

R&I Mobility Strategy

Innovation in and from Austria for a
Climate-neutral Mobility System in Europe



Publication details

Media proprietor and publisher:
Federal Ministry for Climate Action, Environment,
Energy, Mobility, Innovation and Technology (BMK)
Radetzkystraße 2, A-1030 Vienna
bmk.gv.at

R&I Mobility Strategy project leader:
Sarah Bittner-Krautsack
Unit III/4 – Mobility and Transport Technologies
+43 1 71162 653106
i4@bmk.gv.at
AIT coordinator: Michael Dinges

Authors/members of the R&I Mobility Strategy steering group:
BMK: Evelinde Grassegger; Andreas Dorda; Theresa Bauer;
Sarah Bittner-Krautsack; Andreas Blust; Christian Drakulic;
Constanze Kiener; Walter Wasner
AIT: Matthias Weber; Michael Dinges
FFG: Christian Pecharda; Dietrich Leihs
AustriaTech: Martin Russ; Walter Schneider; Lina Mosshammer;
Natasa Hodzic-Srndic

Photo credits: The copyrights to the portraits are held by the
respective subjects (unless indicated otherwise). All other rights reserved by BMK.

Design: beyond.ag

Printing: offset5020

Vienna, 2020. As of August 2020

Copyright and liability: Excerpts may only be printed when reference is made to the source.
All other rights are expressly reserved without the written consent of the media proprietor.
Despite utmost care, no guarantee is provided for the information in this publication,
and any liability of BMK or the authors is expressly precluded.

Feedback: Please feel free to submit any comments or feedback you have
on this publication to i4@bmk.gv.at.

Preface

The ambitious goal of the Austrian Federal Government of achieving climate neutrality in Austria by 2040 and becoming a European pioneer in climate protection requires novel approaches, especially in mobility. We must reverse the CO₂ emission trend in this sector, as these emissions have increased by 73 per cent since 1990 instead of decreasing substantially. This is primarily the result of the highly increased volume of traffic and the continued heavy dependence of the transport sector upon fossil fuels. My ministry is currently drafting the 2030 Mobility Master Plan and is contributing to the development of the Federal Government's Research, Technology and Innovation strategy for 2030 – the 2030 R&I Strategy.

The 2030 Mobility Master Plan is intended to lay out a concrete path to climate neutrality in 2040 for the mobility sector. By identifying ways to avoid traffic and shift traffic to public transport and active mobility, by increasing energy efficiency and replacing fossil fuels with renewable energy sources. New solutions from research, technology, and innovation will be more important than ever for our mobility-related climate targets. We must also use the potential offered by digitalisation.

Accordingly, the Federal Government's 2030 R&I Strategy has assigned high importance to contributions from research, technology, and innovation for reaching the climate targets.

Mobility policy and R&I policy relating to mobility both address the overarching objective of attaining climate neutrality by 2040. The R&I Mobility Strategy with its vision and mission is a key interface between mobility policy and innovation policy objectives of my ministry. With its four mission areas as guiding principles and a broad range of measures, it will facilitate the future implementation of research, technology, and innovation policy measures in the field of mobility by engaging all relevant stakeholders. I look forward to a fruitful collaboration for reaching our common goal of developing innovations in and from Austria for a climate-neutral mobility system in Europe!



Federal Minister
Leonore Gewessler

Contents

Preface	3
1 Introduction	6
1.1 Status quo.....	7
1.2 Development process.....	9
2 Target vision: Mobility R&I Vision for 2040	12
3 Role of BMK: Mobility R&I Mission for 2040	13
4 Four mission areas as guiding principles	14
4.1 Cities: Promoting climate-neutral urban mobility.....	16
4.2 Regions: mobilising and sustainably connecting rural areas.....	18
4.3 Digitalisation: efficient and climate-friendly operation of infrastructure, mobility, and logistics services.....	20
4.4 Technology: developing environmentally friendly transport technologies.....	22
5 R&I measures	24
5.1 R&I funding.....	25
5.2 Exploration Spaces.....	26
5.3 Alliances and implementation partnerships.....	26
5.4 European and international positioning.....	28
6 Steering concept	29
7 R&I Mobility Advisory Council	32
7.1 Responsibilities.....	33
7.2 Members.....	33

1

Introduction

To reach the ambitious European and national climate targets and master the complex demands placed on the mobility system and the associated global economic system, the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) contributes actively to R&I policy with a focus on technological, social, and organisational mobility innovations. Thus, we spur the lasting transformation of the mobility sector.

1.1 Status quo

As the national R&I programme Mobility of the Future (2012–2020) and the current EU Framework Programme for Research and Innovation Horizon 2020 are ending, the R&I Mobility Strategy is setting the course for future research and innovation policy measures in the mobility sector and is supporting Austria's successful positioning in mobility-relevant areas of the future EU Framework Programme for Research and Innovation Horizon Europe.

Austria is ideally positioned for this:

- The Austrian mobility industry is an innovative key industry with high value-add, employment, and export activity:
 - Every ninth job in Austria is based in the automotive industry, and the vehicle industry is the second largest source of exports in the country. R&D spending comes to EUR 21,500 per employee, twice the industry average.¹
 - Austria is ranked an excellent seventh in the world in exports in “railway vehicles and associated equipment”. Austria accounts for 5 per cent of global trade in rail vehicles.²
- Over 30 per cent of all goods (measured in ton-kilometres) transported in Austria are carried by rail. This places Austria at the forefront in the European Union; the goal is to further expand this high proportion of rail transport³. The most recent Logistics Performance Index (LPI) by the World Bank puts Austria in sensational fourth place in 2018.
- Thanks to its long tradition of mission-oriented research, technology, and innovation promotion (R&I funding) in the field of mobility, Austria has built up a widely varied network of actors and a broad research base for the transformation of the mobility sector over the past three decades:
 - The Mobility of the Future programme supported over 590 R&I projects with roughly EUR 157 million through a variety of R&I instruments between 2012 and 2020 alone. In addition to traditional R&I instruments such as collaborative R&I projects and explorations, BMK also supported large-scale flagship projects and a collaborative technology initiative on strategic R&I topics in addition to implementing structural elements such as innovation laboratories in the form of test environments for automated driving, urban mobility laboratories, and a transformation laboratory, as well as professorship endowments.
 - Several competence centres engaged in joint, multi-year collaborative research projects between the scientific and business communities are being supported under the COMET programme.

1 Source: investinaustria.at/en/sectors/automotive-industry/.

2 Source: bahnindustrie.at.

3 Source: National energy and climate plan.

- Austria's track record in the EU Framework Programme for Research and Innovation Horizon 2020 transport challenge "Smart, green and integrated transport" is impressive:
 - This challenge is the third most successful of all individual programmes and is also the third most significant programme for Austria with funding of roughly EUR 156 million.
 - Submissions with Austrian involvement have a very high success rate of 41 per cent (EU average: 32 per cent), and Austria has the highest relative share of participants and coordinators, with an above-average share of industry participation.
- Austria offers strategically important research and testing infrastructure. In addition to mobility laboratories and test environments for automated driving, the country is also home to unique research infrastructure such as the climate-wind tunnel, the "Zentrum am Berg" tunnel research facility, and the hydraulic engineering laboratory.
- In 2020, BMK has combined the competencies for mobility, innovation, and technology with those for climate protection, the environment, and energy. This facilitates coherent and coordinated strategies. The 2030 Mobility Master Plan (under elaboration) is intended to map the concrete path to climate neutrality in the mobility sector by 2040 and to highlight the contributions to be made by research, technology, and innovation in reaching the climate targets under the Federal Government's new research, technology, and innovation strategy (R&I strategy) for 2030. In this, the R&I Mobility Strategy acts as a nexus in this and precisely defines this interface.
- BMK is (co-)owner of key infrastructure and mobility operators (such as Austrian Railways, ASFINAG, and via donau), mobility and environmental agencies (such as AustriaTech, SCHIG, the Federal Environment Agency), funding agencies and funds (such as the Austrian Research Promotion Agency, aws, the Climate and Energy Fund), and non-university research institutions (such as AIT).

1.2 Development process

The R&I Mobility Strategy was drafted under the direction of BMK from November 2019 to August 2020. To this end, BMK set up a steering group with representatives of the following institutions:

- BMK – Federal Ministry for Climate Action
- FFG – Austrian Research Promotion Agency
- AustriaTech – Federal Agency for Technological Measures Ltd
- AIT – Austrian Institute of Technology GmbH (Center for Innovation Systems & Policy)

The steering group met eight times, was responsible for determining the content of the strategy, and coordinated the development process and involvement of the relevant stakeholders.

A broad co-creation approach was chosen for the strategy process to adequately account for the various stakeholders in the mobility system and their varying interests and objectives:

- During a kick-off event in November 2019 with over 250 participants, national and international experts gave their assessments of current policy developments in the areas of mobility, environment, research, technology, and innovation. The participants gave their inputs for the further strategy design process in three concurrent interactive workshops.
- Working from this foundation, eight modules/workshops with existing committees and platforms as well as nine thematic workshops were held from December 2019 to May 2020. 279 persons were involved in this.

 Federal Ministry
Republic of Austria
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology



austriatech



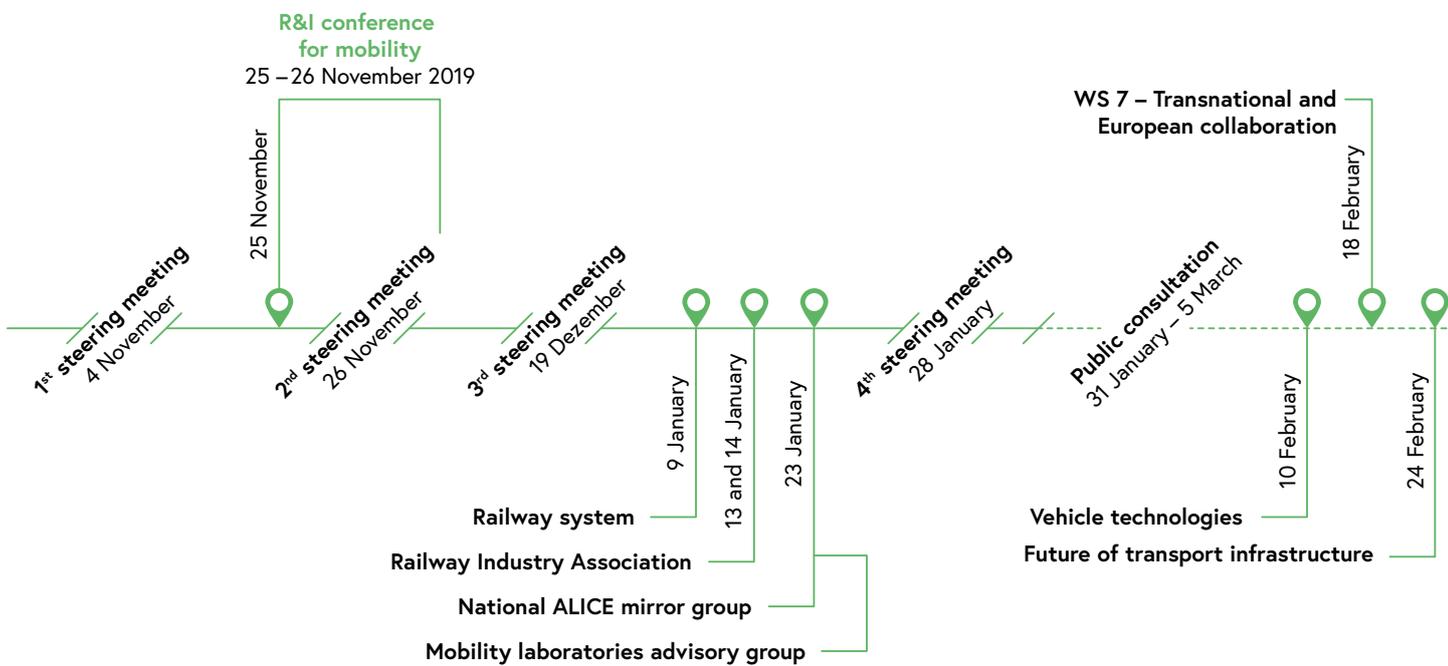
Table 1:
Overview of the workshops relating to the R&I Mobility Strategy

Modules with existing committees/platforms

M 1 – Rail system
M 2 – National ALICE mirror group
M 3 – Mobility laboratories advisory group
M 4 – Vehicle technologies
M 5 – Future of transport infrastructure
M 6 – Automated mobility
M 7 – ITS Austria platform
M 8 – Austrian Rail Industry Association

Thematic workshops

WS 1 – Target visions and narrative
WS 2 – Energy and mobility
WS 3 – Digitalisation and mobility
WS 4 – (Public) operators
WS 5 – Intervention measures
WS 6 – R&I experiments and transfer into practice
WS 7 – Transnational and European collaboration
WS 8 – Health and mobility
WS 9 – Collaboration within the ministry



- Two public consultations were held, the first with 988 respondents (471 complete responses) and the second with 360 respondent (229 complete responses).

This has resulted in a vision for the R&I Mobility Strategy, the definition of BMK's role in its implementation (as a mission), four R&I mission areas for the transformation of the mobility system, four sets of R&I measures, and a steering concept pursued by BMK for implementing the R&I strategy.

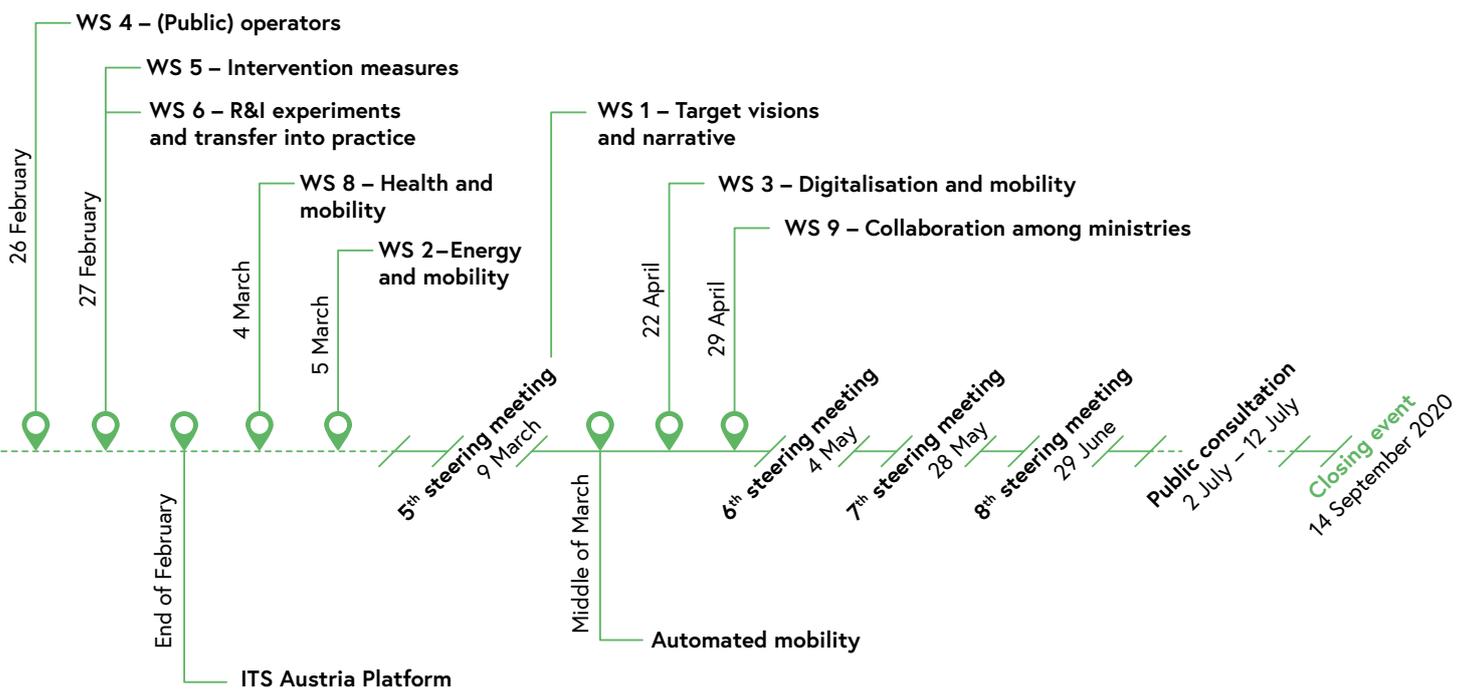
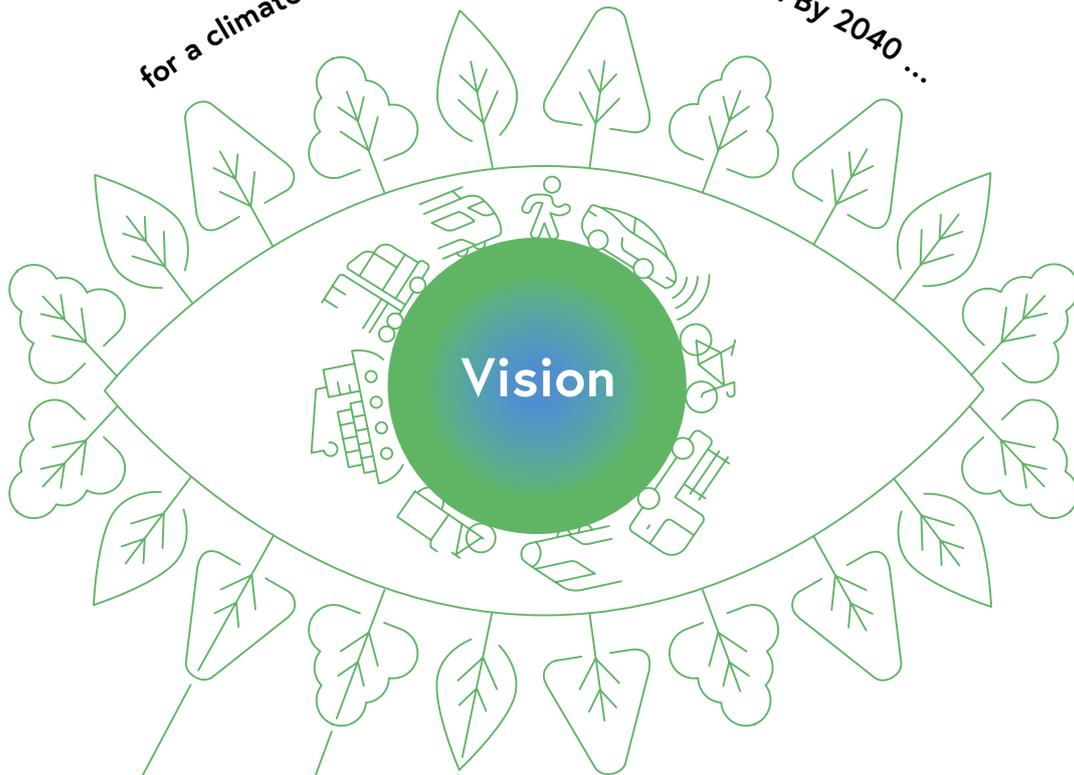


Figure 1:
The development process for the R&I Mobility Strategy

2 Target vision: Mobility R&I Vision for 2040

Innovation in and from Austria
for a climate-neutral mobility system in Europe. By 2040 ...



... Austria has mastered the challenges of transitioning to a **sustainable, climate-neutral, and inclusive mobility and transport system** in its urban and rural areas.

... **Austria's research, technology, and innovation players have made a key contribution** to sustainable development, to ensuring a high quality of life and fostering high competitiveness and a robust labour market in Austria.

... **innovations from Austria will be recognised as leading and solicited all over the world.**

3 Role of BMK: Mobility R&I Mission for 2040

BMK intends to pursue the following mission to achieve the vision outlined above



We take the necessary **research and innovation policy steps** to implement a sustainable, climate-neutral, and inclusive mobility system by 2040.

We thus address **relevant technological, structural, and organisational developments** and necessary **behavioural changes** in the economy and society.

We develop **instruments and measures** to support the necessary economic, industrial, and mobility-related structural transformation in Austria and Europe in a targeted and effective manner.

We shape the **coordination and dialogue process** between the business and scientific communities, civil society, policymakers, and the public administration in a national and international context.

4

Four mission areas as guiding principles

With its clear focus on system solutions, the R&I Mobility Strategy is not aligned with individual technological fields or transport modes, but defines four mission areas. The latter form the framework for R&I policy measures for achieving climate neutrality by 2040 following the 2030 Mobility Master Plan maxim of “Avoiding, Shifting, and Improving”.

The mission areas “Cities: Promoting climate-neutral urban mobility” and “Regions: mobilising and sustainably connecting rural areas” focus on the spatial dimension with its social and economic relationships driving the need and demand for mobility. Different types of space require different solutions, thus a differentiated approach.

The mission areas “Digitalisation: efficient and climate-friendly operation of infrastructure, mobility, and logistics services” and “Technology: developing environmentally friendly transport technologies” place the focus on two technology-based linchpins and address the potential offered by digitalisation and other technological developments in achieving a climate-neutral mobility system.

The digitalisation and technology mission areas have to be effectively aligned with the urban and regional mission areas via pilot projects and concrete applications in real-world contexts. Strategic alliances will be formed to ensure the necessary coordination between the various actors from policymaking, public administration, the business and science communities, and civil society and to ensure the strategic management of the measures defined for each mission area.

The four thematic approaches via the mission areas will be supported by overarching tasks that

- promote newly arising key technologies and important social and organisational trends with an eye to their utility in a mobility context,
- strengthen Austria’s international positioning in the fields of R&I and mobility,
- promote coordination and networking between the relevant stakeholders, and
- ensure diffusion and an orientation towards effectiveness.

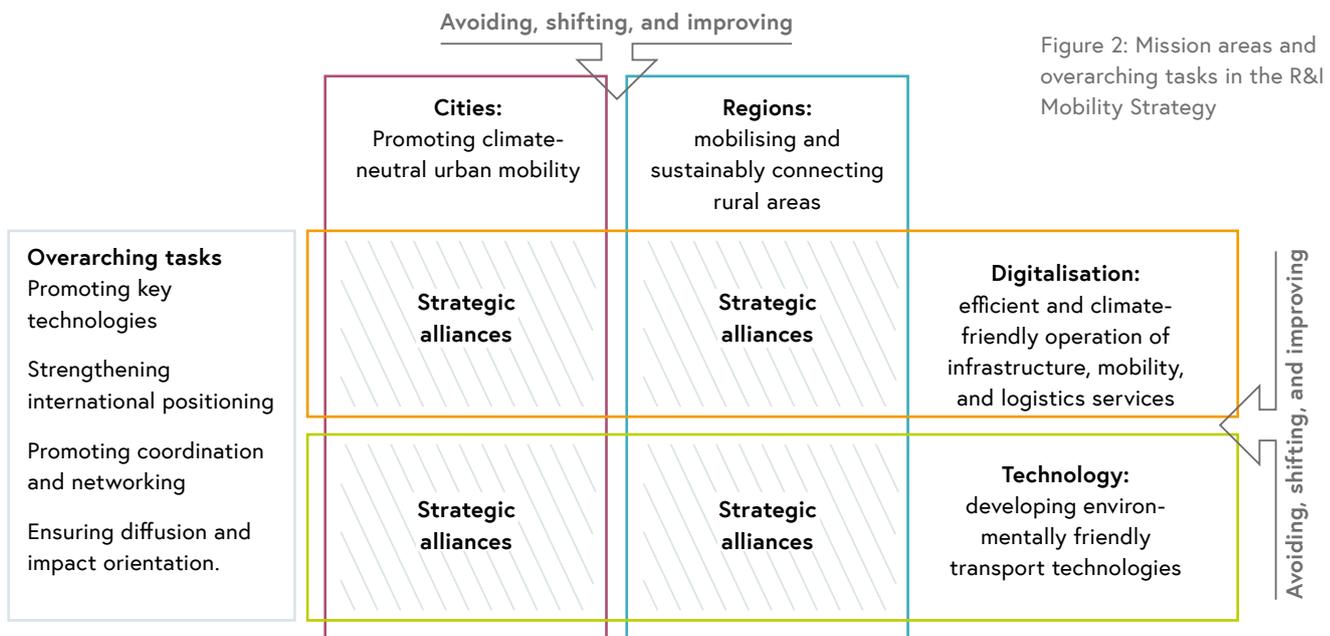


Figure 2: Mission areas and overarching tasks in the R&I Mobility Strategy

Source: AIT – Austrian Institute of Technology

4.1 Cities: Promoting climate-neutral urban mobility

The primary objective of this mission area is making cities more attractive places for live and business and reducing the need for private and freight traffic emitting harmful pollutants, greenhouse gases, and noise in urban areas.

This mission area focuses on changing mobility and transport activities and providing the necessary attractive, healthy and inclusive mobility and transport options limiting private and freight transport to achieve climate-neutral mobility.

Research, technology, and innovation will create the necessary foundation, tools, and solution approaches for the development of active, intermodal, and cooperative mobility and transport options and will develop new concepts for the provision and networking of various urban functions through an interdisciplinary approach.

In terms of urban structures, the focus will be on fair distribution, the design of public spaces, and the interplay between space utilisation, settlement structure, mobility and transport options, and information and communication technologies. This will address not only new development areas, but above all existing structures. This should facilitate minimum physical distances to be covered and attractive mobility and transport options as a prerequisite for climate neutrality and support suitable strategies in urban areas for adapting to the global temperature increase caused by human activity. Peri-urban areas and their personal and freight traffic volumes are also highly relevant.

Innovations in infrastructure and transport modalities will ensure barrier-free and equal access and usability. New integrated services and business and operating models in urban freight transport and transport logistics, especially to cover the first and last mile, and the inclusion of alternative zero-emission vehicles and active mobility are also central elements of this mission area.

R&I measures must be embedded in urban and mobility development strategies and the relevant stakeholders must be involved so that research, technology, and innovation can have their full effect in this mission area. Cross-sector solution approaches, incentive systems for behavioural changes, and the creation of the needed framework through innovative policy and planning measures along with the engagement and participation of citizens and the relevant businesses will ensure the orientation of the mission area towards effective action.



Figure 3:
Cities: Promoting climate-
neutral urban mobility

4.2 Regions: mobilising and sustainably connecting rural areas

The primary objective of this mission area is strengthening and maintaining the functionalities of rural areas through the innovative combination of supply structures with new mobility and logistics concepts that contribute to combating the climate crisis, reducing regional disparities, and ensuring access with minimum energy input in a regional and supra-regional context.

The focus is on making rural areas more attractive by improving access to services and supplies for households and businesses and ending dependence on oil in regional and supra-regional personal and freight vehicle transport to achieve climate-neutral mobility. The scope of this area also goes beyond the mobility system because the provision of and access to key supply and service functions has a major impact on mobility and transport needs.

There is a particular need for the development of new solution approaches for cooperation, coordination, and sharing models and new solutions for goods delivery, dispatch, and pick-up and for bundling and unbundling goods flows. Collaborative, non-commercial on-demand solutions and the incorporation of new mobility service providers into existing public transportation structures will also play an important role, but will also require more flexible legal regulations.

To help reduce the volume of motorised individual traffic, ways of making cycling and walking more attractive must also be considered in the context of land use planning, transport network design, and especially the relationship between commuting and mobility and the role of tourism.

Barrier-free mobility infrastructure in rural areas is also a focus in order to implement new offerings. The first and last mile are of particular importance in rural areas, where the use of automated mobility services and new on-demand services offers great potential. Sustainable rural mobility must also take broad rail-based freight transport into account.

Integration into plans for regional development, the involvement of political decision-makers at the provincial and municipal levels, and the participation of regional companies and citizens are crucial for ensuring that research, technology, and innovation can have their full effect in this mission area. Cross-sector solution approaches and the development of new technological, social, and organisational innovations in cross-company collaboration can also offer options for making rural areas more attractive.



Figure 4:
Regions: mobilising and
sustainably connecting rural
areas

4.3 Digitalisation: efficient and climate-friendly operation of infrastructure, mobility, and logistics services

The primary objective of this mission area is to increase the efficiency, resilience, safety, and environmental compatibility of the mobility system. To this end, promising approaches such as mobility as a service (MaaS) and logistics as a service (LaaS), automated driving, and the Physical Internet (PI) should be evaluated to assess which contribution they can make to achieve these objectives, and implemented. The potential offered by digitalisation shall be leveraged for the development of new services and business and operating models so to provide citizens and the businesses with environmentally friendly and attractive transport options. Possible rebound effects on the overall system from the optimisation of individual logistics chains and mobility options shall also be taken into account to minimise the overall volume of traffic.

The planned R&I measures will focus on the provision of the necessary digital, networked infrastructure and on international and European coordination in standardisation for the realisation of integrated logistics and mobility chains. Mobility services providers and infrastructure operators should be enabled to develop new generic components and systems and make full use of the potential provided by digitalisation at an early stage, for example to optimise passenger and freight capacities and to optimally manage logistics chains, traffic flows, fleets, and infrastructure.

This will require a number of R&I needs to be addressed relating to aspects such as connected, shared, and open data, networked infrastructure and traffic management systems, the security and resilience of these systems, and the development of corresponding collaborative services, business and operating models.

In passenger transport, shared, networked information and uniform ticketing will be decisive for customer acceptance and ensuring the efficient use of various modes of transport. To make multi-modal solutions more attractive, it must also be ensured that new private-sector and collaborative offerings can be seamlessly integrated into existing public transportation systems.

In freight transport, the integration of data and the subsequent optimisation of cross-company processes along the supply chain and in the transport network offer great potential for the increased integration of environmentally friendly modes of transport such as rail and inland waterways, and thus for the attainment of sustainable freight transport and transport logistics solutions.

Aspects of data security are crucial in allowing research, technology, and innovation to have their full effect in this mission area. Because of the increasing network integration within Europe, common standards for cross-border mobility and logistics services are also of increasing relevance for this mission area.



Figure 5:
Digitalisation: efficient and
climate-friendly operation of
infrastructure, mobility, and
logistics services

4.4 Technology: developing environmentally friendly transport technologies

The primary objective of this mission area is the development and broad use of new technologies that make a lasting contribution to reducing CO₂ emissions and other pollutants throughout the system and help to protect the environment. This area focuses on the technical system and its application as a whole (vehicle, infrastructure, development tools, component control, validation techniques, traffic dynamics, traffic management, energy optimisation, interaction with the environment), with the goal of using no fossil fuels for powertrains but only renewable energy sources with close to zero pollutant emissions.

Key objectives are the further development and diffusion of system solutions, climate-neutral drive systems, and resource-efficient and environmentally friendly components for transport infrastructure (road, rail, structures, and noise protection), transport equipment (such as cable cars and containers), and especially vehicles and the necessary production processes (such as simulation-based development and testing). New system solutions for the coupling of energy supply and storage to facilitate a sustainable, climate-neutral, and clean energy system and the fields of material sciences, lightweight construction, as well as the circular economy are in addition highly relevant to this mission area.

Research, technology, and innovation in this mission area shall address the topics and technology options relating to electromobility (batteries, fuel cells, hydrogen, filling and charging infrastructure, etc.) and take questions of energy supply and a holistic approach (sector coupling) into account in terms of the necessary construction and operation of the required infrastructure. This makes all facets of the generation, storage, and use of renewable and climate-neutral energy a priority in this mission area.

Measures must be implemented to promote market introduction and penetration so that research, technology, and innovation can have their full effect in this mission area and greater attention is given to technological development. This includes testing and implementation in the other mission areas, the funding of innovation-oriented public procurement, and moving towards true-cost pricing in the taxation of mobility. Measures must also be developed at an early stage to identify and counter potential negative effects from the use of these new technologies in the mobility system.

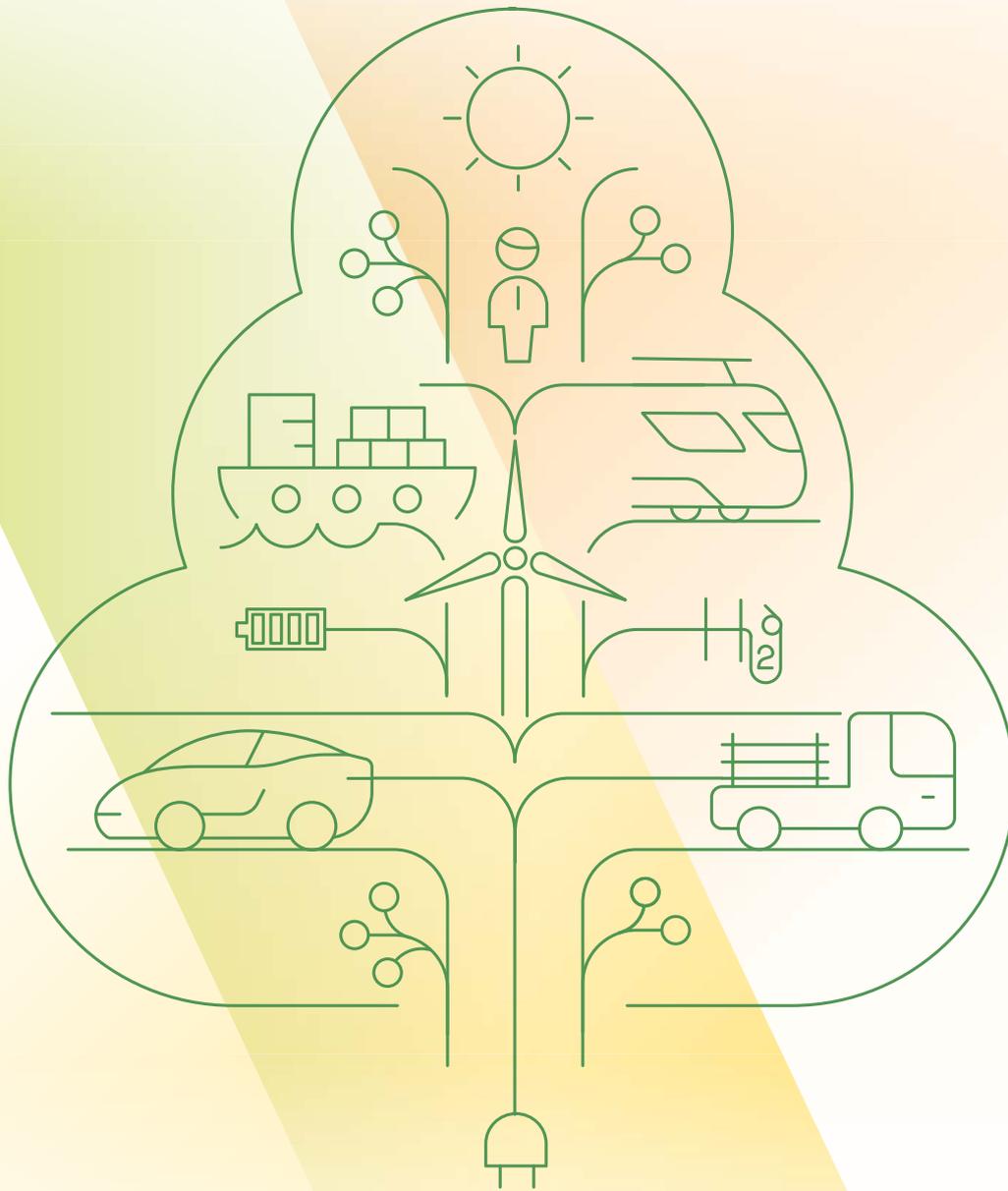


Figure 6:
Technology: developing
environmentally friendly
transport technologies

5

R&I measures

R&I measures by BMK shall ensure that the four mission areas of the R&I Mobility Strategy are executed with integrative consideration of gender and diversity aspects in all processes.



R&I funding

Financial support for R&I projects and R&I activities on fundamental issues of sustainable passenger and freight transport within the context of the four mission areas is a cornerstone of BMK's measures. There is a range of instruments, especially from the Austrian Research Promotion Agency, from exploration and collaborative R&I projects to flagship projects, innovation laboratories, competence centres, and professorship endowments relevant for reaching the objectives of the mission areas. R&I funding will especially target interdisciplinary and transdisciplinary cooperation networks that are in a position to develop technologies, system and orientation knowledge, and planning fundamentals and tools and to pilot innovative mobility concepts.

BMK will develop its FTI funding activities further to increase mission orientation and (co)develop new national, transnational, and European funding initiatives to make new technological frameworks and system changes possible. Cornerstones thereof:

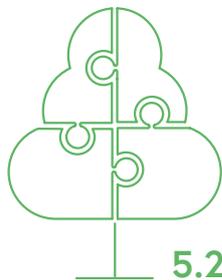
- The development of knowledge and competence for stronger user, problem-solving, and diffusion orientation through the increased involvement of operators, local policymakers and administration, and representatives of civil society to facilitate the transformation process,
- The development of common target visions between R&I actors, users, and citizens and of solutions in regional contexts to allow social innovations, business models, and the testing of incentives for behavioural changes,
- Focusing of support for the R&I process as it relates to mobility to foster a mission orientation on urgent societal needs,
- Development of qualification measures in the education and research system to meet the requirements for the mission areas,
- Support for participation in European and transnational initiatives that offer synergies with global R&I actors and projects,
- Establishment of the necessary long-term research infrastructure,
- Mobility workshops for existing and new actors for new ideas,
- Establishment of institutional structures for cross-sector collaboration, and
- The initiation of new funding instruments as permitted under the European aid framework now and in the future, especially to support the goal of an impact-oriented R&I policy.



5.1 Exploration Spaces

As a complement to conventional R&I funding, BMK will establish real-world laboratory environments in Austrian R&I policy to allow research and innovation projects to be tested and embedded in real socio-technical contexts at an early stage. This is intended to ensure acceptance among the population and decision-makers and generate new impetus for innovative solutions. BMK intends to move forward with initiatives relating to the Austrian urban mobility laboratories and mobility transformation laboratories and to test environments, for example for automated driving, to provide crystallisation points for vital innovation ecosystems in urban and rural regions with the necessary stimulation, transfer, and translation processes.

Real-world laboratories shall also offer regulatory sandboxes that allow innovative solutions, technologies, products, services, and business models to be developed and tested in a controlled, realistic environment for a specific period. Temporary exonerations from legal or regulatory requirements otherwise acting as barriers shall make this possible. Closer cooperation with lawmakers shall help innovative approaches to be incorporated into the legal regulations more quickly.



5.2 Alliances and implementation partnerships

The establishment of transformative solutions in larger regional mobility systems requires coordination, networking, and cooperation at and between multiple governance levels and the sharing of knowledge⁴: firstly at the legislative level to create the legal framework for experimentation and to incorporate new knowledge and experiences into new laws; secondly at the executive level to offer support for innovation across policy areas; thirdly at the level of actors and stakeholders to implement innovation processes and to bring gained experience into the legislative processes and into business processes and practices.

⁴ Source: parlament.gv.at/ZUSD/FTA/081_reg_experiment.pdf.

To facilitate the necessary coordination and networking, BMK will initiate strategic alliances for mobility missions and system transformation to promote the execution of the mobility mission areas. The alliances for the mobility missions will:

- develop shared visions for the mobility mission areas as guidelines for research and innovation,
- promote co-creation in research and innovation between cities and communities, research institutions, industry, users, and citizens,
- move forward with the coordination of mobility and transport policy taking into account climate, environment, energy, economy, and social issues, health care, and industrial policy,
- facilitate the increasing harmonisation of supply- and demand-side instruments of R&I policy through the synergetic use of the funding instruments from the various agencies and develop flanking measures for innovation-oriented public procurement,
- identify needs for regulation, facilitate learning and integrate this into legislative processes, and
- support participation by Austrian stakeholders in international research collaboration projects, transnational strategy processes, and global value creation chains that serve to develop and implement R&I results in the mobility field.

At the operational level, so-called implementation partnerships will be established to better coordinate the various measures. BMK will represent the R&I policy aspect of these implementation partnerships, which

- initiate and coordinate new and established instruments for R&I funding,
- ensure the coordination of the various funding avenues and thus the accelerated handover of R&I projects and initiatives to funding avenues closer to implementation stages and for synchronisation with demand-side mobility policy instruments as well as other areas of policy through exchange with the various funding agencies and funds (such as the Austrian Research Promotion Agency, aws, the Climate and Energy Fund) and mobility and environmental agencies (such as AustriaTech, SCHIG, Federal Environment Agency),
- promote coordination and an exchange of information in the context of participation in European and other international initiatives, committees, programmes, and strategy processes,
- support the coordination of R&I policy, mobility policy, other relevant policy areas, regional authorities, businesses, the science community, and civil society,

- actively manage portfolios within the individual mission areas to ensure the coordination of the various projects over a longer period of time,
- initiate flanking measures, for example in qualification and education, regulation, standardisation, and procurement, and
- facilitate impact-oriented management, policy learning, and thus the ability to adapt to new challenges.



5.3 European and international positioning

The core societal challenges in the areas of mobility, transport, and industry are addressed through targeted initiatives of the European Commission, particularly through the Green Deal and Horizon Europe. Here as well, R&I policy must be stronger integrated into a holistic policy approach for solving these societal challenges. BMK will actively contribute to the improvement of this orientation and pursue the objective of ensuring better coordination between the levels of the EU and the Member States in European and international committees. Austrian companies must also have the opportunity to participate in collaborative research and innovation projects in the highly globalised mobility industry. This ensures positioning in international value creation networks, strengthens their role in the technological transformation and creates value-added and jobs in Austria. To this end, BMK intends to support the successful participation of Austrian actors in the EU Framework Programme for Research and Innovation (Horizon Europe), especially in the mobility-related European partnerships and Missions of Horizon Europe. BMK will also increase participation in non-European research collaboration projects relevant for Austria, such as the IEA (International Energy Agency) and the IPHE (International Partnership for Hydrogen and Fuel Cells in the Economy), wherever possible. This also pertains to involvement in the amendment of regulations and standards in the transport and mobility context building on scientifically validated findings.

6

Steering concept

The R&I Mobility Strategy addresses the necessary transformation of the mobility system in all of its dimensions and is dedicated to a transformation of the innovation ecosystems and collaborative networks linking policy-making and administration, science, business, and civil society. In line with this new commitment, BMK will also set up new structures and processes to strategically manage the implementation of this strategy.

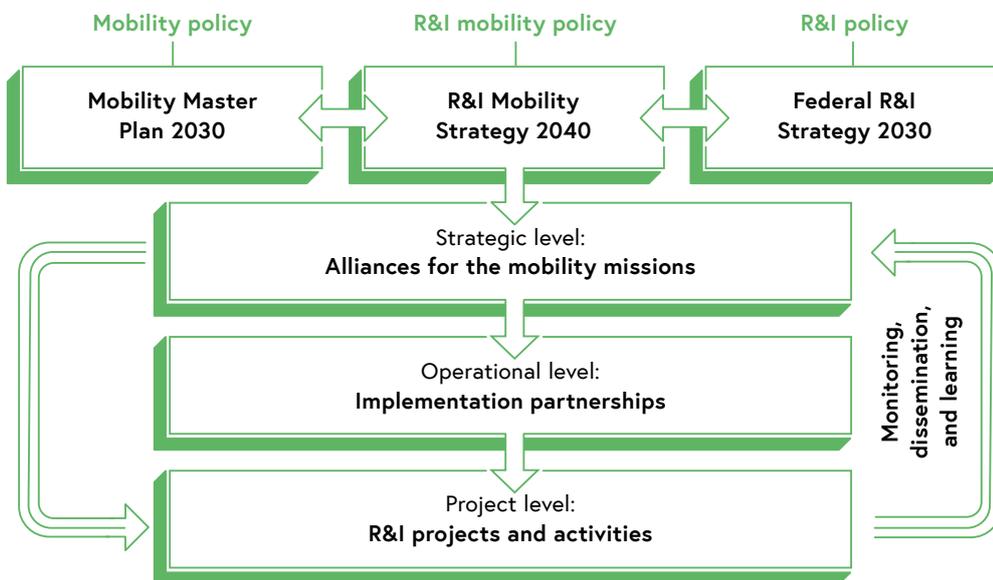
Considering the ambitious goals of the R&I Mobility Strategy for 2040, close coordination with mobility policy will be necessary, especially on the basis of the 2030 Mobility Master Plan and the R&I policy, in particular the Federal Government's R&I strategy for 2030.

The associated collaboration between policymakers and public administration and numerous other actors and stakeholders from the science and business communities and civil society will require the effective and ongoing coordination of the strategic perspectives and operational measures.

In addition to continuing the strategic coordination of the R&I activities with actors from the scientific and business communities and civil society through established national and European structures, new steering approaches will be needed at the following three levels (figure 7):

- **Strategic level:** This involves political coordination between R&I policy and other policy areas and levels, especially relating to mobility policy, but also with other strategic partners for the mission areas such as cities, regions, industry and service providers, operators, and civil-society organisations.
The establishment of so-called alliances for mobility missions serves the function of steering at the strategic level. Here, common orientations are defined for the mission areas, the commitment and coordination of the involved ministries and stakeholders is ensured, long-term financing prospects are identified, and guidelines are set for the operational level.
- **Operational level:** The development and implementation of measures requires efficient collaboration between funding and implementation agencies, regional authorities, and other actors to effectively coordinate the activities in order to build and time a portfolio with secured long-term financing. The portfolio can range from funding activities to regulatory adaptations so to effectively address the requirements of each mission area.
Drawing on international experience, so-called implementation partnerships can be set up to help better coordinate the various fields of action. BMK is involved in implementation partnerships through its measures while other ministries or entities such as cities handle further measures. The core function of the implementation partnerships is thus ensuring effective collaboration between the various agencies and partners to support concrete projects, activities, and initiatives in the best interests of the objectives of the mission areas. The various projects (and project portfolios) in the mission areas must also be supported from a holistic perspective to facilitate the exchange of information and experiences and to generate synergy effects. The individual measures that are embedded in the implementation partnerships are managed centrally via corresponding management structures.

- **Project level:** The measures defined under the R&I Mobility Strategy are ultimately realised in concrete projects in the four mission areas, or support these projects. The management of these projects will be demanding given the wider range of actors, the experimental approach, and the combination of societal, organisational, and technological issues. Aspects of open access, open data, and results dissemination must also be taken into account at the project level.
- Alongside the three levels, monitoring, dissemination, and learning processes must be put into place to ensure a high degree of effectiveness and to learn from the initial experiences with the new governance architecture in the interests of refining the R&I strategy. Strategic support for the mission areas must also be ensured to facilitate the adaptation of the development path and R&I strategy over a time horizon of (at least) 20 years. This is planned via a combination of system monitoring, forecasting, and a participative support process with the key stakeholders in line with the open innovation approach.



Source: AIT – Austrian Institute of Technology

Figure 7:
Governance model for
the R&I Mobility Strategy

7

R&I Mobility Advisory Council

An Advisory Council of national and international experts was formed to support implementation and refinement of the research, technology, and innovation strategy for mobility. The members cover wide-ranging socio-technical aspects of mobility, address future mobility issues, and have demonstrated visionary thinking. They are also familiar with the mechanisms of the innovation ecosystem.

7.1 Responsibilities

The Advisory Council meets two to three times per year and supports BMK in the management, implementation, and refinement of the R&I Mobility Strategy with its international experience, in this way

- ensuring its international connectivity,
- facilitating adaptation to new trends and conditions, and
- assisting with the identification of expertise and cooperation partners needed for the further innovation process.

7.2 Members



© Mobility Genossenschaft

Arnd Bätzner

Member of the Administrative Board, Mobility Genossenschaft

Expertise:

- Integration of fixed-route transit services and shared modes in urban development
- Suburban and regional mobility
- Community transport and urban cable cars



© Dr. Bonhoff

Klaus Bonhoff

Head of the Department for Policy Matters in the German Federal Ministry for Transport and Digital Infrastructure

Expertise:

- Alternative drives and fuels
- Sustainable mobility concepts
- International collaboration



© J. Maierhofer

Katja Diehl

Communication and consulting, She Drives Mobility

Expertise:

- Fair and green mobility
- Inclusion
- Digitalisation

© Florian Lennert



Florian Lennert

Managing Partner, Future Lab Berlin
Head of Mobility, NEOM

Expertise:

- Sustainable mobility
- Smart cities
- System innovation

© DLR



Barbara Lenz

Director, DLR Institute of Transport Research; Professor of Transport Geography, Humboldt Universität zu Berlin

Expertise:

- New mobility concepts
- Automated driving
- Mobility and spac

© Gereon Meyer



Gereon Meyer

Head of the Department for European and International Business Development, VDI/VDE Innovation + Technik GmbH

Expertise:

- Vehicle technologies
- Smart systems integration
- Transformation of the transport system

© IZT/ Rolf Schulten



Stephan Rammler

Director of the Institute for Future Studies and Technology Assessment (IZT) and Professor of Transportation Design

Expertise:

- Social and political mobility frameworks
- Digitalisation of mobility
- Urban mobility and communal regulation

© freedomain



Sylvia Schwaag-Serger

Professor, Vice President (until December 2020), Lund University

Expertise:

- Internationalisation and international perspectives
- Innovation policy for holistic sustainability and transformative change
- Research, education, and innovation policy

© Umweltbundesamt



Henriette Spyra

Head of Science and Innovation, Austrian Federal Environment Agency

Expertise:

- Transformation processes
- Disruptive goals
- Effectiveness

© Lukas Beck



Maria Vassilakou

Independent Advisor for Urban Development and City Management

Expertise:

- Urban mobility strategies
- Integrated mobility systems
- Walkability

© Sylvia Völker



Sylvia Völker

Sylvia Völker Consult

Expertise:

- Efficient material and information flows
- Innovative logistics management
- Digitalisation and supply chain collaboration

