URBAN MOBILITY

ROADMAP SUMMARY

TRANSFORUM
TRANSPORT 2050

This project is co-funded by the European Union

SEVENTH FRAMEWORK PROGRAMME

ROADMAP SUMMARY towards goal 1 of the White Paper on Transport:
»Halve the use of 'conventionally-fuelled' cars in urban transport by 2030; phase them out in cities by 2050; achieve essentially CO_2-free city logistics in major urban centres by 2030.«

The research leading to these results has received funding from the European Union's Seventh Framework Programme [FP7/2007-2013] under grant agreement n° MOVE/FP7/321565/TRANSFORUM.

URBAN MOBILITY – ROADMAP SUMMARY

1 The goal for Clean Urban Mobility

This is the official wording of the White Paper goal on Urban Mobility. It sets an unprecedented level of ambition for policy-driven change in urban mobility across Europe; no goal of this kind has been formulated on a continental scale before.

Yet, it corresponds well with the visions of and initiatives in many European cities. It also resonates well with policies formulated by stakeholders, governments and the European Community itself in areas such as transport, energy, climate change, innovation and technology, urban planning, health and the environment.

However, existing commitments and policies are not sufficient to ensure that the White Paper goal will be reached. In fact, it has so far been quite unclear how urban transport stakeholders and policymakers across Europe view this particular goal and how they consider it could be fulfilled in practice, if at all.

For this purpose, TRANSFORuM has developed a roadmap, which aims to provide an answer to the question "Who needs to do what by when in order to reach the White Paper goal?"

Halve the use of 'conventionally-fuelled' cars in urban transport by 2030; phase them out in cities by 2050; achieve essentially CO_2-free city logistics in major urban centres by 2030

2 From Goal to Strategies

The roadmap is based on stakeholder consultations informed by studies on conditions, trends, opportunities and barriers with regard to urban transport in Europe. The aim of this process was to translate the overall goal into feasible strategies and significant actions.

Stakeholders involved in TRANSFORuM included representatives of:

- city administrations;
- producers and developers of vehicles and energy technologies;
- transport operators and mobility service providers;
- businesses and experts involved in freight and urban logistic services;
- representatives of citizen organisations, think tanks, and other NGOs and;
- members of national and European programmes and platforms supporting clean urban mobility.

All stakeholders participating in TRANSFORuM's consultations confirmed the usefulness of a clear and measurable goal. They also highlighted, however, the danger of 'tunnel vision', that is, a mechanistic pursuit of a single goal without consideration for context, side effects, or new opportunities. Stakeholders must have opportunities to adopt and freedom to adapt the goal to local circumstances. In short, the White Paper goal for clean urban mobility cannot stand alone but must be seen as an element of a wider approach towards sustainable, competitive and resource efficient urban development.

Stakeholders considered a broad range of solutions and measures as potential building blocks for the roadmap. It is clear that reaching the goal will require substantial transformations of technologies, services and behaviour within the entire area of urban mobility and transport. It will imply fundamental changes to the development, adoption and use of vehicles and propulsion systems, and to the provision of logistics services in cities all over Europe.

However, it was also recognised that many existing examples demonstrate that such transformations are not impossible. A key to enabling transformations is enhanced governance frameworks at all levels from

European to local, emphasising dialogue, coordination, experimentation, and learning, but also regulations and incentives.

The following three strategic routes towards the goal emerged as distinct but equally valid and complementary options. They form the backbone structure of the urban mobility roadmap:

- Technological substitution of conventionally-fuelled passenger cars and fuels;
- Reduced use of private passenger cars for transport combined with an increase in public transport usage and non-motorised forms of travel;
- Increased utilisation of low carbon city logistics technologies and practices.

The following figure illustrates the strategic areas and building blocks for urban mobility, related to the three mentioned routes. Red lines indicate blocks that may interact.

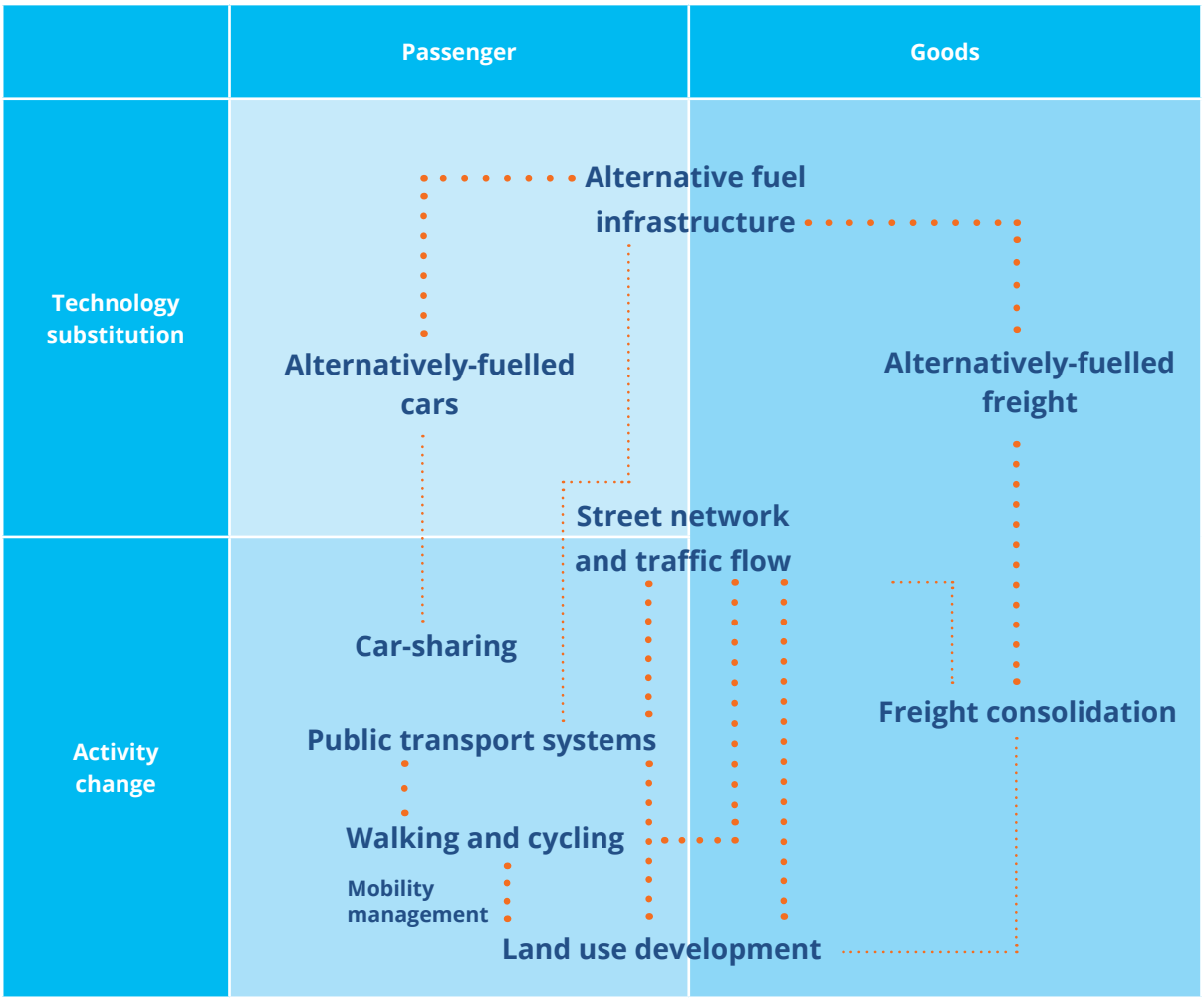

Figure 1: Strategic areas and building blocks for urban mobility. Orange lines indicate blocks that may interact.

3 Exemplary pathways

The urban mobility roadmap contains one separate chapter about three different speculative urban transformation pathways towards the White Paper goal. This was inspired by the strong stakeholder views that there is a need to take into account the widely differing conditions for reaching the goal across Europe.

Each pathway – or fictive city – is described for a specific urban context that in some respects resembles ones existing in Europe. Their key characteristics are as follows:

	Waterberg	Viga	Valanov
Key strategy	Technical substitution: "technophilic" approach	Modal sharing: Reduce use of private cars	'Starter' pathway: Developing enabling conditions to 'catch-up' with frontrunner cities
Character-istics	Approximately 500,000 inhabitants University, local car manufacturer, low urban density Hilly, large lake	Approximately 900,000 inhabitants University, local car manufacturers, fairly high urban density Flat; sprawling	Approximately 250, 000 inhabitants No University, regional cultural centre, ageing population, no car industry, medium density Border city; very hilly
Transport system	Good public transport, tramway, cycling network, Electric vehicle (EV) charging points	Good public transport, metro, cycling network	Poor bus system, no cycle lanes
Modal split (passenger)	65% drive/10% public transport/10% cycle/15% walk	45% drive/20% public transport/20% cycle/ 15% walk	53% drive/25% public transport/2% cycle/ 20% walk

Table 1: Main characteristics of the three fictive cities – Waterberg, Viga and Valanov

The differing situations, chances, barriers, contexts, histories etc. in these different cities leads to different approaches, different policies, different milestones, funding requirements and so forth. As a consequence, they approach the urban mobility goal with different emphases as illustrated below and overleaf.

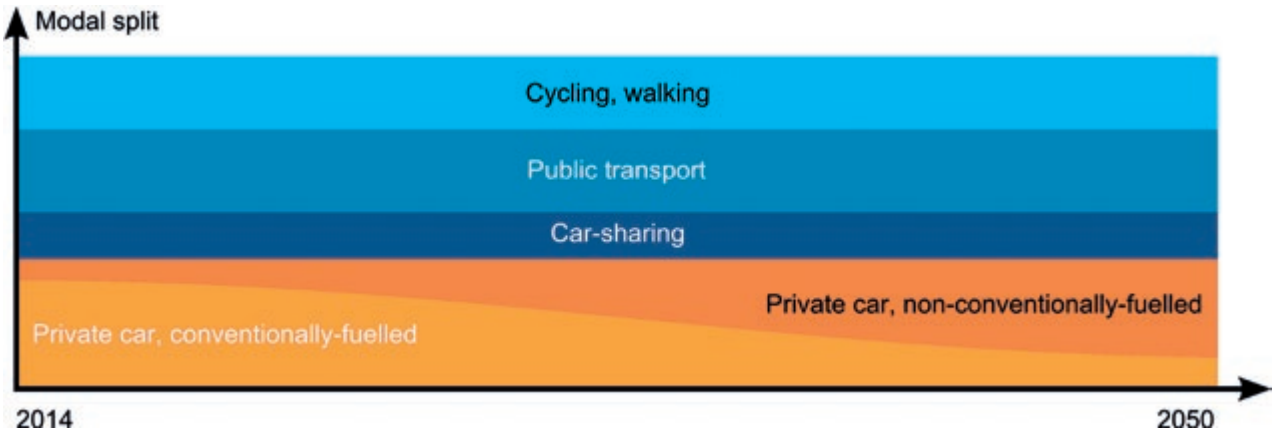

Figure 2: Imagined pathway for fictive city "Waterberg"

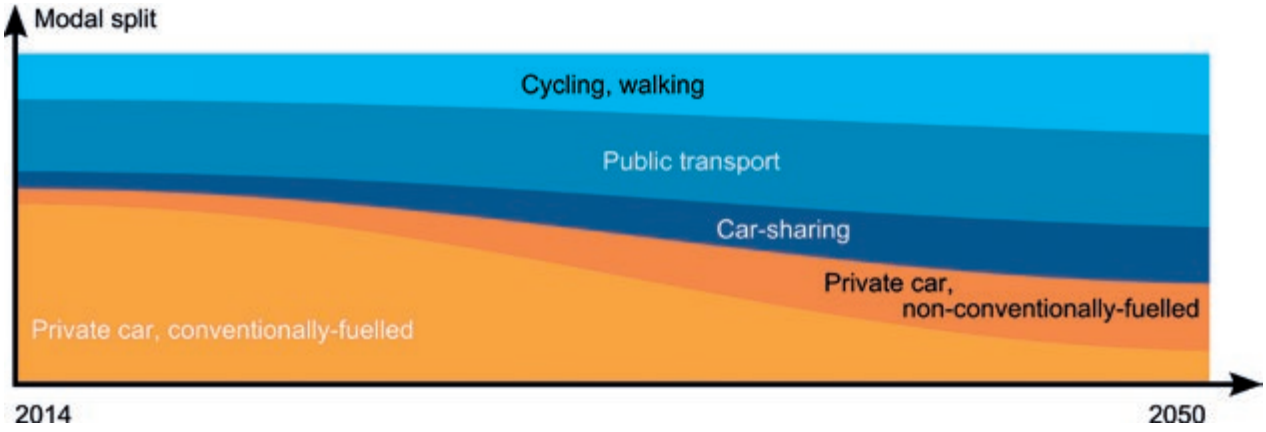

Figure 3: Imagined pathway for fictive city "Viga"

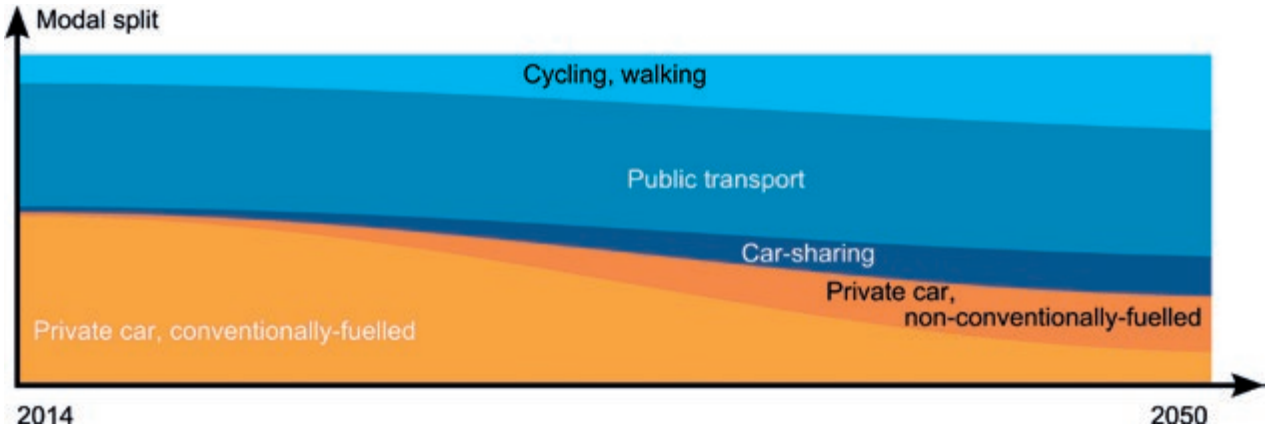

Figure 4: Imagined pathway for fictive city "Valanov"

4 Seven key messages

4.1 Transforming urban mobility requires an open approach

A European roadmap towards the implementation of the White Paper goal needs to adopt a broad and open approach because the required processes of transformation cannot be prescribed from above, given the diversity and specific historical, cultural, economic, environmental and other conditions of each urban area.

Stakeholders share the view that urban mobility needs to become more sustainable and resource efficient. However there is no overall agreement over which solutions are most appropriate to implement in which cities at this point. There is a need to experiment with new types of technology, organisation and governance.

A roadmap must take into account these broader strategic conditions and cannot presently assume the form of a European-wide 'deployment plan'.

4.2 European goals must be aligned with local visions and benefits

The overarching concerns for climate change and fuel independence must be aligned with concerns and rationales at the urban level such as improved accessibility, quality of life, safety, health, and prosperity. While offering a climate responsible approach for urban businesses, improved city logistics is, for example, not the main solution to reduce global CO2 emissions, whereas it is essential for increasing local safety, efficiency and viability. Fortunately there is a significant potential for correspondence between local and overarching goals, in as much as many low carbon transport solutions are also supportive of convenient, city-friendly and healthy urban transport. If the White Paper goal is to motivate action it must first and foremost become associated with understandable and measureable benefits for a wide range of stakeholders in each city.

4.3 Replacing vehicles and fuels is important but not sufficient alone

Specific technological solutions such as electromobility still suffer from various limitations. In some Central and Eastern European countries there are hardly any EVs on the market and citizens have yet to see a dedicated charging point. In other cities knowledge and technology may be present on various non-conventionally-fuelled alternatives for both passenger and freight, but vehicles and systems remain expensive, impractical, or based on energy carriers that may be far from CO2-free or sustainable.

The roadmap for the White Paper goal must therefore embrace a much wider scope of transport options than simply replacing conventionally-fuelled vehicles with non-conventionally-fuelled ones. Otherwise too many challenges would be left unsolved and too many synergies with regard to accessibility, mobility, congestion, safety and the attraction of inner cities would be left unexploited.

The most promising solutions may be the ones that combine new technologies with new mobility solutions such as sharing and partnering models for EVs, electric freight vehicles (EFV) or bicycles. The roadmap should help tease out the new and yet unknown solutions and combinations

4.4 Limiting conventionally-fuelled vehicle use can be low cost

Investments needed for new technologies and infrastructures may seem like impediments for transformation of urban mobility systems, especially in times of economic contraction with limited funds available and weaker demand.

However, TRANSFORuM's review of possible building blocks for change (see chapter 4 of the full urban mobility roadmap) has emphasised the great potential of many less costly options for limiting the use of conventionally-fuelled vehicles. This includes measures to enhance walking, cycling, e-bikes and car-sharing that are not yet widely exploited in many cities. Also measures where up-front investments can lead to significant efficiency gains over time have been identified; for example, the introduction of electric propulsion and efficient ticketing systems for public transport, or the deployment of ITS solutions in urban traffic and logistics management.

Some options like the introduction of road pricing, parking charges, or the revision of company car benefits and taxation schemes can even release economic resources to support investments in other attractive solutions. In city logistics there are examples of commercially viable models such as the 'Binnenstadt' concept of some Dutch cities that combine the use of clean distribution vehicles with the provision of additional logistics services, although large-scale solutions of this kind are still rare.

4.5 Political momentum must be fostered in many cities

Stakeholders have repeatedly pointed out that the most fundamental impediments to start the transformation process in many cities is often a the lack of a culture of and governance arrangements to facilitate innovation. There is a strong need to identify ways to inspire cities to take action at the political level. Although a number of cities stand out as already progressing towards a more sustainable urban transport situation in various areas, the majority of cities have not made any significant steps towards the goal or no ambitions to do so are apparent.

Partnerships for change at the political level are needed to embody the transformation of urban transport

and logistics as a 'winner' case for cities, and to support underlying processes of analysis, planning, deliberation, and innovation.

4.6 National and state frameworks must support European goals and local actions

Whether starters or more advanced, cities need active support from national, state and regional governmental levels.

There is a clear but differentiated need across Europe for both hard and soft infrastructures in areas such as planning regulations, taxation rules, investment support, ICT solutions, monitoring procedures, and capacity for experimentation, in addition to systems and standards for cleaner vehicles, fuels, infrastructures, and products.

While certain standards are best defined at the European level, the benefits and even necessity of national/regional support should not be underestimated, even if stakeholders do not all agree about the role of central government. Cities advancing today – such as Oslo in terms of electromobility, Copenhagen in terms of cycling, and many other cities in terms of modernised public transport systems – do so not least because of favourable background conditions supported by national tax incentives, legislation, investment support and research and development (R&D).

New actions at Member State and regional level are essential in areas such as deployment of alternative fuel infrastructure, rules on access restrictions and charging schemes, fiscal incentives, and national frameworks for planning to enhance sustainable urban mobility planning (SUMP).

4.7 Communication, coordination, and knowledge consolidation will advance the learning curve

The most widely shared observation emphasised among stakeholders is the strong need for continued communication, coordination and dialogue on sustainable urban transport solutions and transformations. A reinforced dialogue among stakeholders should be prioritised at all levels, and across them, because enhanced dialogue is the best way to move upwards on the learning curve.

Given the subsidiarity principle, action at the local political level is important to support innovations, initiatives and developments that are underway in a 'bottom-up' manner. City governments need to work as catalysts supporting local ideas and initiatives just as much as authorities exercising power. Particularly in the area of freight and logistics a need for a dialogue and partnership-based approaches has been pointed out.

A lack of data is a serious factor hampering progress, in the passenger and, in particular, in the logistics sector. The European Commission has a key role to consolidate the knowledge base for European-wide dialogue and learning. The Commission should continue to support the development of frameworks and databases though research, monitoring and dialogue with stakeholders.

5 Action steps – Who has to do what by when?

To reach the urban mobility goal of the White Paper coordinated actions must be taken by stakeholders at all levels of decision making over an extended period of time starting now. The following tables and text show proposed actions including 'processes' (communication and coordination actions) and 'measures' (direct policy, regulation, intervention and investment). In practice there are some overlaps between these types of actions.

The actions mainly refer to activities to be carried out by policymakers and authorities at the different levels, acting on behalf of the common good as convenors, catalysts, or regulators in regard to urban transport technologies, systems, markets and users.

Proposed milestones are inserted in both tables, and explained in Table 7. The milestones refer to combined results at the European level, and not to milestones for individual Member States or for individual cities (as were exemplified in Chapter 6 in the longer version of the roadmap). The proposed milestones are examples that reflect important indicators of progress.

6 Action at the European level

Action at the European level is especially relevant in order to set common technical standards for vehicles, fuels and refuelling systems, to define frameworks for common national and local actions, and to support research in common urban transport problems and solutions with a view to exchanging good practices, and monitoring performance and results. The following are proposed key processes and actions at the European level.

6.1 Processes

- Evolution of the Urban Mobility Observatory (UMO) into a centre for knowledge co-production and co-utilisation;
- Deployment and further development of the SUMP framework;
- A platform for political commitment with explicit reference to the White Paper goal on urban mobility should be facilitated at the European level;
- A special platform should be established to engage 'starter' cities and who are not yet ready to commit to ambitious goals.

6.2 Measures

- European technical standards for vehicles, fuels and infrastructure should be continuously reinforced and extended;
- The Commission should support national plans and strategies for the deployment of alternative fuel infrastructure – and research related to their effectiveness;
- European institutions (funds, banks, programmes) should continue and extend financial and practical support to sustainable urban mobility initiatives in European cities;
- Current campaigns like 'Mobility Week' and 'Do the right mix' should be reinforced. There could be a stronger emphasis on solutions on the freight side.

7 Action at the national level

Urban planning frameworks and general transport policies as well as taxation and charging rules remain largely within national jurisdictions. The national level is especially important to align country-specific legislation, fiscal regulations, and planning frameworks with transformations needed to accomplish European and local goals for urban transport systems, as will be outlined in the following.

7.1 Processes

- Systematic review of national policies and frameworks and national support for sustainable urban mobility goals;
- Integration of SUMP into national planning laws and frameworks. Also related national training schemes, network formation, and benchmarking activities should be introduced;
- Member States should deploy effective campaigns to promote awareness of alternative solutions to the use of conventionally-fuelled vehicles in cities.

7.2 Measures

- Member States need to develop ambitious, effective and realistic deployment strategies for alternative fuel infrastructure, including for example 'smart charging' options;
- Member States should provide the legal framework to allow cities to charge and restrict unsustainable vehicle traffic;
- Systematic review of national taxation schemes (vehicle taxes, VAT, company car tax exemptions);
- Support for City Logistics Service Centres (CLSC) to effectively tackle urban freight-related problems (harmonised regulations, requirement for publicly procured goods etc.).

8 Action at the city level

Action at the city level is obviously extremely important. Options for urban and regional governments include measures such as spatial planning, parking regulations, access restrictions, and provisions for public transport, walking, cycling and low carbon freight vehicles. However, as emphasised by TRANSFORuM stakeholders, cities face highly diverse spatial conditions, transport needs, resource constraints, mobility cultures, and policy priorities which makes it impossible to define specific combinations of actions with detailed timeframes that all European cities should follow.

The local processes and actions proposed here refer to generic areas of activities that that all cities should consider to exploit to some degree and in some form. The specific actions and measures cannot be meaningfully prescribed in a European roadmap but only exemplified.

Nevertheless it is necessary that cities do in fact take action in most or all of the proposed areas if the goal is to be fulfilled. 'Starter' cities should begin by adopting basic versions of each process and action, while cites already 'advancing' would build on existing results and adopt more ambitious and transformative developments of some of these processes and actions.

8.1 Processes

- The basis for successful transformation at the city level is to bring local stakeholders together and engage them in dialogue and visioning processes;
- All European cities should develop and implement some form of SUMP platform to connect political visions, strategies, plans, measures and evidence utilisation in a common approach;
- Cities need to develop "freight partnerships" that involve business and transport operators in joint efforts to analyse problems and develop solutions and strategies;
- Join one or more platforms of European cities committing to specific urban transport goals.

8.2 Action areas

- All cities should adopt an integrated transport and land use plan, as appropriately defined in national planning frameworks;
- Public transport should be further developed in terms of infrastructure and service. Public transport vehicles should be based mostly on fossil free fuels by 2030;
- Every city should have a walking and cycling network. Also more advanced plans and strategies should be deployed towards making these truly convenient forms of mobility;
- Support car-sharing by providing for example, reserved parking, promoting it and procuring mobility services from car-sharing organisations;
- Develop mobility management strategies, helping workplaces integrate sustainable mobility;
- Make use of their sovereign power over their street network through access restrictions, road charging (depending on national regulations);
- Adopt a set of strategies to support more efficient logistics (e.g. through support for private CLSC initiatives). The measures are best identified through freight partnerships;
- Cities should support the deployment of infrastructure for alternative fuels in accordance with national strategies and plans;
- Adopt procurement policies in areas such as waste collection, public transport service and health services that favour mobility based on alternative fuels.

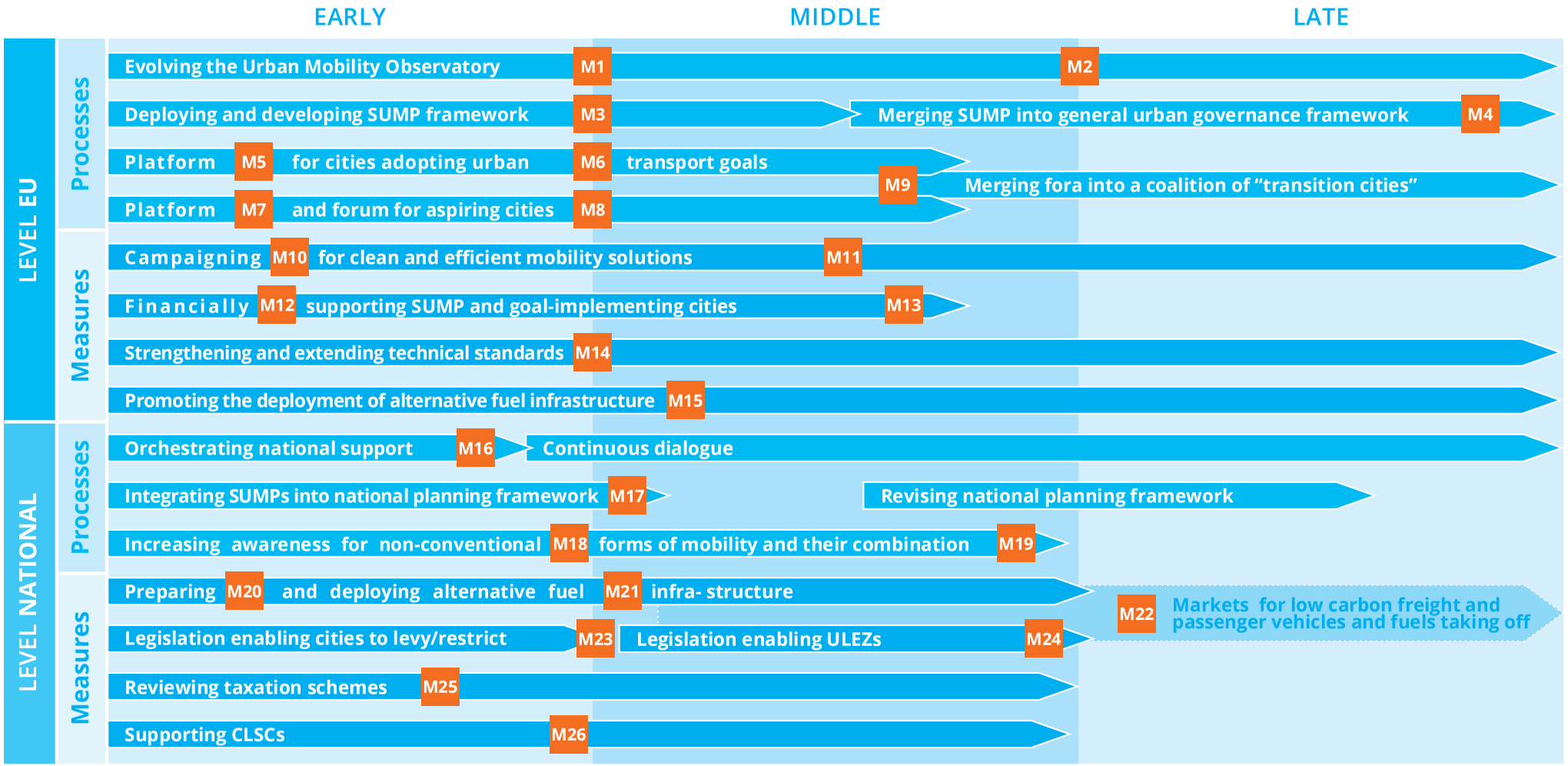

Table 2: Proposed processes and measures at the EU and national levels

No.	Milestones for the European and national levels
M1	Data, indicators and procedures to measure urban mobility goal performance resolved
M2	A comprehensive benchmarking system for clean and efficient urban transport defined
M3	Concept of SUMP recognised by all cities in Europe; 2nd generation SUMP framework adopted
M4	3rd generation SUMP integrated as part of wider urban development frameworks adopted
M5	European platform for cities committing to urban mobility goal formed with 20 Mayors
M6	100 Mayors have committed their cities to urban mobility goal
M7	A European platform for aspiring cities formed with 50 Mayors
M8	500 Mayors have joined the aspiring cities platform
M9	All European cities have committed to urban mobility goal; The platforms are merged
M10	Prestigious award for clean and efficient urban transport launched
M11	Survey demonstrates high awareness or European urban mobility goal and strategies
M12	Funding schemes adapted to support aspiring cities investing to reach urban mobility goal
M13	100 cities have received European support; All funding efficiently spent on relevant projects
M14	All relevant technical standards to support clean and efficient urban transport revised/proposed
M15	National programmes for promoting alternative fuels evaluated and new measures proposed
M16	All Member States have defined how to orchestrate national support for urban mobility goal
M17	All Member States have reviewed national planning frameworks to support SUMP
M18	All Central and Eastern European Member States have launched campaigns or similar
M19	85% of citizens in Central and Eastern European Member States express support to non-conventionally-fuelled vehicles
M20	All Member States have communicated convincing plans for deployment of alternative fuels
M21	All Member States have implemented effective plans for deployment of alternative fuels
M22	Efficient markets for affordable alternative fuels emerging in all Member States
M23	All Member States have reviewed legislation to allow cities necessary leverage over access
M24	All Member States have reviewed legislation to allow cities to restrict non-zero-emission access
M25	All Member States have reviewed taxation schemes
M26	All Member States have national programmes supporting CLSCs

Table 3: Milestones for the European and national levels

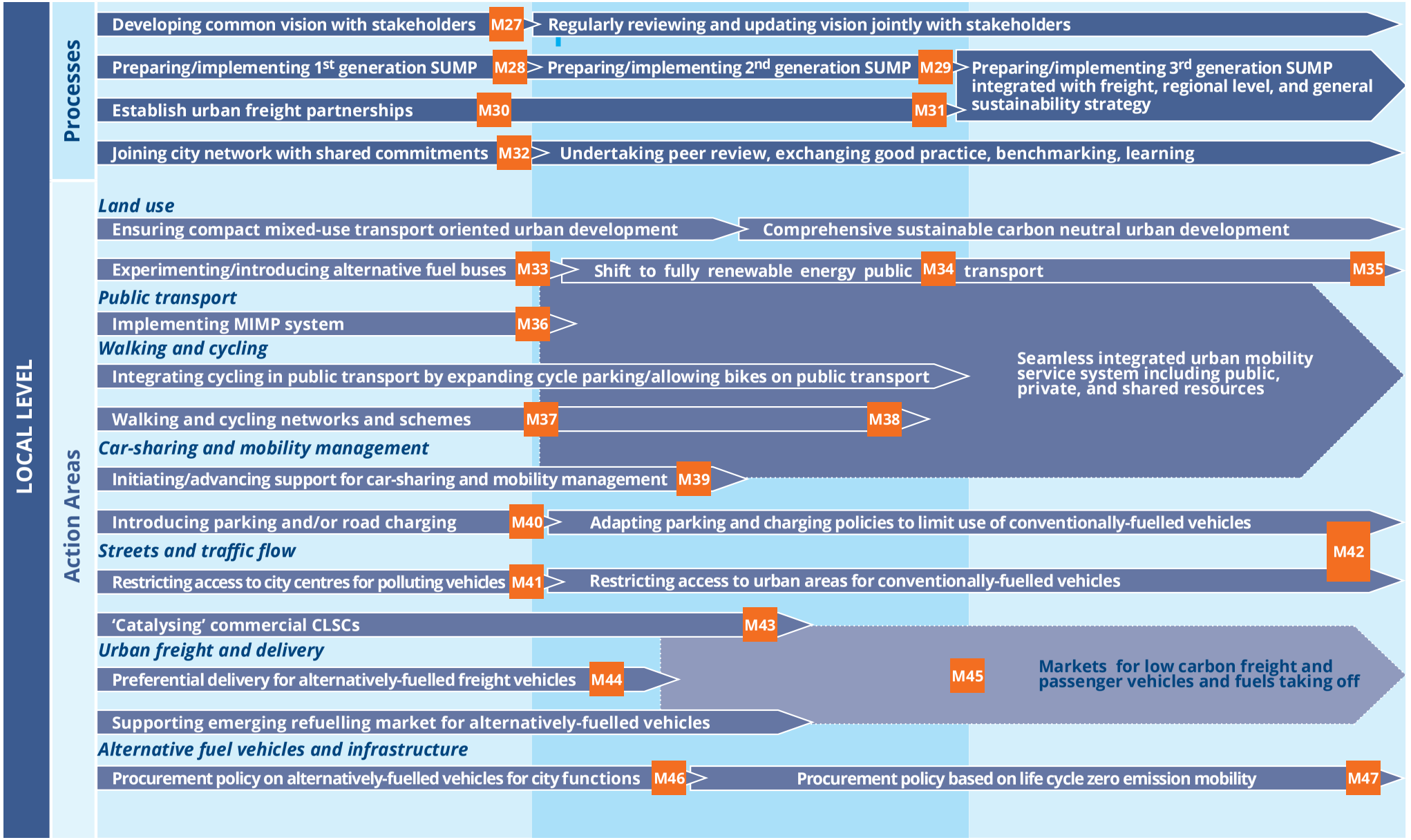

Table 4: Proposed processes and actions at the urban level - key examples

No.	Milestones for the urban level
M27	All cities have conducted a stakeholder dialogue on urban mobility goal and strategies
M28	All cities have adopted a certified SUMP by 2020
M29	25% of cities have adopted a second generation certified SUMP by 2025
M30	Half of the major cities have established some form of freight transport partnership
M31	All major cities have established a freight transport partnership following 'good practice'
M32	Most cities have joined city networks for urban mobility goal (=M6 and M8)
M33	At least 50% of the cities are experimenting with or have implemented alternatively-fuelled buses
M34	At least 50% of cities committed to only use renewable energy for public transport
M35	At least 50% of cities have fully switched to renewable energy for public transport
M36	At least 50% of cities have multimodal transport information, management and payment (MIMP) system in place
M37	800 cities have adopted basic pedestrian and cycling networks and strategies, cycling in European cities increased on average 100% between 2015 and 2020, with minimal reduction in walking and public transport
M38	400 cities have extensive bike-sharing systems with e-bikes and/or large secured bicycle parking at public transport nodes; cycling in European cities has increased on average 200% between 2015 and 2025, with minimal reduction in walking and public transport
M39	Most cities provide support to car-sharing initiatives, and have adopted Mobility Management strategies jointly with employers and business parks
M40	At least 25% major cities (that have a legal basis to do so) have introduced road and/or extensive parking charging favouring non-conventionally-fuelled vehicles (according to a standard definition)
M41	At least 25% of major cities (that have a legal basis to do so) have introduced access restrictions favouring non-conventionally-fuelled vehicles (according to a standard definition)
M42	All major cities have introduced charging or access restrictions favouring non-conventionally-fuelled vehicles (according to a standard definition)
M43	In 40% of major cities one or more CLSCs have been established, based on a review of needs and opportunities in the particular context
M44	10% of urban freight is carried by zero emission vehicles (ZEV)
M45	25% of urban freight is carried by zero emission vehicles (ZEV)
M46	At least 75% of cities have adopted a procurement policy for alternatively-fuelled mobility
M47	All publicly procured mobility in European cities is zero emissions and based on renewables

Table 5: Milestone descriptions for the urban level

ACRONYMS AND ABBREVIATIONS

CLSC	City Logistics Service Centres
EV	Electric vehicle
EFV	Electric freight vehicle
ITS	Intelligent Transport Systems
MIMP	Multimodal transport information, management and payment
R&D	Research and development
SUMP	Sustainable Urban Mobility Planning
UMO	Urban Mobility Observatory
ZEN-T	Trans-European Transport Network
TKM	tonne-kilometre
ZARA	Zeebrugge, Antwerp, Rotterdam, Amsterdam

CONTACT DETAILS

Questions or comments about the Urban Transport roadmap

Henrik Gudmundsson
Direct: +45 45256543
hgu@transport.dtu.dk

Jens Schippl
Direct: +49 721 608 23994
Jens.Schippl@kit.edu

General questions about TRANSFORuM:
Ralf Brand
Direct: +49 221 60 60 55 - 18
r.brand@rupprecht-consult.eu

RUPPRECHT CONSULT
Forschung & Beratung GmbH

RUPPRECHT CONSULT
Forschung & Beratung GmbH
Clever Str. 13 - 15
50668 Köln (Cologne)/ Germany
Tel +49 221 60 60 55 - 0
www.rupprecht-consult.eu
www.transforum-project.eu

CC BY SA