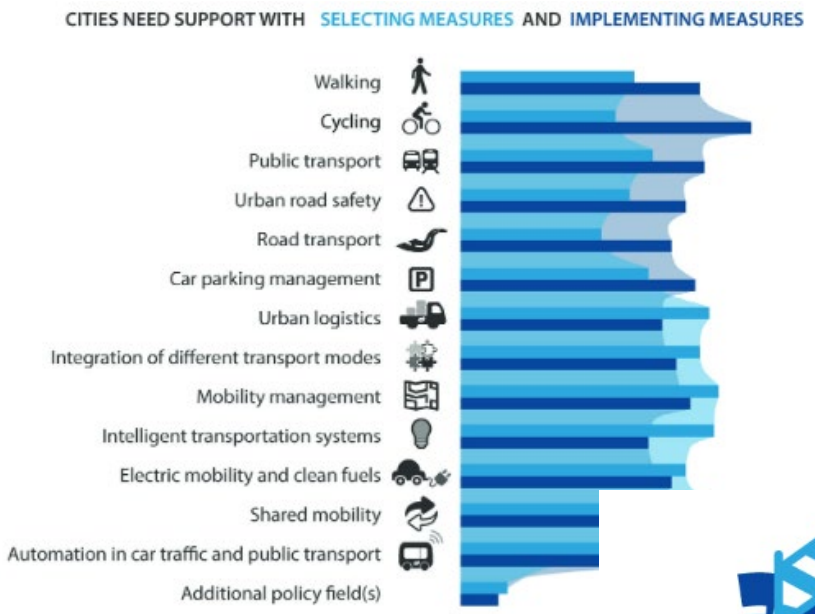
Achieving mobility transitions: existing evidence

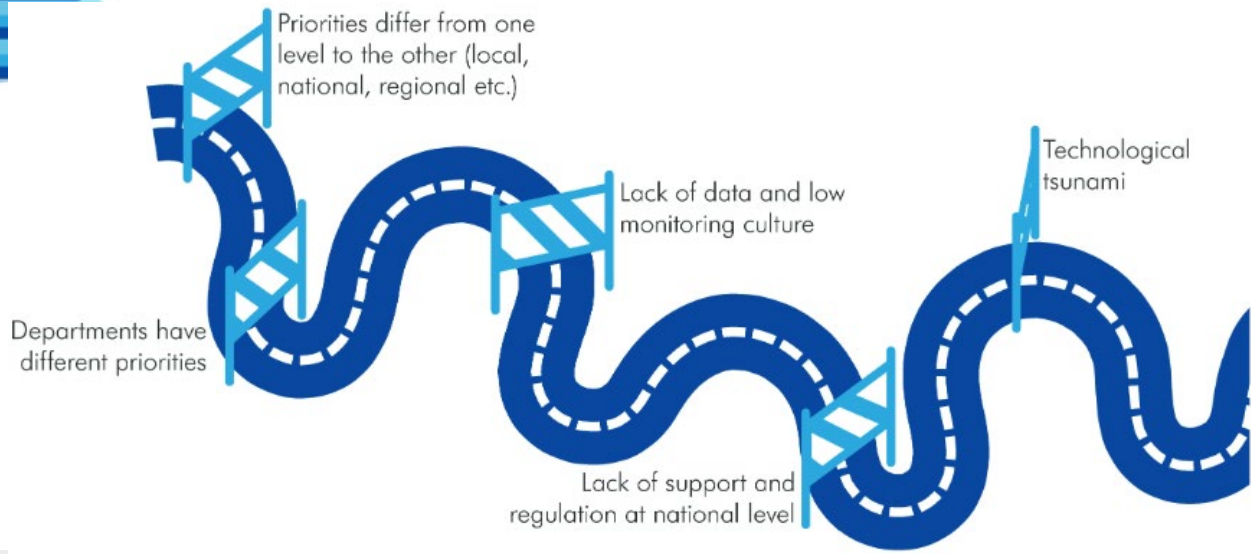


Figures from: **SUMPs-UP Needs Assessment.**

https://sumps-up.eu/publications-and-reports/

SUMPs-UP survey of 328 European municipalities:

- Need for support: measure *implementation*, rather than selection
- Major barriers to SUMP implementation: funding and governance



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Step 6 and 7: identifying enabling actions – new funding, governance and partnership models

By when do we need to take actions to overcome institutional/financial barriers, to enable the implementation of policy X and achievement of mid-term target Y?

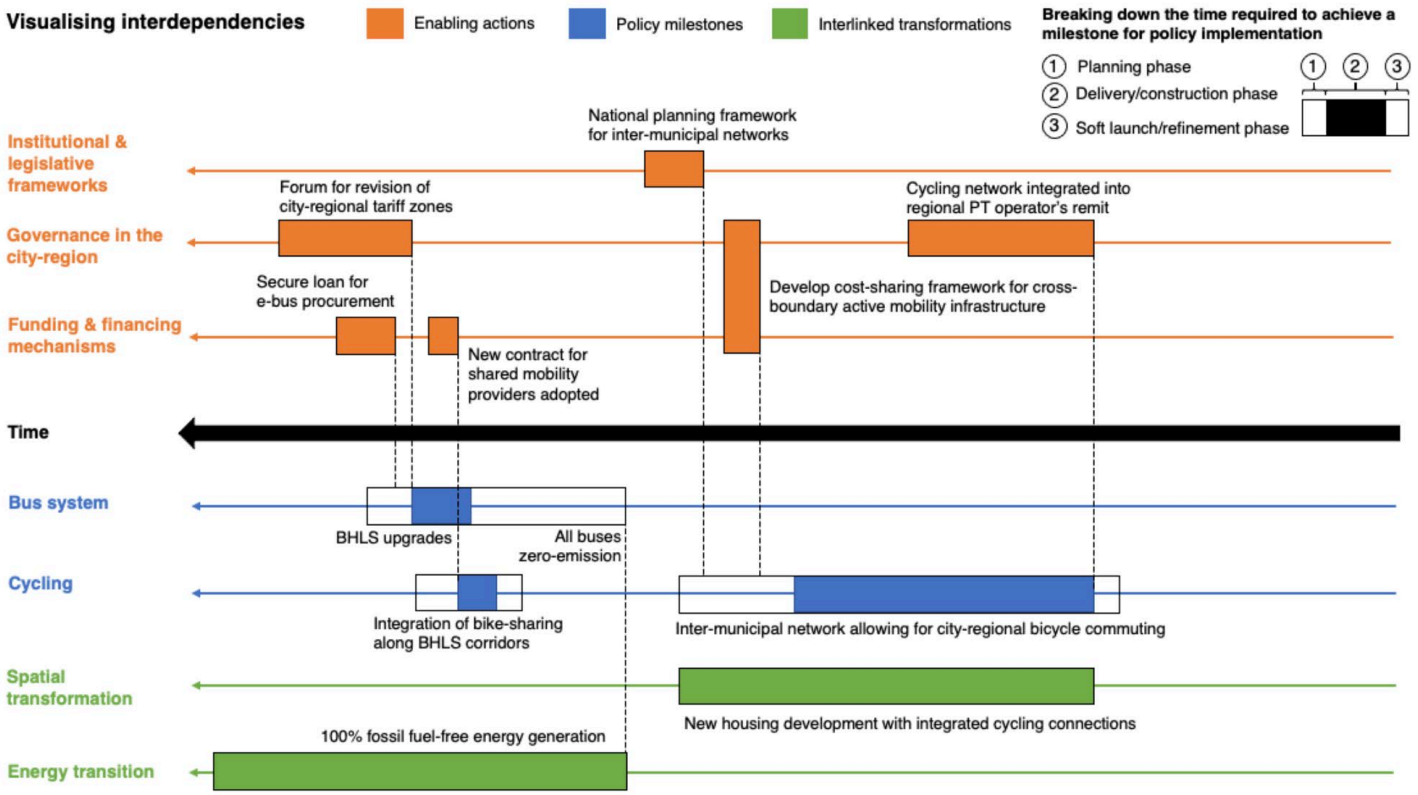
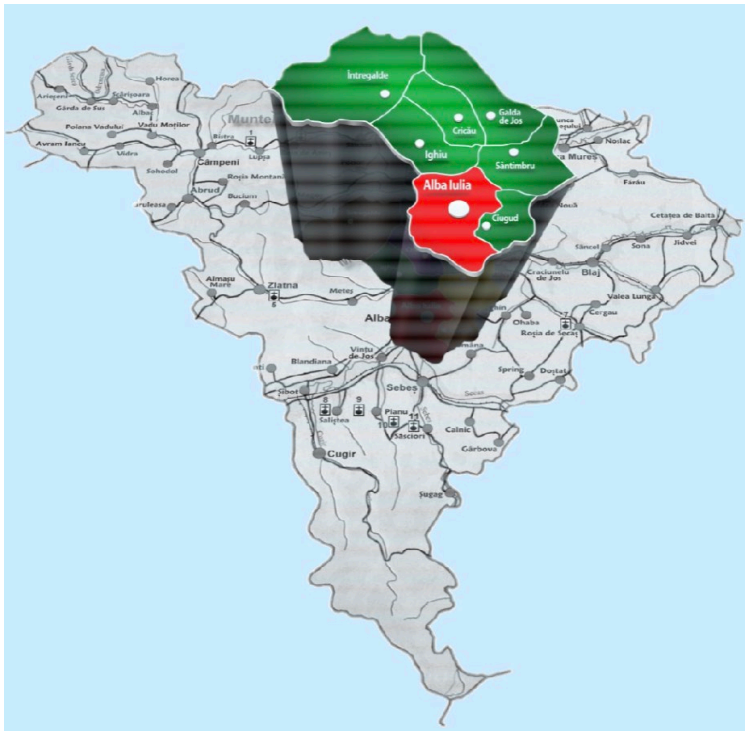
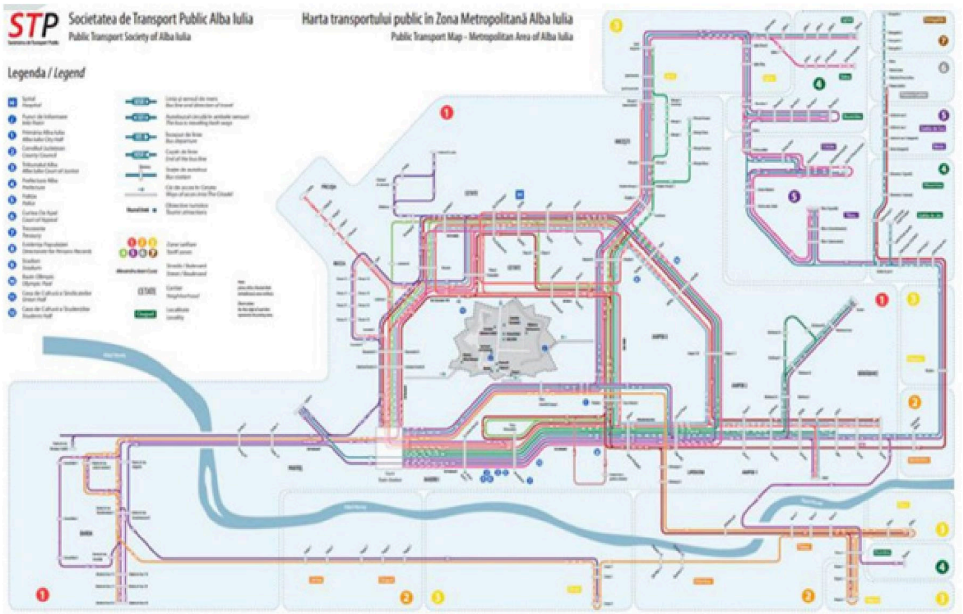


Figure 5.22: Example of a timeline visualising interdependencies between policy milestones, enabling actions and other transformations interlinked with the urban mobility transition.

Example: city-regional governance in Alba Iulia, RO

Over a 20 to 30-year time horizon, it is possible to change the framework conditions for SUMP planning. For example, PT new governance structures.





Map of the public transport system, available in bus stops
Source: Public Transport Company of Alba Iulia (www.stpalba.ro)

Source: Presentation by Stelian Nicola, General Manager of STP Alba Iulia (regional public transport company). Available online at: https://www.eltis.org/sites/default/files/16-06-2015_a_nicola-perspectives_on_mobility_poverty_alba_iulia_region.pdf.

Example: financial capacities in Bristol, UK

Being clear and realistic about capacities to achieve climate-neutral mobility at present – gap between funding available and funding needed, for policy mix.

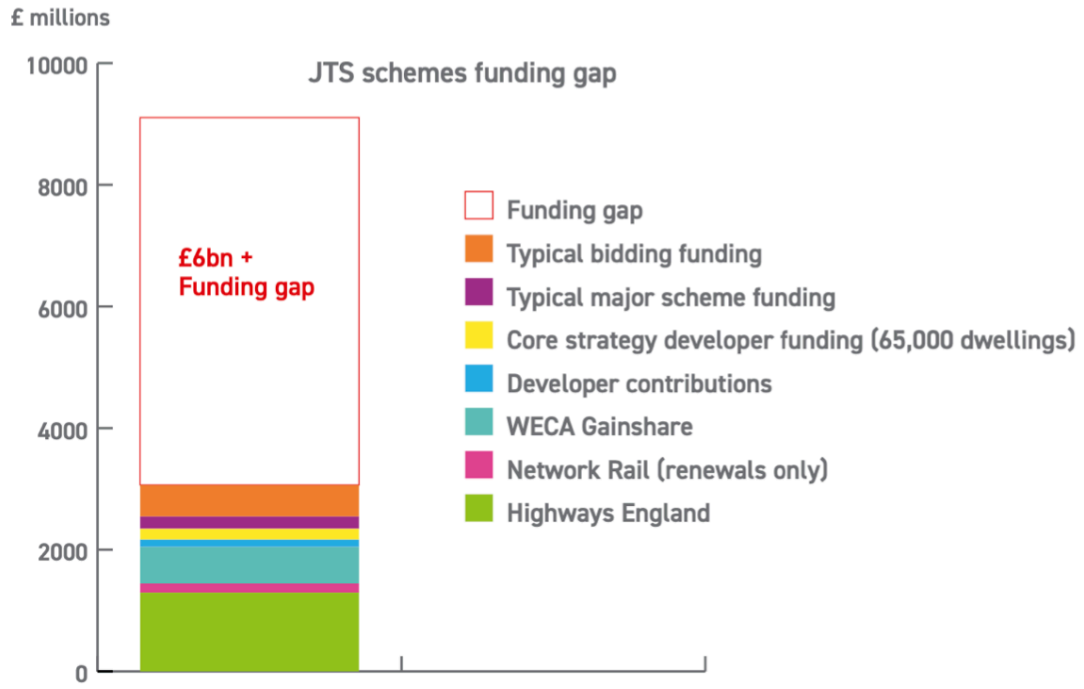


Figure 5.20: Estimated 'funding gap' for delivering policies in the West of England Combined Authority's Joint Local Transport Plan 2020-36. Source: WECA (2020, p.124).

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Key take-away – going beyond emission curves

A Transition *Pathway* should not be understood (only) as…

…a hypothetical scenario consisting only of emissions and policy packages…

…but as the **full set of policies, resources, institutional and political changes** that will allow a city to reach the 2050 target of climate-neutral mobility.

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Remaining questions for Topic Guide

- The need for parallel planning processes: medium-term + long-term; SUMP/SECAP + Transition Pathway; forecasting + backcasting

- What kind of organisational structures and processes to recommend in the Guidelines: how to create ownership of the Transition Pathway plan and avoid it becoming just another 'on the self' document

- Identifying case studies of real-life mobility/2050 pathway development: Antwerp, Manchester, Stockholm, Barcelona, Dresden, but also smaller cities…

- Generalised guidance, but making it relevant enough to different types of cities…

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Context-specific Pathways in different cities

New framework of 9 different European city types, based on analysis of SUMPs-UP survey data from 328 municipalities → SUMP-PLUS Deliverable D1.1

Region / City population size	less than 50.000	between 50.000 and 500.000	more than 500.000
Northern and Western Europe	.....	.....	.....
	.....	.....	.....
	.....	.....	.....
Central and Eastern Europe	.....	.....	.....
	.....	.....	.....
	.....	.....	.....
Southern Europe	.....	.....	.....
	.....	.....	.....
	.....	.....	.....

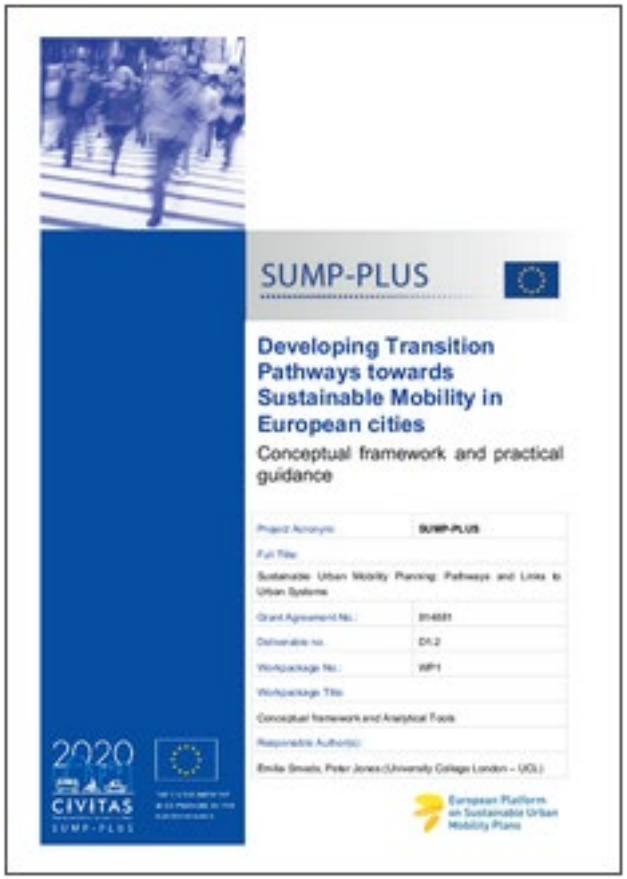
Level 1 indicators:	Level 2 indicators:		
City population size	Population density	GDP (PPP) per capita	Car modal share and trend
Region of Europe			

		Very small municipalities (<50.000)	Small and mid-sized cities (50.000-500.000)	Large cities and city-regions (>500.000)
Southern Europe		PLATANIAS	LUCCA	
		Population: 20.972 inhab. Population density: 42.6 inhab./km2	Population: 89.346 inhab. Population density: 480 inhab./km2	
		Adjusted regional GDP/capita: €14.676	Adjusted regional GDP/capita: €25.113	
		Mode share (private car): 70%, trend-increasing	Mode share (private car): 64.7%, trend-slowly decreasing	
	F	AGRICULTURAL / TOURISM	COMMERCIAL / TOURISM	
	S	SATELLITE / Commuting zone	POLYCENTRIC	
	C	CAR-BASED	CAR-BASED	
	L	LOW AUTONOMY	MEDIUM AUTONOMY	
	P	LOW CAPACITY Not yet familiar with sustainable urban transport planning. Does not have a SUMP, with the first plan currently under development.	MEDIUM CAPACITY Has applied sustainable mobility measures, but not systematically. Currently implementing the SUMP.	
Central and Eastern Europe			KLAIPEDA	
			Population: 172.272 inhab. Population density: 1356 inhab./km2	
			Adjusted regional GDP/capita: €15.600	
			Mode share (private car): 34%, trend-decreasing	
	F		INDUSTRIAL / PORT	
	S		POLYCENTRIC	
	C		CAR-BASED	
	L		MEDIUM AUTONOMY	
	P		MEDIUM CAPACITY Has applied sustainable mobility measures, but not systematically. Currently implementing the SUMP.	

SUMP-PLUS outputs

This presentation is based on:

Smeds, E. and Jones, P. (2020). ***Developing Transition Pathways towards Sustainable Mobility in European Cities: Conceptual framework and practical guidance.*** Deliverable D1.2, H2020 CIVITAS SUMP-PLUS project.



Concepts are elaborated in:

Smeds, E. and Jones, P. (2021). **Developing transition pathways for mobility in European cities - challenges and new approaches**. In Abdullah, H. and Serrano Robles, E. (eds). ***Urban Mobility after COVID-19. Long-term strategies for the sustainable mobility transitions in European cities***. CIDOB Monograph Series no. 82. Barcelona: Barcelona Centre for International Affairs (CIDOB) and Barcelona City Council, pp.31-36.

Smeds, E. and Cavoli, C. (2021). **Pathways for accelerating transitions towards sustainable mobility in European cities.** In Abdullah, H. (ed). ***Towards a European Green Deal with Cities. The urban dimension of the EU's sustainable growth strategy***. CIDOB Monograph Series, no.80. Barcelona: Barcelona Centre for International Affairs (CIDOB), pp. 75-91.

All available at: https://sump-plus.eu/resources.

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We look forward to your comments!

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