



Study on the social dimension of the future EU transport system regarding users and passengers

Final report



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Contents

Glossary	i
Abstract	iv
Executive summary	v
Introduction.....	v
Methodological approach	vi
Key findings	vii
Recommendations.....	viii
1 Introduction.....	1
Background.....	1
Defining affordability, reliability, and accessibility of transport for the purpose of this study	4
Organisation of this report.....	5
2 Methodology	7
Introduction.....	7
Inventory of relevant existing data and evidence	8
Stakeholder consultation	11
Research limitations	13
3 Inventory and mapping of the challenges and level of preparedness of stakeholders 16	16
Introduction.....	16
Inventory of challenges/opportunities by user group	17
Clustering common themes	30
Level of preparedness	33
Summary.....	44
4 Good practices	46
Introduction.....	46
Summary of good practices.....	49
Review of guidance from multilateral organisations	61
Inclusivity indicators	64
Summary.....	66

5 Recommendations	68
Introduction.....	68
Recommendations.....	70
Summary.....	84

Figures

Figure 1.1: Overview of study scope	3
Figure 2.1: Overview of methodology	7
Figure 2.2: Number of inventory items* by user group	9
Figure 2.3: Common themes across projects reviewed	10
Figure 2.4: Common themes across studies, guidance and other documents reviewed.....	10
Figure 2.5: Overview of stakeholder engagement status by stakeholder group	12
Figure 3.1: Share of road fatalities by transport mode, across age groups.....	26
Figure 3.2: Share of road fatalities by transport mode and gender for children under 15.....	27
Figure 3.3: Users' level of preparedness	34
Figure 3.4: Willingness to switch to more sustainable forms of transport in daily mobility.....	35
Figure 3.5: Willingness to pay more for sustainable mobility	35
Figure 3.6: Willingness to pay for sustainable long-distance travel by country.....	36
Figure 3.7: Future mobility	37
Figure 3.8: Awareness of automated vehicles by country	38
Figure 3.9: Readiness to use connected and autonomous vehicles by country.....	39
Figure 5.1: Inclusion framework	69

Tables

Table 2.1: Databases and libraries reviewed for relevant evidence and data	8
Table 2.2: Stakeholder engagement methods.....	11
Table 2.3: Inventory items by user group.....	14
Table 2.4: Inventory items by theme and trend	14
Table 3.1: Breakdown of individuals with no or low level of digital skills by age group and gender, 2019.....	20

Table 3.2: Advocacy gap analysis of stakeholder engagement in this study – availability of relevant representatives and degree of engagement	43
Table 4.1: Good practice topics, Member States evidence is drawn from, high level challenges and changes, and user groups addressed	47
Table 4.2: Good practices related to improving the transport network design to better fulfil the needs of users.....	49
Table 4.3: Good practices related to involving local communities in mobility strategy development steps	50
Table 4.4: Good practices related to free public transport	51
Table 4.5: Good practices related to the deployment of services powered by autonomous technologies in areas with low public transport availability	52
Table 4.6: Good practices related to rural on-demand transport.....	53
Table 4.7: Good practices related to on-demand transport services tailored to young people and children, persons with disabilities and with reduced mobility.....	54
Table 4.8: Good practices related to digital innovations for transport users with disabilities and reduced mobility.....	55
Table 4.9: Good practices related to integrated and seamless travel for persons with disabilities and reduced mobility.....	56
Table 4.10: Good practices related to innovations to better consider the transport needs of women	57
Table 4.11: Good practices related to disability awareness training	58
Table 4.12: Good practices from non-EU countries	59
Table 4.13: Sustainable Urban Mobility Indicators (SUMIs).....	64
Table 4.14: Transport and mobility social indicator areas	65
Table 4.15: Examples of transport and mobility social indicators used in the research projects reviewed	65
Table 5.1: Overview of recommendations	70
Table 5.2: Summary of recommendations	84

Appendices

- A Stakeholder consultation**
- B Workshop summary**
- C Detailed inventory of relevant existing data and evidence**

- D** Contextual country dashboards
- E** Inventory and mapping by Member State and user group
- F** Good practices (EU)
- G** Good practices (non-EU)
- H** Major trends

Glossary

AV	Autonomous Vehicle
AVENUE	Autonomous Vehicles to Evolve to a New Urban Experience
BAME	Black, Asian and Minority Ethnic
BART	Bay Area Rapid Transit
BIPOC	Black, Indigenous, People of Colour
BRT	Bus Rapid Transit
BRTS	Bus Rapid Transit System
C4P	Cities-4-People
CAV	Connected and Autonomous Vehicle
CBO	Community Based Organisations
CCJPA	Capitol Corridor Joint Powers Authority
CEF	Connecting Europe Facility
CITD	Centre for Industrial Technological Development
CORDIS	The Community Research and Development Information Service
COS	Common Set of Evaluation Indicators
DG EMPL	Directorate-General for Employment, Social Affairs and Inclusion
DG JUST	Directorate-General for Justice and Consumers
DG MOVE	Directorate-General for Mobility and Transport
DG REGIO	Directorate-General for Regional and Urban Policy
DPI	Dynamic Passenger Information
DRT	Demand Responsive Transport
ELARD	European Leader Association for Rural Development
EqIA	Equality Impact Assessments
EU	European Union
FABULOS	Future Automated Bus Urban Level Operation Systems
GIS	Geographical Information System
HiReach	High reach innovative mobility solutions to cope with transport poverty
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HS2	High Speed Rail 2 (United Kingdom)
IDB	Inter-American Development Bank
ICT	Information and Communications Technology

IFC	International Finance Corporation
INDIMO	Inclusive Digital Mobility Solutions
IT	Information Technology
ITF	International Transport Forum
ITMS	Integrated Transport Management System
KPI	Key Performance Indicator
LaaS	Logistics as a Service
LAN	Local Area Network
LGBTIQ	Lesbian, gay, bisexual, trans, non-binary, intersex and queer (LGBTIQ)
MaaS	Mobility as a Service
MAV	Hungarian State Railways
MIPAA	Madrid International Plan of Action on Ageing
MS	Member State
NECP	National Energy and Climate Plan
NGO	Non-Governmental Organisation
NMT	Non-Motorised Transport
NTA	National Transport Authority
NUTP	National Urban Transport Policy
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Co-operation and Development
PCMC	Pimpri Chinchwad Municipal Corporation
PLM	Persons with Limited Mobility
PMC	Pune Municipal Corporation
PMPML	Pune Mahanagar Parivahan Mahamandal Limited
POP	Promotions and Outreach Programme
PPP	Purchasing Power Parity
PRM	Person with Disabilities and Person with Reduced Mobility
PSO	Public Service Obligation
PTCV	Pre-trip concierge and virtualisation
QR	Quick Response
SDGs	Sustainable Development Goals
SEDEMA	Ministry of the Environment (Mexico)
SGEI	Services of General Economic Interest
SISBEN	Database of social and economic conditions of vulnerable people in Colombia

SUMI	Sustainable Urban Mobility Indicator
SUMP	Sustainable Urban Mobility Plan
SUTP	Sustainable Urban Transport Project
TEN-T	Trans-European Transport Network
TFEU	Treaty on the Functioning of the European Union
TRIMIS	Transport Research and Innovation Monitoring and Information System
UDM	Universal Design Manual
UK	United Kingdom
UN	United Nations
UX	User Experience
V2I	Vehicle to infrastructure
V2V	Vehicle to vehicle
VZBV	Federation of German Consumer Organisations
WB	World Bank

Abstract

This report presents the findings of the study on the social dimension of the future EU transport system regarding users and passengers. Transport evolves and modernises along major trends: the green and digital transitions, demographic change but also the recent COVID-19 pandemic. These trends will have a considerable impact on transport with profound consequences for users and passengers. Different groups of people have different needs as transport users and it is important to ensure that the transport system is inclusive and available to all. The issues are complex and have multiple overlapping dimensions as different users, needs, geographies, Member States/legal contexts, modes, business models and wider trends all interact.

This study maps the challenges and opportunities posed by the modernisation of the transport system to different groups of transport users in terms of affordability, reliability, and accessibility, and reviews possible solutions that ensure users are at the centre of the future transport system. In particular, the study considers six user groups: women; citizens with poor IT literacy or with limited access to the internet; persons with disabilities and with reduced mobility (e.g. older people); people living in remote areas (notably rural areas), segregated localities or in less developed regions; young people and children; and people on low income, at risk of poverty or social exclusion.

Based on a review of literature and a wide-ranging stakeholder consultation programme, the analysis found that the level of information available for different user groups varies significantly across Member States. It also highlighted users that may not be captured within current groupings, and emphasised the overlaps or intersectionality between different groups. While a significant number of current challenges for users was identified, there was a limited amount of information on anticipated future challenges. Stakeholders observed that improved consideration of the social dimension of transport may sometimes be impeded by advocacy gaps for some user groups.

Recommendations were developed that aim to improve the extent and effectiveness with which the social dimension of transport is taken into account by relevant stakeholders at different levels, and which address policy and advocacy gaps identified through measures that provide the stakeholders with the necessary knowledge, capability and resources.

Executive summary

Introduction

This report presents the findings of the study on the social dimension of the future EU transport system regarding users and passengers. The European Pillar of Social Rights, jointly proclaimed by the European Parliament, the Council and the Commission on 17 November 2017, places transport among the essential services to which everyone has the right to access (Principle 20). It stresses that such services should be of good quality and that support for access – intended in broad terms – shall be available for those in need.

Different groups of people have different needs as transport users and it is important to ensure that the transport system is inclusive and available to all. The issues are complex and have multiple overlapping dimensions as different users, needs, geographies, Member States/legal contexts, modes, business models and wider trends all interact. With the aim of ensuring that the future transport system will be inclusive and equitable, it is important to consider the system from the perspective of users in terms of affordability, reliability, and accessibility.

The general objectives of the study are to:

- map the challenges and opportunities posed by the modernisation of the transport system to different groups of transport users/passengers in terms of affordability, reliability and accessibility; and
- review and propose possible solutions that ensure users are at the centre of the future transport system, so that benefits can reach all societal groups.

Most research and decision-making on this subject are undertaken at a national, regional or local level. This study brings together the needs, challenges and opportunities of users across all Member States and identifies common themes and/or potential policy gaps.

The Terms of Reference specify six different groups of transport users/passengers most likely to be affected by the modernisation of the transport system which may have particular needs or face particular challenges as mobility and transport evolve. The six user groups of the study are:

- Women;
- Citizens with poor IT literacy or with limited access to the internet;
- Persons with disabilities and with reduced mobility (e.g. older people);
- People living in remote areas (notably rural areas), segregated localities or in less developed regions;
- Young people and children; and
- People on low income and in particular at risk of poverty or social exclusion.

Additionally, in considering the social dimension of the future EU transport system, citizens falling outside the above categories may also have to change their mobility habits.

Transport evolves and modernises along major trends, including:

- Decarbonisation and digitalisation, both of which can be said to predominantly be bringing about changes to the transport system itself (i.e. in the way transport is organised and provided); and

- An ageing population and the COVID-19 pandemic, both of which can be said to predominantly be bringing about changes in the profile of users' needs (i.e. behavioural changes), which the transport system ought to adapt to.

These trends will have a considerable impact on transport with profound consequences for users.

Methodological approach

The methodology for responding to the Terms of Reference included the following elements:

- Stakeholder consultation using a number of approaches to engage with relevant stakeholders and collect information about their specific situation.
 - On the user side, we were looking to understand the challenges and opportunities that users may face, as well as their views on engagement with authorities/operators and the level of awareness towards major trends.
 - On the authority/operator side, we were aiming to understand the extent to which they take equity and inclusion into account in planning and delivering transport, the approaches used to engage with users, and the level of preparedness with respect to the major trends.

In both cases, we were asking stakeholders to share good practices they are aware of.

- Desktop research to develop an inventory of relevant existing information and data with respect to the social dimension of transport regarding users/passengers, particularly information that provides insight at Member State level, followed by literature review of this material to identify the challenges and opportunities by user group.
- The identification of at least 10 good practices from EU Member States and 5 from non-EU countries, as well as the review of good practices available in guidance from multilateral organisations.
- A participatory workshop with over 60 stakeholders at which the study's draft recommendations were discussed.

The study team was able to obtain inputs from a range of stakeholders in all of the relevant stakeholder categories, including from transport user representatives; social inclusion and equality experts or networks; Member States; local transport authorities/companies; transport operators; and others (e.g. transport staff representatives). However, the overall response rate to the consultation was relatively limited, as result of a combination of factors, including the complexity of the issues explored, the impact of COVID-19 on resources to respond to the consultation, and in some cases a lack of knowledge or mandate with respect to transport for organisations representing different users.

More than 100 projects, studies and guidance, policy and other documents were identified covering the challenges and opportunities posed by the modernisation of the transport system. These included publicly available data and evidence collected in the framework of relevant research projects, and material from a wide range of European and multilateral organisations. Nevertheless, information on certain user groups (e.g. people with low IT literacy) was sourced from a narrower range of sources and contributors than others (such as PRMs). Practical limitations also meant that the study focuses on the most prominent themes in the context of transport, but it acknowledges that strong links exist with wider socioeconomic considerations.

Key findings

Current challenges, future challenges and future opportunities that are faced by the different user groups were brought together and summarised across Member States. The inventory and mapping provided many valuable insights, but the level of detail available across Member States varied significantly. This exercise also highlighted users that may not be captured within current definitions, and emphasised the overlaps or intersectionality between different groups.

While a significant number of current challenges for users was identified, there was a limited amount of information on anticipated future challenges. Where present, the way future opportunities were identified did not appear to be actionable in many cases. They were often identified in aspirational vision or strategy documents, with focus on stating bold goals rather than outlining clear and actionable steps towards implementation.

It was found that, in many documents discussing future trends, mention of the social dimension of transport (if any) is made at a very high-level, and infrequently discussed for disaggregated user groups. This creates a gap in understanding how trends may impact or exclude members of different user groups, or how they could be leveraged to address existing challenges faced by users.

Clustering some of the themes that emerged from the inventory and mapping identified a number of findings which highlight intersections between different user groups. These themes included:

- The concentration of ageing, populations on low income in rural areas poses a growing number of mobility challenges;
- Lack of coordination in transport comes at the expense of users, particularly for PRMs;
- Suburbanisation driven by unaffordability can result in higher transport costs for users and undermine progress towards decarbonisation;
- Mobility challenges for children and young people are more severe in rural areas;
- Having easily accessible and up-to-date information is important for transport users, but may be particularly impactful for individuals belonging to the different user groups considered in this study.

The level of preparedness was assessed for both users and authorities/operators. Responses from stakeholders indicated that the level of preparedness of authorities/operators is highly variable across the EU. Differences in terms of how the social dimension of transport was taken into account were noted at different levels (local, regional, national, EU) and across different cities, regions, and countries.

Other key findings included that:

- There is increasing recognition that equity and inclusion are important in the context of mobility, although stakeholders observed that this may sometimes be impeded by advocacy gaps for some user groups (e.g. citizens with poor IT literacy or with limited access to the internet, and people on low income);
- Policy frameworks which mainstream the needs of different transport users (e.g. PRMs) have demonstrated the ability to deliver meaningful improvements for transport users, including through the development of sophisticated networks of user representatives; and that

- Context-specific solutions are more effective for ensuring that the needs of different users are addressed properly, particularly where the user groups and intersectionalities that are identified are also appropriate for the context.

Good practices were identified which correspond to some of the key challenges identified for the different user groups, and/or to prominent changes to the transport system driven by the major trends. Good practices were explored across ten topics (i.e. challenges and/or prominent changes) drawing on evidence from the EU, and touching on the design and planning of transport, new forms of mobility, and innovations to support different users. An additional five relevant good practices from non-EU countries were also presented.

Overall, a number of common messages emerged across the good practices:

- Widespread awareness of different users' and their specific and diverse needs throughout all levels of transport governance and operations (from national to local, from boardroom to frontline staff) is key in helping advance equity and inclusion in transport;
- Stakeholder engagement is critical to better understand and meet users' specific needs and secure stakeholder buy-in; and
- Knowledge-building through the identification and collection of user-specific data is necessary for providing relevant insights into the different experiences of different users.

A review of guidance from multilateral organisations found that this mainly focused on two user groups: PRMs (e.g. older people); and women and girls. The guidance covered mainstreaming activities, supporting tools and practices relating to stakeholder engagement and knowledge-building (data), and more operational guidelines. The importance of knowledge-building through establishing a suitable framework for the identification, collection and analysis of data was highlighted, and examples of inclusivity indicators were provided with reference to Sustainable Urban Mobility Indicators (SUMIs), which stakeholders cited as a good example of a comprehensive and standardised approach to specifying relevant metrics.

Recommendations

The findings of the study included structural challenges and policy gaps that were identified through the analysis of the detailed challenges/opportunities for different user groups and in different Member States, and the analysis of the level of preparedness of different stakeholders to adapt to change.

The table below summarises the recommendations and the level at which these are aimed. The recommendations cover how structural challenges may be tackled and how the identified policy gaps may be addressed to ensure that the evolving transport system will be inclusive and foster connectivity and access to transport for all, and are grouped into four themes:

1. Improving coordination;
2. Building knowledge and evidence;
3. Integrating the social dimension when reviewing existing practice; and
4. Providing resources.

Summary of recommendations

Theme	Recommendation	European Union level	Member State level	Regional level	Transport sector level	Company level
Improve coordination	1: Strengthen coordination between different decision-makers	✓	✓	✓	✓	✓
Build knowledge and evidence	2: Develop an improved understanding of the needs of different user groups and the challenges they face	✓	✓	✓	✓	✓
	3: Develop a preferred methodology for building inclusion and equity considerations into transport appraisal, and specify relevant indicators	✓				
Integrate the social dimension when reviewing existing practice	4: Identify gaps with respect to inclusion and equity of different groups of transport users when reviewing existing policy and legal frameworks	✓	✓	✓		
	5: Identify gaps or constraints with respect to governance for the social dimension of transport when reviewing existing policy and legal frameworks	✓	✓	✓		
	6: Take the social dimension better into account from the perspective of users in relevant projects and operations	✓	✓	✓	✓	✓
	7: Review contingency plans to build resilience into the transport system that accounts for different users' needs	✓	✓	✓	✓	✓
	8: Support awareness-raising and capacity-building	✓	✓	✓	✓	✓
Provide resources	9: Provide consolidated guidance in an actionable toolkit	✓	✓			
	10: Address advocacy gaps and strengthen users' ability to engage	✓	✓	✓	✓	✓

Source: Steer

Recommendations at EU level that include the involvement of the European Commission have been prioritised based on their added value and costs and benefits.

- Recommendations 2, 6, 8, 9 and 10 are ranked first in terms of priority. The implementation of these recommendations is considered to be where value is created and benefits are expected to outweigh costs. The positive cost-benefit ratio is based on the fact that the Commission can build on existing initiatives.
- Recommendations 1, 4, 5 and 7 are ranked second in terms of priority. Although the costs of implementing these recommendations in full is considered to be high as a result of complex or time-consuming processes, intermediate steps are identified (such as focused coordination on key issues and the provision of guidance) that would contribute towards delivering improved outcomes without incurring higher costs.

- Recommendation 3 is ranked third in terms of priority. Developing a preferred methodology for building inclusion and equity considerations into transport appraisal, and specifying relevant indicators, could be a lengthy and time-consuming process. The application of such a methodology would also rely on relevant data being collected, for which capacity would need to be developed at the local level.

The degree to which different user groups are already recognised and their needs accounted for in transport varies. As an example, drawing on the advocacy gap analysis of stakeholder engagement in this study and the inventory of evidence collected, inclusion considerations in transport are relatively more advanced for PRMs, women, and people living in remote areas than for citizens with poor IT literacy or limited access to the internet, young people and children, and people on low income. However, this will also vary between different levels and places.

The extent and urgency with which the recommended actions might be undertaken will depend on the relative ‘starting position’ of the user groups being considered in each case and the level of ambition of different stakeholders (particularly authorities and operators). Overall, despite increasing recognition that equity and inclusion are important in the context of transport, steps have to be taken to ensure that the social dimension of transport from the perspective of users forms an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that different user groups benefit equally and inequality is not perpetuated.

1 Introduction

Background

- 1.1 The European Pillar of Social Rights¹, jointly proclaimed by the European Parliament, the Council and the Commission on 17 November 2017, places transport among the essential services to which everyone has the right to access (Principle 20). It stresses that such services should be of good quality and that support for access – intended in broad terms and covering availability, accessibility, and affordability – shall be available for those in need.
- 1.2 In addition, transport services subject to public service obligations (PSOs) can be considered as Services of General Economic Interest (SGEI)². As part of the shared values of the EU in respect of SGEI within the meaning of Article 14 of the Treaty on the Functioning of the European Union (TFEU), Protocol (No 26) TFEU includes a high level of quality, safety and affordability, equal treatment and the promotion of universal access and of user rights³. Article 36 of the Charter of Fundamental Rights of the European Union also recognises and respects access to SGEI in order to promote the social and territorial cohesion of the Union⁴.
- 1.3 There is a clear link between Principle 20 of the European Pillar of Social Rights and the United Nations' Sustainable Development Goals (SDGs). In its Communication⁵ from 2016 entitled 'Next steps for a sustainable European future – European action for sustainability', the Commission committed to 'mainstream the Sustainable Development Goals (SDGs) into EU policies and initiatives, with sustainable development as an essential guiding principle for all its policies. Existing and new policies should take into account the three pillars of sustainable development, i.e. social, environmental and economic concerns.' Two SDGs are relevant for the present topic: Goal 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation) and Goal 11 (Make cities and human settlements inclusive, safe, resilient and sustainable). Eurostat has recently assessed the progress towards these SDGs as 'overall moderate progress over the past five years'⁶.
- 1.4 Transport evolves and modernises along major trends: the green and digital transitions, demographic change but also the recent COVID-19 pandemic. These trends will have a considerable impact on transport with profound consequences for users and passengers.

¹ https://ec.europa.eu/info/strategy/priorities-2019-2024/economy-works-people/jobs-growth-and-investment/european-pillar-social-rights/european-pillar-social-rights-20-principles_en

² Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - White Paper on services of general interest, COM(2004)374 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52004DC0374&qid=1597243441398&from=EN>

³ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12012E/TXT>

⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12012P/TXT>

⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2016:739:FIN>

⁶ Sustainable development in the European Union — Monitoring report on progress towards the SDGs in an EU context — 2021 edition, <https://ec.europa.eu/eurostat/web/products-statistical-books/-/ks-03-21-096>

Different groups of people have different needs as transport users and it is important to ensure that the transport system is inclusive and available to all. A number of European equality and non-discrimination initiatives are aligned with this ambition. As the transport system evolves into the future, understanding the inclusion issues, policy gaps, opportunities, and range of possible solutions at various levels (EU, national, local) could, if appropriate, support informed decision-making and action from the Commission towards achieving relevant goals.

- 1.5 The issues are complex and have multiple overlapping dimensions as different users, needs, geographies, Member States/legal contexts, modes, business models and wider trends all interact. However, with the aim of ensuring that the future transport system will be inclusive and support connectivity and access to transport for all, it is important to consider the system from the perspective of users in terms of **affordability, reliability, and accessibility**.
- 1.6 The European Commission describes social inclusion as a process which ensures that those at risk of poverty and social exclusion gain the opportunities and resources necessary to participate fully in economic, social and cultural life and to enjoy a standard of living and well-being that is considered normal in the society in which they live. It ensures that they have greater participation in decision making which affects their lives and access to their fundamental rights (as defined in the Charter of the Fundamental Rights of the European Union)⁷.
- 1.7 Transport offers the means to reach essential opportunities such as jobs, education, leisure activities, shops, and friends, all of which affect the quality of life. Lack of mobility is inextricably linked to social disadvantage and exclusion⁸. However, within the context of transport and this study, **inclusion** refers to the process whereby different users are able to participate in decision making (e.g. in planning services) to ensure that their needs are recognised.
- 1.8 **Equity** involves recognising that people are different and need different support and resources to ensure their rights are realised. To ensure connectivity and access to transport for all, measures must often be taken to compensate for specific discrimination and disadvantages. It involves looking at relative disadvantages faced by different user groups, understanding exactly what barriers different users face in accessing services, and developing ways to overcome these barriers. This may also mean adopting measures that support improved **inclusion** of different user groups by working to direct support to those that do not enjoy political influence or do not benefit from affordable, reliable, and accessible services⁹.
- 1.9 The general objectives of the study are to:
 - map the challenges and opportunities posed by the modernisation of the transport system to different groups of transport users/passengers in terms of affordability, reliability and accessibility; and
 - review and propose possible solutions that ensure users are at the centre of the future transport system, so that benefits can reach all societal groups.

⁷https://ec.europa.eu/employment_social/soc-prot/soc-incl/final_joint_inclusion_report_2003_en.pdf

⁸https://civitas.eu/sites/default/files/civitas_policy_note_transport_poverty.pdf

⁹Adapted from <https://www.worldbank.org/en/topic/social-inclusion#1>; World Bank (2006). Equity and Development; World Bank (2013). Inclusion Matters: The Foundation for Shared Prosperity; and Water Aid (2010). Equity and Inclusion: A rights based approach.

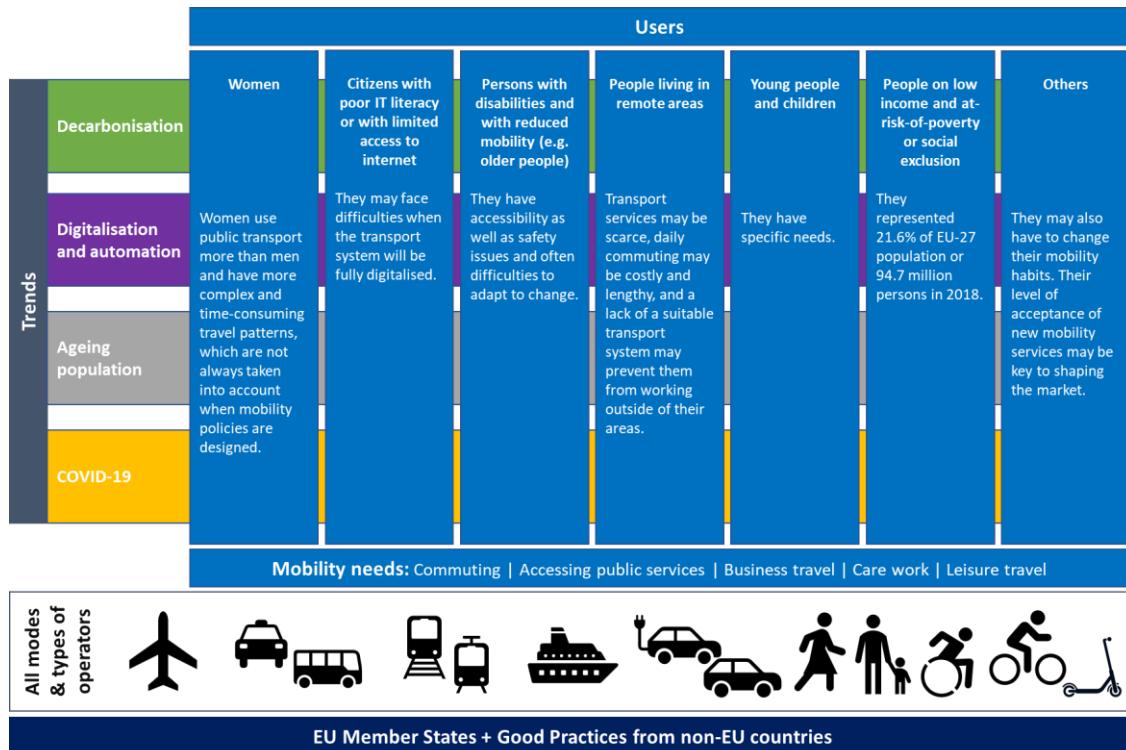
1.10 The study's specific objectives are to:

- identify all relevant existing data and evidence covering the challenges and opportunities posed by the modernisation of the transport system in terms of affordability, reliability and accessibility;
- identify and cluster the challenges and opportunities in terms of affordability, reliability and accessibility per category of transport users/passengers most likely to be affected by the modernisation of the transport system, including an analysis of the level of preparedness of relevant stakeholders;
- identify good practices from a representative sample of at least 10 different Member States that address the identified challenges; and
- draw up recommendations on possible solutions on how the identified challenges may be tackled and how the identified policy gaps may be addressed, and organise a participatory event to discuss possible recommendations with all relevant categories of stakeholders.

1.11 Most research and decision-making on this subject are undertaken at a national, regional or local level. This study brings together the needs, challenges and opportunities of all Member States and identifies common themes and/or potential policy gaps.

1.12 The scope of the study is summarised in Figure 1.1, taking into account different transport modes, trends impacting the transport industry, and different groups of transport users who are potentially disadvantaged by the current and future approach to transport provision.

Figure 1.1: Overview of study scope



Source: Steer

1.13 It is recognised that the user groups described above are heterogeneous and that individual users will often belong to multiple user groups simultaneously. This study explores some intersectionalities through the clustering of challenges faced by the different user groups into

common themes and acknowledges that (some) intersectionalities often act to exacerbate mobility challenges experienced by individual users.

Defining affordability, reliability, and accessibility of transport for the purpose of this study

- 1.14 The meaning of affordability, reliability and accessibility is not universal, and there are no harmonised definitions at EU level, because they are defined for the specific context they are used in (for example, see the European Accessibility Act¹⁰ and the Sustainable Urban Mobility Plan Guidelines¹¹). For the purposes of the study they are defined as follows, so that they can frame the data analysis, literature review and stakeholder consultation, ensuring that information is recorded in a consistent way. A definition for each term is provided below and reflects our review of a range of sources – primarily from the Organisation for Economic Co-operation and Development's (OECD) International Transport Forum (ITF) and the World Bank's Transport Sector Board.

- 1.15 **Affordability** is defined as¹²:

The ability to make necessary journeys to work, school, health and other social services and make visits to other family members or urgent other journeys without having to curtail other essential activities as a result of the cost of transport.

- 1.16 **Reliability** is defined as¹³:

The ability of the transport system to provide the expected level of service quality, upon which users have organised their activities.

- 1.17 A transport system is reliable if travel times are consistent (and hence, predictable). This is important because transport users subsequently organise their activities around expected journey, arrival and departure times when they use the transport system. The extent to which the system operates predictably allows users to form such expectations, thus allowing them to better use the system. Reliability implies the absence of significant variation in travel times (including arrival/departure times).
- 1.18 In general, accessibility can be defined relatively broadly as the ease with which people and places are connected. This can be in terms of transport affordability, reliability, connectivity, and usability as all four factors affect the extent to which different user groups in different places are able to access the transport system. For the purposes of this study, however, affordability and reliability are being treated separately.

¹⁰ Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services. <https://eur-lex.europa.eu/eli/dir/2019/882/oj>

¹¹ <https://www.eltis.org/mobility-plans/sump-guidelines>

¹² <https://openknowledge.worldbank.org/handle/10986/17408>

¹³ <http://www.internationaltransportforum.org/Pub/pdf/10Reliability.pdf>

1.19 **Accessibility** is defined as¹⁴:

The extent to which passengers can access the transport system in terms of connectivity and usability, where:

Connectivity refers to the extent to which those living in specific areas (e.g. rural or economically deprived) are able to access the transport system and, correspondingly, the extent to which the system serves areas people wish to travel to effectively (e.g. without excessive or lengthy changes).

Usability is defined as the extent to which transport users are willing and able to access the transport system safely and easily. This encompasses not only the barrier-free access for users with disabilities or reduced mobility, but other factors including the safety and security of transport vehicles and infrastructure and the ease of access to information about travel possibilities (including in accessible formats).

Organisation of this report

1.20 The remainder of this report is organised as follows:

- Chapter 2 describes the methodology, including the inventory of relevant existing data (Task 1 of the Terms of Reference) and evidence and the stakeholder consultation;
- Chapter 3 describes the findings in terms of the challenges and opportunities per category of transport user, and the level of preparedness of different stakeholders (Task 2 of the Terms of Reference);
- Chapter 4 provides a summary of key learnings from EU and non-EU case studies, as well as a review of other good practices, including relevant guidance from multilateral organisations (Task 3 of the Terms of Reference); and
- Chapter 5 outlines recommendations on possible solutions (Task 4 of the Terms of Reference).

1.21 The following appendices are also included:

- Appendix A provides details on the stakeholder consultation;
- Appendix B provides the report on the participatory workshop;
- Appendix C provides the detailed inventory of relevant and existing data and evidence;
- Appendix D provides some reference information on each Member State in the form of contextual country dashboards of selected relevant indicators;
- Appendix E sets out the evidence collected from the inventory and mapping of the challenges and opportunities per category of transport user and by Member State;

¹⁴ <https://openknowledge.worldbank.org/handle/10986/17408>;

https://www.itf-oecd.org/sites/default/files/docs/measuring-accessibility-methods-issues_1.pdf; <https://www.itf-oecd.org/sites/default/files/docs/accessibility-indicators-appraisal-uk.pdf>

- Appendix F details the good practices identified from ten case studies from the EU;
- Appendix G presents the good practices identified from the five case studies from non-EU countries; and
- Appendix H provides some contextual descriptions of how the major trends might be expected to influence the future transport system.

2 Methodology

Introduction

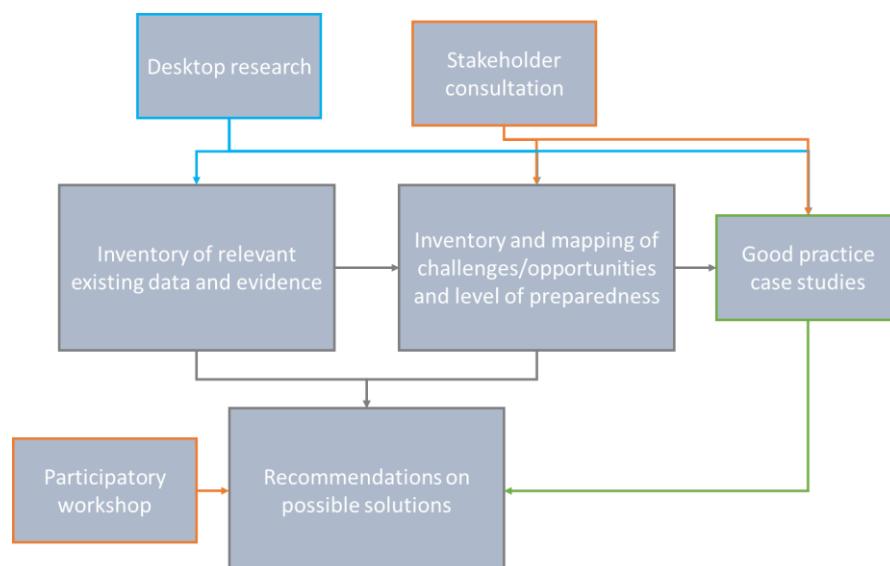
2.1 The methodology for responding to the Terms of Reference included the following elements:

- Stakeholder consultation using a number of approaches to engage with relevant stakeholders and collect information about their specific situation.
 - On the user side, we were looking to understand the challenges and opportunities that users may face, as well as their views on engagement with authorities/operators and the level of awareness towards major trends.
 - On the authority/operator side, we were aiming to understand the extent to which they take equity and inclusion into account in planning and delivering transport, the approaches used to engage with users, and the level of preparedness with respect to the major trends.

In both cases, we were asking stakeholders to share good practices they are aware of.

- Desktop research to develop an inventory of relevant existing information and data with respect to the social dimension of transport regarding users/passengers, particularly information that provides insight at Member State level, followed by literature review of this material to identify the challenges and opportunities by user group.
- The identification and description of at least 10 good practices from EU Member States and 5 from non-EU countries, as well as the review of good practices available in guidance from multilateral organisations.
- A participatory workshop with over 60 stakeholders at which the study's draft recommendations were discussed.

Figure 2.1: Overview of methodology



Source: Steer

Inventory of relevant existing data and evidence

- 2.2 More than 100 projects, studies and guidance, policy and other documents have been identified covering the challenges and opportunities posed by the modernisation of the transport system. This includes publicly available data and evidence collected in the framework of relevant research projects, and material from a wide range of European and multilateral organisations. Descriptions are provided in Appendix C.

Sources

- 2.3 Research and decision-making around this subject are undertaken at a variety of levels (supranational, national, regional, and local) across the EU, meaning that the range of relevant data and literature is very broad. In light of this, we have completed a wide-ranging review of sources aimed at practitioners to identify material (research projects, studies, guidance documents, policy papers and other relevant resources) across several databases and libraries across multilateral and European organisations, as summarised in Table 2.1.

Table 2.1: Databases and libraries reviewed for relevant evidence and data

Type	Sources
Multilateral organisations	<ul style="list-style-type: none"> Online libraries of the World Bank, International Transport Forum (Organisation for Economic Cooperation and Development), International Monetary Fund, European Bank for Reconstruction and Development, United Nations, Inter-American Development Bank, African Development Bank, and Asian Development Bank
European Commission	<ul style="list-style-type: none"> Project databases, including: EU CORDIS, TRIMIS, Keep.eu, InterReg Europe, LIFE, CEF and REGIO¹⁵ Other evidence from the Joint Research Centre, Consumer Markets Scoreboard and Eurobarometer.
European initiatives	<ul style="list-style-type: none"> Databases and libraries of POLIS, Eltis, CIVITAS, and Eurocities
Other	<ul style="list-style-type: none"> Literature reviews conducted as part of EU-funded research projects (e.g. CAMERA's Mobility Report¹⁶).

Source: Steer analysis

- 2.4 These sources have been reviewed, with relevant evidence and data catalogued in the inventory under five core categories:

- EU research projects (45)¹⁷;
- Studies (38);
- Guidance documents (11);
- Policy documents (5); and
- Other resources (16).

¹⁵ For details, see: <https://cordis.europa.eu/>; <https://trimis.ec.europa.eu/projects>; <https://keep.eu/>; <https://www.interregeurope.eu/projectresults/>; <https://webgate.ec.europa.eu/life/publicWebsite/search>; <https://ec.europa.eu/inea/connecting-europe-facility/cef-transport/cef-transport-projects>; and https://ec.europa.eu/regional_policy/en/projects/ALL.

¹⁶ Annex 2, Mobility Report 1 (2021). Coordination and Support Action for Mobility in Europe Research Assessment. Available from: https://h2020camera.eu/wp-content/uploads/2019/05/CAMERA_mobilityreport_final_20190517_light_light.pdf

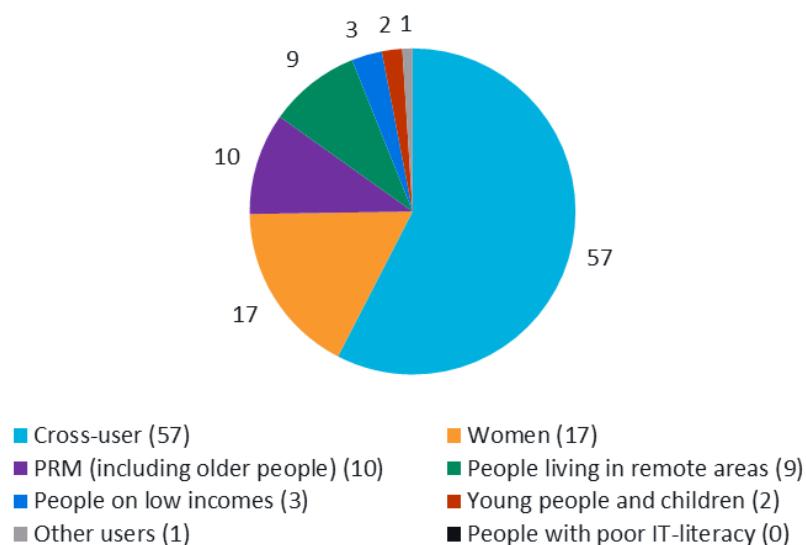
¹⁷ Which originated under relevant EU research projects (e.g. Horizon 2020, FP7 or similar) and, therefore, were financed – in whole or in part – by the European Union.

2.5 For EU research projects, deliverables and results have been identified and catalogued for the majority of projects. In addition, project documents, outputs and results have been extensively analysed for several projects as part of the analysis underpinning other chapters of this report.

Summary of materials

2.6 In total, 115 pieces of evidence and data are presented in the inventory in Appendix C. In general, the sources focused on relatively broad themes – analysing relevant topics in a pan-European level or in a way which cut across multiple or all modes (cross-modal) or user groups (cross-user). Furthermore, some specific user groups were studied more frequently than others, for instance PRMs were studied more frequently than women, as illustrated in Figure 2.2. This is in contrast to users with poor IT literacy or with limited access to the internet for whom no directly relevant materials were identified, and which do not feature in the figure below as a result (see also *Research limitations* section below).

Figure 2.2: Number of inventory items* by user group



Source: Steer analysis. (*) Note: excludes *Other documents* (16) which have not been categorised by user group.

2.7 An analysis of the key themes across all of the **EU research projects** identified is presented in the word cloud below. This is based on descriptions of each project's purpose and outputs (available in Appendix C) to analyse the coverage of specific words and phrases.

2.8 The size of the word or phrase corresponds to the frequency with which it appeared across projects. The above suggests that **projects**:

- Predominantly focused on public or urban transport rather than any specific mode;
- Generally focus on wider, cross-user impacts rather than focusing on specific user groups;
- Are results orientated (producing guidelines, actions plans, and identifying examples of best practice); and
- Had a common focus on sustainable mobility.

Figure 2.3: Common themes across projects reviewed



Source: Steer analysis. Visual provided by Word Cloud Generator.

2.9 The analysis is repeated below for the identified studies, guidance documents, policy papers and other documents. Our analysis suggests that **studies**:

- Tend to focus on cross-user, cross-modal and pan-European themes, albeit a significantly larger proportion focus on specific user groups – predominantly women, and persons with disabilities and with reduced mobility (e.g. older people);
- More frequently undertake comparative analysis (e.g. between countries, modes, etc.) than projects; and
- Are also results orientated (recommendations, case studies, good practice, etc.).

Figure 2.4: Common themes across studies, guidance and other documents reviewed



Source: Steer analysis. Visual provided by Word Cloud Generator.

Stakeholder consultation

Objectives

2.10 The stakeholder consultation had the following objectives:

- Offer stakeholders the opportunity to provide factual information, as well as views on the challenges faced by different user groups and how these are expected to change in the future;
- Supplement the literature review and support validation of its findings, either filling or confirming data or policy gaps;
- Understand how different stakeholders account for different users' needs in transport, and the level of engagement that users have in influencing transport provision; and
- Collect stakeholder views on what lessons can be learnt from examples of good practice and where policy interventions might be welcome.

Approach

2.11 Table 2.2 shows the types and purpose of each engagement method used during the study.

Table 2.2: Stakeholder engagement methods

Method	Approach	Target audience and purpose
Pilot interviews	5 interviews with a range of stakeholders.	To help shape the methodology of the work programme.
Interviews	30 interviews with a range of stakeholders.	To discuss stakeholders' views and obtain evidence, covering different stakeholder types and contexts.
Questionnaires	11 types of tailored questionnaires, covering the different user groups at different levels (e.g. EU or local level) were developed. We issued questionnaires to 436 stakeholders.	To collect stakeholders' views and evidence across all Member States as well as from EU-wide organisations.
Participatory workshop	An online event with over 60 participants representing stakeholders from all relevant categories.	To present and discuss possible recommendations with all relevant categories of stakeholders.

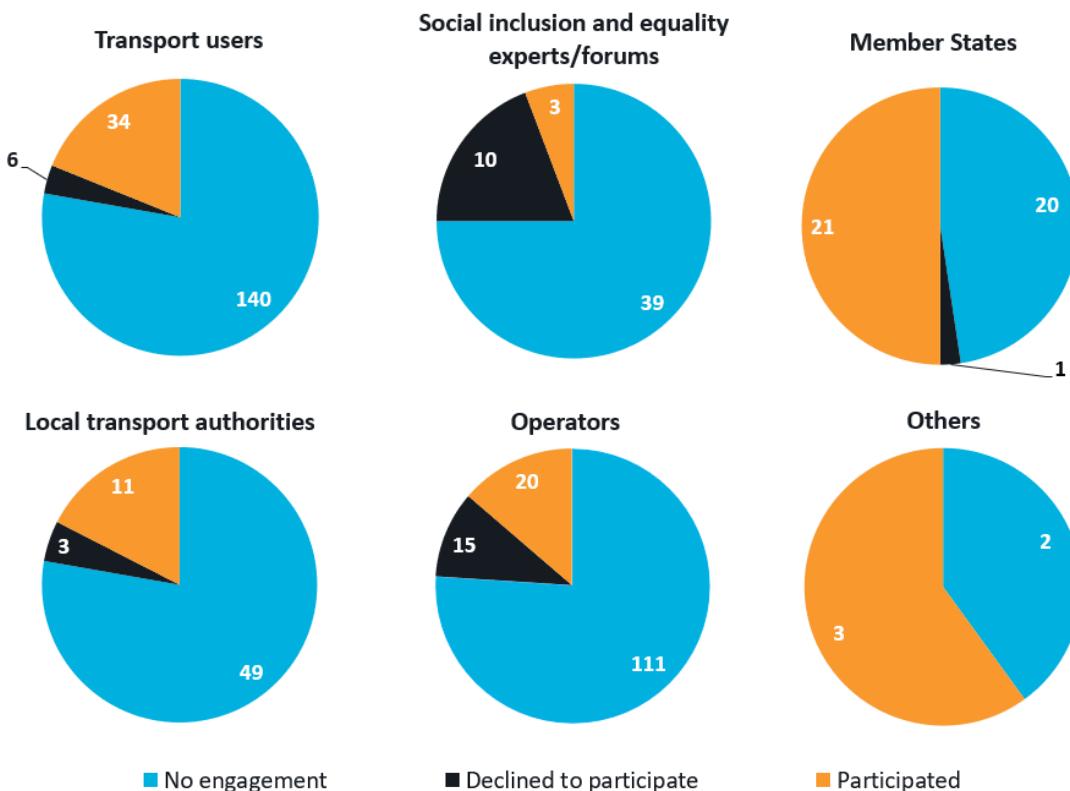
Source: Steer

2.12 We identified 6 broad groups of stakeholders, as listed below.

1. Transport user representatives, including:
 - Organisations focused on digital skills;
 - Representatives of persons with disabilities and persons with reduced mobility (PRMs);
 - Representatives of older people;
 - Representatives of people living in rural locations;
 - Women's organisations;
 - Youth organisations;
 - Organisations for people on a low income or at risk of poverty;
 - General consumer and/or passenger representatives; and
 - Other (e.g. Roma representatives);
2. Social inclusion and equality experts or networks;
3. Member States;

- 4. Local transport authorities/associations/companies;
 - 5. Transport operators; and
 - 6. Other, including transport staff representatives (e.g. the European Transport Workers' Federation).
- 2.13 Figure 2.5 provides an overview of the stakeholder engagement by stakeholder group. Stakeholders' status is recorded as being either:
- Having engaged with the study by responding to a written questionnaire and/or participating in an interview and/or the participatory workshop (in orange);
 - Having initially engaged by responding to our introduction of the study and then declined to participate (in black); or
 - Not having responded or contributed (i.e. no engagement, in blue).
- 2.14 Across the stakeholder engagement process a total of 488 stakeholders were introduced to the study and encouraged to participate in some capacity. Across the stakeholder consultation, input was received from at least one stakeholder in each Member State, except from Cyprus and Slovenia, while nearly one third of stakeholders who contributed to the study were at EU-level, representing members across the European Union. Given the subject matter of the study, we contacted a total of 52 social experts within the sub-groups of the European Anti-Poverty Network (EAPN), European Social Policy Network (ESPN), European Network of Independent Living (ENIL) and European Social Network (ESN), but many of these stakeholders declined to participate, citing a lack of expertise in the field of transport (see also *Research limitations* below on the Impact of COVID-19 and the Stakeholder consultation). A more detailed overview of the stakeholder consultation is provided in Appendix A.

Figure 2.5: Overview of stakeholder engagement status by stakeholder group



Source: Steer. Note that for Member States, more than one relevant stakeholder may have been contacted (e.g. Ministry of Transport and Ministry of Consumer Protection).

2.15 A summary of the participatory workshop is provided in Appendix B.

Research limitations

2.16 The social dimension of the transport system is a very broad topic which interfaces in a complex way with wider social and economic activity. Transport is a derived need and therefore many relevant challenges faced by users reflect the challenges they may face more widely in society. Further, the heterogeneity of user groups and the intersectionality of user characteristics give rise to hugely diverse needs experienced at the individual, local level. It is not possible for a study such as this to present an exhaustive inventory of all possible challenges faced by existing and potential transport users.

2.17 Additionally, identifying challenges (and opportunities) that may be presented by the future transport system is very dependent on stakeholders (users, authorities, operators etc.) having an awareness of potential upcoming changes in transport and their impacts. In this study, we have approached this by asking stakeholders to first describe existing challenges that they are aware are faced by different user groups (or the user group they represent). We subsequently asked them to consider how these challenges may change or what opportunities may be presented to address them in the future.

2.18 The trends driving change include:

- Decarbonisation and digitalisation, both of which can be said to predominantly be bringing about changes to the transport system itself (i.e. in the way transport is organised and provided); and
- An ageing population and the COVID-19 pandemic, both of which can be said to predominantly be bringing about changes in the profile of users' needs (i.e. behavioural changes), which the transport system ought to adapt to.

2.19 Contextual descriptions of how these major trends might be expected to influence the future transport system are provided in Appendix H. An analysis of the level of awareness and preparedness of different stakeholders with respect to these trends is developed in Chapter 3.

Evidence collection

2.20 As introduced above, evidence has been collected for this study through a combination of desk research and consultation with stakeholders. The desk research has mainly focused on materials aimed at practitioners and has not covered academic literature. The inventory and mapping of challenges and opportunities at Member State level also relied on structured desk research using key search terms in English and national languages to find relevant Member State documents, if available (e.g. national transport strategies, policy documents, country reports, national recovery and resilience plans, etc.).

2.21 Where evidence of specific challenge/opportunity was reported for a specific Member State, this was recorded accordingly (see Appendix E). However, where a challenge/opportunity is not mapped to a Member State, this does not indicate that this issue is not applicable there, only that specific evidence has not been found in the review of documents or been provided by stakeholders. In many cases, it is clear that challenges/opportunities found in one Member State are possibly applicable in others too. Overall, the mapping exercise provides a good understanding of the range of challenges/opportunities faced by transport users across the EU, along with a degree of granularity for these challenges/opportunities. At the same time, we note that the absence of information on a challenge/opportunity, may indicate a lower level of awareness, political will, or preparedness to address that issue.

2.22 With respect to the inventory of relevant existing data and evidence (Appendix C), the following limitations/gaps are noted in terms of:

- Types of documents (projects, studies, guidance, etc.) and user groups; and
- Themes (affordability, accessibility and reliability) and trends (decarbonisation, digitalisation and automation, an ageing population, and COVID-19).

2.23 Table 2.3 describes the distribution of documents by user group.

Table 2.3: Inventory items by user group

User group	Projects	Studies	Guidance	Others*	Total
Cross-user	34	17	3	3	57
Women	2	11	3	1	17
Poor IT-literacy or access	-	-	-	-	-
PRMs (e.g. older people)	4	2	3	1	10
People living in remote areas	4	3	2	-	9
Young people and children	1	1	-	-	2
People on low income	-	3	-	-	3
Other users	-	1	-	-	1
Total	45	38	11	5	99

Steer: Steer analysis. (*) Note: includes policy papers and other resources (e.g. surveys and data).

2.24 The inventory consists predominantly of projects (45) and studies (38) – the majority of which do not focus on or differentiate between specific user groups. For women, the available documents were mainly in the form of studies (11) – with only 2 projects focusing specifically on women and the transport system. PRMs (e.g. older people) was the only group for which there is a relatively broad range of types of material.

2.25 There are significant gaps for other user groups, however, with:

- No material found on users with poor IT-literacy or with limited access to the internet;
- One study only on other users (on Roma);
- Two sources are specifically focused on young people and children; and
- No projects (albeit 3 studies) focused on people on low income.

2.26 Table 2.4 describes the distribution of materials for the different themes (affordability, accessibility and reliability) and trends.

2.27 In terms of themes, accessibility was the most common (35 of 99 inventory items), with reliability studied the least (14). In terms of trends, materials discussing decarbonisation were relatively common (27 inventory items). Only 6 materials were identified relating to COVID-19 (including project INDIMO which examined, among other groups, ‘COVID-19 confined people’).

Table 2.4: Inventory items by theme and trend

Theme	Projects	Studies	Guidance	Others*	Total

	Projects	Studies	Guidance	Others*	Total
Accessibility	13	14	8	-	35
Affordability	8	8	1	-	17
Reliability	7	5	1	1	14
Trend					
Decarbonisation	12	8	2	5	27
Digitalisation and automation	10	3	-	3	16
Ageing population	3	3	1	3	10
COVID-19	-	2	1	3	6

Source: Steer analysis. (*) Note: includes policy paper and other resources (e.g. surveys and data).

Impact of COVID-19

- 2.28 The most important impact of COVID-19 on the study has been the slow response rate of stakeholders interested in participating in the study, as they were often extremely busy managing their organisation's response through an unexpected crisis. More consultation time than originally planned was provided which allowed stakeholders to still participate in meaningful ways.
- 2.29 Additionally, given the phase of the pandemic during which the study was undertaken (January–October 2021), information on the long-term impacts of the COVID-19 pandemic itself, which is one of the major trends influencing the transport system (and part of the Terms of Reference), was limited.

Stakeholder consultation

- 2.30 As summarised in the section above and detailed in Appendix A, despite attempting to engage (on multiple occasions and through a variety of channels) with a wide range of EU-level and Member State-level stakeholders, representing the different user groups specified in the Terms of Reference, national and local authorities, transport operators and other practitioners, the response rate to the consultation has been relatively limited. We assess that this is the result of a combination of factors, including the complexity of the issues explored, the impact of COVID-19 on resources to respond to the consultation, and in some cases a lack of knowledge or mandate with respect to transport for organisations representing different users. Our experience on this study corroborates issues highlighted in the literature and by stakeholders who did participate that advocacy gaps often exist and that the degree to which awareness of relevant challenges are embedded in organisations is not high (see Chapter 3).

Summary

- 2.31 The evidence gap results in relatively limited analysis being presented on future challenges and opportunities that users face as the transport system modernises, as opposed to the existing ones. In addition, information on certain user groups (e.g. people with low IT literacy) is sourced from a narrower range of sources and contributors than others (such as PRMs). Practical limitations also mean that the study focuses on the most prominent themes in the context of transport, but it acknowledges that strong links exist with wider socioeconomic considerations.

3 Inventory and mapping of the challenges and level of preparedness of stakeholders

Introduction

- 3.1 In order for the study to successfully look to the future, it is necessary to start by understanding the existing challenges that users experience in the transport system. The inventory and mapping exercise collects key related findings from reports or feedback from stakeholders and pulls them together to identify challenges across Member States.
- 3.2 The purpose of the inventory and mapping is twofold: to identify locally situated examples of challenges/opportunities for different user groups, and to compare the level of available information and understanding by Member State related to the social dimension of transport. The mapping exercise provides insight into how challenges/opportunities faced by different users overlap.
- To support the findings of the inventory and mapping, reference information for each Member State has been collected on a number of indicators and organised into a dashboard. These are intended to help contextualise some of the challenges/opportunities, and can be found in Appendix D.
 - The detailed inventory is provided in Appendix E.
 - The analysis is developed in the context of four key trends – Decarbonisation, Digitalisation and Automation, an Ageing Population, and COVID-19. Additional information on these trends can be found in Appendix H.
- 3.3 The Terms of Reference specify six different groups of transport users/passengers most likely to be affected by the modernisation of the transport system which may have particular needs or face particular challenges as mobility and transport evolve. These form the reference points for understanding the social dimension of transport and related mobility challenges/opportunities. Few individuals will fall neatly into these groups, with some falling into multiple groups, and others fulfilling some but not all of the ‘criteria’ used to outline the group. This intersectionality and ‘grading’ of users is part of what makes genuinely understanding and delivering equity and inclusion so challenging. Nevertheless, it is helpful to specify groups of users, as without them it would be impossible to frame the results of any research.
- 3.4 The six user groups of the study are:
- Women;
 - Citizens with poor IT literacy or with limited access to the internet;
 - Persons with disabilities and with reduced mobility (e.g. older people);

- People living in remote areas (notably rural areas), segregated localities or in less developed regions;
 - Young people and children; and
 - People on low income and in particular at risk of poverty or social exclusion.
- 3.5 Additionally, in considering the social dimension of the future EU transport system, citizens falling outside the above categories may also have to change their mobility habits. Their level of acceptance of new mobility services may be key to shaping the market.
- 3.6 Clusters of common themes with respect to challenges/opportunities faced by different user groups or presented in different contexts are developed later in this chapter.
- 3.7 Finally, the level of preparedness to adapt to change driven by the different major trends is also explored from the perspective of transport users and authorities, operators and other stakeholders.

Inventory of challenges/opportunities by user group

- 3.8 A description of each user group is provided with reference to the challenges/opportunities which it faces, providing a clear connection between the users and issues with the transport system. The challenges/opportunities used in these descriptions are broad, in the sense that they are common across multiple geographies and relate to issues which are near-ubiquitous for individuals within these user groups. These challenges/opportunities have been identified through collecting evidence from:
- The high-level findings of the inventory and mapping by user group at Member State level (see Appendix E); and
 - Broader sources, as referenced in the text below.
- 3.9 The broader sources are found to align with the findings across the different Member States, and together these make up an EU-specific evidence base.

Women

- 3.10 Research shows that women use public transport more than men and have more complex and time-consuming travel patterns¹⁸, which are not always considered when mobility policies are designed. Women are more likely to travel shorter distances and to stop more frequently than men during their journey¹⁹. This is due to the prevailing gender division of household roles and responsibilities which affects individual mobility²⁰. Women still spend significantly more time than men on these tasks and are often responsible for the mobility of other family members in a complex spatial-time organisation with specific transport requirements²¹. In many cases, this prevents or restricts their use of public transport, thus reducing the capacity to be mobile

¹⁸ Ortega Hortelano, A., Grosso, M., Haq, G., Tsakalidis, A., Gkoumas, K., van Balen, M., and Pekár, F. (2019). [Women in European Transport with a Focus on Research and Innovation - An overview of women's issues in transport based on the Transport Research and Innovation Monitoring and Information System \(TRIMIS\)](#), EUR 29833 EN, Publications Office of the European Union , Luxembourg , 2019, ISBN 978-92-76-09692-4, doi:10.2760/08493, JRC117687.

¹⁹ Ibidem.

²⁰ European Commission (2020). [Sustainable development in the European Union Monitoring report on progress towards the SDGs in an EU context](#). Brussels: European Commission.

²¹ Dotter, Fred (2016). [CIVITAS Thematic Policy Note: Transport Poverty](#). CIVITAS Initiative.

geographically and socially²² ²³. In addition to different travel behaviour due to different roles and responsibilities, women's modal choice depends not only on the conventional parameters of journey time, cost and comfort, but also on the conditions and safety/security of the journey²⁴ ²⁵, as women may face forms of gender violence and/or harassment on public transport²⁶, or at stops, terminals or platforms or simply walking on streets²⁷ ²⁸.

- 3.11 Women are more likely to be caring for dependents (whether younger or older)²⁹. Women also tend to live longer, and therefore are more likely to reach old age³⁰, which often comes with reduced mobility and increased difficulty in using transport³¹. Likewise, the prevalence of women with disabilities is generally higher than for men³², and also their incomes tend to be lower than those of men³³. New technologies around transport are not necessarily gender neutral and women seem to be less willing to use them³⁴, which appears to be broadly related to gaps in a sense of trust and safety related to these new modes. Women appear to be more sceptical about the readiness and reliability of new technologies such as autonomous and electric vehicles, are more risk-averse and tend to use new technologies only, once they are operational and consolidated and can be used in a safe environment. Concerns with being 'stranded' by an unreliable mode influence their openness to using new technology. For micromobility, the lack of suitable infrastructure to ensure safe safety is also an important factor. Being later adopters of technology, may then mean that women are more reliant on

²² [She moves. Women's Issues in Transportation. European Commission](#)

²³ World Bank Group (2018). [Driving Toward Equality: Women, Ride-Hailing, and the Sharing Economy: Main Report](#). Washington, D.C.

²⁴ Sustainable Mobility for All (2019). [Global Roadmap of Action Toward Sustainable Mobility: Universal Urban Access](#). Washington, D.C.

²⁵ World Bank; International Association of Public Transport. (2018). [Electric Mobility and Development. ESMAP Paper](#); World Bank, Washington, DC. World Bank.

²⁶ Ortega Hortelano, A., Grosso, M., Haq, G., Tsakalidis, A., Gkoumas, K., van Balen, M., and Pekár, F. (2019). Women in European Transport with a Focus on Research and Innovation - An overview of women's issues in transport based on the Transport Research and Innovation Monitoring and Information System (TRIMIS), EUR 29833 EN, Publications Office of the European Union , Luxembourg , 2019, ISBN 978-92-76-09692-4, doi:10.2760/08493, JRC117687.

²⁷ World Bank; International Association of Public Transport. (2018). [Electric Mobility and Development. ESMAP Paper](#); World Bank, Washington, DC. World Bank.

²⁸ Women4Climate Initiative (2019). [Gender Inclusive Climate Action in Cities](#). C40 Cities, Climate Leadership Group.

²⁹ European Commission (2021). [Sustainable development in the European Union Monitoring report on progress towards the SDGs in an EU context](#). Brussels: European Commission.

³⁰ Cleaner and Better Transport in Cities (2014). [CIVITAS Thematic Policy Note: Gender Equality and Mobility: Mind the gap!](#)! CIVITAS Initiative.

³¹ Cleaner and Better Transport in Cities (2014). [CIVITAS Thematic Policy Note: Gender Equality and Mobility: Mind the gap!](#)! CIVITAS Initiative.

³² Libertun de Duren, Nora Ruth, et al (2021). [Cities as Spaces for Opportunities for All: Building Public Spaces for People with Disabilities, Children and Elders](#). Monograph; 859. Inter-American Development Bank.

³³ European Commission (2020). European Commission Report on the Impact of Demographic Change. Brussels: European Commission

³⁴ Ortega Hortelano, A., Grosso, M., Haq, G., Tsakalidis, A., Gkoumas, K., van Balen, M., and Pekár, F. (2019). [Women in European Transport with a Focus on Research and Innovation - An overview of women's issues in transport based on the Transport Research and Innovation Monitoring and Information System \(TRIMIS\)](#), EUR 29833 EN, Publications Office of the European Union , Luxembourg , 2019, ISBN 978-92-76-09692-4, doi:10.2760/08493, JRC117687.

public transport but they may not have access to the same digital tools when using it (or planning to use it).

- 3.12 Although it is widely understood that individuals with different genders have different mobility needs, and there are many good examples of gender-inclusive transport projects³⁵, the degree to which it is embedded into considerations about transport by policy-makers, public authorities or transport operators is more limited³⁶. As such, the approach to gender equality in transport is quite fragmented, with differing practices in different places^{37 38} and across different modes^{39 40}. The literature review found that while some stakeholders had a better understanding of issues for women using transport, and had been able to integrate that understanding into policies and practices (e.g. in Austria), other stakeholders did not have very much information on the challenges faced by women, or did not acknowledge that women face challenges related to transport, resulting in little to no practices for accommodating women's travel needs. Additionally, the challenges women face while using different modes of transport are varied and so require different approaches by mode (e.g. concern related to traffic safety while cycling versus concern for personal safety and harassment on public transport).
- 3.13 Women are also less likely to have access to a private vehicle than men either because they do not own one (linked to income inequality) or because, where a household does own a car, they are not the primary users if (as a result of prevailing gender roles) men are using it to commute to work, so the vehicle is not available to them⁴¹.

Citizens with poor IT literacy or with limited access to the internet

- 3.14 Citizens with poor IT literacy or with limited access to the internet may face difficulties as the transport system becomes increasingly digitalised⁴². Key considerations for this group include access to technology (physical access to devices that are connected to the internet and allow for communication and information gathering), understanding of technology⁴³ (the skills and understanding of how to use technology and technological interfaces), and presence of underlying infrastructure (the connective services, such as broadband or mobile data coverage, that enable use of digital devices and services)⁴⁴.

³⁵ Libertun de Duren, Nora Ruth, et al (2021). [Cities as Spaces for Opportunities for All: Building Public Spaces for People with Disabilities, Children and Elders](#). Monograph ; 859. Inter-American Development Bank.

³⁶ CIVITAS Policy Note, Gender equality and mobility: mind the gap! 2020.

³⁷ World Bank; International Association of Public Transport. (2018). [Making transport work for women and men: challenges and opportunities in the Middle East and North Africa \(MENA\) region - lessons from case studies](#). Washington, DC: World Bank.

³⁸ Cleaner and Better Transport in Cities (2014). [CIVITAS Thematic Policy Note: Gender Equality and Mobility: Mind the gap!](#) CIVITAS Initiative.

³⁹ [Transport | European Institute for Gender Equality \(europa.eu\)](#)

⁴⁰ Roscoe, Alexa (2020). [Gender-Segregated Transport in Ride-Hailing: Navigating the Debate](#). Washington, D.C.: World Bank Group.

⁴¹ Gender equality and mobility: mind the gap! (2020): https://civitas.eu/sites/default/files/civ_pol-an2_m_web.pdf

⁴² Multiple authors (2019), [The future of road transport](#), EUR 29748 EN, Publications Office of the European Union, Luxembourg, 2019.

⁴³ Ibídem.

⁴⁴ Multiple authors (2019), [The future of road transport](#), EUR 29748 EN, Publications Office of the European Union, Luxembourg, 2019.

- 3.15 The challenges faced by citizens with poor IT literacy and those with limited access to the internet often come in hand in hand. Within the EU, those with poor IT literacy can be defined as those who have ‘no’ or ‘low’ digital skills: information, communication, content creation, safety and problem solving. This makes up 28% of the EU population aged 16-74 (2019)⁴⁵. Table 3.1 shows the breakdown of individuals with no or low level of digital skills by age group and gender at EU level.

Table 3.1: Breakdown of individuals with no or low level of digital skills by age group and gender, 2019

Age group	Male	Female	Total
Years 16 – 24	18%	16%	17%
Years 25 – 54	29%	30%	30%
Years 55 – 74	33%	39%	36%
Years 16 – 74	27%	28%	28%

Source: Eurostat (isoc_sk_dskl_i)

- 3.16 Transport related challenges for users with poor IT literacy could include: difficulties in purchasing travel tickets online, issues with access for cashless payments on transport services, issues for accessing travel information (timetables, fares, maps, etc.), real-time travel service updates or contacting customer services. These users also risk having to pay higher fares for paper-based tickets than for online tickets.

Citizens living in households with limited access to the internet, 8% of EU households in 2019⁴⁶, may face slightly different challenges in using the transport system (e.g. they may have the capability to purchase tickets through technological interfaces, like ticket vending machines at station), but will be limited in a similar way to those with low IT literacy in accessing online services, such as access to Mobility as a Service (MaaS) transport modes or online journey planning and ticket purchasing. In some areas, tickets are more expensive if not bought online, meaning that just as citizens with poor IT literacy, passengers with limited access to the internet are likely to pay more for services.

The way that challenges for citizens with poor IT literacy or with limited access to the internet intersect with those of other user groups is important; for example, people experiencing linguistic isolation may experience exacerbated, or reduced, levels of exclusion, depending upon the nature of the digital service provided. People on low income are more likely to face digital isolation, as are older people. Any future lapse in ‘net neutrality’ and the ‘best effort internet’, which oblige internet service providers to deliver equal access to data traffic, would impact low income users if service providers were able to raise the cost of quick access to information. The European Leader Association for Rural Development (ELARD) identified another intersection, where there is a larger proportion of residents in rural communities who are less likely to be confident in using IT services to make their journeys – as well as an inconsistent coverage of IT-accessible solutions for relevant transport modes (e.g. digital ticketing is not consistently distributed across the transport network and more likely not available on services in rural areas).

⁴⁵ Eurostat (May 2021), Individuals’ level of digital skills.

⁴⁶ Eurostat (May 2021), Households – Level of internet access.

- 3.17 COVID-19 has accelerated the digitalisation of society, placing many more essential services (e.g. public administration, healthcare, education, etc.) online⁴⁷. If authorities see the movement of in-person services to digital services as a way to reduce the need for transport provision to access such services, this may lead to a lower level of access to services to those who are excluded from using digital services and who are already suffering from digital isolation.
- 3.18 The proportion of people who have poor IT literacy appears to be shrinking. As such, although it is an important issue within the transport network today⁴⁸, many sources expect it to become less significant⁴⁹. IT literacy is often discussed in the context of age, and while there may be a clear age divide in current conditions, familiarity with technology is more accurately connected to the generation an individual belongs to rather than their age (i.e. age itself is not causal to low IT literacy – IT literacy is an issue impacting older adults but not driven in itself by age). The timeline of when a specific technology is introduced or proliferated in relationship to different generations is more determining for how comfortable someone will be with that technology. Through understanding this distinction between age and generation with respect to IT literacy, and if current definitions for IT literacy were to remain constant, it could be anticipated that gaps in IT literacy would reduce over time as younger, more technologically adept generations become the older generations.
- 3.19 However, two key considerations should be taken into account before making the assumption that gaps in IT literacy will become a thing of the past. This assumption relies on the basis that technology and the contexts for digital literacy in the future will look much like the present; for a field that values all things ‘disruptive’, consistency between present and future may not be a sound assumption. The second consideration is the emergence of, what research identifies as a second digital divide, which suggests that despite the reputation the younger generation has as ‘digital natives’, access and skills still vary based on demographic factors, such as gender, age, income, employment and disability. Additionally, access to internet varies across different areas and socioeconomic groups, and the level to which technology is integrated into education also varies significantly, sometimes due to differences at a policy/national level and other times on a school-to-school basis. So, while poor IT literacy will certainly not look the same in the future as it does currently, it is very plausible that there will be different gaps in technological capability in the mid- and long-term.

Persons with disabilities and with reduced mobility (e.g. older people)

- 3.20 Persons with disabilities and with reduced mobility (e.g. older people) might have accessibility⁵⁰ and safety issues, difficulties with adapting to change, and affordability barriers as they may require more expensive transport services⁵¹. PRMs is a highly heterogeneous

⁴⁷ European Commission (2020). [European Commission Report on the Impact of Demographic Change](#). Brussels: European Commission

⁴⁸ Eurostat, [Individuals' level of digital skills](#), 2021

⁴⁹ Multiple authors (2019), [The future of road transport](#), EUR 29748 EN, Publications Office of the European Union, Luxembourg, 2019

⁵⁰ UN Economic Commission for Europe (2011). [Transport for Sustainable Development in the ECE region](#). United Nations, Geneva.

⁵¹ UN Economic Commission for Europe (2015). [Transport for Sustainable Development – The case of Inland Transport](#). United Nations, Geneva.

group due to the high diversity of disabilities (e.g. physical or cognitive)⁵². Key challenges^{53 54 55} can include:

- situational awareness, wayfinding in terminals, understanding any visual-based information, associated with reduced vision;
- understanding any sound-based information, which is of particular relevance in emergency situations, associated with reduced hearing;
- the need to overcome different heights or to overcome accessibility barriers and gaps, associated with reduced movement;
- higher than-average concentration of pollutants in or around vehicles, more crowded environments in respect to COVID-19, associated with severe allergies or health conditions;
- poor first/last mile infrastructure and safety challenges associated with using infrastructure designed for individuals without reduced mobility (e.g. short crossing times); and
- poor infrastructure at interchanges between different modes or inconsistencies in accessibility for different modes; and,
- understanding how to use the transport system, associated with cognitive disabilities.

3.21 Age also plays a relevant role because physical and cognitive capabilities reduce over time and disabilities may increase or aggravate with age^{56 57}.

3.22 Although safety is part of the broader concept of accessible services and infrastructure, examples of challenges faced by PRMs that might be described as related more to safety than barrier-free access, might include: navigating road infrastructure for people with reduced situational awareness⁵⁸; crossing roads safely and in the time allowed by traffic signals for PRMs; the lack of accessible pavement infrastructure resulting in PRMs having to use road space, putting them at risk of being hit by motorised vehicles; and difficulties in using safety equipment (e.g. seatbelts) on-board vehicles.

3.23 These challenges can be amplified during multimodal journeys, as poor accessibility or infrastructure at interchanges between modes was found as an issue across a number of Member States in the literature review, as well as inconsistencies in accessibility for different modes; for example, one mode might have the majority of fleet accessible, but the mode a PRM is making a transfer to may have a much lower proportion of accessible vehicles. Having access to information on whether a precise scheduled vehicle is accessible or not is also

⁵² ITF (2011). Mobility: Rights Obligations and Equity in and Ageing Society. OECD Publishing, Paris.

⁵³ Dotter, Fred (2016). CIVITAS Thematic Policy Note: Transport Poverty. CIVITAS Initiative.

⁵⁴ Libertun de Duren, Nora Ruth, et al (2021). Cities as Spaces for Opportunities for All: Building Public Spaces for People with Disabilities, Children and Elders. Monograph ; 859. Inter-American Development Bank.

⁵⁵ Tim Breemersch, Eef Delhaye, Sebastian Vanderlinden, Péter Pápics (TML), Evangelos Bekiaris, Matina Louka, Angeliki Konsta (CERTH), Xavier Le Den (Ramboll)] (2018). Best practices guide on the carriage of persons with reduced mobility. Brussels: European Commission.

⁵⁶ Ibidem.

⁵⁷ ITF (2011). Mobility: Rights Obligations and Equity in and Ageing Society. OECD Publishing, Paris.

⁵⁸ Neate, G (No Year). Challenges faced by people with reduced mobility in navigating pedestrian crossings. JCT Consultancy, UK. Accessed on 22nd October 2021.

<http://www.jctconsultancy.co.uk/Symposium/Symposium2014/PapersForDownload/Challenges%20faced%20by%20people%20with%20reduced%20mobility%20in%20navigating%20pedestrian%20crossings.pdf>

- essential for these users. Information on the maintenance status of key equipment such as lifts or hearing loops is also essential.
- 3.24 Similarly, having easy access to good information online is important for these users, and they need to do more planning before starting their journey to ensure the route and modes they are taking are accessible and safe for them. Limited access to online information, or information that is difficult to find, not accessible or not detailed enough can create additional, informational barriers for these users. This is not limited to accessible information pre- or post-travel but also during travel (real-time apps, ticketing and vending machines, operation of PRM gates, etc.) and disruption too.
- 3.25 Other non-physical barriers exist beyond information, including complicated fare structures for PRMs that are not consistent between different transport service providers in EU Member States. Where discounts exist, they can be administratively challenging to access, resulting in PRMs missing out on fare discounts.
- 3.26 The heterogeneity of users which fall within this group means that it is very difficult to accurately describe how any given trend will impact them⁵⁹. For example, digitalisation may assist people with impaired physical mobility, but present problems for those with cognitive disabilities⁶⁰. Additionally, in some cases, future trends may impact PRMs in ways that are not necessarily intuitive; for example, decarbonisation and the associated roll-out of electric vehicles may cause issues for PRMs, who may not be able to use charging infrastructure unless it is designed to accommodate their needs (e.g. in terms of height or space around the vehicle) or PRMs with visual impairments may not always be able to hear electric vehicles arriving. Overall, because PRMs tend to be more car-dependent, any changes to the use of private cars (for example, through limiting access to city-centres to improve air quality, or road charging), may disproportionately impact them⁶¹.
- 3.27 The needs of these users tend to be addressed by legislation at EU and/or national level, which sets binding regulatory requirements and/or standards for accessibility in transport^{62 63}. For example, EU passenger rights legislation provides minimum standards which must be achieved for passengers travelling longer distances on public transport by air, by rail, and by bus and coach⁶⁴. At the national level, standards for accessibility to transport at a more local level may be set by authorities to fulfil public service obligations that stem from equalities legislation and are defined through contract mechanisms or licensing requirements applicable to the built environment, vehicles and/or systems. Although PRM representatives highlight that such requirements do not tend to extend far enough in ensuring spontaneous and independent travel for PRMs, the approach for addressing (some of) these users' needs is different to that

⁵⁹ Libertun de Duren, Nora Ruth, et al (2021). [Cities as Spaces for Opportunities for All: Building Public Spaces for People with Disabilities, Children and Elders](#). Monograph ; 859. Inter-American Development Bank.

⁶⁰ Multiple authors (2019), [The future of road transport](#), EUR 29748 EN, Publications Office of the European Union, Luxembourg, 2019.

⁶¹ Transport for London, [Electric Vehicles Gauging interest among disabled and elderly drivers](#), 2016.

⁶² Multiple authors (2019), [The future of road transport](#), EUR 29748 EN, Publications Office of the European Union, Luxembourg, 2019.

⁶³ Dotter, Fred (2016). CIVITAS [Thematic Policy Note: Transport Poverty](#). CIVITAS Initiative.

⁶⁴ European Commission, [Rights for travellers with disabilities or reduced mobility](#), 2021.

for several other user groups for which legislative requirements corresponding to their needs do not exist⁶⁵.

People living in remote areas (notably rural areas), segregated localities or in less developed regions where transport services are scarce

- 3.28 Public transport services are not always well-tailored to the mobility needs of different user groups and to dispersed trip origins/destinations in rural and less developed areas^{66 67}. A longer-term vicious cycle has been developing as rural areas become less attractive and face issues such as an ageing population⁶⁸ and reduction in transport demand, which results in depleted public transport provision⁶⁹. This was also highlighted by ELARD, which stated that the focus of the public transport network seems to be on denser regions, with few connections between rural communities or smaller towns. Reduced affordability⁷⁰, reliability, and accessibility⁷¹ in turn make rural and less developed areas less attractive to potential new residents, reinforcing the cycle^{72 73 74}. This is also the case for private transport services, with lower population densities and dispersed origins/destinations not corresponding well with the business models of market-based or collaborative services (e.g. taxis, ride-hailing, e-scooters).
- 3.29 These are issues which are, quite clearly, variable across the EU^{75 76}. Some countries have very small rural areas – Malta being an example. Others, such as Spain and Italy, have large expanses in which population decline is leading to ever-poorer service provision. It is worth noting, however, that simply having a large expanse of rural area does not mean that rural transport exclusion impacts a large proportion of the population. Sweden, for example, has a very large rural area, but proportionally a very small rural population – only 15% of the population is classified as living in areas that do not have ‘very high’ accessibility⁷⁷.

⁶⁵ UN Economic Commission for Europe (2015). [Transport for Sustainable Development – The case of Inland Transport](#). United Nations, Geneva.

⁶⁶ Dotter, Fred (2016). [CIVITAS Thematic Policy Note: Transport Poverty](#). CIVITAS Initiative.

⁶⁷ Sustainable Mobility for All (2019). [Global Roadmap of Action Toward Sustainable Mobility: Universal Urban Access](#). Washington DC.

⁶⁸ ITF (2011). [Mobility: Rights Obligations and Equity in and Ageing Society](#). OECD Publishing, Paris.

⁶⁹ European Commission (2020). [European Commission Report on the Impact of Demographic Change](#). Brussels: European Commission.

⁷⁰ 6.79 Patella, Dominic Pasquale; Wolanski, Michal Piotr; Nieweglowska, Magda; Pierog, Mateusz Hubert (2019). [Poland Catching-Up Regions Three: Rural Public Transport in Zachodniopomorskie](#). Washington, D.C.: World Bank Group.

⁷¹ UN Economic Commission for Europe (2020). [Transport Trends and Economics 2018–2019: Mobility as a Service](#). ECE/TRANS/285. United Nations, Geneva.

⁷² Ibidem.

⁷³ ITF (2011). [Mobility: Rights Obligations and Equity in and Ageing Society](#). OECD Publishing, Paris.

⁷⁴ European Network for Rural Development (2018). [EU Rural Review 26: Smart Villages: Revitalising Rural Services](#). Luxembourg: Publications Office of the European Union.

⁷⁵ UN Economic Commission for Europe (2020). [Transport Trends and Economics 2018–2019: Mobility as a Service](#). ECE/TRANS/285. United Nations, Geneva.

⁷⁶ Baptista, I. and Marlier, E. (2020). [Access to essential services for people on low incomes in Europe. An analysis of policies in 35 countries](#). European Social Policy Network (ESPN). Brussels: European Commission.

⁷⁷ SMARTA, [Rural Shared Mobility insight paper](#), Sweden, 2020.

- 3.30 Several European countries include islands separated from their main landmasses. These islands often suffer from poor connectivity to the mainland, but also face specific intra-island problems. For example, in Madeira, the roll-out of clean fuel vehicles by fleet operators has been hampered by the challenges of shipping parts and vehicles to the island⁷⁸.
- 3.31 Additionally, issues with the transport network in remote areas are not necessarily limited to a lack of options⁷⁹. In some rural areas, which have low populations for large portions of the year, seasonal influxes of tourists can cause significant issues for the transport network, through overcrowding and congestion.
- 3.32 The world is becoming more urban, with the global rural population estimated to peak in 2021 with future growth focused in cities. In the literature review, many Member States identified the issue of rural depopulation as a current and ongoing challenge. People, particularly young, skilled workers, are leaving rural areas for better economic opportunities present in cities, and rural areas have populations that are ageing.
- 3.33 This dynamic is more complex, however, than just a binary movement of population from rural to urban areas and has additionally been impacted by COVID-19. To begin, cities should be considered in their entirety, often a sprawl of mixed densities with varying levels of infrastructure and service provision, and including both core/connected areas as well as those on the periphery which often have fewer resources, such as access to frequent and well-connected transport services. For example, Czech local transport authority Klaipedos highlighted that there are often few bus stops in areas with housing growth.
- 3.34 When viewed in its entirety, present day urbanisation has more complex dynamics than a one-directional flow of population from rural to urban and can be better understood through the lenses of income and employment type. While young, skilled workers leave rural areas for opportunities in urban areas, low income and low-skilled workers are being priced out of revitalising urban cores and are pushed towards the peri-urban areas where housing is more affordable and transport costs are higher. Also observed through the literature review was the suburbanisation of low-skilled employment to areas primarily accessible by car. People on a low income arriving from rural areas and other countries might also be concentrated in peri-urban areas.
- 3.35 The COVID-19 pandemic has also impacted these dynamics, at a minimum in the short-term. Suburban areas were identified, in preliminary mapping⁸⁰, as more vulnerable and more impacted by COVID-19 in terms of health outcomes, although data on this is still emerging and not conclusive. The ability to work from home has been identified as more prevalent among higher-income workers⁸¹, with some moving away from cities, opting for more space in suburban, peri-urban and rural areas, making both temporary and more permanent relocations. Longer term impacts of COVID-19 on socio-economic spatial patterns are yet to be fully understood.

⁷⁸ CIVITAS, Destinations, [Measure Evaluation ResultMAD 4.1-Promote the uptake of clean vehicles by fleet operators](#), 2021.

⁷⁹ Sustainable Mobility for All (2019). [Global Roadmap of Action Toward Sustainable Mobility: Universal Rural Access](#). Washington DC.

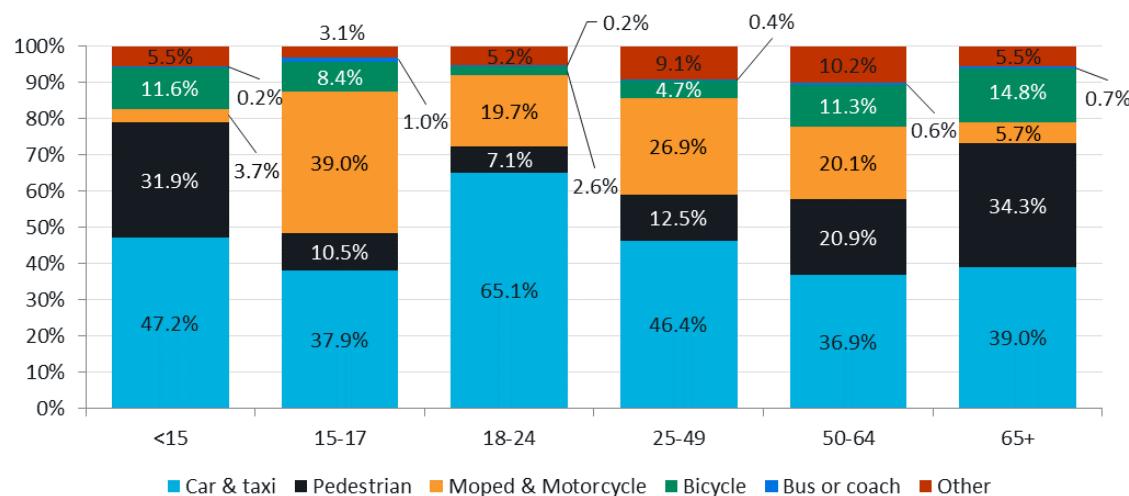
⁸⁰ Samantha Biglieri, Lorenzo De Vidovich & Roger Keil (2020) City as the core of contagion? Repositioning COVID-19 at the social and spatial periphery of urban society, *Cities & Health*, DOI: 10.1080/23748834.2020.1788320.

⁸¹ [Teleworking in the COVID-19 pandemic: Trends and prospects](#), OECD Publishing, Paris.

Young people and children

- 3.36 Young people and children generally rely on adults to fulfil their mobility needs due to lack of autonomy or responsibility and limited financial resources. Children in particular have a strong dependency on adults for transport (car dependency, but also escorting on public transport or when walking, cycling, etc.), while households with children are also more likely to use a car every day. Barriers to accessing public transport can socially disadvantage young people. Poor availability and high public transport fares as well as safety and security issues may hamper access to education, cultural and leisure activities, health and jobs⁸².
- 3.37 Access to education is particularly important⁸³, as travelling to school is the main journey that the majority of young people take, and a journey that many make independently. Across the EU, there are a variety of provisions for access to school for young people. In many countries, special transport options are provided. Safety is a key concern – accidents are one of the leading causes of mortality for people under 15 years old with 1,781 recorded fatalities in the EU in 2017⁸⁴ of which transport accidents are significant portion at 36% (643). Transport accidents are dominated by road traffic accidents as a result of the smaller size of other modes such as rail, air and shipping and their associated stringent safety measures⁸⁵. Figure 3.1 shows the share of road fatalities by transport mode across age groups. Car & taxi and pedestrian accidents make up the largest proportion (79% combined) of fatalities for under 15s than for other age groups. Figure 3.2 shows the share of fatalities for children under 15 years old by mode across genders, with a larger proportion of female fatalities as a result of car & taxi and pedestrian accidents (83%) compared to their male counterparts (75%).

Figure 3.1: Share of road fatalities by transport mode, across age groups



Source: CARE (Community Road Accident) database, 2019

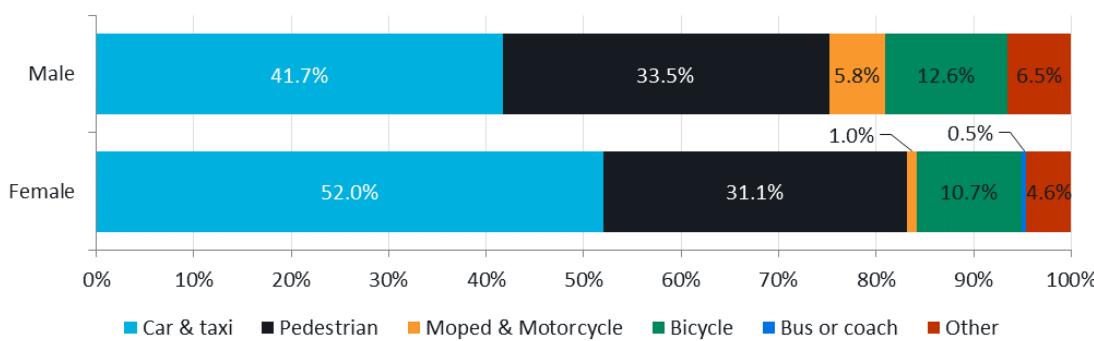
⁸² Romero, Jose Manuel; Urquhart, Rob (2018). [Is It Enough for Programs to Train Youth if They Can't Get to the Job? The Challenge of Transport Costs in Addressing Youth Employment \(English\)](#). Solutions for Youth Employment Washington, D.C.

⁸³ UN Economic Commission for Europe (2011). [Transport for Sustainable Development in the ECE region](#). United Nations, Geneva.

⁸⁴ Eurostat, code: [hlth_cd_ar0](#).

⁸⁵ European Environment Agency (2010). [Transport accident fatalities](#).

Figure 3.2: Share of road fatalities by transport mode and gender for children under 15



Source: CARE (Community Road Accident) database, 2019

- 3.38 There are a number of specific projects which have looked at safety for school journeys across the EU. For example, in Limassol, the CIVITAS Destinations project delivered a series of workshops focusing on safety for school journeys⁸⁶. Access to schools is not evenly distributed by geography – our research has highlighted that in a number of countries (Germany, Romania and Netherlands being specific examples), children in rural areas suffer from poor transport options for educational purposes. Such services, however, also support children’s access to other activities (e.g. sports, arts, friends), so when specially-provided school services are reduced during holiday periods, particularly in the summer, this also limits children’s ability to access other activities.
- 3.39 MAV, a Hungarian train operator, noted that it has identified that fewer young people are making use of the rail network in Hungary. MAV is actively trying to encourage growth from this demographic group through improving reliability of services and putting connections with schools in place to ensure that there are safer transport methods for young children and students on their journeys to school.
- 3.40 Rising use of digital payments for transport services may also hinder transport accessibility for younger people – they are less likely to have a bank account, and therefore may find it harder to participate in digital payment schemes. Similarly, should children need to travel beyond their immediate area, they often rely upon the assistance of an adult to show them how the transport network works, and help them to navigate it. This can lead to issues of intersectionality; for example, families on lower incomes are less likely to have one parent with time or budget available to teach a young person how to use the transport network. These issues can be improved by providing education on using the transport network for young people in formal settings, such as schools.
- 3.41 Often overlooked in lieu of other user groups, young people represent a user group for which the transport network is ill-designed, leaving them isolated socially, educationally, and economically⁸⁷, when compared to adults living in the same location.

⁸⁶ CIVITAS Destinations, [Measure Evaluation Result LIM 3.3 - Safe routes to school](#), 2021.

⁸⁷ Romero, Jose Manuel; Urquhart, Rob (2018). [Is It Enough for Programs to Train Youth if They Can't Get to the Job? The Challenge of Transport Costs in Addressing Youth Employment \(English\)](#). Solutions for Youth Employment Washington, D.C.

People on low income and in particular at risk of poverty or social exclusion

- 3.42 This group of users is large and heterogeneous and may cover women, young people and students, older people, migrants and ethnic minorities, unemployed people, people with limited access to the internet, as well as other people on low income^{88 89 90}. Their needs and trip patterns may differ^{91 92}, however they are all disproportionately affected by transport affordability problems⁹³, which may determine whether they have access to employment opportunities (e.g. in cases where the transport network does not provide good service for those travelling at off-peak hours to access low-skilled jobs), key activities and services (including health and education)^{94 95}. Their place of residence may not allow them good accessibility to the transport system, or the more reliable parts of it⁹⁶. Limited access to the transport network may reduce options for accessing employment, education, legal institutions, and other facilities and services^{97 98}. They may also be less likely to have bank accounts⁹⁹, therefore limiting the use of smart technologies. Migrants and ethnic minorities also face mobility challenges due to language and cultural barriers, which might limit their ability to understand how the transport system works or affect their willingness to use certain modes. They may also face discrimination or be reluctant to travel due to anxiety about the risk of discrimination on public transport.
- 3.43 There are barriers to using more affordable modes of transport for these users as well. Research has found that cycling is not seen as a way of getting around for everyone and that there are disparities in relation to gender, age, disability, and race/ethnicity for both recreational and utilitarian cycling¹⁰⁰. Research also identifies barriers to cycling for women

⁸⁸ European Commission (2020). [Sustainable development in the European Union Monitoring report on progress towards the SDGs in an EU context](#). Brussels: European Commission

⁸⁹ Dotter, Fred (2016). [CIVITAS Thematic Policy Note: Transport Poverty](#). CIVITAS Initiative.

⁹⁰ ITF (2011). Mobility: Rights Obligations and Equity in and Ageing Society. OECD Publishing, Paris

⁹¹ Dotter, Fred (2016). [CIVITAS Thematic Policy Note: Transport Poverty](#). CIVITAS Initiative.

⁹² United Nations Economic Commission for Latin America and the Caribbean (2013). [Transport, the poor and moving towards low-carbon societies](#). FACILITATION OF TRANSPORT AND TRADE IN LATIN AMERICA AND THE CARIBBEAN Bulletin, Issue No. 318 - Number 2 / 2013.

⁹³ UN Economic Commission for Europe (2011). [Transport for Sustainable Development in the ECE region](#). United Nations, Geneva

⁹⁴ European Commission (2020). [Sustainable development in the European Union Monitoring report on progress towards the SDGs in an EU context](#). Brussels: European Commission.

⁹⁵ Dotter, Fred (2016). [CIVITAS Thematic Policy Note: Transport Poverty](#). CIVITAS Initiative.

⁹⁶ Sustainable Mobility for All (2019). [Global Roadmap of Action Toward Sustainable Mobility: Universal Urban Access](#). Washington DC

⁹⁷ Multiple authors (2019), [The future of road transport](#), EUR 29748 EN, Publications Office of the European Union, Luxembourg, 2019

⁹⁸ Patella,Dominic Pasquale; Wolanski,Michał Piotr; Nieweglowska,Magda; Pierog,Mateusz Hubert (2019). [Poland Catching-Up Regions Three: Rural Public Transport in Zachodniopomorskie](#). Washington, D.C.: World Bank Group

⁹⁹ https://www.finance-watch.org/wp-content/uploads/2020/03/FW-Report_Vulnerable_Groups_March2020.pdf

¹⁰⁰ Aldred, R. 2018. Culture, Equity and Cycle Infrastructure. London. <http://rachelaldred.org/writing/culture-equity-and-cycle-infrastructure>.

and minorities¹⁰¹ ¹⁰² with the most commonly cited concerns including: safety, increased visibility and harassment, appearance/lack of facilities, barriers due to parenting and child care, racism and racial profiling, discrimination in bike shops (similar to that experienced by women in car garages), and barriers related to ability.

- 3.44 People on low income or at risk of poverty are often catered for indirectly within transport¹⁰³ on the basis of some other characteristic – for example, many European countries provide discounts to older people or students, both of which are groups that are likely to have low income. Similarly, those living in rural areas may be provided with subsidies or special services which provide improved accessibility¹⁰⁴. However, this approach may ultimately prove to be less effective than approaches which aim to assist low-income individuals directly, through improving affordability.

Additional/others

- 3.45 Other specific challenges and opportunities faced by the user groups described above are explored more in depth in the following sections. However, there are some key observations which do not fit neatly into any particular group, but are significant for understanding some of the benefits and limitations that grouping users in this way have.
- 3.46 First, users who suffer from ‘transport poverty’ can be very hard to identify and engage with. Transport poverty ‘broadly refers to households and individuals who struggle or are unable to make the journeys that they need’¹⁰⁵. It is challenging to know both how many people fall into this category, and their specific needs, as they are not picked up in the majority of transport-linked datasets, by merit of the fact that they are unable to use transport. The Commission intends to develop further research and strengthen evidence concerning the definition, monitoring and evaluation of progress towards the provision of adequate access to essential services, also by developing the concept of ‘transport poverty’ if appropriate, particularly within the context of the green transition towards a sustainable well-being economy¹⁰⁶.
- 3.47 Second, intersectionality is essential to a more complete understanding the challenges faced by individual users. For this study, intersectionality is when a person falls into two or more of the user groups identified above. This is an issue which is known to be important – once a person is excluded in one dimension it can lead to other forms of exclusion. For example, people with disabilities are more likely to have low income, and therefore be subject to multiple potential facets of exclusion. Additionally, falling into multiple user groups will often alter the nature of the challenge faced by the user, and will influence what type of solutions or opportunities can best address the user’s needs. Conversely, failing to disaggregate categories enough can lead to ‘incorrect’ classification, making it more challenging to tackle the root cause of exclusion. For example, migrants may face exclusion for a wide range of reasons –

¹⁰¹ Lubitow, A. 2017. Narratives of Marginalized Cyclists: Understanding Obstacles to Utilitarian Cycling Among Women and Minorities in Portland, OR. Portland: National Institute for Transportation and Communities NITC-SS-994.

¹⁰² <https://www.cityofsydney.nsw.gov.au/surveys-case-studies-reports/on-the-go-how-women-travel-around-our-city>

¹⁰³ [ESPN synthesis report: Access to essential services for people on low incomes in Europe](#)

¹⁰⁴ Patella, Dominic Pasquale; Wolanski, Michal Piotr; Nieweglowska, Magda; Pierog, Mateusz Hubert (2019). [Poland Catching-Up Regions Three: Rural Public Transport in Zachodniopomorskie](#). Washington, D.C.: World Bank Group

¹⁰⁵ UK National Centre for Social Research: [Transport and inequality: An evidence review for the Department for Transport](#), 2019, p. 10

¹⁰⁶ <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2021:801:FIN>

including linguistic, financial and safety reasons – but focusing on any single one of these factors may not help to solve the root cause of the exclusion.

- 3.48 Third, equity and inclusion considerations in transport may also need to take into account some of the other characteristics (i.e. sex, race, colour, ethnic or social origin, genetic features, language, religion or belief, political or any other opinion, membership of a national minority, property, birth, disability, age or sexual orientation) which form the grounds for discrimination under the European Charter of Fundamental Rights. For example, the experience and mobility needs of people with respect to race, colour, ethnic or social origin, and sexual orientation may also be relevant dimensions, in addition to those captured by the six user groups considered above.
- 3.49 Lastly, some of the trends this study examines will impact users who are outside the user groups we have identified above. In general, these impacts would be expected to be minor in magnitude (or severity), but they may influence a large number of people. As a result, these impacts have the potential to be significant. For example, the social dimension of decarbonisation will likely have profound impacts across society. The degree to which individuals are aware of this, and are willing or able to adapt, will have a significant effect. Measures such as the Social Climate Fund¹⁰⁷ aim to contribute to the transition towards climate neutrality by addressing the social impacts of transport users (amongst others) who are vulnerable and particularly affected by the inclusion of greenhouse gas emissions from road transport into the scope of the Emissions Trading Directive¹⁰⁸. However, other users will also be impacted. A specific, hypothetical, example described in a stakeholder interview was a worker, who relies upon a company car, losing the right to that car as the company tries to cut its carbon emissions. The social dimension of such changes ought to also be considered, as it may also more widely influence how the trends impact the different user groups.

Clustering common themes

- 3.50 An exercise in clustering themes in the inventory and mapping has been used to identify additional layers of detail. These are described below and draw on the combined evidence from the synthesis above and the tables in Appendix E. The clustering exercise is intended to reveal information that builds from the initial understanding of the users. In general, this takes an intersectional approach to issues and should be used as an example for how findings on different users' challenges can be pulled together to identify overlapping or deeper takeaways.

The concentration of ageing, people on low income in rural areas pose a growing number of mobility challenges

- 3.51 Rural populations tend to be older and on low income, including many women. Economically productive and more educated segments of the population are leaving rural areas due to low living standards, low transport accessibility, high unemployment, poorer access to public services and, more broadly, civic amenities and commercial services. This is a long-standing trend and although COVID-19 has sometimes had an impact on this trend by momentarily slowing down this trend, its long-term effects are still unknown.

¹⁰⁷ https://eur-lex.europa.eu/procedure/EN/2021_206

¹⁰⁸ Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading

- 3.52 The rural population is more likely to have a lower income and needs access to affordable and available transport, and as the population ages, people have greater accessibility concerns and less access to personal vehicles; as a result they are more reliant on public transport.
- 3.53 The growing importance of accessible, affordable and reliable transport in these areas comes in direct conflict to the increasing challenges to transport operators to run economically viable networks, and reductions in service continue to decrease attractiveness and consequently service viability. In many Members States, rationalisation of public transport in rural areas exacerbates high existing levels of mobility needs among users. Where private companies fill gaps left by public operators, costs for users can be much higher than in urban areas and there is a risk that public operators abandon unprofitable routes.
- 3.54 On-demand mobility has been a popular solution proposed for low demand areas and has the potential to meet some of the needs unmet by declining quality of public transport in rural areas. However, approaches to on-demand mobility that are highly digitalised will not meet the need of users with less comfortability with or access to technology, and lead to even greater exclusion among these groups; digital tools have many barriers for older users, and rural users and users on low income also experience barriers to technology access. Women are also later adapters of technology so will not experience the same benefits. If digitally exclusive on-demand service were to be introduced to replace existing public transport services, the impact would be potentially detrimental to these users, who are also less likely to have access to personal vehicles.

Lack of coordination in transport comes at the expense of users

- 3.55 Governance of transport systems can have significant impacts on users. While decentralisation provides some benefits in providing locally responsive services, it leaves significant gaps for users through a lack of delineated responsibility for meeting users' needs (either across different regions or across different user groups). The inventory and mapping revealed two key ways that lack of coordination disadvantages users: lack of centralised information and inconsistencies in accessibility.
- 3.56 Lack of coordination between transport providers leads to difficulties for users when accessing essential traveller information like schedules, trip-planning tools and ticket purchasing. The lack of comprehensive online mobility platforms and fragmented traveller information creates barriers for users. Transport, which requires a high degree of local knowledge to use it, creates challenges particularly for first time users, those with poor IT literacy or with limited access to the internet, children and young people and PRMs. In some examples, even experienced users were not aware of the resources available to them, e.g. an interactive map of accessible stations. User-friendly systems with centralised traveller information are also important infrastructure to support new mobility opportunities like Mobility as a Service (MaaS), but also will be less accessible to those with poor IT literacy or with limited access to the internet.
- 3.57 Lack of coordination around accessibility between transport providers or between different modes has repercussions for users, particularly for PRMs. Examples of bus fleets with 90% of vehicles accessible compared to only 30% of trams in the same transport network illustrate the ineffectiveness of evaluating accessibility by a singular mode or individual transport services offering. Additionally, street infrastructure for transferring between modes needs to be taken into account as a segment of a single accessible trip.
- 3.58 Funding streams for decarbonisation which may facilitate wide scale fleet replacement can provide an opportunity to prioritise accessibility in the design of new rolling stock. However,

one local transport authority in a major city stated that although it participates in a number of research pilot projects that take the social dimension of transport into account, it can be difficult due to a lack of financial and human resources to bring relevant learnings across to influence larger programmes (e.g. linked to the focus on decarbonisation), as a way of scaling up social equity initiatives.

Suburbanisation driven by unaffordability can result in higher transport costs for users and undermine progress towards decarbonisation

- 3.59 While younger, economically active and more educated segments of the population leave rural areas for opportunities in urban areas, increasing unaffordability has created an opposite trend pushing low-income groups out of urban cores and towards suburbs and peri-urban areas. Stemming from high costs of housing, suburbanisation of low-income groups can result in higher transportation costs with reduced quality of service and increased travel times for these users.
- 3.60 An important characteristic of many peri-urban users is the need to commute over longer distances, both for services and job opportunities. There has been in some Member States an outward movement of low-wage jobs from urban centres towards less accessible areas, which sometimes require workers to commute by private vehicle, further increasing transportation costs and CO₂ emissions.
- 3.61 While peri-urban areas may appear to be less dense, areas with a higher number of low-income households may have a higher number of overcrowded homes, creating ‘forgotten densities’ where population density is high compared to housing/development density. In these areas, users may experience the downsides of low density (further distances to destinations, lower density of transport services). During COVID-19, peri-urban areas with overcrowded homes have been particularly impacted.
- 3.62 In addition to increasing transportation costs and reducing opportunities for users on low income, this trend undermines efforts made towards decarbonisation. To address this trend, it is necessary to examine both transport and housing policies and practices.

Rural challenges for young people and children

- 3.63 Young people and children are at particular risk of transport-related social exclusion due to lower incomes, dependency on adults, not being old enough to drive or being unable to afford a vehicle, and being reliant on public transport.
- 3.64 These challenges are particularly pronounced for young people and children in rural areas. Access to school may be limited, while access to out-of-school activities can be particularly challenging, especially out of term-time and for young people/children in low-income families. Young people/children from low-income groups may also have more restricted school choices and be less able to access learning outside school hours. The transport costs for young people/children can be burdensome for low-income families, particularly as rural transport tends to be more expensive. The absence of good quality transport has been found to contribute to young people/children engaging in anti-social behaviour and experiencing boredom and frustration through a lack of choices.

Providing updated, easy to access trip information to transport users is essential

- 3.65 Providing easy to access, reliable and legible information is important for all transport users, but the consequences of poor or outdated information can be more harmful to those in the focus user groups.
- 3.66 For example, PRMs must plan their trip ahead of time to ensure that the services and vehicles they are planning to use will be accessible to them. This includes at interchanges between modes and when transferring from one vehicle to another. An issue highlighted in multiple Member States through the inventory and mapping of challenges was broken elevators at stations. Having access to this information ahead of time is important so that the passenger knows they will be able to complete each leg of the trip without compromising their safety or becoming stranded.
- 3.67 The inventory and mapping identified an issue with complete or centralised information, especially in areas where the local nature of transport services or the provision of services by multiple (private) operators resulted in a lack of coordinated information.
- 3.68 While having information in a centralised location online can effectively address this challenge, it is also important to consider users with poor IT literacy who may be excluded from this solution. Complementing thorough and up to date information online with offline channels for accessing the same information can help bridge this gap.
- 3.69 Beyond knowing where to find up-to-date information, presenting information in a way that is easily understood by users is essential. Information that is accessible to those with limited proficiency in the prevailing language(s) should be provided. Complex policies or mechanics related to the service itself, such as fares, can also render the use of the service more complicated. Fare structures that are inherently complex will not be easy to explain to users and this is often further complicated when multiple operators or service providers are present. The inventory and mapping also found that some places (in Italy and Poland, for instance) have conditional reduced fares that are unintuitive or administratively challenging to access, leading to an under-utilisation of such resources which themselves are intended to reduce barriers to transport access.

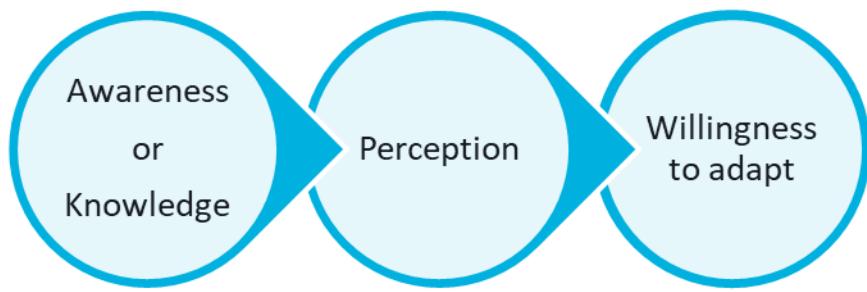
Level of preparedness

- 3.70 The level of preparedness to adapt to change related to the different major trends has to be considered from at least two different perspectives:
- That of transport users who belong to one or more of the different user groups; and
 - That of authorities (Member State, regional or local level), operators and other stakeholders responsible for the planning and delivery of transport services and/or infrastructure.

Users' level of preparedness

- 3.71 From the perspective of transport users, the level of preparedness relates to the degree to which they are aware of the potential impacts of the different major trends on their mobility, their perception towards these impacts and their willingness to adapt to the expected changes.

Figure 3.3: Users' level of preparedness



Source: Steer

3.72 For example:

- Users who have a good awareness of the impacts of a trend and understand how it may impact their mobility, perceive these changes positively and are willing to adapt to upcoming changes, can be said to have a high level of preparedness;
- On the other hand, users who are not aware of the trends and the potential impacts of these trends on them, can be said to have a low level of preparedness;
- Other users may have a good awareness of the impacts of a trend, but maintain a negative perception towards these and as a result may be less willing to adapt to change and hence can also be said to have a low level of preparedness.

3.73 The awareness, perception and willingness to adapt to change of individual users who belong to one or more of the different user groups will vary greatly and will be influenced by socioeconomic factors, such as education, age, and income.

3.74 Results of recent Eurobarometer surveys provide some indication (although not limited to the different user groups) of users' level of preparedness with respect to certain aspects of the modernising transport system. Depending on the questions asked as part of the surveys, different insights can be gained into users' awareness of the major trends, their perception of these and their willingness to adapt.

3.75 In the context of the **decarbonisation** trend, Special Eurobarometer 495 on Mobility and Transport (survey carried out in September 2019)¹⁰⁹, asked respondents about:

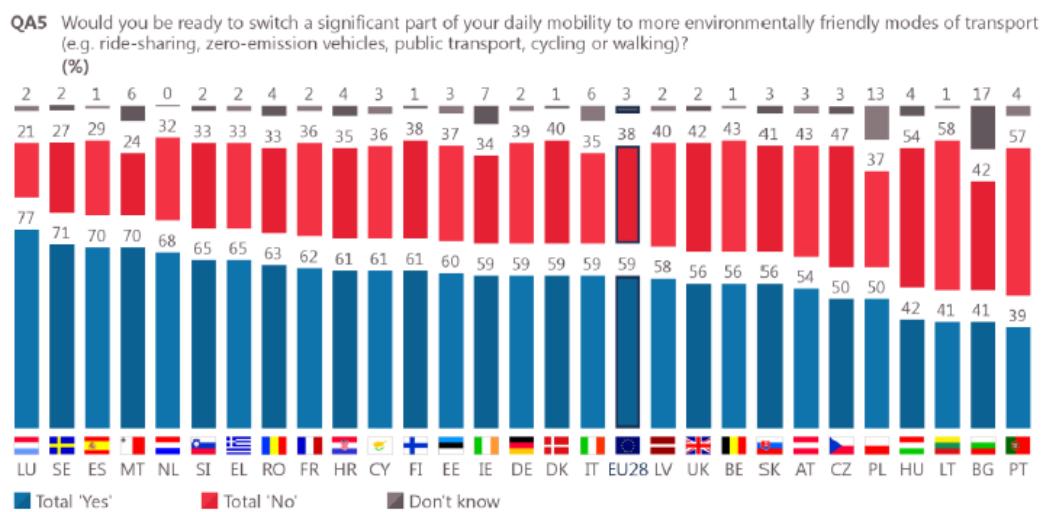
- Their willingness to switch to more sustainable forms of transport in daily mobility;
- Their willingness to pay more for more sustainable modes in daily mobility;
- Factors that would influence a switch to more sustainable long-distance transport options; and
- Their willingness to pay more for more sustainable modes in long-distance journeys.

3.76 **Willingness to switch to more sustainable forms of transport in daily mobility:** at EU level, 59% of respondents said that they were ready to adopt more environmentally friendly modes of transport, with no difference based on gender or income. However, younger respondents were more likely to be ready to switch (70% of 15-24 year olds) compared with older people (53% of those aged 55 and over). Respondents living in towns were more likely to be ready to

¹⁰⁹ <https://europa.eu/eurobarometer/surveys/detail/2226>

switch (63%) than those in rural locations (55%). In 24 countries, at least half of all regular car users said that they were ready to switch, although there was considerable variation.

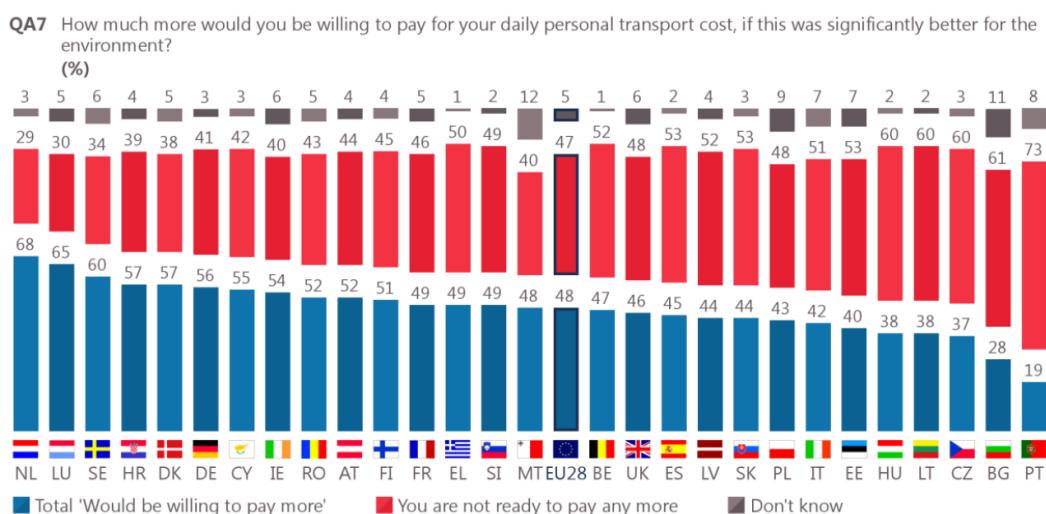
Figure 3.4: Willingness to switch to more sustainable forms of transport in daily mobility



Source: Special Eurobarometer 495 | Base: All respondents who use cars other than zero-emission cars (n=16,717)

- 3.77 **Willingness to pay more for more sustainable modes in daily mobility:** at EU level, willingness to pay more for sustainable transport was nearly exactly divided in half – 48% of respondents would be willing to pay more, 47% would not, with the remainder (5%) unsure – with no differences based upon gender or level of urbanisation. However, younger people (58% of those aged under 55) were more willing to pay more than those aged 55 and over (40%). Additionally, the higher an individual's income, the more willing they would be to pay more.
- 3.78 The main reason given for an unwillingness to pay more was because of an inability to pay more (43% of responses). Within this, women were more likely to say they could not afford to pay more for their transport than men (46% as opposed to 41%). Those on lower incomes were more likely to say that they cannot pay more.
- 3.79 There were 11 countries where at least half of the population said that it would be willing to pay more.

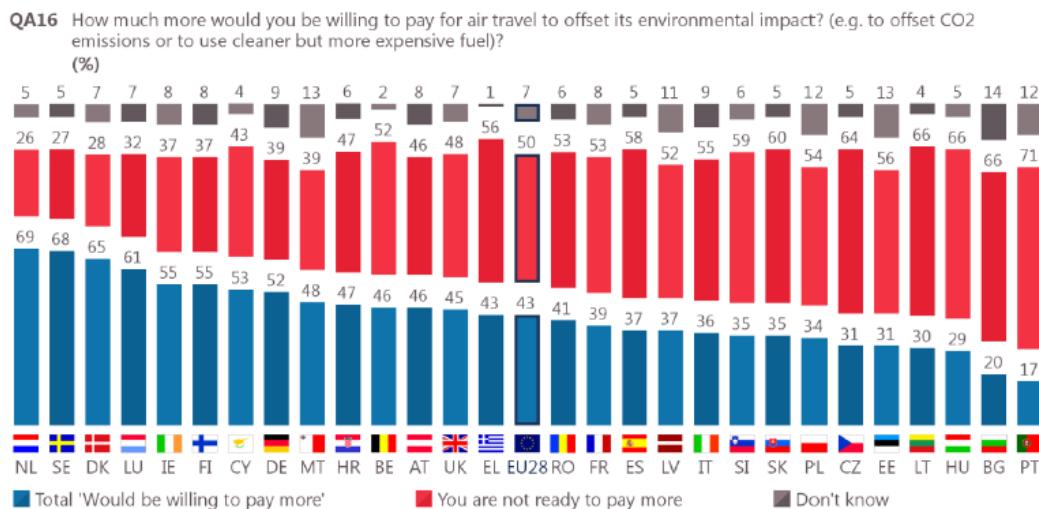
Figure 3.5: Willingness to pay more for sustainable mobility



Source: Special Eurobarometer 495 | Base: All respondents (n=27,565)

- 3.80 **Factors that would influence a switch to more sustainable long-distance transport options:** at EU level, respondents gave three main answers when asked what factors would influence a switch to more sustainable long-distance transport options; 37% said having an alternative mode of transport that would get them to their destination as quickly; 36% said that having an alternative mode at similar or equivalent price; 28% said they were not ready to change their long-distance travel.
- 3.81 Older respondents were more likely to say that nothing would influence them towards more environmentally friendly transport – 36% of those aged 55 and over compared to 19% aged 15-24. The higher an individual's income, the more likely they were to say that having a mode of transport that will get them to their destination as quickly as current options, is important. The same was more true of urban residents, than of those living in rural areas.
- 3.82 **Willingness to pay more for sustainable modes of transport in long-distance journeys:** the majority of respondents across the EU would be unwilling to pay more for sustainable modes of long-distance transport (50% of respondents), with no differences based upon gender. However, younger people were more willing to pay to offset the environmental impacts of air travel than their older counterparts (54% of 15-24 year olds, compared to 34% of those aged 55 and over). Additionally, those who lived in urban areas, are more likely to be willing to pay more than those living in rural areas (44% as opposed to 39%). Respondents in just 8 countries said they would be willing to pay more for sustainable long-distance travel.

Figure 3.6: Willingness to pay for sustainable long-distance travel by country



Source: Special Eurobarometer 495 | Base: All respondents (n=27,565)

- 3.83 In the context of the **digitalisation and automation** trend, Special Eurobarometer 495 on Mobility and Transport asked respondents about the future of personal mobility, while Special Eurobarometer 496 on Expectations and Concerns from a Connected and Automated Mobility (survey carried out in September 2019)¹¹⁰ asked respondents about:
- Perceptions of automated vehicles;

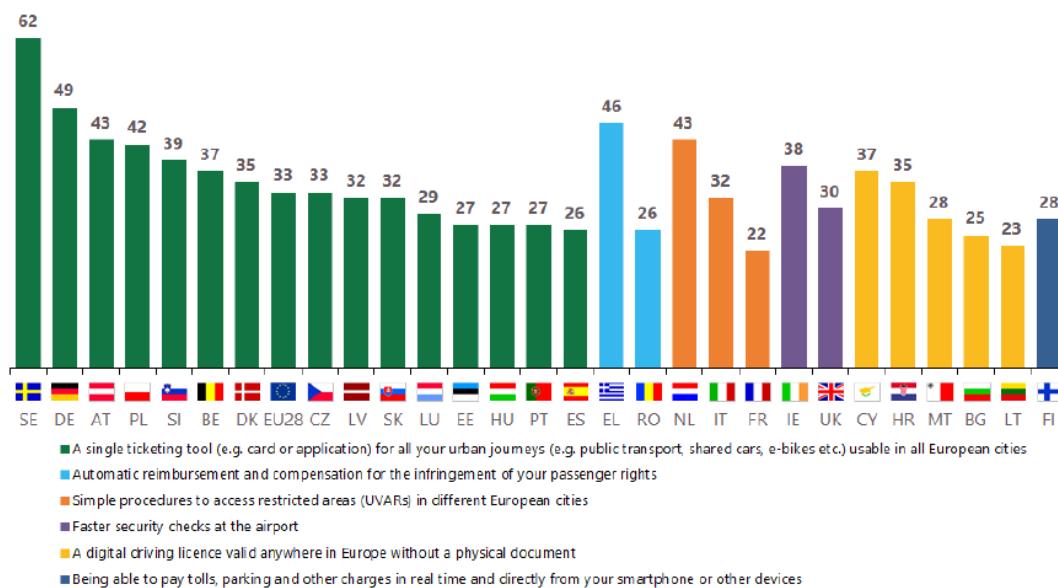
¹¹⁰ <https://europa.eu/eurobarometer/surveys/detail/2231>

- Attitudes towards the introduction of fully automated and connected vehicles; and
- Readiness to use fully automated and connected vehicles.

3.84 At EU level, half of the responses given on what would be most useful for **future personal mobility** involved digital solutions¹¹¹. Men were more likely than women to mention car-related changes (e.g. digital driving licences; 28% versus 19%). Those aged over 55 were less likely (27%) than younger age groups (37%) to mention a single ticketing tool, as were people who experience financial difficulties (25% versus 34%) and those living in rural locations (29% versus 38%). In 23 countries digital solutions were most mentioned as being useful for future personal mobility.

Figure 3.7: Future mobility

QA11T For the future of your personal mobility, which of the following would you find the most useful? Firstly? And then?
(% - THE MOST MENTIONED ANSWER BY COUNTRY)



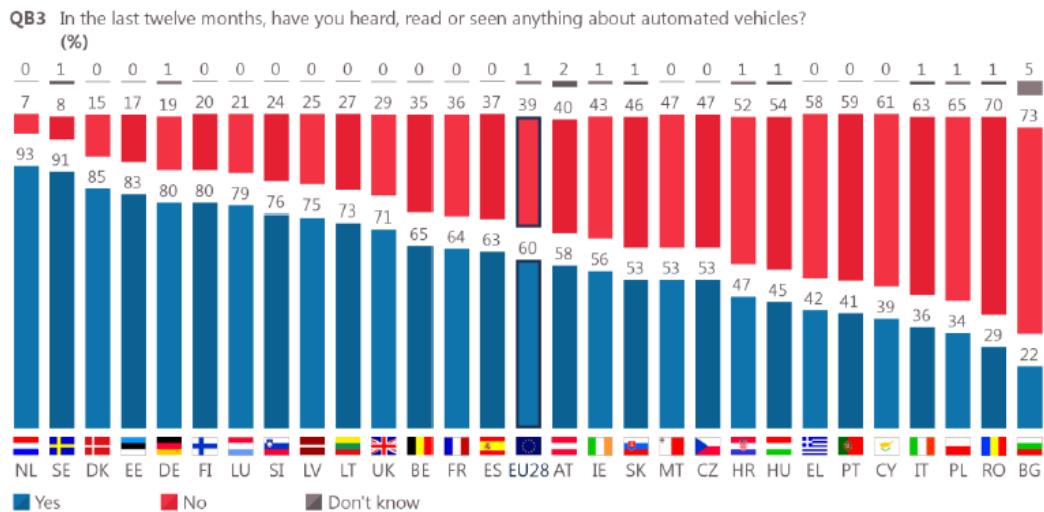
Source: Special Eurobarometer 495 | Base: all respondents (n=27,595)

3.85 **Perceptions of automated vehicles**¹¹²: At EU level, 60% of respondents said that they had seen or heard something about automated vehicles in the past 12 months. Men were significantly more likely to have seen, read, or heard something about automated vehicles in the past 12 months (68% versus 53%). Older people were the group least likely to have heard something about automated vehicles (56%). Results varied significantly by country; from 12% in Bulgaria to 93% in Netherlands.

¹¹¹ Digital solutions here assumed to be: a single ticketing tool; digital driving licence; being able to pay tolls, parking and other charges in real time and directly from your smartphone or other devices; automatic reimbursement and compensation for the infringement of your passenger rights; being able to check in and check out a rental car with your smartphone.

¹¹² Vehicles that are capable of driving themselves without being controlled or monitored by an individual for at least part of a journey.

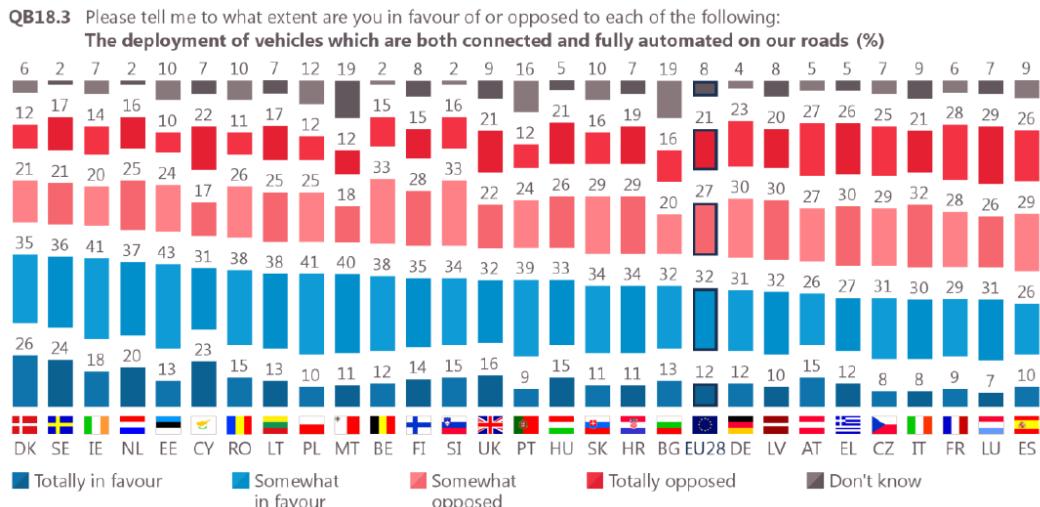
Figure 3.8: Awareness of automated vehicles by country



Source: Special Eurobarometer 495 | Base: all respondents (n=27,595)

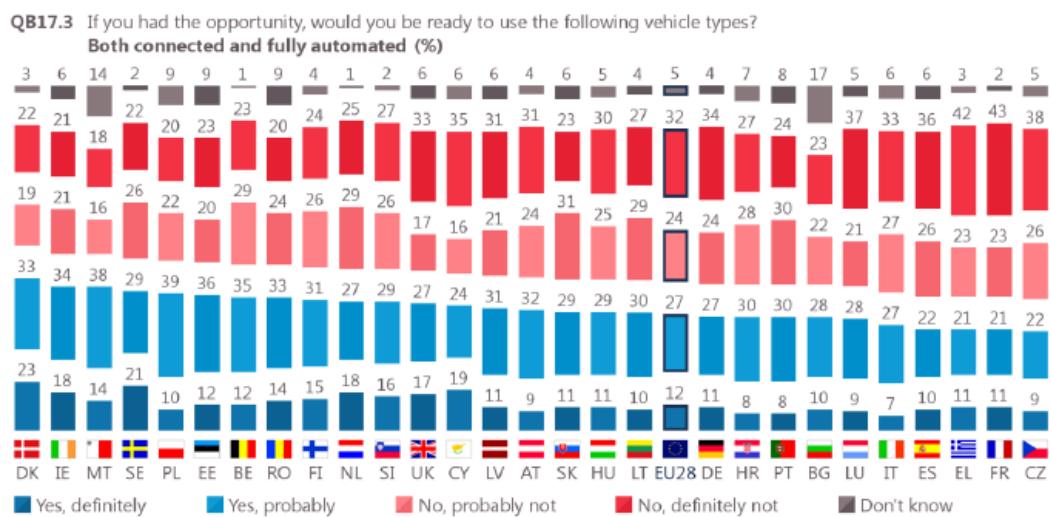
3.86 Attitudes towards the introduction of fully automated and connected vehicles¹¹³: respondents across the EU were more supportive of the introduction of connected vehicles (50% of respondents), than of automated vehicles (46% of respondents). Men were more likely than women to say they were in favour of the deployment of connected vehicles (58% versus 42%) and of fully automated vehicles (55% versus 38%). Younger people were also more supportive of automated and connected vehicles (67% and 63% support for respondents aged 15-24), than older people (38% and 34% for those aged 55 and over). Respondents living in urban areas were more likely to be in support of connected vehicles (54%) than those living in rural areas (46%). Those with reduced mobility were less likely than those without reduced mobility to agree with the deployment of connected vehicles (39% versus 51%) and fully automated vehicles (18% versus 47%). 44% of respondents said they were in favour of vehicles which are both fully automated and connected. When examined by country, attitudes towards autonomous and connected vehicles were mixed.

¹¹³ Fully automated vehicles, or autonomous vehicles mean a vehicle that is able to operate itself and perform necessary functions without any human intervention, through ability to sense its surroundings.

Figure 3.10: Attitudes towards autonomous and connected vehicles**3.87**

Source: Special Eurobarometer 495 | Base: all respondents (n=27,595)

Readiness to use fully automated and connected vehicles: overall, a majority of respondents at EU level said they would not be ready to use connected vehicles (50% of respondents) or autonomous vehicles (53%), or both autonomous and connected vehicles (56%). Men were significantly more likely than women to say they would be ready to use connected vehicles (53% versus 37%) and fully automated vehicles (52% versus 34%). Similarly, younger (15-24) respondents were much more likely to be supportive than older respondents (55 and over) of connected vehicles (64% versus 30%) and autonomous vehicles (61% versus 28%). Those living in urban areas were more likely than their rural counterparts, to be supportive of connected vehicles (46% versus 40%), and autonomous vehicles (48% versus 39%). Those with reduced mobility were less likely than those without reduced mobility to say they were ready to use connected vehicles (32% versus 46%) and automated vehicles (32% versus 44%). There was some variation in responses by country, as illustrated by Figure 3.9, which looks at readiness to both connected and autonomous vehicles.

Figure 3.9: Readiness to use connected and autonomous vehicles by country

Source: Special Eurobarometer 495 | Base: all respondents (n=27,595)

- 3.88 Drawing on the stakeholder consultation for this study, questionnaire responses received, suggest that users' awareness of how major trends will shape the evolving transport system is relatively low, and by extension their level of preparedness is not advanced. Consumer and user representatives (e.g. VZBV, LARES) welcome the opportunity to be more involved with and better consulted by authorities and operators so that they can contribute to shaping the implementation of any changes, but also – through a feedback loop – become better informed about the trends through their participation. They state that increased participation supports the empowerment of users, the development of positive perceptions and improved willingness to adapt to change.
- 3.89 The Dutch Passenger Association (Rover) noted that different approaches are taken between short-term and longer-term issues, with good engagement of users and/or their representatives by authorities and operators on more immediate changes, but little involvement in longer-term planning. Limited resources on the side of user representatives also present a constraint in developing increased awareness of longer-term trends and communicating these more widely to the users they represent.

- 3.90 User representatives had greater awareness of potential changes emerging from the decarbonisation and digitalisation and automation trends than from the ageing population trend. Although the existing impacts of COVID-19 were well recognised, views on longer-term changes were not particularly developed.

Level of preparedness of authorities, operators and other stakeholders

- 3.91 From the perspective of authorities, operators and other stakeholders responsible for planning and delivering transport services and infrastructure, the level of preparedness with respect to the social dimension from the perspective of users has two interacting elements:
- The first is the degree to which these stakeholders have an awareness of different user groups and take their needs into consideration; and
 - The second is the degree to which these stakeholders have an awareness of the different major trends and have developed plans to support/address them (that also take into account different user groups).
- 3.92 In the absence of an awareness of different user groups and their differing needs, it is likely that the challenges or opportunities that these users may encounter through the modernisation of the transport system would not be accounted for. As a result, even if plans have been developed with respect to the major trends, the level of preparedness of authorities and/or operators with respect to equity and inclusion can be said to be low.
- 3.93 On the other hand, if authorities/operators already take into consideration different user groups and their needs, and have also recognised these in the context of the major trends and related plans, then the level of preparedness with respect to equity and inclusion can be said to be high. Consideration of different users and their needs may involve:
- Developing visibility of different users and their needs through collecting sufficiently disaggregated data and other related information; and
 - Involving different users or their representatives through appropriate engagement processes.
- 3.94 In very general terms, transport has traditionally been planned by taking economic considerations, technical specifications and the dominant user groups' mobility needs into account, rather than the diverse needs of other user groups creating an apparent

disconnection between the needs of different user groups and transport authority governance/decision-making. It is important then for authorities/operators to recognise the benefits and value delivered by considering different user groups and their potentially conflicting needs and embed requirements for the social dimension to be considered at all relevant stages of planning and delivering transport. Considering how transport policy shapes the system, there are four main areas of intervention¹¹⁴ that are particularly relevant from the perspective of ensuring equity and inclusion in future transport:

- High-level policy ambition: setting objectives and targets that explicitly take diverse social aspects into account.
- Planning framework: defining requirements for affordability, reliability and accessibility to be considered when transport interventions and investments are analysed and decided upon; specifying obligations to engage with users and approaches for measuring the contribution of interventions towards social inclusion policy objectives.
- Project preparation: Including the social dimension in business case guidance, design guidelines and procurement processes.
- Operation of services: Developing a regulatory environment applicable to service provision (e.g. passenger rights) that includes consideration for the social dimension and collection of relevant, disaggregated data.

3.95 An example of different user groups and their needs being considered is the 2025 Sustainable Mobility Urban Plan for Bremen (Germany). The plan integrated the social dimension of transport through a strong focus on local participation of all main stakeholders at all societal and government levels, such as public interest groups, citizens, regional committees, and authorities. Although the plan focuses on ‘traditional’ transport specifics such as optimisation of commercial traffic, it also includes elements that focus on the social dimension of mobility. For instance, a key goal of the plan is to ‘enable social inclusion of all people and to strengthen the equality of all transport users’. Within this, Bremen has indicated the desire ‘to improve accessibility of public space and of local public transport by providing for the needs of pedestrians, in particular older people, people with disabilities and people with small children.’ Likewise, the plan aims to link transport systems, have fewer negative effects on people, health and the environment; and have more environmentally friendly modes of transport¹¹⁵. Bremen’s plan demonstrates that, through a thorough collection and understanding of users’ needs, with the engagement of all governance levels, policies can be created to support the development of the transport sector in a more socially inclusive manner.

3.96 Based on the feedback received through the stakeholder consultation and observations collected through our research, the level of preparedness of authorities/operators is highly variable across the EU. Differences in terms of how the social dimension of transport is taken into account are noted at different levels (local, regional, national, EU) and across different cities, regions, and countries. There is increasing recognition that inclusion is important in the context of mobility. For example:

- in Czechia, we see that between 2014 and 2021 specific objectives around the social dimension have been introduced in national transport policy documents;

¹¹⁴ Adapted from the Inter-American Development Bank guidelines on ‘Social Impact Assessment: Integrating Social Issues in Development Projects’.

¹¹⁵ Sustainable Urban Mobility Plan Bremen 2025. Freie Hansestadt Bremen. Der Senator für Umwelt, Bau und Verkehr.

- in Greece, a committee on disability issues has recently been set up by the Ministry of Transport;
 - in Austria, the organisational structure of the Federal Ministry for Mobility¹¹⁶ has been adapted to include a dedicated unit to address the needs of persons with disabilities and with reduced mobility; whilst
 - in Denmark, regional passenger councils in the five Danish regions started being set up from 2020, funded by the government, and comprising 20 diverse members representing different user groups and intersectionalities.
- 3.97 Fragmentation at different levels and across different places can result in inconsistent measures to address users' needs (e.g. different transport allowances for pensioners between bordering authorities in Romania). Additionally, since the social dimension of transport is inextricably linked to wider social issues, stakeholders also note the complex interaction between different government directorates and policies as generating gaps in governance from the perspective of addressing the needs of different transport users. For example, the needs of people on low income or at risk of poverty are predominantly addressed through social security systems and hence are predominantly in the remit of relevant welfare directorates rather than transport directorates. Similar examples apply in the case of gender equality, which result in the transport needs of these user groups sometimes being only indirectly addressed by wider social inclusion and equality measures.
- 3.98 An example of the interaction between different directorates is the 'Bummelbus' service, in Luxembourg. This is an on-demand bus service aimed at users in rural areas, where the buses are driven by unemployed people undergoing professional driver training. The initiative is sponsored by the Ministry of Labour (rather than the Ministry of Transport), which subsidises 70% of the service. The bus operation and organisation rests with a local non-profit association.
- 3.99 Although the 'Bummelbus' initiative provides improved mobility services to people living in rural areas, it may also represent direct competition to existing transport operators. This is one of the challenges that governance gaps may create, despite the objectives of an initiative such as this working towards improving equity and inclusion. Some other challenges are:
- When the directorates are working independently, without appropriate channels of communication and coordination, there is room for a mismatch of objectives, duplication, or inefficient allocation of funding; and
 - When directorates are working together, a lack of well-defined roles and functions, decision-making levels and processes might create situations in which responsibilities and accountabilities are not clear.
- 3.100 Despite increasing recognition of equity and inclusion with respect to transport, systematic, disaggregated data collection and engagement with users remain limited. Several local authorities and some operators indicated that they rely on user feedback about services as the main method for collecting data and engaging with users, rather than more proactive approaches.
- 3.101 Even where the needs of different user groups are recognised, most authorities/operators consider just a few of the user groups described in this study (such as PRMs), meaning that the needs of some users may be overlooked. This is reflected in the responses of user

¹¹⁶ <https://www.bmk.gv.at/themen/mobilitaet/barrierefreiheit/leitfaden.html>

representatives, many of whom indicated that they are not meaningfully involved (if at all) by authorities and operators through consultation processes (such as representatives of older people), and that if they are, it is often at a stage when it is too late to influence the design of the project or service. Conversely, some authorities and user representatives noted that consultation processes (initial consultation, ongoing engagement, co-creation/co-design) work well, with several noting that the Commission's Sustainable Urban Mobility Plan (SUMP) framework¹¹⁷ has provided useful guidance and tools for involving users. It is not always clear to which extent these consultation exercises involve representatives from different user groups, however, two authorities noted that under-representation of some user groups in formal advocacy has sometimes been a constraint. Other resource constraints may also present themselves during engagement between authorities/operators and user representatives, as engagement can be quite time-consuming and involve intense levels of contact, meaning that a balance between resource requirements and meaningful insights has to be struck.

- 3.102 Throughout the stakeholder engagement process for this study, a large number of stakeholders for the defined user groups were identified across both the EU and Member State level. Following efforts to secure engagement from these user group representatives, we have observed that for this study, some user groups may have greater levels of advocacy with respect to transport and mobility than others. These advocacy levels are shown in Table 3.2 where a darker colour depicts higher levels of advocacy.

Table 3.2: Advocacy gap analysis of stakeholder engagement in this study – availability of relevant representatives and degree of engagement

User group	Availability of relevant representatives and degree of engagement in this study
General users	Highest
Persons with disabilities and with reduced mobility (e.g. older people)	
People in remote areas (notably rural)	
Women	
Young people and children	
Citizens with poor IT literacy or with limited access to the internet	
People on low income and in particular at risk of poverty or social exclusion	Lowest

Source: Steer analysis of stakeholder availability of relevant representatives and degree of engagement in this study

- 3.103 The level of advocacy has been derived from the availability of relevant representatives and degree of engagement on the subject of this study. Based on these observations, the user groups most likely to have advocacy gaps with respect to transport are citizens with poor IT literacy or with limited access to the internet, and people on low income and at risk of poverty or social exclusion. By comparison, there are high levels of advocacy for PRMs, older people and general transport users.
- 3.104 Through the inventory and mapping of challenges and opportunities, there were clear differences in the level of information available for each user group. This was also reflected in the presence of stakeholders or advocates representing different user groups, where some

¹¹⁷ https://transport.ec.europa.eu/transport-themes/clean-transport-urban-transport/urban-mobility/urban-mobility-actions/sustainable-urban-mobility-plans_en

users (e.g. PRMs) had a developed network of support created by representative organisations, whereas other user groups had very few organisations, stakeholders or experts to advocate for them.

- 3.105 What also sets apart user groups with a greater body of information on their challenges and needs, as well as a network of advocates, is that their needs are typically addressed by legislation at EU and/or national level.
- 3.106 The best example from the different user groups considered in this study is PRMs, who are protected by binding regulatory requirements and standards for accessibility in public transport. Having policy and legal frameworks which protect the needs of PRMs, combined with a strong network of support from advocates, stakeholders and experts has led to a better understanding of these users' needs. This improved understanding, combined with active networks of advocates, has resulted in actions which integrate considerations for those needs into the planning, implementation, and delivery of transport. Extending beyond transport, accessibility mainstreaming¹¹⁸ indicates that a regulatory approach can also encourage a more multi-disciplinary approach to addressing user needs.
- 3.107 Policy frameworks which mainstream the needs of different transport users have demonstrated the ability to translate observed inconsistencies into meaningful actions and improvements for transport users. As evidenced by the presence of more information on the needs of PRMs, more formalised requirements based on those needs, and the existence of a sophisticated network of user representatives, the existence of high-level policy frameworks can result in tangible benefits for users. This example demonstrates that, although transport services are often delivered at a more local level, they are influenced by high-level policy and funding.

Summary

- 3.108 Current challenges, future challenges and future opportunities were brought together and summarised across Member States. The inventory and mapping provided many valuable insights, but the level of detail across all Member States varies significantly. These findings were integrated into the user group descriptions, to build a more functional and rounded overview of each user group, which was also supplemented by broader research. This exercise also highlighted users that may not be captured within the user groups examined in this study, and emphasised the overlaps or intersectionality between different groups.
- 3.109 While a significant number of current challenges for users was identified through this exercise, there has been a limited amount of information on anticipated future challenges. Where present, the way future opportunities are identified do not appear to be actionable in many cases. They are often identified in aspirational vision or strategy documents, with focus on stating bold goals rather than outlining clear and actionable steps towards implementation.
- 3.110 It was found that, in many documents discussing future trends, mention of the social dimension of transport (if any) is made at a very high level and infrequently discussed for disaggregated user groups. This creates a gap in understanding how trends (or strategies to

¹¹⁸The strategy of mainstreaming is defined as the process of assessing the implications for a societal group of any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a strategy for making that societal group an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that different societal groups benefit equally and inequality is not perpetuated. – Adapted from United Nations (2002); Gender Mainstreaming, An Overview

address those trends) may impact or exclude members of different user groups, or how they could be leveraged to address existing challenges faced by users.

3.111 Clustering themes in the inventory and mapping has identified a number of findings which provide more context and highlight intersections between different user groups. Often, these findings also emphasised the importance of intersectionality between user groups and their needs/challenges. These themes include:

- The concentration of ageing populations on low income in rural areas pose a growing number of mobility challenges;
- Lack of coordination in transport comes at the expense of users, particularly for PRMs;
- Suburbanisation driven by unaffordability can result in higher transport costs for users and undermine progress towards decarbonisation;
- Mobility challenges for children and young people are more severe in rural areas;
- Having easily accessible and up-to-date information is important for all transport users, but may be particularly impactful for individuals belonging to the different user groups specified for this study.

3.112 The level of preparedness was assessed for both users and authorities/operators. Responses indicate that the level of preparedness of authorities/operators is highly variable across the EU. Differences in how the social dimension of transport is taken into account are noted between different levels (local, regional, national, EU) and across different cities, regions, and countries. There is increasing recognition that inclusion is important in the context of mobility, although stakeholders observed that this process may sometimes be impeded by advocacy gaps for some user groups. Policy frameworks which mainstream the needs of different transport users have demonstrated the ability to translate observed inconsistencies into meaningful actions and improvements for transport users, including through the development of sophisticated networks of user representatives.

4 Good practices

Introduction

- 4.1 This section presents selected good practices from EU and non-EU countries that address some of the key challenges and opportunities for different user groups that were identified in Chapter 3. In addition, this chapter includes a review of practice by selected multilateral organisations with respect to guidance that they publish around the social dimension of transport and looks at potentially relevant indicators for capturing relevant metrics.
- 4.2 The approach to selecting the good practices is described below, followed by an overview of the selected good practices. The good practices are presented in more detail in Appendix F (EU) and Appendix G (non-EU). The analysis draws from multiple sources to describe the relevant good practice in each instance. Where possible, quantitative information is included, but where the good practices describe broader (e.g. policy) initiatives, the descriptions are predominantly qualitative.

Selection of good practices

- 4.3 As introduced in the methodology section of Chapter 2 and demonstrated in the inventory of Chapter 3, the social dimension of the transport system is a very broad topic which interfaces in a complex way with wider social and economic activity. The heterogeneity of user groups and the intersectionality of user characteristics give rise to hugely diverse needs experienced at the individual, local level. As a result, it is not possible for a study such as this to present an exhaustive inventory of all possible challenges faced by users, and correspondingly, it is not possible to present all possible good practices for addressing identified challenges.
- 4.4 The Terms of Reference for the study required (*inter alia*) scalable and transferable good practices to be **identified from a representative sample of at least 10 different Member States**, that these good practices **address the challenges described in Chapter 3**, and that the analysis of good practices **covered all different groups of transport users/passengers** most likely to be affected by the modernisation of the transport system.
- 4.5 The approach for meeting these criteria was organised around:
- key challenges identified for different user groups; and
 - prominent changes to the transport system driven by the major trends.
- 4.6 We selected 10 topics (i.e. challenges and changes) that cover different contexts (e.g. urban and rural) around which to explore a number of good practices. These topics:
- Across the set, draw on evidence of good practice from at least **10 different Member States**;
 - Correspond to **key challenges** emerging from the analysis and/or to prominent changes to the transport system driven by the major trends; and
 - Across the set, cover **all user groups** considered in this study.

- 4.7 The key challenges and prominent changes to the system driven by the major trends were informed by the literature review and stakeholder consultation.
- 4.8 The topics selected and good practices presented under each were not the result of a ranking exercise, as such an approach would not ensure that the required criteria were met (i.e. come from at least 10 different Member States, cover all user groups, and address different challenges in different contexts). Under each topic, a number of good practices were explored to provide a more rounded view of how relevant challenges or changes, and the needs of different users are being addressed.
- 4.9 Table 4.1 shows the 10 topics selected, the Member States that evidence is drawn from under each topic, the high level challenges and changes to the transport system driven by the major trends that the topic corresponds to, and the user groups addressed by the good practices.

Table 4.1: Good practice topics, Member States evidence is drawn from, high level challenges and changes, and user groups addressed

Topic	Member State that evidence is drawn from (in order evidence presented)	High level challenge and/or to prominent change to the transport system	User group(s) addressed by the good practice
Improving the transport network design to better fulfil the needs of users	<ul style="list-style-type: none"> • Germany • France • Netherlands 	<ul style="list-style-type: none"> • Accessibility • Reliability 	<ul style="list-style-type: none"> • Women • People living in remote areas • Young people and children • People on low income or at risk of social exclusion
Involving local communities in mobility strategy development steps	<ul style="list-style-type: none"> • Germany • Greece • Hungary 	<ul style="list-style-type: none"> • Accessibility • Affordability • Reliability • Population ageing 	<ul style="list-style-type: none"> • Women • Persons with disabilities and with reduced mobility (e.g. older people) • People living in remote areas • Young people and children • People on low income and at risk of social exclusion
Free public transport	<ul style="list-style-type: none"> • Estonia • Germany • Luxembourg 	<ul style="list-style-type: none"> • Affordability 	<ul style="list-style-type: none"> • Women • Citizens with poor IT literacy or with limited access to the internet • Persons with disabilities and with reduced mobility (e.g. older people) • Young people and children • People on low income and at risk of social exclusion
Deployment of services powered by autonomous technologies in areas with low public transport availability	<ul style="list-style-type: none"> • France 	<ul style="list-style-type: none"> • Decarbonisation • Digitalisation and automation • Population ageing 	<ul style="list-style-type: none"> • Persons with disabilities and with reduced mobility (e.g. older people) • People living in remote areas • Young people and children • People on low income and at risk of social exclusion
Rural on-demand transport	<ul style="list-style-type: none"> • Ireland • Belgium • Denmark • Italy • Netherlands • Portugal • Spain 	<ul style="list-style-type: none"> • Affordability • Decarbonisation • Population ageing 	<ul style="list-style-type: none"> • Persons with disabilities and with reduced mobility (e.g. older people) • People living in remote areas

Topic	Member State that evidence is drawn from (in order evidence presented)	High level challenge and/or to prominent change to the transport system	User group(s) addressed by the good practice
On-demand transport service tailored to young people and children, persons with disabilities and with reduced mobility	<ul style="list-style-type: none"> • Italy • Germany • Portugal 	<ul style="list-style-type: none"> • Accessibility • Affordability • Population ageing 	<ul style="list-style-type: none"> • Persons with disabilities and with reduced mobility (e.g. older people) • People living in remote areas • Young people and children
Digital innovations for transport users with disabilities and reduced mobility	<ul style="list-style-type: none"> • Netherlands • Austria • Spain 	<ul style="list-style-type: none"> • Accessibility • Population ageing 	<ul style="list-style-type: none"> • Persons with disabilities and with reduced mobility (e.g. older people)
Integrated and seamless travel for persons with disabilities and reduced mobility	<ul style="list-style-type: none"> • Germany • France • Italy 	<ul style="list-style-type: none"> • Accessibility • Population ageing 	<ul style="list-style-type: none"> • Persons with disabilities and with reduced mobility (e.g. older people)
Innovations to better consider the transport needs of women	<ul style="list-style-type: none"> • Italy • Austria • Germany 	<ul style="list-style-type: none"> • Accessibility 	<ul style="list-style-type: none"> • Women
Disability awareness training	<ul style="list-style-type: none"> • Hungary • Germany 	<ul style="list-style-type: none"> • Accessibility • Population ageing 	<ul style="list-style-type: none"> • Persons with disabilities and with reduced mobility (e.g. older people)
Total number of topics: 10	Total number of MS evidence is drawn from: 14	<p>Challenges:</p> <ul style="list-style-type: none"> • Accessibility • Affordability • Reliability <p>Trends driving changes:</p> <ul style="list-style-type: none"> • Decarbonisation • Digitalisation & automation • Population ageing 	<p>Total number of user groups covered: 6</p>

Source: Steer

- 4.10 As noted previously, given the phase of the pandemic during which the study was undertaken (January–October 2021), information on the long-term impacts of the COVID-19 pandemic itself was limited, so it was not possible to identify good practices relating to the long-term challenges emerging as a result of this.
- 4.11 The non-EU good practices cover the following topics and were selected based on Steer's experience in these countries and their alignment with some of the EU challenges identified in Chapter 3:
- The use of Equality Impact Assessments (EqIAs) in the United Kingdom;
 - The importance of data in reviewing public transport equity in Colombian cities;
 - Stakeholder engagement strategies using multifaceted approaches in India;
 - Demand and gender management strategies for sustainable mobility in Mexico City; and
 - Advancing transport equity as part of the Link 21 project in the San Francisco Bay Area.

Evaluation of good practices

- 4.12 In order to evaluate the effectiveness of the good practices presented, we used an evaluation framework with the view to provide estimates of costs and impacts. However, this framework

is qualitative only, as nearly all good practices selected and researched did not provide quantifiable estimates of costs or benefits. As noted above, under each topic a number of good practices were explored, but only the key good practice per topic was evaluated, as there was usually less information available for the other good practices presented.

- 4.13 The evaluation framework used was based on the consideration of:
- the costs for the various groups of stakeholders that might be impacted by the good practice;
 - the economic, social and environmental benefits that may be derived from the good practice, as well as the negative impacts that it may generate.
- 4.14 The various groups of stakeholders that have been considered in this assessment include the users, the transport operators and the public authorities. The assessment of costs and benefits are detailed in Appendix F and summarised in this chapter.

Summary of good practices

- 4.15 We observe that the good practices presented below vary considerably in terms of their benefits (and for whom), their practicality, their costs (where this information is available), the type of intervention they imply, and hence give rise to a range of potential outcomes for users, administrations and industry.
- 4.16 In most instances, good practices are described in literature or project documents in a fairly generic level without much detail. We note that this review is not exhaustive, not covering all practices of all stakeholders in all Member States.

Good practices from EU countries identified

Improving the transport network design to better fulfil the needs of users

Table 4.2: Good practices related to improving the transport network design to better fulfil the needs of users

Improving the transport network design to better fulfil the needs of users	
Relevant user groups	Women People living in remote areas Young people and children People on low income or at risk of social exclusion
User challenges	Women: In general, women's travel patterns are more complex and time-consuming. Furthermore, with respect to modal choice, women factor in additional considerations such as safety and security, in addition to journey time and cost. People living in remote areas: Public transport networks are not always well-tailored to the mobility needs of people living in remote areas, who are often afflicted by low service frequencies, poor connectivity, and substandard transport infrastructure. These challenges can prevent timely access to health services, education, shopping, and jobs. People on low income: Transport accessibility and affordability are critical factors for people on low income, as 'poverty, inequality and social exclusion are tied to personal mobility and to the accessibility of goods and services'. Children and young people: Accessibility, affordability, and safety are particularly pertinent for young people and children, who usually depend upon older relatives or guardians to access the transport system. A lack of financial independence may also constrain young people's mobility, a characteristic which is more prevalent amongst young people.
Good practice on improving the transport system to	Changes to the design of the public transport network in Mulndental in Fahrt (Germany) to meet the needs of different user groups by expanding the network to accommodate localities with no prior access to public transport (i.e. remote areas). This was initiated by involving the Mobility Authority, MDV and publicly owned public transport operating

better meet user mobility needs in remote areas	companies. It promoted connectivity and, through an integrated timetable, led to shorter stop distances and cross-modal synchronisation of arrivals and departures. This benefited people in remote or underserved areas, or for those reliant on trip chaining (multiple stops or modes in one trip) who may not wish or be able to travel during peak times (e.g. women/young people and children).
Evaluation of good practice on improving the transport system to better meet user mobility needs in remote areas	Benefits include for people in remote areas improved connectivity and mobility options, increased frequencies (especially off-peak), increased passenger safety and increased social benefits. In addition, as there is decreased reliance on private vehicles this translates into better environmental outcomes. Users do not generally incur increased costs, but may indirectly as taxpayers. Operators need to significantly redesign the network and implement operational changes.
Good practice on making cycling more attractive for women	Higher uptake of cycling in some countries is, in part, due to differences in transport network design. Initiatives such as segregated bike lanes protect cyclists from traffic, providing sufficient cycle-parking and integrating cycling with the wider public transport network makes cycling safer and more convenient are prevalent in the Netherlands and facilitate short trips and trip chaining (travelling on multiple modes or lines in a single journey) which are mostly made by women.
Key learnings from this topic	The deliberate inclusion of the social dimension in the design process for the public transport network can include, for example, integrating timetables across transport modes to increase connectivity, and rescheduling services to run throughout the day (not just to support commuting workers) to improve convenience, mobility and safety for different user groups. However, the widespread adoption of good practices such as these may require a relatively high level of political commitment and financial resources.

Involving local communities in mobility strategy development steps

Table 4.3: Good practices related to involving local communities in mobility strategy development steps

Involving local communities in mobility strategy development steps	
Relevant user groups	Women Persons with disabilities and with reduced mobility (e.g. older people) People living in remote areas Young people and children Citizens with poor IT literacy or with limited access to the internet People on low income and at risk of social exclusion
User challenges	All users: Limited stakeholder engagement within the transport planning process can have multiple impacts on (among others) the accessibility, affordability, availability or connectivity of a transport service or infrastructure. People living in remote areas: Rural communities, which are generally smaller and more isolated geographically than metropolitan counterparts are also at risk of a lack of suitable stakeholder engagement in the planning process both locally (due to lack of funds) and nationally (where rural communities may not be included within national strategic focus). This has the potential to impact the connectivity of rural user groups. People with low IT literacy and people on low income and at risk of social exclusion: Those with no digital or reading skills may also be excluded from consultation that rely on written forms whilst citizens with low income or migrants may not have the time, knowledge of the local language or appetite for engagement.

Good practice on involving local communities in all mobility strategy development steps of a city	A community-based and participatory approach was used in the Budapest Citizen Mobility Lab ¹¹⁹ (Hungary) between 2017 and 2020 to allow local communities to be involved in all steps of mobility developments, working with mobility experts, policy-makers and other urban mobility stakeholders. Transport initiatives such as the 'Mobility Point Network' in Budapest, which offers multi-modal transport solutions for citizens travelling to the city centre through use of e-car, e-bike and e-scooter services, are examples of results of the stakeholder engagement and transport planning conducted at the Citizen Mobility Labs.
Evaluation of good practice on involving local communities in mobility strategy development	Benefits include increased participatory engagement with all users, better development of transport services to match user needs. Costs are very limited, including time involvement for user groups and stakeholder engagement costs. If funding comes from external sources, there will be no additional costs.
Good practice on addressing gender equity and vulnerable groups in Sustainable Urban Mobility Plans	As part of the CIVITAS ECCENTRIC ¹²⁰ project, an EU-funded project which ran from 2016 to 2020, a document guide on addressing the gender equity and inclusivity within transport planning was developed. The target users of the document are mobility practitioners and local authorities, with the goal of illustrating how Sustainable Urban Mobility Plans processes can be designed to address the accessibility needs of women and other groups of users. The document provides insights to guide a gender responsive approach in policy, legislation and procedures for strategic urban transport planning.
Key learnings from this topic	The good practices within this theme of stakeholder engagement form an important part of wider mainstreaming activities ¹²¹ and the creation of a more equitable and inclusive transport system. The transport outcomes of Citizen Mobility Labs highlight that collaborative and inclusive design processes can lead to successful transport initiatives and policy which accurately addressed the transport needs of a community. The transferability of engagement activities like this relies upon developing robust engagement processes and resources which can then reduce the cost barrier to wider stakeholder engagement in other areas across the EU. This could provide an opportunity for more remote and smaller communities to be consulted and their transport needs reflected in transport outcomes.

Free public transport

Table 4.4: Good practices related to free public transport

Free public transport	
Relevant user groups	Women Citizens with poor IT literacy or with limited access to the internet Persons with disabilities and with reduced mobility (e.g. older people) Young people and children People on low income and at risk of social exclusion
User challenges	People on low income and at risk of social exclusion

¹¹⁹ <https://cities4people.eu/pilot-areas/budapest-hu/>

¹²⁰ <https://civitas.eu/projects/eccentric>

¹²¹ As cited widely across relevant mainstreaming literature. See, for example, section on Review of guidance from multilateral organisations, later in Chapter 4.

	<p>The user groups which benefit most from free public transportation tend to be those who are on low income and would otherwise struggle to afford the costs of using the transportation network. As stated elsewhere in this report, there is a high degree of intersectionality between low-income public transport users and other user groups, for example, migrants, older and/or young people.</p> <p>Women, persons with disabilities and with reduced mobility (e.g. older people), young people and children</p> <p>Similarly to the user group above, these user group categories may have access to less income or be more price sensitive. In addition, these users may be more dependent on public transport.</p>
Good practice on free public transport in a city	<p>Since 2013, public transport has been free for Tallinn residents (Estonia) in order to:</p> <ul style="list-style-type: none"> ● promote modal shift from private car to public transport; ● increase the mobility of unemployed and low-income groups; and ● stimulate the registration of inhabitants as residents of Tallinn (therefore increasing municipal income tax) as transport is free only for registered city residents. <p>Transport outcomes of the initiative included spatial changes to the city, an on average reduction in speeds in the city centre, an increase of 3% in people travelling by public transport. However, average trip length has dropped by approximately 10%, suggesting that mode shift is from walking and cycling rather than private car journeys.</p>
Evaluation of good practice on free public transport in a city	<p>Benefits include lowering of income barrier in transport decisions and an increase in public transport trips with a decrease in car trips (albeit limited as a much higher decrease in walking and cycling is observed). Costs increase for the operator as they need to operate more buses, get more drivers. Overall, financial benefits are unclear as the fare box revenues of the transport provider now need to be funded by the authority directly, resulting in indirect costs for the taxpayers.</p>
Good practice on free public transport in a Member State	<p>In 2020, Luxembourg made public transport free across the country. Motivations for introducing the policy were to reduce congestion, reduce inequality, and help to improve the environment. Public transport is free for all users in Luxembourg, including visitors and commuters from outside the country's borders.</p>
Key learnings from this topic	<p>The outcomes of free public transport in Tallinn (Estonia) and Luxembourg for user groups and the wider transport system have been mixed and could, therefore, show that free public transport is only one tool in a suite of measures which could be used to improve equity and inclusion in transport.</p>

Deployment of services powered by autonomous technologies in areas with low public transport availability

Table 4.5: Good practices related to the deployment of services powered by autonomous technologies in areas with low public transport availability

Deployment of services powered by autonomous technologies in areas with low public transport availability	
Relevant user groups	<p>Persons with disabilities and with reduced mobility (e.g. older people)</p> <p>People living in remote areas</p> <p>Young people and children</p> <p>People on low income and at risk of social exclusion</p>
User challenges	<p>People living in remote areas, young people and children and people on low income and at risk of social exclusion: Gaps in fixed route public transport services exist in suburban or rural areas due to lower demand impacting first and last mile connectivity for the groups without access to private cars including young, older people or people belonging to low-income groups.</p> <p>Persons with disabilities and with reduced mobility (e.g. older people): Similarly to the user groups above accessibility and connectivity is often lacking for people</p>

	with disabilities including older people or persons with reduced mobility in suburban or rural areas, alongside more specific user needs.
Good practice on full-scale demonstrations of urban transport automation	AVENUE ¹²² , an EU funded project, running from 2018 to April 2022 aims to design and carry out full scale demonstrations of autonomous urban transport in the cities of Lyon (France), Copenhagen (Denmark), Luxembourg and Geneva (Switzerland), focusing on low public transport demand. The trials focus on improving the passenger travel experience by addressing the needs of different users, such as older people, people with disabilities or reduced mobility. Over the first phase in Lyon (2016-2019), 35,000km were covered with 55,000 passengers carried. A passenger survey during the trial suggested 74% of respondents agreed that autonomous vehicles will be an important form of public transport, with 56% being motivated or highly motivated to reduce their personal car use as a result.
Evaluation of good practice on full-scale demonstrations of urban transport automation	Benefits include reduced driving human error, reduced risk of driving fatigue, reduced environmental impacts (if energy provides from a sustainable source), Potentially increased reliability. Benefits also include the possibility of door-to-door transport for some user groups and increased transport offer in less well served areas, if well specified by authorities. However, costs could be wide-ranged from economic costs with more complex maintenance needs and technological investments although possibly offset to an extent by lack of driver cost. Increased costs of infrastructure (digital in particular) to support the vehicles (especially in areas without existing 5G coverage) as well as negative social costs (loss of driver jobs, lack of human contact and perceived safety).
Good practice on the integration of autonomous shuttles in European cities	FABULOS, an EU funded project ¹²³ piloted between 2018 and 2021 six trials using autonomous shuttles in the cities of Helsinki (Finland), Tallinn (Estonia), Gjesdal (Norway), Lamia (Greece) and Helmond (Netherlands) to demonstrate the feasibility of connected and autonomous vehicles. Benefits for older people and younger people were seen where autonomous vehicles provided efficient transport in the areas where limited public transport was available.
Key learnings from this topic	When deployed in areas with low public transport availability, services powered by autonomous technologies could provide a reliable transport service to users, particularly those who do not have access to a private vehicle or must have one due to lack of alternate transport choices. However, as for any transport model, authorities will need to ensure that they are deployed where user groups need them and that they are designed/planned/implemented to fulfil the needs of user groups and not just that of the 'general public'.

Rural on-demand transport

Table 4.6: Good practices related to rural on-demand transport

Rural on-demand transport	
Relevant user groups	People living in remote areas People on low income and at risk of social exclusion Persons with disabilities and with reduced mobility (e.g. older people) Young people and children
User challenges	People living in remote areas, people on low income and at risk of social exclusion, persons with disabilities and with reduced mobility, young people and children: These user groups can lack connectivity to public transport services

¹²² <https://h2020-avenue.eu/>

¹²³ <https://fabulos.eu/>

	as a result of living in remote areas (typically rural regions or islands) and/or users who are least likely to be able to afford, own or otherwise use a private vehicle.
Good practice on rural demand responsive transport in Ireland	Demand responsive transport (DRT) services have been deployed in remote areas of Ireland since 2006, with funding supporting 17 'Local Link' units of DRT and scheduled services. Objectives of the services are to combat social exclusion by providing weekly services, connecting villages and urban centres and improved efficiency and integration of rural services with existing transport services. 2.5 million passengers were carried by 'Local Link' coordination units in 2019, an increase of 42% since 2015 with an additional 60 services. User satisfaction has been high, sampled from market research and user surveys, with reduced per passenger costs.
Evaluation of good practice on rural demand responsive transport in Ireland	Benefits for user groups in scope include increased transport provisions, decreased reliance on private vehicles with better environmental outcome and increased social benefits. There are some limited direct costs for the users (notably decreased costs compared to the use of taxi if that was previously the case) but increased costs for operators related to additional drivers, vehicles and service implementation which will usually need to be funded by taxpayers.
Good practice on rural demand responsive transport in Spain	In rural areas of Catalonia (Spain), DRT solutions supplied by Shotl (an on-demand mobility platform with driver and user apps and management module) have resulted in: <ul style="list-style-type: none"> ridership more than doubling in the weeks following the switch to DRT (from 6 passengers per bus to 16 with DRT in one town); additional bus stops being added (70% more in one town), meaning that previously underserved areas now had a bus stop accessible from their homes; the mobile phone app used by passengers is highly rated (4.4/5 stars); and average waiting times has dropped to as low as 15 minutes (up to a 5 time decrease compared to the previous situation).
Key learnings from this topic	Demand responsive transport (DRT) has been tested for several decades and may present the opportunity to improve network connectivity for people living in remote areas, make services more affordable (for people on a low income), and provide public transport services which contain a door-to-door service (for older people and PRMs, women and girls, and children and young people). Recently, deployment technologies have improved significantly towards more spontaneous, ride-hailing-style technologies. Overall, authority funding remains necessary, but DRT can sometimes be provided as cost-effectively as scheduled services.

On-demand transport service tailored to young people and children, persons with disabilities and with reduced mobility

Table 4.7: Good practices related to on-demand transport services tailored to young people and children, persons with disabilities and with reduced mobility

On-demand transport service tailored to young people and children, persons with disabilities and with reduced mobility	
Relevant user groups	People living in remote areas Persons with disabilities and with reduced mobility (e.g. older people) People on low income and at risk of social exclusion Young people and children
User challenges	People living in remote areas: Public transport provision is often limited in rural areas with access to the public transport network during the beginning and end of their journeys.

	Persons with disabilities and with reduced mobility, people on low income and, young people and children: Connectivity for those requiring access to a private car but who are less able to drive often short to long journeys is lacking, leading to lack of access to jobs, education and amenities.
Good practice: On-demand transport service specifically tailored to children, older people and PRMs	<i>PickMeApp</i> ¹²⁴ an on-demand transport service provided by a private software platform that offers a mobility solution specifically tailored to children, older people and PRMs. It offers a door-to-door service, which can be booked and paid for online. The service is delivered by affiliated operators. Users can be tracked, if required, through a GPS-enabled bracelet. The service currently operates in the cities of Potenza and Salerno, Italy. An algorithm optimises multiple bookings and shared routes in order to make journeys suitable and affordable. Additionally, a unique feature of the service is the use of wearable tracking devices/bracelets for the users. The service has a comparable cost to a taxi at €4 per single trip and saw usage growth of 250% in 2018, demonstrating the ability of shared mobility (and this concept) when addressing transport poverty and user needs.
Evaluation of good practice on on-demand transport service specifically tailored to children, older people and PRMs	Benefits for user groups in scope include door-to-door mobility service, with the possibility of tracking through wearable devices. This allows for better inclusion of persons with disabilities and with reduced mobility (e.g. older people) and decreases time and costs of travel for carers of children and older people. There are some limited direct costs for the users but some increased costs for affiliated operators related to use of the software platform and transaction fees – these should be offset by increased vehicle utilisation and optimised routes for operators.
Key learnings from this topic	Shared mobility (new transportation concepts relating to the shared use of transport such as car-pooling, shared micromobility, ride-sharing, etc.) offers a flexible and cost-effective alternative to private car travel and to meeting the needs of different user groups. However, the exclusion of people with poor IT literacy or with limited access to the internet is a considerable barrier to the deployment of such concepts, including in rural settings.

Digital innovations for transport users with disabilities and reduced mobility

Table 4.8: Good practices related to digital innovations for transport users with disabilities and reduced mobility

Digital innovations for transport users with disabilities and with reduced mobility	
Relevant user groups	Persons with disabilities and reduced mobility (e.g. older people)
User challenges	Persons with disabilities and with reduced mobility: Users with disabilities and with reduced mobility and older people, particularly those with cognitive and sensory disabilities who do not (or are unable to) use personal vehicles and are reliant on public transportation, friends and relatives, or specialised medical transport services for mobility.
Good practice: App for users with cognitive disabilities to travel independently on public transport	<i>GoOV</i> ¹²⁵ is a social enterprise mobility service in the Netherlands, targeting persons with cognitive disabilities. It provides detailed route navigation, dynamic public transport information, travel deviations and alternative routes in the event of disruption, dynamic travel instructions in a variety of formats at key journey waypoints, continuous monitoring by family members, caregivers and connection to a helpline: It also includes a version of the app with icons that is possible for people who are non-native, with low literacy or those with dyslexia to use. An

¹²⁴ <http://www.pickmeapp.it/en/>

¹²⁵ <https://www.go-ov.nl/>

	extensive training of users is conducted (4-8 weeks) as well as the provision of a travel guarantee whereby a taxi is dispatched to their location should the user become lost or cannot be assisted by other means.
Evaluation of good practice on app for users with cognitive disabilities to travel independently on public transport	Benefits for the users include independent travel, empowering of user, better transport choices and availability as well as guaranteed journey and assistance. This provides better societal inclusion and social benefits. Costs for users include training time. There are some on-off costs for the operators to develop and start the service related to app technology, training of users, as well as running costs (provision of assistance, provision of service guarantee, availability of staff to deliver the service) but these may be lower compared to taxi travel meaning that running costs for users may be limited.
Good practice on app for users with cognitive disabilities to travel independently on public transport in Barcelona	<i>App&Town Compagnon</i> ¹²⁶ is a privately-developed innovative intelligent guidance system that enables autonomous navigation and multimodal public transport use for people with mild to moderate cognitive and physical disabilities. It covers the metropolitan area of Barcelona. The majority of uptake has been those with cognitive disabilities (rather than physical or sensory).
Key learnings from this topic	New digital innovations are being deployed in the context of transport (e.g. virtual assistants, smart ticketing, pre-trip concierge and virtualisation) and present significant opportunities for some user groups, here mostly students with cognitive disabilities and young people when using public transport independently. Good data, a clear funding stream and adequate support from authorities and operators is required for successful implementation.

Integrated and seamless travel for persons with disabilities and reduced mobility

Table 4.9: Good practices related to integrated and seamless travel for persons with disabilities and reduced mobility

Integrated and seamless travel for persons with disabilities and reduced mobility	
Relevant user groups	Persons with disabilities and with reduced mobility (e.g. older people)
User challenges	<p>Persons with disabilities and with reduced mobility, including older people:</p> <p>Key challenges for transport users in this group can include:</p> <ul style="list-style-type: none"> • situational awareness, wayfinding in terminals, understanding any visual-based information, associated with reduced vision; • understanding any sound-based information, which is of particular relevance in emergency situations, associated with reduced hearing; • the need to overcome different heights or to overcome accessibility barriers and gaps, associated with reduced movement; • higher than-average concentration of pollutants in or around vehicles, more crowded environments in respect to COVID-19, associated with severe allergies or health conditions; • understanding how to use the transport system or situation awareness, associated with cognitive disabilities.
Good practice on integrated seamless travel	A public transport operator (Bogestra) in Germany successfully implemented a series of measures that enhance the accessibility of public transport with a significant focus on barrier-free travel for PRMs. Measures include: passenger information to support independent travel, PRM assistance services, barrier free infrastructure and vehicle upgrades and, staff training. Post implementation, increased passenger demand among PRM groups was seen and positive feedback was received.

¹²⁶ <https://www.appandtown.com/compagnon.html>

Evaluation of good practice on integrated seamless travel	Benefits for persons with disabilities and with reduced mobility (e.g. older people) – and sometimes other user groups - include better service provided, better safety delivered, less dissatisfaction and discomfort. Overall for the operators, this generates better awareness of users' needs, better service being delivered, less complaints received. Costs for users or taxpayers are limited but are more significant for operators as they need to change their operating procedures, train their staff and acquire accessible vehicles and communication systems, and make infrastructure changes to support better accessibility.
Good practice on seamless assistance for PRMs at an airport	At Rome Fiumicino Airport (Italy) a seamless assistance service has been available for PRMs making use of rail services prior or post flight since 2017. The service is provided by trained staff who support the passenger during the security check, luggage delivery and train ticket purchase travel phases. PRM associations have provided positive feedback on the service, with 371 services offered between August and December 2017.
Good practice on coordinated accessibility measures in metro network	In 2015 lower ticket validation modules were added to existing entrance control equipment in the Toulouse (France) metro system. The aim of this was to allow people in wheelchairs or with limited arm movement to validate their own tickets. These access points have been clearly marked on the network map, with icons, to enable people with low literacy or visual impairments to identify accessible locations. A mobile app has also been developed to further assist independent travel for those with cognitive disabilities or other PRMs.
Key learnings from this topic	Investment in providing accessible infrastructure, via modifications to existing or new, both simple and sophisticated, can lead to increased satisfaction of PRMs whilst travelling as well as the removal of barriers for other user groups. Providing training directly to PRMs and other transport users can be an effective way of encouraging them to use more the transport infrastructure through highlighting accessible routes and removing barriers to their travel. However, these kinds of initiatives are potentially more powerful when used in parallel to larger infrastructure changes and upgrades, which often take time to design and implement, as it provides an opportunity to currently excluded transport user groups to make use of the current transport provision to the widest extent.

Innovations to better consider the transport needs of women

Table 4.10: Good practices related to innovations to better consider the transport needs of women

Innovations to better consider the transport needs of women	
Relevant user groups	Women
User challenges	Women: Transport frequently does not take gendered mobility patterns into account, as traditionally, it has followed a male-oriented design focused on radial commuting journeys between home and work. The mobility patterns and needs of women are complex due to the roles they typically play in society – especially related to caring duties. Women and caregivers make nearly 50% more trips than men or non-care givers, have more complex routes and trip chains and a wider variety of reasons for travel. They also accomplish their trips more often as pedestrians, with safety or perceived safety an important factor for their mobility needs.
Good practice on a navigation app to provide	<i>Wher</i> ¹²⁷ is a privately-developed interactive phone navigation app, launched in Milan (Italy) and 20 other Italian cities, that provides women with information on

¹²⁷ www.w-her.com

perceived street safety information	the safety of streets that aims to highlight safe routes for women to reach their destination using crowdsourced information. Roads are rated in the app by evaluating aspects such as the time of day, street lighting and busyness along with comments on whether they would take the road again. In March 2020, <i>Where</i> had 1,400 users in Milan with 4,300 km evaluated from 7,600 entered evaluations.
Evaluation of good practice on a navigation app to provide perceived street safety information	Benefits include better knowledge and information, increased perceived safety for women and other users of the app. There are no direct costs for users, authorities or operators, apart for the technology provider to build, develop and support the app.
Good practice on gender mainstreaming	Since 1990, the city of Vienna (Austria) has included gender considerations in every aspect of the city's administration, especially in transport. The city has a specific government authority called Department for Gender Mainstreaming. It is responsible for ensuring that the (transport) services of the City of Vienna are fair and fulfil the needs of various target groups and people's demands. Projects in public space such as roads, paths, squares, parks, or in the area of traffic planning are prepared and developed including gender considerations, for example, public lighting. The city is aware that women place high importance on safety in public spaces, as they feel more at risk in these locations than men. Thus, it has launched a campaign to study the lighting situation of city parks and has prepared a number of measures for critical pedestrian crossings.
Key learnings from this topic	On gender mainstreaming, the act of examining the ways current transport services or planning approaches do not meet women's needs can be considered innovative. In this sense, re-examining current planning practices and processes (e.g. shifting from engagement towards participatory design) can be seen as a gendered innovation. Through enacting high-level policy change and integrating gender-mainstreaming throughout all government departments, improvements for women are more likely to be realised across different parts of their day-to-day experience, not just in their trips. Secondly, innovations have also been specifically developed: tools that can be used to crowdsource information about women's barriers and needs can be valuable inputs for problem identification. For this reason, sharing data and information collected through privately delivered innovations with authorities presents an opportunity to improve decision-makers' understanding of women's and girls' needs across specific themes (such as street or transport safety).

Disability awareness training

Table 4.11: Good practices related to disability awareness training

Disability awareness training	
Relevant user groups	Persons with disabilities and with reduced mobility (e.g. older people)
User challenges	Persons with disabilities and with reduced mobility (e.g. older people): Users within this group can face challenges as a consequence of a lack of adequate transport or city infrastructure, a lack of understanding of their specific needs, and lack of funding to pay for different services or infrastructure to address these needs.
Good practice on disability awareness training	Disability awareness training was conducted in Budapest (Hungary) as part of the EU-funded INCLUSION ¹²⁸ project, which ran between 2017 and 2020, to help public transport staff better understand the needs of passengers with disabilities

¹²⁸ <http://www.h2020-inclusion.eu/>

	and reduced mobility. The objective of this training was to improve the usability of public transport for these users. The training included stakeholder engagement with user representatives, creation of a staff handbook to reflect the needs of stakeholders and an evaluation of impact on staff, volunteers and passengers. Results saw a 20% increase in passengers identified as (and assisted) PRMs by staff as well as the number of PRMs delivering positive feedback on their services.
Evaluation of good practice on disability awareness training in Hungary	Benefits for persons with disabilities and with reduced mobility (e.g. older people) – and sometimes other user groups - are important and include better service provided, better safety delivered, less dissatisfaction and less discomfort. Overall for the operators, this generates better awareness of users' needs, better service being delivered, and fewer complaints received. Costs for users or taxpayers are very limited, as they mostly include training costs for transport operator staff.
Good practice on independent public transport commute to school for students with intellectual disabilities	The <i>MogLi Project</i> ¹²⁹ in Nordhorn (Germany) was launched in 2007 to support students with intellectual disabilities by enabling them to make independent use of the public transport for their school commute. Barrier identification and analysis of commuting routes to school was conducted, prior to bus driver training. The results of the project saw one third of participating students able to commute to school entirely independently, which led to an associated 15% cost saving in travelling support services as less children needed to travel individually to school.
Key learnings from this topic	Staff awareness training helps to ensure staff members know the appropriate actions to take when serving different users, such as giving extra time for boarding, securing wheelchairs, sitting and alighting, or for adequately assisting users with other needs. The effect of the staff awareness training is that it empowers passengers, allows staff to provide empathetic, gender equitable and safer public transport. Ultimately, better staff awareness and improved attitudes towards user groups help remove barriers that prevent users from using public transport services (navigation, safety, usability, etc.). Better trained staff can also lead to improved safety and feelings of security while travelling, which is of particular relevance to women, children, migrants and older people.

Source: Steer analysis

Good practices from non-EU countries identified

- 4.17 We present good practices from non-EU countries below, based on the information available. They ranges from the national level – such as the adoption equality impact assessment mandate in the United Kingdom – to the municipal level – such as the gender mainstreaming in mobility strategy adopted in Mexico City.

Table 4.12: Good practices from non-EU countries

Equality impact assessments in the United Kingdom	
Relevant user groups	All
Good practice	Equality impact assessments (EqIA) are a tool that helps public authorities ensure their policies, and the ways they carry out their functions, do what they are intended to do and for everybody. Carrying out an EqIA involves systematically assessing the likely (or actual) effects of policies on people in respect of disability, gender (including gender identity) and racial equality and, where required/selected, wider equality areas. This includes looking for opportunities to

¹²⁹ <https://www.iatss.or.jp/common/pdf/en/publication/booklet/07-3.pdf>

	promote equality that may have previously been missed or could be better used, as well as negative or adverse impacts that can be removed or mitigated.
Key learnings	EqlAs are applicable in the United Kingdom to transport projects of all sizes, ranging from projects to improve a single street, through to major new investments in transport infrastructure or nationwide changes to transport policy. Naturally, the level of effort and detail for an EqlA should be proportionate to the expected scale of impact.
Public transport and equity in Colombia	
Relevant user groups	All
Good practice	This good practice relates to public transport and equity policy in Colombia, which provide several useful ideas and concepts that largely focus on improving decision-makers' understanding of the relationship between social equity and other key factors such as inequality, gaps, social exclusion, injustice and poverty.
Key learnings	We observe that the relationship between inequality, the urban realm and transport, is complex, and can rarely be solved using a single intervention type. The intervention types tested in this good practice each had different strengths and weaknesses, meaning their efficacy varied by the specific geography of the urban area. Secondly, this example highlights the importance of data and sources. For example, in Colombia, there is good, localised, information about equality and social circumstances. Without this underlying data, it would have been impossible to develop such detailed results. Finally, the analysis highlighted that certain aspects of inequality are built into the material fabric of cities; something which is often intuitively known, but more challenging to quantitatively measure.
Stakeholder engagement strategies in India	
Relevant user groups	All
Good practice	This good practice relates to strategies for stakeholder engagement and highlights that in the context of emerging economies, as well as in developed ones, good engagement with stakeholders leads to more inclusive designs and more effective projects.
Key learnings	The good practice finds that effective stakeholder engagement allows for local communities to have less resistance to new transport services and/or infrastructure. It is also highlighted that a detailed stakeholder engagement strategy should be considered across all stages of the project life cycle. A pre- and post-project implementation strategy allows for this.
Demand and gender management strategies for sustainable mobility in Mexico City	
Relevant user groups	Women Young people and children
Good practice	This good practice examines Mexico City's framework for mainstreaming gender in the context of sustainable mobility, which provides a location-specific, evidence-based approach for understanding how gender, mobility and equity intersect. The framework has been designed to operate at the scale of a single municipality, but could be scaled up to operate at a regional level, or down to operate at a neighbourhood level, depending on the availability of data at that scale. Theoretically, some aspects of the framework could also be adjusted to take account of other axes of social exclusion/inequality, if there is underlying data, which can be connected to spatial movement and housing patterns.
Key learnings	Recommendations under the framework include: <ul style="list-style-type: none"> • data collection on specific user groups; • treating gender as an integral part of the transport planning process (mainstreaming); and

	<ul style="list-style-type: none"> involving and engaging with a wide range of stakeholders as part of the planning process. <p>Key challenges highlighted include a lack of:</p> <ul style="list-style-type: none"> disaggregated data, making it hard to identify issues; and female representation in public policy development.
Advancing transport equity in California (United States)	
Relevant user groups	All
Good practice	The good practice centres on the use of a 'priority populations' concept in California in the United States. For the Link21 project (a publicly funded megaproject related to connecting urban and intercity rail throughout Northern California), priority populations are identified based on a number of different economic, mobility, community and health/safety impacts, as well as a number of demographic factors.
Key learnings	<p>One of the key learnings identified is that there is a need to define vulnerable populations and ensure that the project in question positively impacts these communities. It is equally important to ensure that transport megaprojects do not negatively impact such communities (which may put them at further risk of social disenfranchisement). The Link 21 project spends considerable time developing a detailed framework which captures vulnerable communities across the project area and makes an explicit promise in its vision and objectives that the project will positively impact user groups at risk of social exclusion.</p> <p>A second key learning is that projects of this size, cost, and potential impact, can benefit from the co-creation approach, where transport projects actively engage with community based organisations representing these groups, giving them a voice in co-creating the project objectives and goals. This would be carried out across the project life cycle.</p>

Source: Steer analysis

Review of guidance from multilateral organisations

Overview

- 4.18 Guidance documents published by multilateral organisations of relevance to this study can be categorised into one of several categories:
- Inclusive urban planning and mainstreaming guidelines**, providing recommendations on how to better integrate issues associated with a specific user group (primarily women and girls, older people and PRMs) into transport planning specifically or more broadly across all policy fields;
 - Transport project financing guidelines**, providing recommendations on how to understand the social dimension of transport in the context of new transport projects supported by international financial institutions (e.g. World Bank); and
 - Operational guidelines** for transport planners and operators, outlining operational best practice to improve the usability of the transport system for older people and PRMs.
- 4.19 Guidance documents put forward numerous recommendations, many of which can be effectively grouped under two broad themes:
- Mainstreaming: integrated approaches to transport planning and design; and
 - Supporting tools:
 - Engagement: power-building through effective stakeholder engagement; and
 - Data: knowledge-building through insightful social analysis and data collection.

- 4.20 The guidance documents also provide a range of other points of advice which are not readily captured in the themes above. For example, more specific recommendations – such as specific transport operating guidelines – have been noted but are not explained here.

Gap analysis

- 4.21 Notably, the guidance documents collected focused almost exclusively on two user groups: Persons with disabilities and with reduced mobility (e.g. older people), and women and girls. Only two documents¹³⁰ (of the twelve collected) focused on broader social issues, such as the relationship between transport and poverty, HIV/AIDS, jobseekers, etc.
- 4.22 Furthermore, several documents¹³¹ provided guidance at the level of individual transport projects. Although useful, this does not necessarily address systemic concerns (e.g. cross-modal issues). Others¹³² provided guidelines for integrating aspects of transport planning across each stage of the project life cycle (identification and design, preparation and appraisal, etc.). Another¹³³ provided recommendations split by urban, peri-urban and rural contexts.

Thematic analysis

- 4.23 Guidance documents consistently recommend adopting integrated approaches to transport planning and design. This typically manifests as guidelines on collaborative working across all levels of government (national, regional, local) and policy-areas (transport, welfare, education, etc.) – reflecting the barriers erected by the cross-cutting nature of the social dimension of transport¹³⁴ – and as guidelines on improving policy-makers' understanding of user groups' diverse needs through engagement and data collection frameworks.
- 4.24 For example, it is highlighted that understanding the relationships 'between the regulatory context in a given country/city/region, and the various institutions involved in delivering improved transport accessibility [...] is an essential precursor to achieving greater, and sustainable, levels of accessibility [...] in transport [...] projects'¹³⁵. Mainstreaming (e.g. gender mainstreaming) is put forward as a solution for embedding these practices.
- 4.25 The importance of effective stakeholder engagement across all stages of transport projects¹³⁶ is highlighted in most guidance documents. For example, the World Bank states that 'some of the most successful projects that have delivered improved accessibility for people with limited mobility are those which have involved significant engagement and consultation'¹³⁷. Guidelines on stakeholder engagement focused on both capacity building (in terms of the

¹³⁰ World Bank (2006). Social Analysis in Transport Projects: Guidelines for Incorporating Social Dimensions into Bank-Supported Projects; and Inter-American Development Bank (2018). Social Impact Assessment – Integrating social issues in development projects.

¹³¹ World Bank (2006). Social Analysis in Transport Projects: Guidelines for Incorporating Social Dimensions into Bank-Supported Projects; World Bank (2013). Improving Accessibility to Transport for People with Limited Mobility (PLM); World Bank (2020). Handbook for Gender-Inclusive Urban Planning Design; and IDB (2018) Social Impact Assessment: Integrating Social Issues in Development Projects.

¹³² e.g. Inter-American Development Bank IDB (2018). Social Impact Assessment – Integrating social issues in development projects.

¹³³ World Bank (2010). Mainstreaming Gender in Road Transport Operational Guidance for World Bank Staff.

¹³⁴ Ibidem.

¹³⁵ World Bank (2013). Improving Accessibility to Transport for People with Limited Mobility (PLM).

¹³⁶ Be it new transport infrastructure, changes to mobility plans, or otherwise.

¹³⁷ Ibidem.

capabilities of specific user groups' representatives) and developing frameworks through which user groups can influence the transport system.

- 4.26 In terms of capacity building, developing the knowledge and political capital of specific user groups to enable them to more effectively collaborate with transport decision-makers (planners, operators, local government, etc.) is a common recommendation. This is designed to, *inter alia*, facilitate integrated planning approaches to transport planning and design (see above) by providing the institutional influence through which cross-cutting social issues pertaining to specific user groups can be overcome. The World Bank assesses that capacity building could be delivered through 'workshops and training, or the formation of leadership committees'¹³⁸.
- 4.27 Likewise, in terms of developing frameworks through which user groups can influence the transport system, guidelines assess that effective, ongoing stakeholder engagement throughout a project's life cycle not only raises awareness of the needs of specific user groups, but also facilitates effective ongoing monitoring and data collection. For specific examples of good practice, the World Bank details a framework for engaging with stakeholders¹³⁹. Notably, the World Bank states that effective engagement with some groups can improve the representation of others. For example, the World Bank outlines that 'including women in stakeholder consultations for the planning of transport systems often provides practical insights that can improve transport access and safety for other vulnerable users such as children, older people and people with disabilities'¹⁴⁰.
- 4.28 Guidance from multilateral organisations frequently highlights the importance of knowledge-building through establishing a suitable framework for the identification, collection and analysis of data insofar as this can be used to understand specific user groups' needs with respect to the transport system. For example, in the context of women's and girls' use of transport, the World Bank states that the 'different roles of women and men need to be understood and recognized in order to adequately plan and design the spatial and temporal characteristics of the transport modes that both women and men depend on'¹⁴¹.
- 4.29 This is most commonly presented in the form of guidelines on social impact assessments – including recommendations on data identification, collection and analysis. For example, the Inter-American Development Bank defines 'ten key elements of social impact assessment'¹⁴² which include, *inter alia*: analysing benefits and opportunities; identifying risks; establishing indicators, baselines and methodologies; establishing monitoring and evaluation tools; defining reporting requirements; and requirements on stakeholder engagement.
- Other documents provide examples of inclusivity indicators. For example, the World Bank provides examples of the data and indicators needed to create a baseline and to measure progress and results achieved through policies aimed at mainstreaming gender into road

¹³⁸ p.56. World Bank (2020). Handbook for Gender-Inclusive Urban Planning Design.

¹³⁹ World Bank (2006). Social Analysis in Transport Projects: Guidelines for Incorporating Social Dimensions into Bank-Supported Projects.

¹⁴⁰ World Bank (2010). Mainstreaming Gender in Road Transport Operational Guidance for World Bank Staff.

¹⁴¹ Ibidem.

¹⁴² p.7 Inter-American Development Bank (2018). Social Impact Assessment: Integrating Social Issues in Development Projects.

transport projects¹⁴³. These include: input and process indicators; output indicators; outcome indicators and impact indicators. Other guidance¹⁴⁴ provides indicators in terms of several policy themes: access, mobility, safety and freedom from violence, health and hygiene, climate resilience, security of tenure, representation and inclusion in project decisions, and economic and social inclusion.

Inclusivity indicators

- 4.30 As part of wider good practices, through the stakeholder consultation for this study, it was highlighted that the Sustainable Urban Mobility Indicators (SUMIs) developed by the European Commission have been useful in urban transport planning and an extension of these to account more comprehensively for the social dimension may be a beneficial toolkit for local authorities. SUMIs are a tool for cities and urban areas to ‘identify the strengths and weaknesses of their mobility system and to focus on areas for improvement’¹⁴⁵. This assists cities and urban areas to measure and document progress within their mobility system towards EU policy goals through a set of comprehensive, reliable and standardised indicators.
- 4.31 The current set of SUMIs is outlined in Table 4.13, further details on the indicator definitions and parameters required for calculation are available in relevant guidance published by the European Commission¹⁴⁶. The Commission is currently in the process of finalising the SUMI indicators based on the lessons learnt and feedback received during the pilot phase. This will include simplifying the calculation method and reducing the related administrative burden for collecting relevant data, as well as potentially merging some of the indicators.

Table 4.13: Sustainable Urban Mobility Indicators (SUMIs)

Indicator	
Affordability of public transport for the poorest group	Opportunity for active mobility
Accessibility of public transport for mobility impaired groups	Multimodal integration
Air pollutant emissions	Satisfaction with public transport
Noise hindrance	Traffic safety active modes
Road deaths	Quality of public spaces
Access to mobility services	Urban functional diversity
Greenhouse gas emissions	Commuting travel time
Congestion and delays	Mobility space usage
Energy efficiency	Security

Source: European Commission

- 4.32 Some of the existing indicators already account for aspects of the social dimension of transport from the perspective of users, such as the ‘affordability of public transport for the poorest group’ and ‘accessibility of public transport for mobility impaired groups’ indicators.

¹⁴³ World Bank (2010). Mainstreaming Gender in Road Transport Operational Guidance for World Bank Staff.

¹⁴⁴ pp.69-72 World Bank (2020). Handbook for Gender-Inclusive Urban Planning and Design.

¹⁴⁵ Sustainable Urban Mobility Indicators (SUMIs) - https://transport.ec.europa.eu/transport-themes/clean-transport-urban-transport/sumi_env

¹⁴⁶ Ibidem.

The latter of these two combines three elements of a transport system's accessibility; accessibility of moving assets, accessibility of stops and stations, and accessibility of ticket machines and offices. To extend these indicators, and develop others, to account for the social dimension it would be necessary to capture additional social elements within the indicator definitions, such as ensuring indicators are gendered to enable measuring of progress towards gendered policy objectives and transport users' needs. At the same time, however, the indicators need to be realistic with respect to the data available that allows them to be measured – particularly since relevant social data may not be within transport authorities' remit to collect.

- 4.33 The World Bank has identified four areas in which statistics on the interactions between user needs and transport would be useful for planners and policy-makers, as shown in Table 4.14.

Table 4.14: Transport and mobility social indicator areas

World Bank area	Social dimension in this study
Cost of transport	Corresponding to <i>affordability</i>
Transport quality	Corresponding to aspects of <i>reliability</i> and <i>accessibility</i>
Access to different modes of transport	Corresponding to <i>accessibility</i>
Trip characteristics (modes, frequency, length of trips, reasons for trips)	Corresponding to the <i>mobility needs of users</i>

Source: World Bank, Steer

- 4.34 To capture the above social dimension in indicators similar to the SUMIs, it is important that indicators incorporate a user-centric approach that captures aspects of users' lived experience of using transport. Examples of relevant indicators provided in World Bank guidance, as well as relevant indicators used by three different EU-funded research projects¹⁴⁷ to measure the outcomes of their interventions are presented in Table 4.15. The use of indicators such as these, in conjunction with the methodologies applied in defining the SUMIs, could allow for the social dimension of transport to be better measured.

Table 4.15: Examples of transport and mobility social indicators used in the research projects reviewed

Indicator	Theme	Social dimension
Proportion of household income spent on travel		
Proportion of additional household income gained for lowest income population (e.g. Increased household income due to improved accessibility to jobs)	Financial	Affordability
Anxiety and stress related to mobility		
Convenience of travel to carry-out daily tasks		Reliability
Waiting times		
Cleanliness of public transport options		
Choice of transport and mobility options	Travel experience	Accessibility
Security of personal belongings	Safety	

¹⁴⁷ Cities-4-People, Metamorphosis, INDIMO projects.

Indicator	Theme	Social dimension
Physical safety concerns due to road traffic		
Proportion of [user group] who report feeling safe when travelling		
Choice of destination options		
Information on transport and mobility options		
Physical accessibility of infrastructure or vehicles corresponding to [user group] needs	Individual agency	
Proportion of [user group] population with valid driver's license or car ownership		
Proportion of [user group] population within 0.5 km of the transport network	Mobility / Built environment	
Number of participants in consultation activities (of which [user group])	Participation	
Number of citizen forums that meet target percentage of [user group] attendees		Representation
Proportion of budgets which directly address constraints and needs identified by [user group]	Budgeting	
Number of Civil Society Organisations trained in [user group] equality	Advocacy	

Source: Steer analysis of World Bank guidance, and Cities-4-People, Metamorphosis, INDIMO projects.

Summary

- 4.35 Good practices have been identified which correspond to the key challenges/opportunities identified for different user groups, and which explore prominent changes to the transport system driven by the major trends. European and international good practices have been reviewed as part of the study, highlighting a range of measures (policy frameworks, operational initiatives, technologies, etc.) which can be deployed to ensure that users' needs are understood and are at the centre of the future transport system.
- 4.36 Overall, a number of common messages emerge across the good practices:
- Widespread awareness of different users' and their specific and diverse needs throughout all levels of transport governance and operations (from national to local, from boardroom to frontline staff) is key in helping advance equity and inclusion in transport;
 - Stakeholder engagement is critical as to better understand and meet users' specific needs and secure stakeholder buy-in; and
 - Knowledge-building through the identification and collection of user-specific data is necessary for providing relevant insights into the different experiences of different users.
- 4.37 The international good practices principally focus on identifying actions to support the mainstreaming of the social dimension of transport from the perspective of users. Such action is usually taken by government, so the good practices are rooted within the context of actions taken by policy-makers to better understand or meet the identified needs of specific user groups.
- 4.38 A review of guidance from multilateral organisations found that this mainly focused on two user groups: PRMs (e.g. older people); and women and girls. The guidance covers

mainstreaming activities, supporting tools and practices relating to stakeholder engagement and knowledge-building (data), and more operational guidelines. The importance of knowledge-building through establishing a suitable framework for the identification, collection and analysis of data is highlighted, and examples of inclusivity indicators are provided with reference to Sustainable Urban Mobility Indicators (SUMIs), which stakeholders cited as a good example of a comprehensive and standardised approach to specifying relevant metrics.

5 Recommendations

Introduction

- 5.1 This study seeks to map the challenges and opportunities posed by the modernisation of the transport system to different groups of transport users, review the level of preparedness of different stakeholders (users, authorities, operators) with respect to the modernisation of the transport system, and identify good practices for taking the social dimension of transport from the perspective of users into account. This chapter presents policy-oriented recommendations to ensure that users/passengers are at the centre of the future transport system, so that benefits can reach all societal groups as the transport system evolves.
- 5.2 The major trends driving change include:
- Decarbonisation and digitalisation, both of which can be said to predominantly be bringing about changes to the transport system itself (i.e. in the way transport is organised and provided); and
 - An ageing population and the COVID-19 pandemic, both of which can be said to predominantly be bringing about changes in the profile of users' needs (i.e. behavioural changes), which the transport system ought to adapt to.
- 5.3 The analysis is structured around the following six groups of transport users that are most likely to be affected by changes in the context of these trends, and which may have particular needs or face particular challenges:
- Women;
 - Citizens with poor IT literacy or with limited access to the internet;
 - Persons with disabilities and with reduced mobility (e.g. older people);
 - People living in remote areas (notably rural areas), segregated localities or in less developed regions;
 - Young people and children; and
 - People on low income and in particular at risk of poverty or social exclusion.
- 5.4 Additionally, it is noted that in considering the social dimension of the future EU transport system, citizens falling outside the above groups may also have to change their mobility habits.
- 5.5 In order for the study to successfully look to the future, it is necessary to start by understanding the existing challenges that users experience in the transport system. It is also the case that identifying challenges/opportunities that may be presented by the future transport system is very dependent on stakeholders (users, authorities, operators etc.) having an awareness of potential upcoming changes in transport and their impacts/benefits.
- 5.6 One of the key findings of the study is that there is a limited amount of information on anticipated future challenges/opportunities. Where available, documents discussing future trends only mention the social dimension of transport at a very high level (if at all) and infrequently consider different user groups in a more disaggregated way. This creates a gap in

understanding how trends (or strategies to address those trends) may benefit or otherwise impact members of different user groups. Responses from stakeholders indicate that the level of preparedness of authorities and operators to adapt to change is highly variable across the EU, while differences in how the social dimension of transport is taken into account are noted between different levels (local, regional, national, EU) and across different cities, regions, and countries.

5.7 Other key findings include that:

- There is increasing recognition that equity and inclusion are important in the context of mobility, although stakeholders observed that this may sometimes be impeded by advocacy gaps for some user groups (e.g. citizens with poor IT literacy or with limited access to the internet, and people on low income);
- Policy frameworks which mainstream the needs of different transport users (e.g. PRMs) have demonstrated the ability to deliver meaningful improvements for transport users, including through the development of sophisticated networks of user representatives; and that
- Context-specific solutions are more effective for ensuring that the needs of different users are addressed properly, particularly where the user groups and intersectionalities that are identified are also appropriate for the context.

5.8 The wider, more structural challenges and policy gaps described in the findings above are drawn from the analysis of the detailed challenges/opportunities identified for different user groups and in different Member States, and the analysis of the level of preparedness of different stakeholders to adapt to change. This chapter presents recommendations on how these structural challenges may be tackled and how the identified policy gaps may be addressed to ensure that the evolving transport system will be inclusive and foster connectivity and access to transport for all, in line with Flagship 9 of the Sustainable and Smart Mobility Strategy.

5.9 The degree to which different user groups are already recognised and their needs accounted for in transport varies. As an example, drawing on the advocacy gap analysis of stakeholder engagement in this study and the inventory of evidence collected, inclusion considerations in transport are relatively more advanced for PRMs, women, and people living in remote areas than for other user groups. However, this will also vary between different levels and places. Figure 5.1 below shows a framework for inclusion and illustrates the continuum across which different user groups may be positioned. The first and least ambitious level at which the basic needs of different user groups are being addressed is ‘minimum compliance’, progressing to empowerment of different user groups through building capability and opportunities for them to participate in decision-making, and advances to more transformational, structural changes.

Figure 5.1: Inclusion framework



Source: adapted from The Gender and Inclusion Framework for the Prosperity Fund, Infrastructure and Cities for Economic Development facility, UK Department for International Development¹⁴⁸

- 5.10 The extent and urgency with which the policy-oriented recommendations below might be undertaken will depend on the relative ‘starting position’ of the user groups being considered in each case and the level of ambition and capability of different stakeholders driving the change (particularly authorities and operators). Overall, despite increasing recognition that equity and inclusion are important in the context of transport, steps have to be taken to ensure that the social dimension of transport from the perspective of users forms an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that different user groups benefit equally and inequality is not perpetuated.

Recommendations

- 5.11 These recommendations were developed after detailed analysis, based on the review of literature (at Member State level and broader sources), stakeholder inputs, practitioner insight and the good practices identified. A draft version of these recommendations (structured around the themes of governance, engagement, and data) was presented to stakeholders and discussed during the participatory workshop organised in October 2021 (see Chapter 2 and Appendix B). Feedback from the workshop has been taken into account in developing the recommendations further.
- 5.12 An overview of the recommendations is provided in Table 5.1. The recommendations are grouped into four themes:
1. Improving coordination;
 2. Building knowledge and evidence;
 3. Integrating the social dimension when reviewing existing practice; and
 4. Providing resources.

Table 5.1: Overview of recommendations

Theme	Recommendation
Improve coordination	1: Strengthen coordination between different decision-makers
Build knowledge and evidence	2: Develop an improved understanding of the needs of different user groups and the challenges they face 3: Develop a preferred methodology for building inclusion and equity considerations into transport appraisal, and specify relevant indicators
Integrate the social dimension when reviewing existing practice	4: Identify gaps with respect to inclusion and equity of different groups of transport users when reviewing existing policy and legal frameworks 5: Identify gaps or constraints with respect to governance for the social dimension of transport when reviewing existing policy and legal frameworks 6: Take the social dimension better into account from the perspective of users in relevant projects and operations 7: Review contingency plans to build resilience into the transport system that accounts for different users’ needs

¹⁴⁸ <https://medium.com/iced-facility/mainstreaming-gender-inclusion-in-infrastructure-programming-dc947055168f>

Theme	Recommendation
Provide resources	8: Support awareness-raising and capacity-building
	9: Provide consolidated guidance in an actionable toolkit
	10: Address advocacy gaps and strengthen users' ability to engage

Source: Steer

- 5.13 There are several dependencies and feedback loops between the recommendations. For example, a review of existing practice would likely be more comprehensive if an improved understanding of the needs of different user groups had already been developed. In turn, this requires that relevant awareness and capacity exists, etc.
- 5.14 The recommendations are provided in more detail below. The challenge which each recommendation addresses is identified and a description of the recommendation is provided, including possible examples emerging from the analysis and stakeholder consultation. The level at which the issues should be tackled and the stakeholders that would be expected to initiate relevant actions are indicated, along with the priority that actions at EU level could be approached. A summary of the recommendations with the levels at which they are aimed at is provided in Table 5.2 at the end of this section.

1: Strengthen coordination between different decision-makers

Challenge
The social dimension of transport is linked to wider social issues, with the complex interaction between different government directorates and policies generating gaps in governance from the perspective of addressing the needs of different transport users. Fragmentation at different levels and across different cities, regions, and countries can result in inconsistent measures being taken to address users' needs.
Recommendation
<p>Strengthen coordination between different decision-makers at all levels (and between levels) in terms of policy-making, implementation/operations, and monitoring/evaluation to avoid siloed approaches in addressing different users' needs.</p> <p>At EU level, the European Disability Forum described the approach taken for the implementation of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) as a good example of coordination between different institutions of the EU and bodies representing persons with disabilities.</p> <p>In a further example relating to coordination, a key message from engagement with disability advocates and policy-makers working on the rights of persons with disabilities, was a strong discouragement of using the term 'accessibility' in the broader sense employed by this study. For this study, accessibility covered both connectivity and usability (see Chapter 1) and was intended to capture a broader, more multi-disciplinary set of challenges/opportunities related to availability of transport for all users. However the feedback from stakeholders was that this conflicts with the way the term 'accessibility' is used by the disability movement and risks confusing the more specific set of barriers faced by people with disabilities with the wider concepts of connectivity, usability or 'mobility poverty'¹⁴⁹. A more coordinated approach towards the use of key terms can ensure that relevant strategies, initiatives or measures are better aligned.</p> <p><i>Prioritisation of possible actions at EU level based on added value and costs/benefits</i></p> <p>The European Commission should continue ensuring that its processes sufficiently support joined-up policy-making between all the different policy areas that it addresses. . Given the wide scope and high level of complexity of the relevant interactions, the administrative burden of achieving full coordination across all potential issues could become impractically high, however steps could be taken to facilitate such coordination. Improved coordination of policy-making at EU-level could also promote improved coordination at national, regional and local levels, as implementation of better-coordinated policies is cascaded down.</p>

Level	Initiating stakeholder
European Union level	✓
Member State level	✓
Regional level	✓
Transport sector/industry level	✓
Company level	✓

¹⁴⁹ 'Mobility poverty' for the purposes of this study refers to the inability of utilising transport services either because they are too costly (considered under the term 'affordability' in this study) or because the services do not exist (considered under the term 'connectivity' in this study).

2: Develop an improved understanding of the needs of different user groups and the challenges they face

Challenge
<p>The level of information available on the needs of different user groups varies. From the review undertaken as part of this study, potentially relevant gaps in information were identified with respect to migrants, LGBTIQ people, members of racial/ethnic minorities, people impacted by gentrification and displacement, and people who rely on cross-border mobility.</p>
Recommendation
<p>Develop an improved understanding of the needs of different user groups and the challenges they face. Although the user groups considered in each case ought to be appropriate for the context, good information on a range of user groups would improve practitioners' awareness of the social dimension of transport and help them better identify relevant user groups in each case. The information could be communicated in relevant guidance.</p> <p>In the first instance, this recommendation could be undertaken at a higher level to help drive wider awareness and understanding of relevant issues. It ought to be sponsored by authorities, operators and/or other stakeholders responsible for planning and delivering transport services and infrastructure, and supported by user representatives.</p> <p>Specifically on the user groups identified above, this study has found that:</p> <ul style="list-style-type: none">• Information on the needs and challenges of migrants could be expanded. Migrants are briefly identified in the inventory and mapping as facing higher barriers to transport. However, information about their needs and experience is scarce. The lack of information will create significant obstacles when trying to develop strategies or solutions to improve mobility for this user group.• A better understanding of the transport needs and experiences of LGBTIQ people, as well as members of racial/ethnic minorities, particularly in relation to challenges around harassment and safety that affect individuals' perception of accessibility, could make future work around the social dimension of transport more inclusive.• Understanding of gentrification and displacement could be strengthened. The inventory and mapping identified the suburbanisation of poverty, but there is little information available on displacement. Gentrification and displacement can sometimes be connected to larger infrastructure or transport projects. There are a number of challenges associated with displacement, which primarily impacts low-income individuals. For low-income individuals without access to a vehicle, this challenge can be particularly impactful, limiting access to employment and essential services or destinations.• More research could be undertaken on the social dimension of international cross-border challenges for different user groups. This is the case for both frequent journeys (e.g. cross-border commuter journeys) as well as long-distance occasional travel. More information on challenges for cross-border commuters, in particular relevant information should ideally capture the different user groups completing these journeys. This is particularly relevant in border regions, or for urban areas in proximity to international borders (e.g., the role of cross-border commutes are an important part of any discussions around transport in Luxembourg). Additionally, during COVID-19 when borders were closed across Schengen countries, challenges with cross-border worker journeys to/from work became more apparent. <p><i>Prioritisation of possible actions at EU level based on added value and costs/benefits</i></p> <p>The European Commission's role is important in terms of knowledge-building and awareness-raising, as it engages with transport stakeholders, social experts and user representatives across the EU on a range of equality and non-discrimination initiatives¹⁵⁰. The cost of conducting supplementary research and disseminating its findings would be limited, but would contribute to a valuable advancement in understanding of the relevant</p>

¹⁵⁰ For example: Gender Equality Strategy (2020-2025); Disability Strategy 2021-2030; LGBTIQ Equality Strategy (2020-2025); Strategic Framework for equality and inclusion of Roma; EU Anti-racism Action Plan 2020-2025, EU Strategy on the Rights of the Child and a European Child Guarantee to ensure that children have access to basic services; a Green Paper on Ageing addressing the impact of demographic change.

issues by addressing some of the information gaps identified by this study while avoiding duplication at lower levels.

Level		Initiating stakeholder	
European Union level	✓	Policy-makers	✓
Member State level	✓	Public administrations	✓
Regional level	✓	Transport operators	✓
Transport sector/industry level	✓	Civil society organisations	✓
Company level	✓	Passenger and consumer organisations	✓

3: Develop a preferred methodology for building inclusion and equity considerations into transport appraisal, and specify relevant indicators

Challenge	
Cost-benefit analysis (CBA) approaches that are widely used in transport appraisal do not account well for wider social inclusion and equity impacts. Common, well-defined indicators that capture the different needs of different user groups and that measure the different benefits or impacts that different groups of users experience are not available. Relevant data (e.g. disaggregated by user group) is not always collected and may be inconsistent with other datasets (e.g. land use, economic or health), making it difficult to determine interactions. As such, it is so far not possible to identify that transport has different levels of affordability, reliability or accessibility for some users than others, or to demonstrate the magnitude of this disparity.	
Recommendation	
Develop a preferred methodology for building inclusion and equity considerations into transport appraisal, and specify relevant indicators.	
The EU could look to advance the state-of-the-art with respect to transport appraisal by developing and adopting a preferred methodology for evaluating who experiences the most benefit and burden, and incorporating inclusion and equity considerations in decision-making for transport schemes. For example, the appraisal of schemes could examine whether higher subsidies are being directed to a mode of transport that is used more by high-income users, or whether investment is focused on transport which benefits more male users than female users. This would be supported by: <ul style="list-style-type: none"> the specification of relevant indicators (that should also account for the fact that needs may change over time); and improved and harmonised data, which could be collected by integrating a mobility component into existing surveys or data collection exercises. Stakeholders highlighted that more clarity is required on the application of the General Data Protection Regulation with respect to collecting, processing and retaining such data in this context. They also emphasised that appropriate resources for both collecting and interpreting the data should be made available, to ensure its effective use.	
<i>Prioritisation of possible actions at EU level based on added value and costs/benefits</i>	
The European Commission's role in this process should be focused on developing new approaches with respect to transport appraisal that incorporate inclusion and equity considerations in decision-making for transport schemes. Specifying a preferred methodology that would be widely supported (and hence taken up) by practitioners could be a lengthy and time-consuming process. The application of such a methodology would also rely on relevant data being collected, for which capacity would need to be developed at the local level. Benefits would include advancing knowledge in this field and formalising consideration of inclusion and equity factors in transport appraisal, while avoid duplication of similar initiatives at lower levels.	
Level	Initiating stakeholder
European Union level	✓
Member State level	
Regional level	
Transport sector/industry level	
Company level	

4: Identify gaps with respect to inclusion and equity of different groups of transport users when reviewing existing policy and legal frameworks

Challenge
The level of understanding about the needs of different user groups varies significantly between Member States. In the absence of policy frameworks that mainstream the needs of different transport users, users experience inconsistencies in using transport (for example between modes or between regions). The lack of a more structured policy approach also impedes the development of sophisticated networks of user representatives.
Recommendation
<p>Identify gaps with respect to inclusion and equity of different groups of transport users when reviewing existing policy and legal frameworks. Assess where stricter measures (e.g. regulatory requirements or standards) should be adopted to ensure that the needs of different users are addressed, and where softer measures (e.g. policy templates or guidance) could be developed and communicated.</p> <p>This exercise could be undertaken at every level (EU, Member State, regional) at which transport policies are designed and implemented. It would aim to improve policy practitioners' awareness and understanding of the social dimension of transport and the needs of different users, and provide them with the tools (in the form of specified standards and/or guidance) for taking these into account in their work. Where the introduction of stricter measures is not warranted, particularly by higher-level authorities (i.e. at Member State or EU level), softer measures could be developed by them that support practitioners at lower levels to adopt a structured and more uniform approach (e.g. across modes or regions).</p> <p><i>Prioritisation of possible actions at EU level based on added value and costs/benefits</i></p> <p>The European Commission's role in this process should be focused on promoting the inclusion and equity of different groups of transport users, for example, through relevant guidance for policy and regulatory requirements when reviewing existing policy and legal frameworks . Benefits would include improved and more consistent outcomes for different transport users.</p>

Level	Initiating stakeholder
European Union level	✓
Member State level	✓
Regional level	✓
Transport sector/industry level	
Company level	

5: Identify gaps or constraints with respect to governance for the social dimension of transport when reviewing existing policy and legal frameworks

Challenge	
<p>The social dimension is not consistently embedded in transport governance processes to ensure that policy-makers have sufficient information and flexibility to address different users' needs and accommodate innovations. For example:</p> <ul style="list-style-type: none"> Pathways are often missing between operators/service providers and authorities for data held by operators to feed back into official policy and planning. This challenge is exemplified in the good practices related to innovations to better consider the transport needs of women, where there is a need to connect crowdsourced information on safety for women back to policy-makers and planners in the respective localities. A similar information asymmetry between authorities and transport operators exists in other areas, too (e.g. between city authorities and micromobility providers), which could be bridged. 	
Recommendation	
<p>Identify gaps or constraints with respect to governance for the social dimension of transport when reviewing existing policy and legal frameworks. Assess where frameworks could be adapted to embed the social dimension into planning and procuring transport.</p> <p>This exercise could be undertaken at every level (EU, Member State, regional) at which transport policies are designed and implemented. To support such an exercise, the EU could – for example – develop and share guidance/templates with competent authorities for including the specification of representative data collection and sharing processes in service contracts with operators.</p> <p>Where possible, updated policy and legal frameworks could be outcome-oriented to avoid precluding specific solutions or technologies for addressing different users' needs and allow more local transport policy-makers/planners to deploy solutions that are tailored to the context. Where frameworks are not updated, policy-makers could provide guidance on how emerging solutions/technologies could be accommodated within existing rules.</p> <p><i>Prioritisation of possible actions at EU level based on added value and costs/benefits</i></p> <p>The European Commission's role in this process could be focused on embedding the social dimension into planning and procuring transport when reviewing existing policy and legal frameworks. In addition, steps could be taken to support competent authorities through providing relevant guidance that helps them address relevant gaps and results in more robust governance with respect to the social dimension of transport.</p>	
Level	Initiating stakeholder
European Union level	✓
Member State level	✓
Regional level	✓
Transport sector/industry level	
Company level	

6: Take the social dimension better into account from the perspective of users in relevant projects and operations

Challenge	
The long-term nature of transport projects, investments and assets can limit opportunities for different users' needs to be comprehensively addressed in relevant plans and operations.	
Recommendation	
<p>Take the social dimension better into account from the perspective of users in relevant projects and operations to the extent feasible.</p> <p>This exercise could be undertaken by all levels at which transport is planned and delivered with the aim of taking the social dimension better into account from the perspective of users into relevant plans and operations to the extent feasible. This would make it possible for different users' needs to be addressed more promptly and flexibly, rather than only through new schemes initiated after relevant policy or guidance is developed. In addition, recognising opportunities to address different users' needs may allow for synergies to be realised – for example, the renewal of fleets driven by decarbonisation provides an opportunity for new vehicles to also be specified to meet up-to-date PRM accessibility standards.</p> <p><i>Prioritisation of possible actions at EU level based on added value and costs/benefits</i></p> <p>The European Commission has an important role to play in this process, by ensuring that the funds it distributes through Programmes (for instance TEN-T co-funded projects as assessed by CINEA), frameworks or other interventions continue to take into account the perspective of users.</p>	
Level	Initiating stakeholder
European Union level	✓
Member State level	✓
Regional level	✓
Transport sector/industry level	✓
Company level	✓

7: Review contingency plans to build resilience into the transport system that accounts for different users' needs

Challenge
<p>In situations of disruption, particularly mass disruption, responses by operators and/or competent authorities that are designed to provide a level of resilience or minimum service may not adequately anticipate the needs of different users. For example:</p> <ul style="list-style-type: none"> Assisted travel for persons with disabilities and persons with reduced mobility (PRMs) became unavailable in certain cases during the COVID-19 pandemic, meaning that PRMs who would normally use such services were no longer able to travel independently. Young people and children affected by disruption may not have the ability to complete their journey independently (e.g. by taxi) and to seek reimbursement from operators at a later date. Where an overnight stay may be required, hotel policies often do not allow stays by unaccompanied minors.
<p>Review contingency plans to build resilience into the transport system that accounts for different users' needs. Develop contingency plans that include a breakdown of how the needs of different users will be met during disruptions, involving all elements/stakeholders of the transport value chain.</p> <p>This exercise could be undertaken by individual operators and/or operator associations at sector level, overseen by competent authorities. It presupposes an understanding of the relevant different user groups for the context and their needs, as well as the availability of relevant policy or guidance. It should be supported by a continuous dialogue between authorities, transport operators and user representatives, in order to raise crisis preparedness and resilience levels for all users, and include appropriate methods of communicating relevant measures to different users.</p> <p><i>Prioritisation of possible actions at EU level based on added value and costs/benefits</i></p> <p>The European Commission's role in this process should be to examine applicable European legislation to ensure that existing rules on contingency planning that accounts for different users' needs in transport are enforced. Additionally where new legislation is drafted the Commission should ensure that it includes contingency planning for all users' needs.</p>

Level	Initiating stakeholder
European Union level	✓
Member State level	✓
Regional level	✓
Transport sector/industry level	✓
Company level	✓

8: Support awareness-raising and capacity-building

Challenge	
<p>The level of preparedness of authorities/operators is highly variable across the EU. Preparedness refers to the level of awareness and capacity (resources, funds, skills, etc.) of authorities/operators. Differences in terms of how the social dimension of transport is taken into account are noted at different levels (EU, Member State, regional, local) and across different cities, regions and countries . Not all policy-makers consider accounting for different users' needs as part of the main transport planning and funding activities.</p> <p>Further, only a limited amount of information on anticipated future challenges/opportunities was found. Where available, documents discussing future trends only mention the social dimension of transport at a very high level and infrequently consider different user groups in a more disaggregated way. This creates a gap in understanding how trends (or strategies to address those trends) may benefit or otherwise impact members of different user groups.</p>	
Recommendation	
<p>Support awareness-raising and capacity-building for policy-makers, public administrations, service providers and other transport professionals to ensure practitioners are able to take into account and respond to a range of user needs in their work.</p> <p>This recommendation is aimed at higher-level authorities which could provide tools and funding to raise awareness of relevant issues and build the capacity of authorities at more local levels to identify relevant different user groups and address their needs, particularly in the context of changes driven by the major trends impacting transport (such as decarbonisation, digitalisation, an ageing population, and the COVID-19 pandemic). Tools may take the form of technical assistance, recommended training material or programmes, and guidance documents. Tools could also be developed at sector/industry-level by associations to support their members. The approach used for the development of advice, guidance and tools by the Urban Mobility Observatory (Eltis¹⁵¹) that supports the development of Sustainable Urban Mobility Plans (SUMPs) could provide a useful framework.</p> <p><i>Prioritisation of possible actions at EU level based on added value and costs/benefits</i></p> <p>The European Commission's role is important in terms of awareness-raising, as it engages with transport stakeholders and shares knowledge through established platforms such as the Urban Mobility Observatory (Eltis). Costs for developing tools (e.g. recommended training material, guidance etc.) to support awareness-raising would be limited, while benefits could be substantial as an improved understanding of relevant issues and approaches to address them cascade from European level down through different national, regional and local levels.</p>	
Level	Initiating stakeholder
European Union level	✓
Member State level	✓
Regional level	✓
Transport sector/industry level	✓
Company level	✓

¹⁵¹ <https://www.eltis.org/>

9: Provide consolidated guidance in an actionable toolkit

Challenge

As evidenced by the inventory of relevant existing data compiled by this study, there exists a wide range of sources that provide diverse guidance at different levels. In the context where the level of preparedness of authorities/operators is highly variable across the EU, and particularly where awareness and capacity are low, scattered guidance may impede action if it is not accessible/intelligible. As a result, practitioners may have difficulty in identifying and addressing relevant user groups and their needs, with the risk of some users being overlooked.

Recommendation

Provide consolidated guidance in an actionable toolkit. Review and summarise relevant existing guidance and identify preferred approaches and processes that could be used by practitioners at the local, regional and national level (e.g. participatory budgeting or design, use of universal design principles, inclusive engagement strategies, co-creation).

The aim of this exercise would be to structure diverse guidance from different sources to provide practitioners with a simpler entry point for developing their understanding, taking action to identify different user groups relevant to their context and addressing their needs as the transport system evolves. To achieve a useful degree of coherence, there is value in this first step being undertaken at EU level, with practitioners at more local levels then drawing on this guidance and adapting it as appropriate. The Commission could assess whether synergies with guidance developed by the Urban Mobility Observatory (Eltis¹⁵²) that supports the development of Sustainable Urban Mobility Plans (SUMPs), the New EU Urban Mobility Framework, the Passenger Rights Framework and/or other equality and non-discrimination initiatives could be utilised. Given the complex interaction between different issues, trends and initiatives (e.g. between decarbonisation and digitalisation), a recommended hierarchy of principles could also help support implementation of guidance by practitioners.

As an example of a preferred approach or process that could be used by practitioners, inclusive engagement strategies might feature:

- Guidance in an actionable toolkit emphasising the importance of asking users about their challenges, and listening and learning from their ideas and proposed solutions – as highlighted by user representatives during the stakeholder consultation. Although reviewing studies and analysis can help provide high-level information on needs, these are not a replacement to hearing directly from users about their experience. It is a resource that should not be undervalued, and can be incorporated into decision-making through creating avenues for users to participate more readily. Support from authorities to formalise representation/advocacy of different users would allow for a more coordinated approach, but relevant activities to ensure that users are represented and listened to can also be undertaken by the transport sector/industry itself (e.g. through the sponsoring of relevant forums at the local level) (see Recommendation 10).
- Approaches for enhancing participation by users, such as:
 - Scheduling engagement for times of day/week for those with non-regular work schedules;
 - Providing childcare and a meal;
 - Paying participants for their time;
 - Providing information in multiple languages and in formats accessible for persons with disabilities;
 - Going to meet people where they already are;
 - Hosting in locations which are physically accessible, and are reachable by public transport;
 - Supplementing online participation options with in-person events so that it is possible for those with low IT literacy to provide input.

Prioritisation of possible actions at EU level based on added value and costs/benefits

The European Commission's role in this process should be focused on structuring diverse guidance from different sources to achieve a useful degree of coherence and provide a simpler entry point for practitioners to develop their understanding and take action with respect to inclusion and equity in transport. Costs for

¹⁵² <https://www.eltis.org/>

developing such guidance would be limited, while synergies with guidance developed as part of other initiatives mentioned above could also be utilised. As evidenced by platforms such as the Urban Mobility Observatory (Eltis) that supports the development of Sustainable Urban Mobility Plans (SUMPs) and the European Institute for Gender Equality (EIGE¹⁵³) that contributes to and strengthens the promotion of gender equality, there is clear value in providing structured resources for practitioners to draw on.

Level	Initiating stakeholder
European Union level	✓
Member State level	✓
Regional level	
Transport sector/industry level	
Company level	

¹⁵³ <https://eige.europa.eu/>

10: Address advocacy gaps and strengthen users' ability to engage

Challenge
<p>There is increasing recognition that inclusion is important in the context of mobility, but stakeholders observed that this process can sometimes be impeded by advocacy gaps for some user groups. For example, engagement with stakeholders for different user groups revealed that people on a low income had lower representation with respect to transport. In other cases, even if a well-developed network of representatives may exist for a user group (e.g. women), it may not have the mandate or understanding to engage on transport issues.</p> <p>The lack of an existing network for low-income groups with respect to transport is an important gap, as when thinking of the intersection between people on low-income and other user groups, the challenges faced by users in each group are exacerbated if individuals are also on a low income or at risk of poverty or social exclusion.</p>
<p>Address advocacy gaps and strengthen users' ability to engage through providing targeted support. Identify and address gaps in advocacy with respect to transport for different user groups.</p> <p>This recommendation applies to all levels at which transport is planned or delivered, and at which users could be engaged to help inform decision-making and/or monitoring. Having identified user groups that may be relevant to their context, authorities at EU, Member State and regional levels should assess advocacy gaps with respect to transport and take steps to address these. The transport sector/industry and individual companies (depending on the scale of their activities) could also support more formalised representation of different users through the sponsoring of relevant forums at the local level or setting up dedicated focus groups.</p> <p>Although this recommendation is not directly addressed to civil society organisations and passenger and consumer representatives, they may nevertheless have to take action to request any funding that is made available in order to develop their understanding of relevant issues and their ability to advocate effectively on behalf of their members.</p> <p><i>Prioritisation of possible actions at EU level based on added value and costs/benefits</i></p> <p>The European Commission plays an important role in supporting organisations that facilitate dialogue and exchanges between citizens and policy-makers. Continued support to ensure that such organisations are also able to represent their members with respect to transport issues and/or at a higher level of resolution with respect to other characteristics (e.g. developing the capacity to be able to distinguish the differences for the citizens they represent who are on low income, or who have low IT literacy) would involve relatively low costs, while high quality engagement with diverse user representatives would deliver material benefits in terms of achieving better inclusion and equity outcomes.</p>

Level	Initiating stakeholder
European Union level	✓
Member State level	✓
Regional level	✓
Transport sector/industry level	✓
Company level	✓

Summary

- 5.15 The findings of the study include structural challenges and policy gaps that are identified through the analysis of the detailed challenges/opportunities for different user groups and in different Member States, and the analysis of the level of preparedness of different stakeholders. Table 5.2 summarises the recommendations and the level at which these are aimed. The recommendations cover how structural challenges may be tackled and how the identified policy gaps may be addressed to ensure that the evolving transport system will be inclusive and foster connectivity and access to transport for all.
- 5.16 The degree to which different user groups are already recognised and their needs accounted for in transport varies. As an example, drawing on the advocacy gap analysis of stakeholder engagement in this study and the inventory of evidence collected, inclusion considerations in transport are relatively more advanced for PRMs, women, and people living in remote areas than for citizens with poor IT literacy or limited access to the internet, young people and children, and people on low income. However, this will also vary between different levels and places.
- 5.17 The extent and urgency with which the recommended actions might be undertaken will depend on the relative ‘starting position’ of the user groups being considered in each case and the level of ambition of different stakeholders (particularly authorities and operators). Overall, despite increasing recognition that equity and inclusion are important in the context of transport, steps have to be taken to ensure that the social dimension of transport from the perspective of users forms an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that different user groups benefit equally and inequality is not perpetuated.

Table 5.2: Summary of recommendations

Theme	Recommendation	European Union level	Member State level	Regional level	Transport sector level	Company level
Improve coordination	1: Strengthen coordination between different decision-makers	✓	✓	✓	✓	✓
Build knowledge and evidence	2: Develop an improved understanding of the needs of different user groups and the challenges they face	✓	✓	✓	✓	✓
	3: Develop a preferred methodology for building inclusion and equity considerations into transport appraisal, and specify relevant indicators	✓				
Integrate the social dimension when reviewing existing practice	4: Identify gaps with respect to inclusion and equity of different groups of transport users when reviewing existing policy and legal frameworks	✓	✓	✓		
	5: Identify gaps or constraints with respect to governance for the social dimension of transport when reviewing existing policy and legal frameworks	✓	✓	✓		

	6: Take the social dimension better into account from the perspective of users in relevant projects and operations	✓	✓	✓	✓	✓
	7: Review contingency plans to build resilience into the transport system that accounts for different users' needs	✓	✓	✓	✓	✓
Provide resources	8: Support awareness-raising and capacity-building	✓	✓	✓	✓	✓
	9: Provide consolidated guidance in an actionable toolkit	✓	✓			
	10: Address advocacy gaps and strengthen users' ability to engage	✓	✓	✓	✓	✓

Source: Steer

5.18 Recommendations at EU level that include the involvement of the European Commission have been prioritised based on their added value and costs and benefits.

- Recommendations 2, 6, 8, 9 and 10 are ranked first in terms of priority. The implementation of these recommendations is considered to be where value is created and benefits are expected to outweigh costs. The positive cost-benefit ratio is based on the fact that the Commission can build on existing initiatives.
- Recommendations 1, 4, 5 and 7 are ranked second in terms of priority. Although the costs of implementing these recommendations in full is considered to be high as a result of complex or time-consuming processes, intermediate steps are identified (such as focused coordination on key issues and the provision of guidance) that would contribute towards delivering improved outcomes without incurring higher costs.
- Recommendation 3 is ranked third in terms of priority. Developing a preferred methodology for building inclusion and equity considerations into transport appraisal, and specifying relevant indicators, could be a lengthy and time-consuming process. The application of such a methodology would also rely on relevant data being collected, for which capacity would need to be developed at the local level.

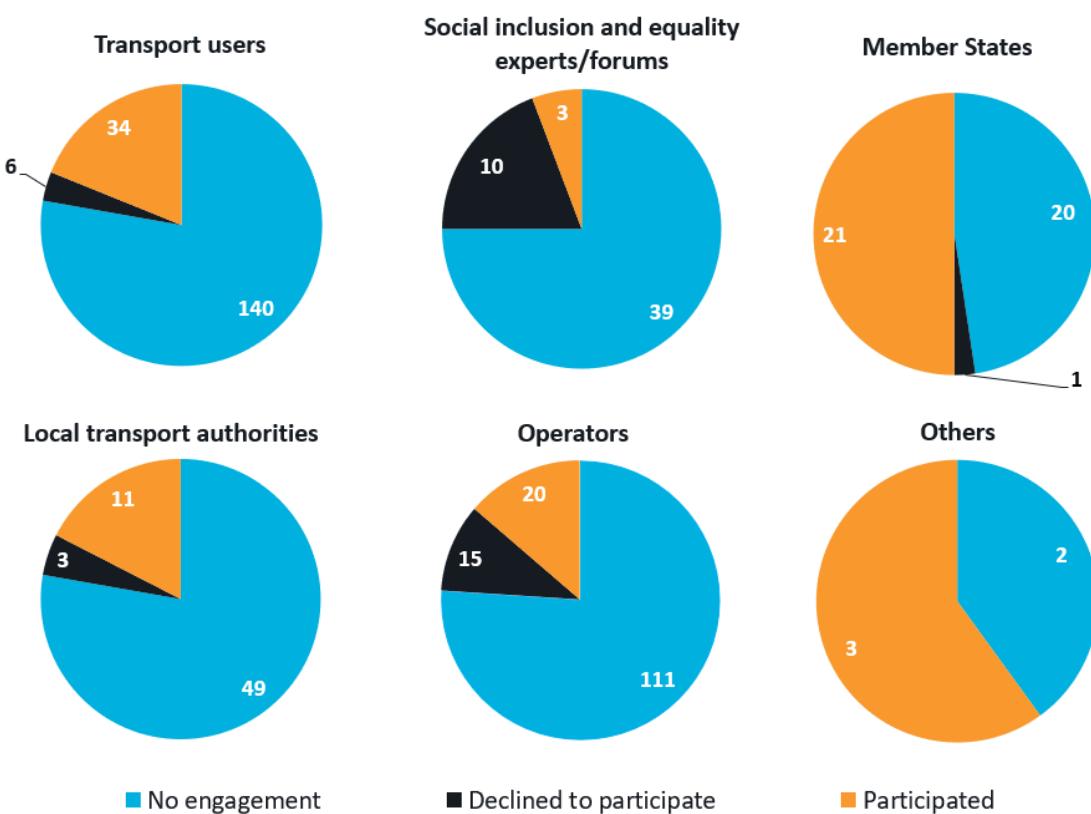
Appendices

A Stakeholder consultation

Detailed overview

- A.1 A detailed overview of the stakeholder consultation is described below. As can be seen in Figure A.1, a large proportion of the contacted stakeholders have not engaged with us, despite repeated approaches. This is seen across all stakeholder types, including Member State ministries, where a number of additional ministries related to the social dimension of transport were contacted to facilitate engagement.

Figure A.1: Overview of stakeholder engagement by stakeholder group



Source: Steer. Note that for Member States, more than one relevant stakeholder may have been contacted (e.g. Ministry of Transport and Ministry of Consumer Protection).

- A.2 In addition to the external stakeholders, Steer has engaged with other DGs of the European Commission, including the Unit on Gender Equality (DG JUST) and the Unit on Disability and Inclusion (DG EMPL).

- A.3 We have contacted 180 organisations representing users at EU and Member State levels. The organisations represent specific user groups or are general consumer/passenger representatives. Across all forms of engagement, such as written questionnaire responses, interviews and workshop participation, we received contributions from 34 transport user representatives. These vary in detail. We note that user responses have been predominantly focused on existing challenges and the level of engagement with authorities/operators, with little information provided on future opportunities/challenges.
- A.4 We have contacted a total of 52 social experts within the sub-groups of the European Anti-Poverty Network (EAPN), European Social Policy Network (ESPN), European Network of Independent Living (ENIL) and European Social Network (ESN). This stakeholder group had one of the largest proportions of stakeholders declining to participate (10 of 52), with the majority of this group citing a lack of expertise in the field of transport. In these cases efforts have been made to gain an input on the topics in the questionnaire related to the experience of the stakeholder. Two completed questionnaire responses have been received from the Czech EAPN member Committee of Goodwill – Olga Havel Foundation and ENIL with a researcher from Vilnius University participating in the workshop.
- A.5 A total of 42 Member State level ministries or national transport authorities have been contacted and introduced to the study. The slight majority of these contacts (22) have participated in the study. The level of details of responses received varies, although the majority provided detailed answers to the questions they chose to answer¹⁵⁴.
- A.6 We have contacted 63 local transport authorities, as well as representatives or EU wide networks of local and regional authorities, such as POLIS. Eleven of these local transport authorities have participated in some form throughout the engagement process, with eight interviews completed. Overall the quality of responses received has been high with the majority of questions answered, in cases where gaps were identified, these were discussed at interview and/or clarifying comments were also received in writing.
- A.7 A total of 146 operators and operator representatives have been contacted across the following modes; air, bus & coach, car, micromobility, rail, taxi and waterborne. Of these, 12 completed questionnaires have been received along with supporting position papers and comments from operators who could not provide a questionnaire response (Lufthansa and Micro-mobility for Europe). The quality of received responses varies with some operators supplying minimal information on the current challenges and policies available to the different user groups considered in this study. Interviews have been conducted with eight operators and operator representatives. Similarly, to the questionnaire responses varied levels of detail have been provided through the interviews. For example, the topic of challenges for persons with disabilities and with reduced mobility was more easily approached than others, as a result of the passenger rights obligations that operators have to comply with.
- A.8 Five other relevant stakeholders were contacted as part of the consultation with three of these stakeholders participating in the study, including the European Transport Workers' Federation (ETF).

¹⁵⁴ Not all stakeholders answered all questions – depending on the relevance of the questions and stakeholders' experience. Some organisations may not have had anything to contribute on some of the user groups, other organisations might not have had any views on a particular trend. Some respondents also combined intersectional issues in their responses to a particular question. It is not possible to analyse the proportion of answered/unanswered questions as a fair indicator of the quality of the responses.

Interviews

- A.9 We have undertaken a programme of interviews with selected targeted stakeholders. Where we were not able to engage with stakeholders who were originally nominated for an interview (or they were not willing to participate), stakeholders have been substituted by alternative contacts from the same stakeholder group, while also trying to maintain a geographical balance. Substitute stakeholders who had previously engaged with the study (by agreeing to participate or who had already submitted a response) were invited first, as it was more likely that they would be interested in taking part in an interview.
- A.10 Following this process 120 stakeholders were invited to an interview with a total of 30 being completed during the engagement process. Details on these interviews are provided in the tables below.

Table A.1: Interview status

Stakeholder Group	Interview invitations	Interviews Completed
European Commission	3	2
Transport user	51	9
Social inclusion and equality experts/forums	13	0
Member State	8	2
Local transport authority	13	8
Operator	29	8
Other	3	1
Total	120	30

Source: Steer

Table A.2: Stakeholders who completed an interview

Country	Stakeholder Group	Stakeholder Sub-group	Organisation
EU wide	European Commission	-	DG JUST Unit on Gender Equality
EU wide	European Commission	-	DG EMPL Unit on Disability & Inclusion
EU wide	Transport user	PRM org/rep	European Disability Forum (EDF)
EU wide	Transport user	Rural org/rep	European LEADER Association for Rural Development (ELARD)
EU wide	Transport user	General consumer	European Consumer Organisation (BEUC)
EU wide	Operator	Air	European Regional Airlines Association (ERAA)
EU wide	Operator	Rail	Community of European Railway and Infrastructure Companies (CER)
EU wide	Operator	Car	BlaBlaCar
EU wide	Operator	Micromobility	Micro-Mobility for Europe
EU wide	Operator	Other	European Public Transport Association (EPTO)
EU wide	Local transport authority	Other	Eurocities

Country	Stakeholder Group	Stakeholder Sub-group	Organisation
EU wide	Local transport authority	Other	POLIS Access Working Group
BE	Transport user	PRM org/rep	Wallonia Brussels Accessibility Collective
BE	Operator	Rail	Brussels Intercommunal Transport Company (STIB)
IE	Operator	Air	Ryanair
ES	Transport user	PRM org/rep	City of Barcelona - Municipal Institute for Persons with Disabilities
ES	Local transport authority	Urban (large)	Metropolitan Transport Authority (Barcelona)
FR	Transport user	PRM org/rep	Accessibility Commission of the CFPSAA - Federation of the Blind of France
IT	Member State	-	Regulatory Authority of Transport (ART)
LV	Local transport authority	Rural	Vidzeme Planning Region
LT	Local transport authority	Urban (large)	Municipal Enterprise Vilnius
LT	Local transport authority	Urban (secondary)	Public Enterprise Klaipedos
HU	Operator	Rail	MAV
HU	Local transport authority	Urban (large)	Budapest Transport Centre (BKK)
NL	Member State	-	Knowledge Institute for Mobility Policy (KiM)
NL	Local transport authority	Urban (secondary)	Province of Gelderland
AT	Other	-	Austrian Federal Chamber of Labour
PT	Transport user	General consumer	Portuguese Association for Consumer Protection (DECO)
FI	Transport user	General consumer	Consumers Union
SE	Transport user	PRM org/rep	Swedish Disability Federation

Source: Steer

- A.11 The tables below show the detailed status for all of the stakeholders contacted as part of the consultation. Stakeholders may have provided a response to the study's questionnaire, and/or completed an interview and/or participated in the workshop ('✓'); they may have responded to our introduction, but declined to participate ('✗'); or they may have not responded or contributed (i.e. no engagement '-').

European Commission

Table A.3: Detailed status of consultation with the European Commission

Organisation	Status	
DG JUST Unit on Gender Equality	✓	Participated
DG EMPL Unit on Disability & Inclusion	✓	Participated

Transport Users

Table A.4: Detailed status of consultation with Transport Users

Country	Organisation	Sub-group	Status
EU wide	European e-Skills Association	e-Skills org/rep	– No engagement
EU wide	European Disability Forum (EDF)	PRM org/rep	✓ Participated
EU wide	European Union of the Deaf	PRM org/rep	✓ Participated
EU wide	Inclusion Europe	PRM org/rep	– No engagement
EU wide	European Blind Union	PRM org/rep	– No engagement
EU wide	European Ageing Network	Older people's org/rep	✓ Participated
EU wide	AGE Platform	Older people's org/rep	✓ Participated
EU wide	AGE Platform Member	Older people's org/rep	✓ Participated
EU wide	AGE Platform Member	Older people's org/rep	✓ Participated
EU wide	AGE Platform Member	Older people's org/rep	✓ Participated
EU wide	European LEADER Association for Rural Development (ELARD)	Rural org/rep	✓ Participated
EU wide	European Network for Rural Development (ENRD)	Rural org/rep	✗ Declined to participate
EU wide	Rural Youth Europe	Rural org/rep	– No engagement
EU wide	Partnership for Rural Europe (PREPARE)	Rural org/rep	– No engagement
EU wide	European Women's Lobby	Women org/rep	– No engagement
EU wide	European Institute for Gender Equality	Women org/rep	– No engagement
EU wide	Women's Homelessness in Europe Network (WHEN)	Women org/rep	– No engagement
EU wide	European Youth Forum	Youth org/rep	– No engagement
EU wide	Eurochild	Youth org/rep	– No engagement
EU wide	Dynamo International-Street Workers Network	Low-income and poverty org/rep	– No engagement
EU wide	European Federation of National Organisations Working with the Homeless (FEANTSA)	Low-income and poverty org/rep	– No engagement
EU wide	European Consumer Organisation (BEUC)	General consumer	✓ Participated
EU wide	European Passengers' Federation (EPF)	General passenger	✓ Participated
EU wide	Confederation of family organisations in the European Union (COFACE)	Other	– No engagement
EU wide	Platform for International Cooperation of Undocumented Migrants (PICUM)	Other	– No engagement

Country	Organisation	Sub-group	Status	
EU wide	European Roma Information Office (ERIO)	Other	-	No engagement
BE	Wallonia Brussels Accessibility Collective	PRM org/rep	✓	Participated
BE	Belgian Disability Forum	PRM org/rep	-	No engagement
BE	Association of Directors of Rest House (ADMR)	Older people's org/rep	-	No engagement
BE	Flemish Rural Network	Rural org/rep	-	No engagement
BE	Council of Francophone Women of Belgium (CFFB)	Women org/rep	-	No engagement
BE	Flemish Youth Council	Youth org/rep	-	No engagement
BE	Test-Achats	General consumer	-	No engagement
BE	Commuters Belgium	General passenger	-	No engagement
BG	National Council of People with Disabilities in Bulgaria	PRM org/rep	-	No engagement
BG	Bulgarian National Rural Network	Rural org/rep	-	No engagement
BG	Bulgarian Platform of the European Women's Lobby	Women org/rep	-	No engagement
BG	National Youth Forum	Youth org/rep	-	No engagement
BG	Bulgarian National Association of Consumers	General consumer	-	No engagement
CZ	National Council of Persons with Disabilities of the Czech Republic	PRM org/rep	✓	Participated
CZ	Czech National Disability Council	PRM org/rep	-	No engagement
CZ	Czech Women's Lobby	Women org/rep	✓	Participated
CZ	Czech Association of Consumers (dTEST)	General consumer	-	No engagement
DK	Danish Disability Organization	PRM org/rep	✓	Participated
DK	Danish Rural Network	Rural org/rep	-	No engagement
DK	Women's Council in Denmark	Women org/rep	-	No engagement
DK	Danish Youth Forum	Youth org/rep	✗	Declined to participate
DK	Danish Consumer Council	General consumer	✓	Participated
DE	German Disability Council	PRM org/rep	-	No engagement
DE	Care Research Network	Older people's org/rep	-	No engagement
DE	German Rural Network	Rural org/rep	-	No engagement
DE	Council of German Women	Women org/rep	-	No engagement
DE	Working Group for Child and Youth Welfare - AGJ	Youth org/rep	✗	Declined to participate
DE	German Anti-Poverty Conference	Low-income and poverty org/rep	-	No engagement
DE	Federation of German Consumer Organisations (VZBV)	General consumer	✓	Participated
DE	German Railway Customers Association	General passenger	-	No engagement
DE	Traffic Club Germany VCD	General passenger	-	No engagement
DE	PRO BAHN	Other	✓	Participated

Country	Organisation	Sub-group	Status	
DE	Nature and Biodiversity Conservation Union (NABU)	Other	–	No engagement
EE	Estonian Chamber of Disabled People	PRM org/rep	–	No engagement
EE	Estonian Council of Managers of Social Institutions (ESJN)	Older people's org/rep	–	No engagement
EE	Estonian Women's Association Roundtable	Women org/rep	–	No engagement
EE	Estonian Union for Child Welfare	Youth org/rep	–	No engagement
EE	Estonian Consumers' Union (ETL)	General consumer	–	No engagement
IE	Disability Federation of Ireland	PRM org/rep	–	No engagement
IE	National Women's Council of Ireland (NWCI)	Women org/rep	–	No engagement
IE	National Youth Council of Ireland	Youth org/rep	–	No engagement
IE	Consumers' Association of Ireland (CAI)	General consumer	–	No engagement
EL	National Confederation of Disabled People	PRM org/rep	✓	Participated
EL	Greek Rural Network	Rural org/rep	–	No engagement
EL	Coordination of Greek Women's NGOs	Women org/rep	–	No engagement
EL	Hellenic National Youth Council	Youth org/rep	–	No engagement
EL	Hellenic Anti-Poverty Network (EAPN Greece)	Low-income and poverty org/rep	–	No engagement
EL	KEPKA Consumer Protection Centre	General consumer	✗	Declined to participate
EL	Hellenic Association of the Friends of the Railway	General passenger	–	No engagement
ES	City of Barcelona - Municipal Institute for Persons with Disabilities	PRM org/rep	✓	Participated
ES	Spanish National Organisation for the Blind (ONCE)	PRM org/rep	–	No engagement
ES	Spanish Committee of Representatives of People with Disabilities (CERMI)	PRM org/rep	–	No engagement
ES	LARES	Older people's org/rep	✓	Participated
ES	European Women's Lobby in Spain	Women org/rep	–	No engagement
ES	Spanish Children's Rights Coalition	Youth org/rep	–	No engagement
ES	Association for the Promotion of Public Transport (PTP)	General passenger	–	No engagement
FR	Accessibility Commission of the Federation of the Blind of France (CFPSAA)	PRM org/rep	✓	Participated
FR	French Council of People with Disabilities for European Issues	PRM org/rep	–	No engagement
FR	National Federation for the Future and Quality of Life of the Elderly	Older people's org/rep	✗	Declined to participate
FR	French Silver Economy	Older people's org/rep	–	No engagement
FR	French Rural Network	Rural org/rep	–	No engagement
FR	National Federation of Association for Child Protection (CNAPE)	Youth org/rep	–	No engagement

Country	Organisation	Sub-group	Status	
FR	French Consumers Association	General consumer	✓	Participated
FR	National Federation of Transport Users Associations (FNAUT)	General passenger	✓	Participated
HR	Croatian Paraplegic and Tetraplegic Alliance (CPTA)	PRM org/rep	–	No engagement
HR	Association of Directors in Croatian Social Welfare	Older people's org/rep	–	No engagement
HR	Croatian Youth Network	Youth org/rep	–	No engagement
HR	Croatian Anti-Poverty Network	Low-income and poverty org/rep	–	No engagement
HR	Croatian Association for Consumer Protection (HUZP) or The Croatian Alliance of Consumers	General consumer	–	No engagement
IT	Italian Forum on Disability	PRM org/rep	✓	Participated
IT	National Association of Managers of Personal Services, among the Directors and Managers of Public and Private Institutions in the welfare, social health, and education sectors	Older people's org/rep	–	No engagement
IT	Italian Rural Network	Rural org/rep	–	No engagement
IT	Italian Coordination for the European Women's Lobby	Women org/rep	–	No engagement
IT	Italian Youth Council (CNG)	Youth org/rep	–	No engagement
IT	Consumer Movement	General consumer	–	No engagement
IT	Assoutenti	General passenger	–	No engagement
LV	Latvian Person with Disabilities Cooperation Organization	PRM org/rep	–	No engagement
LV	Women NGOs Cooperation Network of Latvia	Women org/rep	–	No engagement
LV	National Youth Council of Latvia	Youth org/rep	–	No engagement
LV	Latvian Consumer Protection Association (LPIAA)	General consumer	–	No engagement
LT	Lithuanian Disability Forum	PRM org/rep	–	No engagement
LT	Lithuanian Rural Network	Rural org/rep	–	No engagement
LT	Lithuanian Women's Lobby	Women org/rep	–	No engagement
LT	Lithuanian Youth Council	Youth org/rep	–	No engagement
LT	Lithuanian National Anti-Poverty Network	Low-income and poverty org/rep	–	No engagement
LT	Alliance of Lithuanian Consumer Organisations	General consumer	–	No engagement
LT	National Association of Public Transport Passengers	General passenger	–	No engagement
LU	Luxembourg National Disability Council	PRM org/rep	–	No engagement
LU	Group of Heads of Institutions for the Elderly	Older people's org/rep	–	No engagement

Country	Organisation	Sub-group	Status	
LU	National Council of Women of Luxembourg (CNFL)	Women org/rep	✗	Declined to participate
LU	National Youth Council of Luxembourg (CGJL)	Youth org/rep	–	No engagement
LU	Luxembourg Union of Consumers	General consumer	–	No engagement
HU	Association of Blind and Visually Impaired in Hungary	PRM org/rep	–	No engagement
HU	Hungarian Society of Social Managers and Experts (SZIME)	Older people's org/rep	–	No engagement
HU	Hungarian Women's Lobby	Women org/rep	–	No engagement
HU	National Youth Council of Hungary (NIT)	Youth org/rep	–	No engagement
HU	Hungarian Anti-Poverty Network	Low-income and poverty org/rep	–	No engagement
NL	National Disability Council of the Netherlands	PRM org/rep	✓	Participated
NL	Dutch Rural Network	Rural org/rep	–	No engagement
NL	Dutch Council of Women (NVR)	Women org/rep	–	No engagement
NL	Netherlands Youth Institute	Youth org/rep	–	No engagement
NL	Rover	General passenger	✓	Participated
AT	Austrian Disability Council	PRM org/rep	–	No engagement
AT	Austrian Rural Network	Rural org/rep	–	No engagement
AT	Austrian Women's Ring (ÖFR)	Women org/rep	–	No engagement
AT	Federal Youth Representation (BJV)	Youth org/rep	✓	Participated
AT	Austrian Consumers' Association (VKI)	General consumer	–	No engagement
AT	Probahn Austria	General passenger	–	No engagement
PL	Polish Disability Forum	PRM org/rep	–	No engagement
PL	Coalition to Help the Dependent	Older people's org/rep	–	No engagement
PL	Polish Women's Lobby	Women org/rep	–	No engagement
PL	Polish Council of Youth Organizations (PROM)	Youth org/rep	–	No engagement
PL	Polish Consumer Federation	General consumer	–	No engagement
PL	Zielone Mazowsze Association	General passenger	–	No engagement
PT	National Confederation of Disabled Bodies	PRM org/rep	✓	Participated
PT	Portuguese Rural Network	Rural org/rep	–	No engagement
PT	Portuguese Platform for Women's Rights (PPDM)	Women org/rep	–	No engagement
PT	Portuguese National Youth Council (CNJ)	Youth org/rep	–	No engagement
PT	Portuguese Association for Consumer Protection (DECO)	General consumer	✓	Participated
RO	National Disability Council	PRM org/rep	–	No engagement
RO	Association of Directors of Institutions for the Elderly (ADIV)	Older people's org/rep	–	No engagement
RO	Romanian Rural Network	Rural org/rep	✓	Participated

Country	Organisation	Sub-group	Status	
RO	Romanian Women's Lobby (RoWL)	Women org/rep	-	No engagement
RO	Federation of NGOs for Children	Youth org/rep	-	No engagement
RO	National Anti-Poverty Network - Social Inclusion (RENASIS)	Low-income and poverty org/rep	-	No engagement
RO	Romanian Pro Consumer Association	General consumer	✓	Participated
SE	Swedish Disability Federation	PRM org/rep	✓	Participated
SE	Swedish Rural Network	Rural org/rep	-	No engagement
SE	Swedish Women's Lobby (SWL)	Women org/rep	-	No engagement
SE	National Council of Swedish Youth Organisations (LSU)	Youth org/rep	-	No engagement
SE	Swedish Passenger Organisation	General passenger	-	No engagement
SE	Independent researcher	Other	✓	Participated
CY	Cyprus Confederation of Organizations of the Disabled (KYSOA)	PRM org/rep	-	No engagement
CY	Cyprus National Rural Network	Rural org/rep	-	No engagement
CY	Cyprus Women's Lobby	Women org/rep	-	No engagement
CY	Cyprus Youth Council	Youth org/rep	-	No engagement
CY	Cyprus Consumers' Association (CCA)	General consumer	-	No engagement
FI	Finnish Disability Forum	PRM org/rep	-	No engagement
FI	Association of Elderly Work Leaders and Experts	Older people's org/rep	-	No engagement
FI	Finnish Rural Network	Rural org/rep	-	No engagement
FI	Coalition of Finnish Women's Associations	Women org/rep	-	No engagement
FI	Consumers Union	General consumer	✓	Participated
FI	Finnish Railway Passengers Association	General passenger	-	No engagement
MT	Malta Federation of Organisations of Persons with Disability	PRM org/rep	-	No engagement
MT	Malta Confederation of Women's Organisations (MCWO)	Women org/rep	-	No engagement
MT	Office of the Commissioner for Children	Youth org/rep	-	No engagement
MT	Anti-Poverty Forum Malta	Low-income and poverty org/rep	-	No engagement
MT	Consumers' Association - Malta	General consumer	-	No engagement
SI	Slovenian National Disability Council	PRM org/rep	-	No engagement
SI	Women's Lobby of Slovenia	Women org/rep	-	No engagement
SI	Youth Council of Slovenia	Youth org/rep	-	No engagement
SK	Slovak Disability Council (NROZP)	PRM org/rep	-	No engagement
SK	Slovak Youth Council (RMS)	Youth org/rep	-	No engagement
SK	Slovak Anti-Poverty Network (SAPN)	Low-income and poverty org/rep	-	No engagement

Social inclusion and equality experts/networks

Table A.5: Detailed status of consultation with social inclusion and equality experts/networks

Country	Organisation	Sub-group	Status	
EU wide	European Anti-Poverty Network (EAPN)	EAPN member	✗	Declined to participate
EU wide	European Social Network (ESN)	ESN member	–	No engagement
EU wide	European Network on Independent Living (ENIL)	ENIL member	✓	Participated
EU wide	Caritas Europe	Other	–	No engagement
BE	Belgian Anti-Poverty Network (BAPN)	EAPN member	–	No engagement
BE	Independent researcher	ESPN member	–	No engagement
BE	Independent researcher	ESPN member	–	No engagement
BE	Independent researcher	ESPN member	–	No engagement
BE	Independent researcher	ESPN member	–	No engagement
BG	EAPN Bulgaria	EAPN member	–	No engagement
BG	National Network for Children	ESPN member	–	No engagement
CZ	EAPN Czech Network	EAPN member	✓	Participated
CZ	Masaryk University	ESPN member	–	No engagement
DK	EAPN Denmark	EAPN member	–	No engagement
DE	Hochschule Darmstadt - University of Applied Sciences	ESPN member	–	No engagement
DE	AEM Institute (Accessible and Equitable Mobility)	Other	✗	Declined to participate
DE	Department of Transport Planning, Faculty of Spatial Planning, TU Dortmund	Other	–	No engagement
EE	EAPN Estonia	EAPN member	–	No engagement
EE	Praxis	ESPN member	✗	Declined to participate
EE	Tallinn University of Technology	Other	–	No engagement
IE	EAPN Ireland	EAPN member	–	No engagement
EL	Greek National Centre for Social Research (EKKE)	ESPN member	–	No engagement
EL	University of Peloponnese	ESPN member	–	No engagement
ES	Andalusian Network for the Fight Against Poverty and Social Exclusion	EAPN member	–	No engagement
ES	Cáritas Spain	Other	✗	Declined to participate
ES	University of Alcalá	Other	–	No engagement
FR	Federation of Solidarity Actors	Other	–	No engagement
HR	University of Zagreb	ESPN member	–	No engagement
IT	Italian Connection of Fight Against Poverty (CILAP)	EAPN member	–	No engagement

Country	Organisation	Sub-group	Status	
IT	University of Milan	Other	✗	Declined to participate
CY	Cyprus Gender Equality Observatory	Other	–	No engagement
LV	EAPN Latvia	EAPN member	–	No engagement
LV	Vidzeme University of Applied Sciences	ESPN member	–	No engagement
LT	Vilnius University	Other	✓	Participated
LU	EAPN Luxembourg	EAPN member	–	No engagement
HU	Centre for Social Sciences/Hungarian Academy of Sciences & Semmelweis University	ESPN member	✗	Declined to participate
MT	University of Malta	Other	✗	Declined to participate
NL	Fourth World Netherlands (ATD)	EAPN member	✗	Declined to participate
NL	Regioplan Policy Research	Other	✗	Declined to participate
AT	Austrian Anti-Poverty Network (The Poverty Conference)	EAPN member	–	No engagement
AT	Institute for Advanced Studies	ESPN member	–	No engagement
AT	Vorarlberg Children's Village	Other	–	No engagement
PL	EAPN Poland	EAPN member	–	No engagement
PL	Warsaw School of Economics	ESPN member	–	No engagement
PT	EAPN Portugal	EAPN member	–	No engagement
PT	Study Centre for Social Intervention (CESIS)	ESPN member	✗	Declined to participate
RO	University of Bucharest	Other	–	No engagement
SI	EAPN Slovenia	EAPN member	–	No engagement
SI	Institute for Economic Research	ESPN member	–	No engagement
SK	Comenius University	Other	–	No engagement
SE	Stockholm University	ESPN member	–	No engagement
SE	Protection Guard	Other	–	No engagement

Member States

Table A.6: Detailed status of the consultation of Member States and national transport bodies

Country	Organisation	Status	
BE	DG Sustainable Mobility and Rail Policy	✓	Participated
BE	Federal Service for Public Mobility and Transport	–	No engagement
BG	Bulgarian Ministry of Transport, IT and Communications	✓	Participated
CZ	Ministry of Transport	✓	Participated
DK	Danish Civil Aviation and Railway Authority	✓	Participated

Country	Organisation	Status	
DK	Danish Ministry of Transport	–	No engagement
DE	Federal Ministry for Transport and Digital Infrastructure	–	No engagement
DE	Federal Ministry of Transport, Building and Housing	–	No engagement
EE	Estonian Ministry of Economic Affairs and Communications	✓	Participated
IE	Department of Transport (IE)	✓	Participated
EL	Ministry of Infrastructure and Transport	–	No engagement
ES	Spanish Directorate of Civil Aviation (DGCA)	✓	Participated
ES	Spanish Ministry of Development	–	No engagement
FR	Directorate General for Civil Aviation	✓	Participated
FR	Directorate-General for Infrastructure, Transport and the Sea (DGITM)	✓	Participated
HR	Croatian Ministry of Maritime Affairs, Transport, and Infrastructure	✓	Participated
IT	Regulatory Authority of Transport (ART)	✓	Participated
LV	Latvian Ministry of Transport	✓	Participated
LV	Latvian Road Transport Administration	–	No engagement
LT	Lithuanian Ministry of Transport and Communications	–	No engagement
LU	Ministry of Mobility and Public Works (LU)	✓	Participated
LU	Ministry of Sustainable Development and Infrastructure	–	No engagement
LU	Ministry of Consumer Protection	–	No engagement
LU	Department for Transport	–	No engagement
HU	Ministry of Innovation and Technology: Deputy State Secretariat for Transport Authorities	–	No engagement
HU	Ministry of National Development	–	No engagement
NL	Ministry of Infrastructure and Water Management	✓	Participated
NL	Knowledge Institute for Mobility Policy (KiM)	✓	Participated
AT	Federal Ministry of Transport, Innovation and Technology	✓	Participated
AT	Austrian Conference on Spatial Planning	✗	Declined to participate
PL	Ministry of Infrastructure	✓	Participated
PL	Ministry of Transport, Construction and Maritime Economy	–	No engagement
PT	Portuguese Civil Aviation Authority (ANAC)	✓	Participated
PT	Minister of Infrastructure and Housing	–	No engagement
PT	Ministry of the Economy and Employment	–	No engagement
RO	Romanian Ministry of Transport	–	No engagement
SE	Swedish Transport Administration	–	No engagement
CY	Ministry of Transport, Communications and Works (MoTCW)	–	No engagement
FI	Ministry of Transport and Communications	✓	Participated
MT	Ministry for Transport and Infrastructure	✓	Participated
SI	Slovenian Ministry of Infrastructure	–	No engagement

Country	Organisation	Status	
SK	Slovakian Ministry of Transport, Communications and Public Works	✓	Participated

Local transport authorities/associations/companies

Table A.7: Detailed status of the consultation of Local transport authorities/associations/companies

Country	Organisation	Sub-group	Status
EU wide	European Metropolitan Transport Authorities (EMTA)	Urban	– No engagement
EU wide	Eurocities	Other	✓ Participated
EU wide	POLIS Access Working Group	Other	✓ Participated
BE	Brussels Regional Public Service	Urban	– No engagement
BE	Department of Mobility and Public Works, Flanders	Urban	– No engagement
BE	Public Service of Wallonia	Rural	– No engagement
BG	Sofia Urban Mobility Centre	Urban	– No engagement
BG	Burgas Municipality	Urban	– No engagement
BG	Regional Administration Varna	Urban	– No engagement
BG	Razgrad District Administration	Rural	– No engagement
CZ	Prague Transit Authority	Urban	– No engagement
CZ	Integrated Transport System of the South Moravian Region	Urban	✓ Participated
CZ	South Bohemian Transport Coordinator	Rural	– No engagement
CZ	Czech Association of Public Transport	Other	– No engagement
DK	Movia	Urban	✗ Declined to participate
DK	Region of Southern Denmark	Urban	– No engagement
DK	Central Denmark Region	Rural	✗ Declined to participate
DE	Berlin State Department for Economics, Energy and Industry	Urban	– No engagement
DE	Traffic Association Berlin-Brandenburg (VBB)	Urban	– No engagement
DE	Rhine/Main Regional Transport Association	Urban	– No engagement
DE	Verband Region Stuttgart	Urban	– No engagement
DE	Ministry for Energy, Infrastructure and Digitalisation Mecklenburg-West-Pomerania	Rural	– No engagement
EE	Tallinn Transport Department	Urban (– No engagement
EE	Union of Local Governments of Tartu County	Rural	– No engagement
IE	National Transport Authority	Urban	✓ Participated
IE	Transport Infrastructure Ireland	Urban	– No engagement

Country	Organisation	Sub-group	Status	
EL	Athens Urban Transport Organisation (OASA)	Urban	-	No engagement
EL	Transport Authority of Thessaloniki	Urban	-	No engagement
ES	Metropolitan Transport Authority (Barcelona)	Urban	✓	Participated
ES	Valencia Metropolitan Transport Authority	Urban	-	No engagement
ES	Madrid Regional Transport Consortium (CRTM)	Urban	-	No engagement
ES	Bizkaia Transport Consortium (CTB)	Urban	-	No engagement
ES	Mallorca Transport Consortium	Rural	-	No engagement
FR	Ile-de-France Mobility (Paris)	Urban	-	No engagement
FR	Mixed Syndicate of Transports for the Rhône and the Lyonnaise Agglomeration	Urban	-	No engagement
FR	Public transport in the Clermont-Ferrand area	Rural	-	No engagement
HR	City of Zagreb	Urban	-	No engagement
HR	City of Dubrovnik	Urban	-	No engagement
IT	ATAC Rome	Urban	-	No engagement
IT	Piedmontese Mobility Agency	Urban	-	No engagement
LV	Latvia Planning Region	Urban	-	No engagement
LV	Kurzeme Planning Region	Urban	-	No engagement
LV	Vidzeme Planning Region	Rural	✓	Participated
LT	Municipal Enterprise Vilnius	Urban	✓	Participated
LT	Public Enterprise Klaipedos	Urban	✓	Participated
LU	Luxembourgish Transport Association	Urban	-	No engagement
HU	Budapest Transport Centre (BKK)	Urban	✓	Participated
HU	Debrecen Regional Transport Association	Urban	-	No engagement
NL	Amsterdam Transport Region	Urban	-	No engagement
NL	Province of Gelderland	Urban	✓	Participated
NL	Province of Zeeland	Rural	-	No engagement
AT	Transport Association for Vienna, Lower Austria and BG LD	Urban	-	No engagement
AT	Office of the Lower Austrian State Government: Department of Spatial Planning and General Transport Matters	Urban	-	No engagement
AT	Office of the Upper Austrian State Government: Department of Transport	Rural	✗	Declined to participate
AT	Austrian Association of Municipalities	Other	-	No engagement
PL	Warsaw Transport Authority	Urban	-	No engagement
PL	Municipal Transport Authority in Gdynia	Urban	-	No engagement
PT	Porto Metropolitan Area	Urban	-	No engagement

Country	Organisation	Sub-group	Status	
PT	Lisbon Metropolitan Area	Urban	-	No engagement
RO	Public Transport Bucharest-Iflov Region (ADTPBI)	Urban	✓	Participated
SE	Greater Stockholm Local Transport	Urban	-	No engagement
SE	Malmö municipality	Urban	-	No engagement
SE	Swedish National Road and Transport Research Institute (VTI)	Other	-	No engagement

Operators

Table A.8: Detailed status of the consultation of operators and operator representatives

Country	Organisation	Sub-group	Status	
EU wide	International Air Transport Association (IATA)	Air	✓	Participated
EU wide	European Regional Airlines Association (ERAA)	Air	✓	Participated
EU wide	Airlines for Europe (A4E)	Air	✗	Declined to participate
EU wide	Airlines International Representation in Europe (AIRE)	Air	-	No engagement
EU wide	Airport Council International Europe (ACI Europe)	Air	-	No engagement
EU wide	International Union of Railways (UIC)	Rail	✓	Participated
EU wide	Community of European Railway and Infrastructure Companies (CER)	Rail	✓	Participated
EU wide	European Rail Infrastructure Managers (EIM)	Rail	✓	Participated
EU wide	European Barge Union (EBU)	Waterborne	✓	Participated
EU wide	Federation of European Private Port Operators (FEPORT)	Waterborne	✓	Participated
EU wide	Interferry	Waterborne	-	No engagement
EU wide	European Community Shipowners' associations (ECSA)	Waterborne	-	No engagement
EU wide	European Sea Ports Organisation (ESPO)	Waterborne	-	No engagement
EU wide	European Alliance for Coach Travel (EACT)	Bus and coach	-	No engagement
EU wide	Taxi Europe Alliance (TEA)	Taxi	✓	Participated
EU wide	Uber	Taxi	-	No engagement
EU wide	BlaBlaCar	Car	✓	Participated
EU wide	ChargePoint	Car	✓	Participated
EU wide	Zipcar	Car	✗	Declined to participate
EU wide	AlleGo	Car	✗	Declined to participate
EU wide	Enterprise	Car	-	No engagement
EU wide	Micro-Mobility for Europe	Micromobility	✓	Participated

Country	Organisation	Sub-group	Status
EU wide	Lime	Micromobility	✗ Declined to participate
EU wide	Cycling Industries Europe	Micromobility	– No engagement
EU wide	Swapfiets	Micromobility	– No engagement
EU wide	Instant System	Other	✓ Participated
EU wide	European Public Transport Association (EPTO)	Other	✓ Participated
EU wide	International Road Transport Union (IRU)	Other	✓ Participated
EU wide	Mobility as a Service (MaaS) Alliance	Other	– No engagement
EU wide	Shotl	Other	– No engagement
EU wide	Bestmile	Other	– No engagement
EU wide	International Union of Public Transport (UITP)	Other	– No engagement
BE	Brussels Airlines	Air	– No engagement
BE	Brussels Intercommunal Transport Company (STIB)	Rail	✓ Participated
BE	Royal Belgian Shipowners' Association	Waterborne	– No engagement
BE	Belgian Federation of Bus and Coach Operators (FBBA)	Bus and coach	– No engagement
BE	Taxistop	Taxi	– No engagement
BE	Autodelen.net	Car	– No engagement
BG	Bulgaria Air	Air	– No engagement
BG	BDŽ Inc.	Rail	– No engagement
BG	Association of Bulgarian Enterprises for International Road Transport and the Roads (AEBTRI)	Bus and coach	✗ Declined to participate
BG	Spark	Car	– No engagement
CZ	Czech Airlines	Air	– No engagement
CZ	ČD	Rail	– No engagement
CZ	Česmad Bohemia	Bus and coach	– No engagement
DK	Midttrafik	Rail	✗ Declined to participate
DK	Scandlines	Waterborne	✗ Declined to participate
DK	VikingBus	Bus and coach	– No engagement
DK	ShareNow	Car	– No engagement
DE	Lufthansa	Air	– No engagement
DE	Deutsche Bahn	Rail	– No engagement
DE	Stena Line	Waterborne	✓ Participated
DE	Flixbus	Bus and coach	– No engagement
DE	Cambio	Car	– No engagement
DE	VRS	Other	– No engagement
EE	Elron	Rail	– No engagement
EE	Estonian Shipowners' Association	Waterborne	– No engagement

Country	Organisation	Sub-group	Status
EE	Lux Express Group	Bus and coach	– No engagement
EE	CityBee	Car	– No engagement
IE	Ryan Air	Air	✓ Participated
IE	Irish Rail	Rail	– No engagement
IE	Irish Ferries	Waterborne	– No engagement
IE	Bus Eireann	Bus and coach	– No engagement
IE	Lift Share	Car	– No engagement
IE	Local Link Donegal	Other	– No engagement
EL	Aegean	Air	– No engagement
EL	TrainOSE	Rail	– No engagement
EL	Minoan Lines	Waterborne	✗ Declined to participate
EL	Greek Association of Passenger Shipping Businesses	Waterborne	– No engagement
EL	POAYS (KTEL)	Bus and coach	✗ Declined to participate
ES	Association for the Promotion of Public Transport (PTP)	General passenger	– No engagement
ES	Binter	Air	– No engagement
ES	Albastar	Air	– No engagement
ES	Renfe	Rail	– No engagement
ES	Transmediterranea	Waterborne	– No engagement
ES	Spanish Confederation of Bus Transport (CONFEBUS)	Bus and coach	– No engagement
FR	Air France	Air	✗ Declined to participate
FR	SNCF	Rail	– No engagement
FR	Port Boulogne Calais	Waterborne	✓ Participated
FR	Corsica Ferries	Waterborne	– No engagement
FR	Autolib Vélib	Micromobility	– No engagement
HR	Croatia Airlines	Air	– No engagement
HR	HŽ Passenger Transport (HZPP)	Rail	– No engagement
HR	Jadrolinija	Waterborne	– No engagement
HR	Croatia Bus	Bus and coach	– No engagement
IT	Alitalia	Air	– No engagement
IT	FS Italiane	Rail	– No engagement
IT	Grimaldi Ferries	Waterborne	– No engagement
IT	Baltour	Bus and coach	– No engagement
IT	Union of Taxis Italy (URI)	Taxi	– No engagement
LV	Air Baltic	Air	– No engagement
LV	Latvian Passenger Trains	Rail	– No engagement
LV	AS Nordeka	Bus and coach	– No engagement

Country	Organisation	Sub-group	Status
LT	Lithuanian Railways	Rail	– No engagement
LT	Lithuanian Shipowners Association	Waterborne	– No engagement
LT	UAB Kautra	Bus and coach	– No engagement
LU	Luxair	Air	✗ Declined to participate
LU	Luxembourg National Railway Company (CF)	Rail	– No engagement
LU	Fedilshipping	Waterborne	– No engagement
LU	Luxembourg Association of Bus and Coach Operators (FLEAA)	Bus and coach	– No engagement
LU	Livrando	Car	– No engagement
HU	Wizzair	Air	– No engagement
HU	MAV	Rail	✓ Participated
HU	Volánbusz	Bus and coach	– No engagement
NL	KLM	Air	– No engagement
NL	NS International	Rail	– No engagement
NL	Royal Doeksen	Waterborne	– No engagement
NL	Dutch Association Representing Coach Operators (KNV)	Bus and coach	– No engagement
AT	Austrian Airlines	Air	– No engagement
AT	Austrian Federal Railways (OBB)	Rail	– No engagement
AT	Twin City Liner	Waterborne	– No engagement
AT	OBB Postbus	Bus and coach	– No engagement
PL	LOT	Air	– No engagement
PL	PKP IC	Rail	✗ Declined to participate
PL	Polferries	Waterborne	– No engagement
PL	Neobus	Bus and coach	– No engagement
PT	Azores Airlines	Air	– No engagement
PT	Comboios de Portugal	Rail	– No engagement
PT	Viking Line	Waterborne	– No engagement
PT	Internorte	Bus and coach	– No engagement
PT	Antral	Taxi	– No engagement
RO	TAROM	Air	– No engagement
RO	Regio Calatori	Rail	– No engagement
RO	National Union of Road Hauliers from Romania (UNTRR)	Bus and coach	✓ Participated
SE	SAS - Scandinavian Airlines	Air	– No engagement
SE	MTR Sweden	Rail	– No engagement
SE	ForSea	Waterborne	– No engagement
SE	Ybuss	Bus and coach	– No engagement
CY	Cyprus Airlines	Air	✗ Declined to participate

Country	Organisation	Sub-group	Status	
CY	Joint Cyprus Shipowners' Association	Waterborne	-	No engagement
CY	Intercity Buses Cyprus	Bus and coach	-	No engagement
CY	RideNow	Car	-	No engagement
FI	Finnair	Air	x	Declined to participate
FI	VR Group	Rail	-	No engagement
FI	Tallink/Silja Line	Waterborne	-	No engagement
FI	OnniBus	Bus and coach	-	No engagement
MT	Air Malta	Air	-	No engagement
MT	St Peter Line	Waterborne	-	No engagement
MT	KopTaCo	Bus and coach	-	No engagement
MT	Cool Ride-Pooling	Car	-	No engagement
SI	SZ	Rail	x	Declined to participate
SI	Slovenian Association of Shipowners	Waterborne	-	No engagement
SK	ZSR	Rail	-	No engagement
SK	Slovak Lines	Bus and coach	-	No engagement
SK	Bolt	Car	-	No engagement

Others, including transport staff representatives

Table A.9: Detailed status of the consultation of other relevant stakeholders

Country	Organisation	Status	
EU wide	European Transport Workers' Federation (ETF)	✓	Participated
EU wide	European Environmental Bureau (EEB)	✓	Participated
EU wide	European Conference of Transport Research Institutes (ECTRI)	-	No engagement
CZ	Czech Transport Research Centre (CDV)	-	No engagement
AT	Austrian Federal Chamber of Labour	✓	Participated

B Participatory workshop summary

Introduction

- B.1 The workshop took place online on Wednesday 06 October (09:30-12:30 CEST). The aim of workshop was to share and discuss the study's draft recommendations. It involved interactive discussions with attendees representing a cross-section of different stakeholders and practitioners, including policy-makers, public administrations at different levels (local, regional, national, European, international), transport operators, and representatives of different groups of transport users/passengers.
- B.2 The background and objectives of the study were introduced, along with the draft recommendations, before participants were allocated to breakout rooms to discuss the recommendations. Participants were asked to give their views on the draft recommendations and comment on whether they considered to be any particular barriers to their implementation or other gaps. Participants were also asked to indicate if there were any additional recommendations that they would like to see in the context of this work.
- B.3 The sections below summarise the attendance as well as the discussions across all breakout rooms, followed by the results of the Slido poll.

Attendees

- B.4 The workshop was attended by a total of 61 participants, representing 43 organisations (12 user representatives; 11 Member States; 6 local authorities and representatives; 12 operators and representatives; 2 labour representatives). The details of these attendees are described in the table below.

Table B.1:Attending stakeholders

Country	Organisation	Stakeholder Group	Sub-group
EU wide	AGE Platform Member	Transport user	Elderly org/rep
EU wide	European Leader Association for Rural Development (ELARD)	Transport user	Rural org/rep
EU wide	European Consumer Organisation (BEUC)	Transport user	General consumer
EU wide	European Passengers' Federation (EPF)	Transport user	General passenger
EU wide	European Disability Forum (EDF)	Transport user	PRM org/rep
EU wide	European Union of the Deaf	Transport user	PRM org/rep
EU wide	Instant System	Operator	Other
EU wide	International Road Transport Union (IRU)	Operator	Other
EU wide	International Air Transport Association (IATA)	Operator	Air
EU wide	European Regional Airlines Association (ERAA)	Operator	Air

Country	Organisation	Stakeholder Group	Sub-group
EU wide	International Union of Railways (UIC)	Operator	Rail
EU wide	Federation of European Private Port Operators (FEPOR)	Operator	Waterborne
EU wide	European Barge Union (EBU)	Operator	Waterborne
EU wide	Taxi Europe Alliance (TEA)	Operator	Taxi
EU wide	Micro-Mobility for Europe	Operator	Micro-mobility
EU wide	Eurocities	Local transport authority	Other
EU wide	POLIS Access Working Group	Local transport authority	Other
EU wide	European Transport Workers' Federation (ETF)	Other	-
BG	Bulgarian Ministry of Transport, IT and Communications	Member State	-
CZ	Ministry of Transport	Member State	-
DK	Danish Disability Organization	Transport user	PRM org/rep
DE	Federation of German Consumer Organisations (VZBV)	Transport user	General consumer
EE	Estonian Ministry of Economic Affairs and Communications	Member State	-
IE	Ryan Air	Operator	Air
IE	Department of Transport (IE)	Member State	-
ES	City of Barcelona - Municipal Institute for Persons with Disabilities	Transport user	PRM org/rep
ES	Spanish Directorate of Civil Aviation (DGCA)	Member State	-
FR	French Consumers Association	Transport user	General consumer
FR	National Federation of Transport Users Associations (FNAUT)	Transport user	General passenger
HR	Croatian Ministry of Maritime Affairs, Transport, and Infrastructure	Member State	-
LV	Vidzeme Planning Region	Local transport authority	Rural
LV	Latvian Ministry of Transport	Member State	-
LT	Municipal Enterprise Vilnius	Local transport authority	Urban
HU	MAV	Operator	Rail
HU	Budapest Transport Centre (BKK)	Local transport authority	Urban
MT	Ministry for Transport and Infrastructure	Member State	-
NL	Ministry of Infrastructure and Water Management	Member State	-
NL	Knowledge Institute for Mobility Policy (KiM)	Member State	-
AT	Austrian Federal Chamber of Labour	Other	-
PT	Portuguese Association for Consumer Protection (DECO)	Transport user	General consumer

Country	Organisation	Stakeholder Group	Sub-group
PT	Portuguese Civil Aviation Authority (ANAC)	Member State	-
RO	National Union of Road Hauliers from Romania (UNTRR)	Operator	Bus and coach
RO	Public Transport Bucharest-Iflov Region (ADTPBI)	Local transport authority	Urban

Summary of discussions

- B.5 The points raised during the discussion fell under one of five key themes:
- Developing consistent approaches to equity and inclusion across local and national transport frameworks;
 - Data collection and sharing;
 - Good practice consolidation and sharing;
 - Involvement of transport users throughout the project life cycle;
 - Ensuring effective local stakeholder engagement;
 - Accessibility of transport services; and
 - Affordability and sustainability.
- B.6 Notably, all of the above themes are captured, in whole or in part, by Steer's draft recommendations. No disagreement was raised by any of the stakeholders on the recommendations proposed.
- B.7 Instead, stakeholders focused on examining how the recommendations could be implemented in practice. The discussion, therefore, provided important contextual for how Steer's high-level recommendations can translate into actionable change.
- B.8 The discussion surrounding each of the above five themes is described in detail in the following subsections.
- Developing consistent approaches to equity and inclusion across local and national transport frameworks**
- B.9 Vidzeme Planning Region [LV] assessed that equity and inclusion should also be coordinated at the national level, rather than exclusively at the local level. For example, the Vidzeme Planning Region's efforts to deploy Demand Responsive Transport (DRT) as a solution to some of the challenges experienced by those living in remote areas (e.g. poor network connectivity) have been limited by, *inter alia*, conflicts with national regulation. It was explained that DRT was not classified as public transport, as defined in Latvian national law. This has, therefore, hindered the solution's deployment through limited access to grant funding and subsidies, a lack of formal procurement framework, competition issues with incumbent operators, etc. The stakeholder stated that a legislative framework which allows local transport planners to deploy solutions which are tailored to local needs could be provided at the European level.
- B.10 The European Disability Federation (EDF) generally agreed with the draft recommendations that were put forward at the workshop. Regarding consistent approaches to social inclusion, EDF wished to highlight that better coordination is needed at all levels; across transport organisations, local and regional institutions and, throughout the legislative process. The implementation of the UN Convention on the Rights of Persons with Disabilities was cited as a good practice example. The European Consumer Organisation (BEUC) also stated that it

believed a gap in coordination exists between the different levels (EU-wide down to the local level). Both BEUC and the Budapest Transport Centre (BKK) gave the example of the Sustainable Urban Mobility Plans (SUMPs) and associated Sustainable Urban Mobility Indicators (SUMIs) as a good practice examples of how this is being addressed, although there still remains the issue of capacity and resources at the local level. In the case of SUMIs, BKK also stressed that these indicators would need to be expanded to fully account for the social dimensions.

- B.11 One stakeholder (the National Federation of Transport Users Associations [FR]), however, highlighted that the principle of subsidiarity should be respected where possible. Nevertheless, the stakeholder recognised that there were limits to the application of the principle in the context of transport systems which can span local, regional and national levels.
- B.12 Another stakeholder (the European LEADER association for Rural Development) commented that transport should not be planned and coordinated only based on economic factors. A change in mindset is required from both transport authorities and transport users themselves in order to tackle specific challenges within local and regional transport provision.
- B.13 More generally on the point of development of consistent approaches within transport, the International Air Transport Association (IATA) commented that it would like to see a more consistent application of requirements internationally and across modes, since journeys often involve multiple modes. The European Regional Airlines Association (ERAA) similarly highlighted coordination on multimodality, commenting that last mile services sometimes are not suitable for many user groups.
- B.14 Regarding the uptake of new transport modes and services, the European Transport Workers' Federation (ETF) suggested that, in order to ensure affordability, better regulation and legislation needs to be developed around new popular modes citing privately managed mobility as a service (MaaS) platforms as an example where more consistent regulation was needed.

Data collection and sharing

- B.15 The Federation of German Consumer Organisations (VZBV) [DE] highlighted the importance of coordinating the collection of transport-user data, as to better understand the composition of transport demand and, therefore, identify how to better meet the needs of the passengers and *potential* passengers for a given service. The stakeholder claimed that requirements on data collection and sharing were not in place and could help achieve this.
- B.16 Six other stakeholders also agreed that coordinated data collection related to transport would, in some way, be beneficial to the end user as a result of user needs being better met by both local authorities and operators. Some of these stakeholders, however, pointed out that there are difficulties associated with the collection and effective use of data by operators and local authorities stemming from a lack of capacity and resources in analysis as well as concerns around data protection and GDPR. In particular, Eurocities highlighted that greater clarity from the European Commission on data collection and use within transport is needed so that local transport authorities can develop a standardised approach to data use.
- B.17 POLIS further re-iterated this point highlighting that there is a huge capacity gap between public authorities and the new mobility services whose core skills are data management. They pointed out that better data and drawing out related insights can lead to clear and purposed policy intervention.

- B.18 Vidzeme Planning Region reiterated that data on transport demand – i.e. the number of potential passengers for a given service – was not collected but would be useful for planning transport services.
- B.19 VZBV also requested that one of Steer’s draft recommendations on data¹⁵⁵ should also involve consultation with civil society, consumer and passenger representative organisations.

Good practice consolidation and sharing

- B.20 The Latvian Ministry of Transport and Rail Baltica [LV] highlighted the lack of formal intra-EU knowledge sharing across transport ministries particularly regarding good practice; an issue which had been highlighted by the COVID-19 pandemic. The stakeholders suggested that good practice guidance be consolidated and summarised as to support actionable policy change.
- B.21 Eurocities pointed to a good practice example of the approach to stakeholder engagement for the reallocation of public space in the context of the Superblocks. This was focused on directly addressing the accessibility barriers that would be faced by PRMs in the event of existing built infrastructure being re-purposed or removed within the Superblocks. Where solutions were identified to these barriers these were shared with stakeholders for review.
- B.22 POLIS pointed to user complaints being a key and basic form of user engagement. These are useful in tracking consumer rights but also a channel to detect other problems within transport provision, such as those associated to the social dimension. It suggested that an effective consumer complaints mechanism is important and necessary across all transport modes.
- B.23 Another stakeholder (an AGE platform member) suggested that mobility must be understood as a chain of services and therefore there must be a greater level of cooperation between the private and public sector, especially as the former is increasingly involved in the provision of transport services.

Involvement of transport users throughout the project life cycle

- B.24 The European Passengers’ Federation highlighted that transport users (specifically, PRMs) were not sufficiently involved in the initial stages (e.g. inception, design, pilots, etc.) of transport infrastructure projects.
- B.25 The National Federation of Transport Users Associations, FNAUT [FR] stated that there should be appropriate representation of all transport users across all levels of transport planning.
- B.26 A common theme across multiple stakeholders (EDF, POLIS and Vidzeme Planning Region) was that facilitating participation of interested groups through diversified engagement methods (away from the norm of interviews and surveys) and incentives for participation would assist in ensuring consistent engagement throughout a project. The former being important as it allows more varied user group participation, considering that technical surveys and online engagement can leave out vulnerable groups such as older people or migrant groups. Participatory budgeting is also seen as important as there is significant time and effort required by all parties within consultations that, if offset, may result in greater engagement.
- B.27 Two further stakeholders (IATA, and the Netherlands Institute for Transport Analysis (KiM)) highlighted that advocacy gaps exist for a number of user groups, leading to some user groups

¹⁵⁵ ‘Identify data needs and incorporate into existing data collection exercises’

being heard and considered more often. Raising awareness and understanding of the issues related to these user groups within transport is important to ensure their challenges are accurately addressed within current and future transport provision.

Ensuring effective local stakeholder engagement

- B.28 Most stakeholders assessed that effective stakeholder consultation advances social inclusion in transport.
- B.29 VZBV stated that citizens' councils could be established to develop recommendations on specific issues as to ensure that a diverse range of *local* user groups' views were collected, supplementing consultations with national or European stakeholder representative organisations.
- B.30 The Danish Disability Organisation (DPOD) added that there exists a gap in engagement processes currently, as most surveys focus on current users and not so much on potential or non-users. This leads to a bias in understanding challenges. As a result, there should be a focus in engaging non-users to understand what current barriers may exclude them from transport services and how they might be encouraged to use the services.
- B.31 KiM highlighted that while engagement with users is important, from local authorities' point of view, managing expectations of the users is also important. It is sometimes not economical to include all needs of all user groups.

Accessibility of transport services

- B.32 Regarding accessibility a common theme that was discussed was that of universal design within transport planning. DPOD commented that from a disability standpoint there is a lack of understanding of the needs of PRMs including persons with disabilities paired with a challenging dialogue with local authorities and planners. The City of Barcelona commented that public money should be tied to universal design with universal design being accessible to all the transport chain, and not only to certain parts of it. Stakeholders agreed that making use of a universal design process that is informed of the needs of vulnerable groups can reduce the additional costs associated with retrospective additions to infrastructure and processes with the benefit of services being more accessible and equitable. KiM also added that the operators, designers or app developers should be trained or briefed properly on the different needs of users to develop more equitable solutions.
- B.33 Similarly, an AGE platform member commented that draft recommendations should put more emphasis on the Design for All concept
- B.34 ERAA pointed out that accessibility can be easily improved with digitalisation, but that concerns remain around excluding user groups as a result of focusing solely on digital solutions. The City of Barcelona agreed, suggesting that digitalisation should be complementary to attempts to improve accessibility, but not the main focus.
- B.35 Finally, POLIS commented that the approach to improving accessibility should mean the mainstreaming of accessibility through inclusive design. It was discussed that benefits in accessibility for some transport users will likely result in a more positive travel experience for others. It was suggested that the European Commission may be able to learn from the advances made in air transportation of PRMs as a consequence of passenger rights legislation.

Affordability and sustainability

- B.36 Workers' representatives cautioned about reliance on automation when addressing affordability. Driving low prices in this way often provides low employment conditions and the benefits of lower prices can be countered by loss of jobs. The ETF commented that transport on-demand solutions were quite often based on bad working conditions with vulnerable passengers on the same side as the workers that are providing the service. Examples of prevalence of sexual harassment for women transport users and workers (taxi drivers, bus workers, etc.) were raised. The National Union of Road Hauliers from Romania (UNTRR) highlighted that the Romanian bus and coach industry has developed good practice guidelines on affordability.
- B.37 Regarding sustainability, POLIS commented that local and regional authorities have a key role in advancing equitable mobility and sustainable mobility via sustainable mobility plans which must consider the aspect of social equity and inclusion, and not just cutting emissions.
- B.38 KiM highlighted that it perceived a gap in recommendation 10 'Use the changes driven by major trends like decarbonisation and digitalisation (more digitalisation) of the transport system to also address different users' needs'. Commenting that this in general can solve issues of many user groups, but there should be some caveats considering the groups who are negatively impacted by increased use in technology.
- B.39 With respect to the major trends considered in the context of the study, BEUC would like to see a clear hierarchy of priorities at EU level between the various trends and related actions. For example, decarbonisation and sustainability are a more urgent/pressing trend than digitalisation, which is seen as more elective. Relevant principles should be identified, prioritised and fed down to the local level.

Other points

- B.40 The European Union of the Deaf raised that there have been unintended consequences as a result of changes due to COVID-19, citing an example of face coverings impacting the accessibility of services for people relying on lip reading.
- B.41 The workers' representatives (the Austrian Federal Chamber of Labour and ETF) suggested the need for a transport guarantee to allow citizens to access the transport network without the necessity of owning a personal vehicle. The ETF gave an example of this previously existing in Belgium whereby citizens should have access to a bus stop within a defined range.
- B.42 Related to gender, POLIS highlighted the need to be careful not to bundle together women, disability and children. It is a different problem. A transport system where harassment is systemic will not be the transport of choice, pushing vulnerable users away from more sustainable modes as a result.
- B.43 A Hungarian rail operator (MAV) commented that international travel requirements across borders do not work well in the context of equity and inclusion and the users identified within this study.
- B.44 On consumer compensation, French consumer organisation Que Choisir stressed that clarity was needed on the idea of guaranteed services for which compensation is offered in the event that paid services are not delivered, in particular to services that traverse different regions and the way through-ticketing works.

Slido poll results

- B.45 **Question 1:** Which user groups are the LEAST taken into account in transport planning/design/provision in Europe?

	Responses	Share
People living in remote/rural areas, segregated localities, regions with scarce transport services	18	55%
People on low income/at risk of poverty or social exclusion/migrants/ethnic minorities (including Roma people)	6	18%
People with poor IT literacy/limited access to internet	10	30%
Persons with disabilities and with reduced mobility (e.g. older people)	10	30%
Young people and children	5	15%
Women	3	9%
Total	33	

- B.46 **Question 2:** Why have the user groups' needs not been taken more into consideration in transport planning/design/provision in Europe?

	Responses	Share
We design for the average passenger, not for 7 or more groups of users	18	56%
Their needs are too complex to address	4	13%
Their needs are too costly to address	16	50%
I am not required to take their needs into account	3	9%
I don't know how to take their needs into account	5	16%
I have never thought of considering their needs before	3	9%
Total	32	

- B.47 **Question 3:** 'There is a need for better governance related to these user groups'

	Responses	Share
I strongly agree	14	47%
I agree	14	47%
I don't know	1	3%
I disagree	1	3%
I strongly disagree	0	0%
Total	30	

- B.48 **Question 4:** 'There is a need for better data on these user groups'

	Responses	Share
I strongly agree	13	43%
I agree	14	47%
I don't know	1	3%
I disagree	2	7%
I strongly disagree	0	0%
Total	30	

B.49 **Question 5:** ‘There is a need for better engagement with these user groups’

	Responses	Share
I strongly agree	15	52%
I agree	9	31%
I don't know	3	10%
I disagree	2	7%
I strongly disagree	0	0%
Total	29	

B.50 **Question 6:** On the question of ‘How far we are at addressing the needs of these user groups in transport planning/design/provision?’, we are:

	Responses	Share
Just at the start, there is so much to do...	11	38%
Half-way, a lot of progress has already been made...	14	48%
Nearly there!	2	7%
I don't know	2	7%
Total	29	

C Detailed inventory of relevant existing data and evidence

Introduction

- C.1 This task focuses on the identification of relevant existing data and evidence covering the challenges and opportunities posed by the modernisation of the transport system in terms of affordability, reliability and accessibility. This includes identifying publicly available data and evidence collected in the framework of relevant research projects funded under Horizon 2020. Our review is significantly broader and is described later in this chapter. In total, 100 projects, studies and guidance, policy and other documents have been identified in the inventory. A description of each is provided in Appendix C.
- C.2 Research and decision-making around this subject are undertaken at a variety of levels (supranational, national, regional, and local) across the EU, meaning that the range of relevant data and literature is very broad. In light of this, we have completed a thorough review of sources aimed at practitioners to identify material (research projects, studies, guidance documents, policy papers and other relevant resources (e.g. transport performance dashboards and Eurobarometer survey reports)) to add to the inventory and to inform the analysis for subsequent tasks.

Inventory

Sources

- C.3 In total, 45 projects¹⁵⁶ were identified as being relevant to the study. They are analysed in more detail in Appendix C. This list of projects has been compiled following examination of:
- the EU CORDIS,¹⁵⁷ TRIMIS,¹⁵⁸ KEEP,¹⁵⁹ INTERREG,¹⁶⁰ LIFE,¹⁶¹ CEF¹⁶² and REGIO¹⁶³ project databases of the European Commission;
 - The POLIS Network's and Eltis's¹⁶⁴ project databases;¹⁶⁵

¹⁵⁶ Which originated under relevant EU research projects (e.g. Horizon 2020, FP7 or similar).

¹⁵⁷ For details, see: <https://cordis.europa.eu/>

¹⁵⁸ For details, see: <https://trimis.ec.europa.eu/projects>

¹⁵⁹ For details, see: <https://keep.eu/>

¹⁶⁰ For details, see: <https://www.interregeurope.eu/projectresults/>

¹⁶¹ For details, see: <https://webgate.ec.europa.eu/life/publicWebsite/search>

¹⁶² For details, see: <https://ec.europa.eu/inea/connecting-europe-facility/cef-transport/cef-transport-projects>

¹⁶³ For details, see: https://ec.europa.eu/regional_policy/en/projects/ALL

¹⁶⁴ For details, see: <https://www.eltis.org/search/site>

¹⁶⁵ For details, see: <https://www.polisnetwork.eu/>

- A review of projects conducted by large external organisations including but not limited to CIVITAS¹⁶⁶ and Eurocities;¹⁶⁷
- A review of projects highlighted in literature reviews by others (e.g. CAMERA's Mobility Report 1¹⁶⁸); and
- The study's Terms of Reference and discussions with the European Commission.

C.4 Appendix C provides a review of the all 45 projects including:

- A summary of the project's purpose and outputs;
- A catalogue of each project by user group (including cross-user), mode, themes (affordability, accessibility and reliability) and trends (decarbonisation, population ageing, COVID-19 and digitalisation and automation); and
- A list of Member States for which relevant pilots and case studies were conducted as part of the project.

C.5 Project documents, outputs and results have been identified and catalogued for the majority of projects. In addition, project documents, outputs and results have been extensively analysed for several projects as part of the analysis underpinning other chapters of this report.

C.6 The identification of relevant projects also aided the discovery of relevant studies, guidance documents, policy papers and other resources. However, additional steps were taken to collect material unrelated to the projects above, including literature reviews of documents published or shared by:

- Multilateral institutions (World Bank, the Organisation for Economic Cooperation and Development – including the International Transport Forum, International Monetary Fund, European Bank for Reconstruction and Development, UN Economic Commission for Europe, African Development Bank, Inter-American Development Bank, etc.); and
- The European Commission and other EU institutions (e.g. European Central Bank) including Eurobarometer and Eurostat surveys.

Review

C.7 In general, **projects** and **studies** focused on relatively broad themes – analysing relevant topics in a pan-European level or in a way which cut across multiple or all modes (cross-modal) or user groups (cross-user). Furthermore, although studies and projects on individual user groups were less common than those which cut-across user groups (cross-user), some specific user groups were studied much more frequently than others – particularly women and PRMs. This is in contrast to users with poor IT literacy or with limited access to the internet for whom no relevant studies or projects were identified. This is discussed in detail in paragraph C.20.

C.8 An analysis of the key themes across all of the **projects** identified is presented in the word cloud below. This is based on descriptions of each project's purpose and outputs (available in Appendix C) to analyse the coverage of specific words and phrases.

¹⁶⁶ For details, see: <https://civitas.eu/>

¹⁶⁷ For details, see: <https://eurocities.eu>

¹⁶⁸ Annex 2, Mobility Report 1 (2021). Coordination and Support Action for Mobility in Europe Research Assessment. Available from: https://h2020camera.eu/wp-content/uploads/2019/05/CAMERA_mobilityreport_final_20190517_light_light.pdf

Figure C.1: Common themes across projects reviewed



Source: Steer analysis. Visual provided by Word Cloud Generator.

- C.9 The size of the word or phrase corresponds to the frequency with which it appeared across projects. The above suggests that **projects**:
- Predominantly focused on public or urban transport rather than any specific mode;
 - Generally focus on wider, cross-user impacts rather than focusing on specific user groups;
 - Are results orientated (producing guidelines, actions plans, and identifying examples of best practice); and
 - Had a common focus on sustainable mobility.
- C.10 The analysis is repeated below for the identified studies, guidance documents, policy papers and other documents.

Figure C.2: Common themes across studies, guidance and other documents reviewed



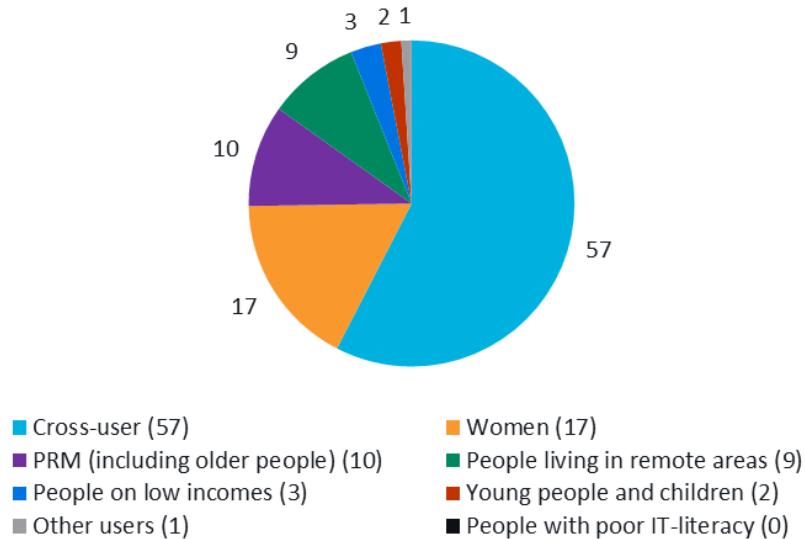
Source: Steer analysis. Visual provided by Word Cloud Generator.

C.11 Our analysis suggests that **studies**:

- Tend to focus on cross-user, cross-modal and pan-European themes, albeit a significantly larger proportion focus on specific user groups – predominantly women, and PRMs (e.g. older people);
- More frequently undertake comparative analysis (e.g. between countries, modes, etc.) than projects; and
- Are also results orientated (recommendations, case studies, good practice, etc.).

C.12 The focus of all inventory items considered together (projects and studies, guidance, etc.) by user group is presented below.

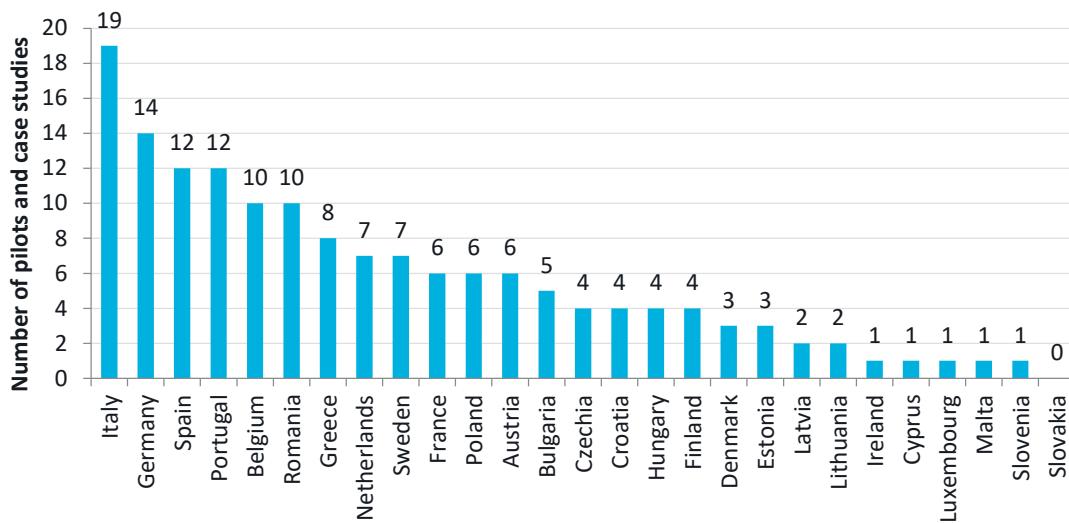
Figure C.3: Number of inventory items* by user group



Source: Steer analysis. (*) Note: excludes Other documents (16) which have not been categorised by user group.

- C.13 As illustrated above, most of the material (58 of 100 projects, studies and other documents) takes a cross-user approach, assessing topics in relatively high-level terms – either without consideration of differences between individual user groups or across multiple individual user groups (these items have also been categorised as ‘cross-user’ for the purpose of this exercise). However, of the 42 items with a specific focus on an individual user group, 17 of 42 focused specifically on women, with just under one quarter (10 of 42) focusing on PRMs and 9 on transport users in remote areas.
- C.14 In terms of the 45 projects¹⁶⁹ identified specifically, many contained case studies or pilots analysing issues, technologies, policies, etc. The chart below summarises the number of pilot projects conducted and case studies researched by Member State (in total, 153).

Figure C.4: Project pilots and case studies by EU 27 Member State

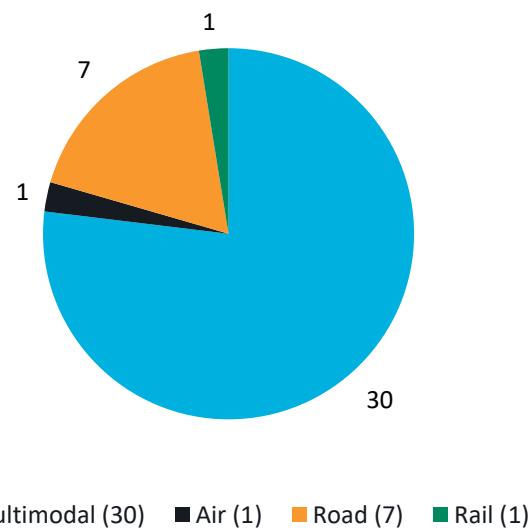


Source: Steer analysis. Note: excludes projects for which outputs were unavailable

- C.15 Case studies and pilots have been conducted in all but one Member State (Slovakia) in the identified projects. Several case studies and pilots have been conducted in the larger Western European countries, although France is a notable exception to this.
- C.16 The figure below shows projects grouped by transport mode. This is based on the categorisation by transport mode of projects listed on the TRIMIS database (39 of the 45 relevant projects identified). More than three-quarters (30 out of 39) of the projects focused on multimodal topics or discussed findings in terms of the transport system more generally. None were focused exclusively on waterborne transport. Data was not available for other modes, e.g. cycling, new mobility, etc.

¹⁶⁹ Which originated under relevant EU research projects (e.g. Horizon 2020, FP7 or similar) and, therefore, were financed – in whole or in part – by the European Union.

Figure C.5: Number of inventory items by user group



Source: Steer analysis of TRIMIS data.

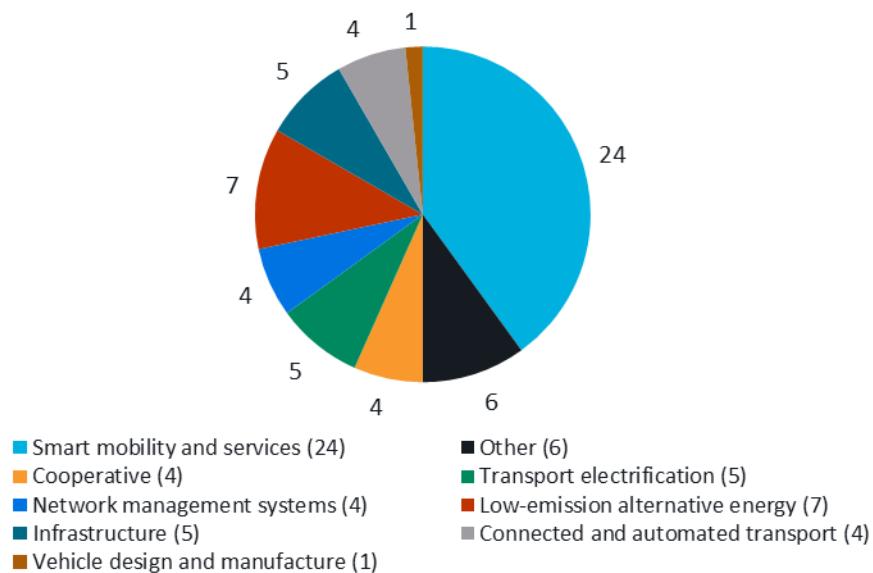
C.17 TRIMIS also categorises projects according to relevant EU Strategic Transport Research and Innovation Agenda (STRIA) priorities,¹⁷⁰ including:

5. Electrification;
6. Alternative fuels;
7. Vehicle design and manufacturing;
8. Connected and automated transport;
9. Infrastructure;
10. Network and traffic management systems; and
11. Smart mobility and services.

C.18 The frequency of tags across all 39 TRIMIS-listed projects is presented in the figure below. Note that some projects are relevant to multiple STRIA priorities.

¹⁷⁰ https://ec.europa.eu/info/research-and-innovation/research-area/transport/stria_en

Figure C.6: Frequency (number) of STRIA priority areas by project



Source: Steer analysis of TRIMIS data. Note: projects can be assigned multiple STRIA areas.

- C.19 The figure above shows that most (24 of 39) TRIMIS-listed projects included a focus on smart mobility and services, which includes coverage of decarbonisation, behavioural change, and new business models, services and markets.¹⁷¹ This has significant overlap with the wider topic of sustainable mobility, supporting the finding from the ‘word-cloud’ analysis that most projects focus on this topic. Decarbonisation (specifically transport electrification) is also explored by 7 projects.

Gap analysis

- C.20 This section identifies gaps in the inventory in terms of:
- Types of documents (projects, studies, guidance, etc.);
 - User groups;
 - Member States;
 - Themes (affordability, accessibility and reliability); and
 - Trends (decarbonisation, digitalisation and automation, COVID-19 and population ageing).
- C.21 Table C.1 describes the distribution of documents by user group. Note that other resources (surveys and data portals) have not been categorised.

Table C.1: Inventory items by user group

User group	Projects	Studies	Guidance	Others*	Total
Cross-user	34	17	3	3	57
Women	2	11	3	1	17
Poor IT-literacy or access	-	-	-	-	-
PRMs (e.g. older people)	4	2	3	1	10

¹⁷¹ https://ec.europa.eu/info/research-and-innovation/research-area/transport/stria_en

User group	Projects	Studies	Guidance	Others*	Total
People living in remote areas	4	3	2	-	9
Young people and children	1	1	-	-	2
People on low income	-	3	-	-	3
Other users	-	1	-	-	1
Total	45	38	11	5	99

Steer: Steer analysis. (*) Note: includes policy papers and other resources (e.g. surveys and data).

C.22 The inventory consists predominantly of projects (45) and studies (38) – the majority of which do not focus on or differentiate between specific user groups. For women, the available documents were mainly in the form of studies (11) – with only 2 projects focusing specifically on women and the transport system. PRMs (e.g. older people) was the only group for which there is a relatively broad range of types of material.

C.23 There are significant gaps for other user groups, however, with:

- No material on users with poor IT-literacy or with limited access to the internet;
- One study on other users (on Roma);
- Two materials are specifically focused on young people and children; and
- No projects (albeit 3 studies) studying people on low income.

C.24 Some Member States are also underrepresented in the inventory, notably France and Poland (each with 6 inventory items each) and the Baltic states (with 7 across Estonia, Latvia and Lithuania). This is illustrated in Figure C.4.

Table C.2: Inventory items by theme and trend

	Projects	Studies	Guidance	Others*	Total
Theme					
Accessibility	13	14	8	-	35
Affordability	8	8	1	-	17
Reliability	7	5	1	1	14
Trend					
Decarbonisation	12	8	2	5	27
Digitalisation and automation	10	3	-	3	16
COVID-19	-	2	1	3	6
Population ageing	3	3	1	3	10

Source: Steer analysis. (*) Note: includes policy paper and other resources (e.g. surveys and data).

C.25 In terms of themes, accessibility was the most common (35 of 99 inventory items), with reliability studied the least (14). In terms of trends, materials discussing decarbonisation were relatively common (27 inventory items). Only 6 materials were identified relating to COVID-19 (including project INDIMO which examined, among other groups, ‘COVID-19 confined people’).

Projects

Table C.3: Projects by user group

Document	Description	Mode/s	Theme/s	Trend/s
Cross-user				
High reach innovative mobility solutions to cope with transport poverty (HiReach), 2017-2020 	<p>Purpose: to improve accessibility and foster inclusive mobility by supporting creation of new tools and business models for public transport. Specifically, HiReach builds on the potential of bundling and mixing dispersed, special and non-coordinated/optimised trip requests and needs from different vulnerable user groups to favour inclusive and participated vs. exclusive/special and geographically-limited mobility. The vulnerable user groups within HiReach include:</p> <ul style="list-style-type: none"> • People with temporarily or permanent reduced mobility; • Children and young people; • Older people; • Women; • Migrants and ethnic minorities; • Low income and unemployed; and • People living in rural and deprived areas. <p>By combining different attributes of available transport concepts and bottom-up initiatives with new operational schemes and IT applications, HiReach will explore viable business models for small scale, modular and easily replicable mobility services (e.g. community transport services, ridesharing, minibus pooling, etc.) that can be provided at affordable prices and/or with minimum subsidies.</p> <p>European pilot projects: DE, EL, IT, PT, LU, RO.</p> <p>Project website: https://hireach-project.eu/</p>	-	Accessibility, affordability	Digitalisation
Inclusive Digital Mobility Solutions (INDIMO), 2017-2020	<p>Purpose: the main objective of the project is to extend the benefits of digitally interconnected transport systems to people that currently face barriers to using such systems. The outcome of the project will be a comprehensive digital mobility</p>	-	Accessibility	Digitalisation

Document	Description	Mode/s	Theme/s	Trend/s
 INDIMO Deployment Toolkit	<p>deployment toolkit, which will be comprised of: a universal design manual (UDM) for digital mobility services; guidelines improving the design of interface between transport users and digital mobility systems (i.e. Universal interface language icons); guidelines for cybersecurity and personal data protection; and a policy evaluation tool and recommendations for policy-makers. INDIMO looks at the following user groups:</p> <ul style="list-style-type: none"> • People on low income; • Non-connected people and people lacking digital skills; • Older people; • People with reduced mobility; • Women; • COVID-19 confined people; • Caregivers; and • Socially isolated people. <p>European pilot projects: IT, BE, DE.</p> <p>Project website: https://www.indimoproject.eu/</p>			
 Sustainable Policy Response to Urban Mobility Transition (SPROUT), 2019-2022	<p>Purpose: to generate innovative policy responses to the challenges presented by the emergence of digitally-enabled business models, new mobility patterns and corresponding travel behaviour, pursuing a city-led approach.</p> <p>European pilot projects: ES, IT, PL, HU, EL, SE, RO, BE, FR, PT, NL.</p> <p>Project website: https://sprout-civitas.eu/</p>	-	-	Digitalisation
 Towards More Accessible and Inclusive Mobility Solutions for European Prioritised Areas (INCLUSION), 2017-2020	<p>Purpose: to understand, assess and evaluate the accessibility and inclusiveness of transport solutions in European prioritised areas. The project is identifying gaps and needs in order to propose and experiment with a range of innovative and transferable solutions.</p>	-	Accessibility	-

Document	Description	Mode/s	Theme/s	Trend/s
	<p>European pilot projects: BE, DE, IT, HU.</p> <p>Project website: http://www.h2020-inclusion.eu/</p>			
Coordination and support Action for Mobility in Europe: Research and Assessment (CAMERA), 2017-2021 	<p>Purpose: to assess and report on the status of air transport mobility research and innovation in Europe and its capabilities to accomplish long-term mobility goals.</p> <p>CAMERA will quantitatively and qualitatively:</p> <ul style="list-style-type: none"> evaluate the executed research activities from the last decade on air mobility; identify the current and future gaps and innovation bottlenecks in the context of the mobility goals; and formulate appropriate recommendations. <p>European pilot projects: none.</p> <p>Project website: https://h2020camera.eu/</p>	Aviation	-	-
Digital Transport in and for Society (DIGNITY), 2020-2022 	<p>Purpose: to foster a sustainable, integrated and user-friendly digital travel ecosystem that improves accessibility and social inclusion by developing an innovative decision support tool that can help local and regional decision-makers formulate digitally inclusive policies and strategies, and digital providers design more inclusive products and services.</p> <p>European pilot projects: ES, BE, NL, IT.</p> <p>Project website: https://www.dignity-project.eu/</p>	-	Accessibility	Digitalisation
Shared Mobility Opportunities and Challenges for European Cities (STARS), 2017-2020 	<p>Purpose: to explore the diffusion of car sharing in Europe, its connections with technological and social innovations, as well as its impact on other transport modes and to provide a policy toolkit for policy-makers (guidelines and recommendations), ‘what-if scenarios’, and European case studies.</p> <p>European pilot projects: FR, DE, ES, IT, BE.</p>	Shared mobility	-	-

Document	Description	Mode/s	Theme/s	Trend/s
 New approaches for community-driven sustainable mobility innovations at neighbourhood and urban district level (Cities4People), 2017-2020	<p>Project website: http://stars-h2020.eu/</p> <p>Purpose: to introduce a community driven People-Oriented Transport and Mobility framework based on participatory, inclusive and transparent innovation processes which incorporates collective awareness and open innovation to understand the real needs of EU citizens and co-create new mobility solutions with them, harnessing digital and social innovation.</p> <p>European pilot projects: DE, HU, EL.</p> <p>Project website: https://cities4people.eu/</p>	-	-	Decarbonisation, digitalisation
 Shared Automation Operating Models for Worldwide Adoption (SHOW), 2020-2023	<p>Purpose: to support the deployment of shared, connected and electrified automation in urban transport, to advance sustainable urban mobility. During the project, real-life urban demonstrations taking place in 20 cities across Europe will see the integration of fleets of automated vehicles in public transport, demand-responsive transport (DRT), Mobility a Service (Maas) and Logistics as a Service (LaaS) schemes. SHOW is the biggest and most holistic ever initiative piloting automated vehicles in urban environments.</p> <p>European pilot projects: BE, DE, SE, FR, AT, ES, FI, DK, NL, IT, EL, CZ.</p> <p>Project website: https://cities4people.eu/</p>	-	-	Digitalisation
 CIVITAS DESTINATIONS, 2016-2021	<p>Purpose: to demonstrate and evaluate the effectiveness of innovative sustainable mobility solutions to address challenges and opportunities in 6 tourist cities with different characteristics but sharing common challenges.</p> <p>European pilot projects: IT, ES, PT, EL, CY, MT.</p> <p>Project website: https://civitas.eu/destinations/</p>	-	-	Decarbonisation

Document	Description	Mode/s	Theme/s	Trend/s
CIVITAS PORTIS, 2016-2020 	<p>Purpose: to implement and evaluate integrated sets of mobility solutions to address challenges and opportunities in 5 major port cities to support the multifunctional role of cities, ports and gateways to inland areas.</p> <p>European pilot projects: LT, RO, IT, BE.</p> <p>Project website: https://civitas.eu/portis/</p>	Waterborne	-	-
CIVITAS ECCENTRIC, 2016-2020 	<p>Purpose: the project focuses on sustainable mobility in suburban districts and innovative urban freight logistics by:</p> <ul style="list-style-type: none"> • demonstrating and testing innovative sustainable mobility in peri-central areas by combining new policies, technologies and soft measures; • demonstrating and testing innovative urban freight in urban centres in close cooperation with the research and private sectors; and • contributing to the knowledge base on effective mobility solutions with the goal to replicate solutions in other cities. <p>European pilot projects: ES, SE, DE, BG, FI.</p> <p>Project website: https://civitas.eu/eccentric/</p>	-	-	Decarbonisation
Making Innovation in Mobility and Sustainable Actions (CIVITAS MIMOSA), 2008-2013 	<p>Purpose: to implement a range of integrated solutions to identified transport challenges and to add to European know-how of sustainable urban transport. Solutions considered included: the promotion of cleaner vehicles and fuels, attracting new passengers to public transport modes, reducing congestion through access restrictions, road and parking management, and promoting more energy-efficient and sustainable car usage, such as car sharing.</p> <p>European pilot projects: IT, PT, PL, EE, NL.</p> <p>Project website: https://civitas.eu/content/mimosa</p>	-	Accessibility, affordability, reliability	Decarbonisation

Document	Description	Mode/s	Theme/s	Trend/s
CIVITAS RENAISSANCE 	<p>Purpose: to demonstrate that new and innovative transport solutions can facilitate mobility, economic growth and environmental sustainability while protecting the valuable fabric of historic cities through the development and validation of new break-through solutions and best practice.</p> <p>European pilot projects: IT, BG, PL.</p> <p>Project website: https://civitas.eu/content/renaissance</p>	-	-	Decarbonisation
Mobilising citizens for vital cities (CIVITAS ELAN), 2008-2012 	<p>Purpose: to identify clean and sustainable urban transport solutions, address topics of specific interest to Central and Eastern European cities (fast motorisation, capacity problems in public transport, infrastructure renewal and rapidly changing cityscapes), implement concrete clean and sustainable urban transport solutions, and mobilise people in physical, political and societal terms.</p> <p>European pilot projects: BE, CZ, PT, SI, HR.</p> <p>Project website: https://civitas.eu/content/elan</p>	-	-	Decarbonisation
Achieving Real Change with Innovative Transport Measures Demonstrating Energy Savings (CIVITAS ARCHIMEDES) 	<p>Purpose: to implement a strong and coherent package of 83 activities to increase energy efficiency of the cities' transport systems, and provide safer and more convenient transport for all.</p> <p>European pilot projects: DK, ES, RO, IT, CZ.</p> <p>Project website: https://civitas.eu/content/archimedes</p>	-	Accessibility, affordability, reliability	Decarbonisation
Mobility, Development and Energy use Reduction (CIVITAS MODERN), 2008-2013 	<p>Purpose: to create a package of measures for cleaner and better urban transport based on stakeholder engagement and a performance-led approach. Measures centred on urban planning, e-ticketing, innovations in energy use and collaboration between cities.</p>	-	Accessibility, affordability, reliability	Decarbonisation

Document	Description	Mode/s	Theme/s	Trend/s
	<p>European pilot projects: RO, IT, PT, ES.</p> <p>Project website: https://civitas.eu/content/modern</p>			
Actions demonstrate how Park4SUMP will lead to achieve sustainable transport in urban areas by strategically integrating innovative parking management solutions into SUMP policies (PARK4SUMP), 2018-2022 	<p>Purpose: to demonstrate how cities can adapt parking management policies and deploy effective and innovative solutions as part of their Sustainable Urban Mobility Plans (SUMPs). Demonstrator cities will help to achieve widespread roll-out and transferability by showcasing best practice in parking management.</p> <p>European pilot projects: PT, ES, FR, IT, AT, DE, BE, NL, PL, HR, BG, RO, EE, FI.</p> <p>Project website: https://park4sump.eu/</p>	Cars	-	-
Action Plan for the future of Mobility in Europe (MOBILITY4EU), 2016-2019 	<p>Purpose: to create a vision for the European transport system in 2030 and an Action Plan including a Roadmap to implement that vision, including recommendations for tangible measures in research, innovation and implementation targeted towards various stakeholder groups.</p> <p>European pilot projects: none.</p> <p>Project website: https://civitas.eu/content/modern</p>	-	-	-
Mobility and Time Value (MoTIV), 2017-2020 	<p>Purpose: to advance research on Value of Travel Time (VTT) by introducing and validating a conceptual framework for the estimation of VTT through a Europe-wide data collection exercise, facilitated through the 'Woorti' smartphone app.</p> <p>European pilot projects: none.</p> <p>Project website: https://motivproject.eu/</p>	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
Users, Safety, Security and Energy in Transport Infrastructure (USE-IT), 2015-2017 	<p>Purpose: to better understand the common challenges experienced across transport modes, bring representatives of transport modes together to share experience and skills and to develop a set of common research objectives.</p> <p>European pilot projects: none.</p> <p>Project website: https://www.useitandfoxprojects.eu/</p>	-	-	-
Understanding Social Behaviour for Eco-Friendly Multimodal Mobility (USEMOBILITY), 2011-2013 	<p>Purpose: to identify what motivates people into switching to environmentally friendly modes of transport to suggest steps and measures towards more sustainable mobility through a survey of over 10,000 transport users.</p> <p>European pilot projects: none.</p> <p>Project website: https://trimis.ec.europa.eu/project/understanding-social-behaviour-eco-friendly-multimodal-mobility#tab-outline</p>	-	-	-
Dynamic Citizens Active for Sustainable Mobility (DYN@MO), 2012-2016 	<p>Purpose: to develop 'Mobility 2.0' systems and services by applying web 2.0 technologies, implementing city and citizen-friendly, electric mobility solutions, using new electric and hybrid vehicles and engaging in a dynamic citizen dialogue for mobility planning and service improvement. DYN@MO cities will implement altogether 30 innovative measures to strengthen sustainable mobility. Sustainable Urban Mobility Plans (SUMPs) are at the core of the project and represent a sound basis for mobility planning.</p> <p>European pilot projects: PL, ES, HR, DE.</p> <p>Project website: https://civitas.eu/content/dynmo</p>	-	-	-
Future Challenges for the Rail Sector (NEAR2050), 2016-2018	<p>Purpose: to analyse and take in to account developing technologies, new societal trends, and changing demographics among others in order to obtain a full account of what users currently need and expect from the rail sector and what they will</p>	Rail	-	-

Document	Description	Mode/s	Theme/s	Trend/s
 	<p>need and expect from the rail sector based on mega trend based scenarios in 2022,2030 and 2050.</p> <p>European pilot projects: none.</p> <p>Project website: https://archivosgist.es/near2050web/</p>			
Furthering Less Congestion by Creating Opportunities for More Walking and Cycling (FLOW), 2015-2018 	<p>Purpose: to develop assessment tools to allow cities to evaluate effects of walking and cycling measures on congestion, including creating implementation scenarios and action plans for introducing or upscaling cycling and walking measures that are shown to reduce congestion in 6 European cities (Budapest, Dublin, Lisbon, Munich, Sofia and Gdynia).</p> <p>European pilot projects: IE, PT, DE, PL, HU, BG.</p> <p>Project website: http://www.h2020-flow.eu/</p>	Walking, cycling	-	-
Sustainable Urban Neighbourhoods - Research and Implementation Support in Europe (SUNRISE), 2017-2021 	<p>Purpose: develop, implement, assess and facilitate learning about new, collaborative ways to address common mobility challenges at the neighbourhood level. Towards this aim, 6 cities will foster collaborative processes in specific neighbourhoods as 'Neighbourhood Mobility Labs' with the explicit mandate to implement innovative solutions for and with their residents, businesses etc.</p> <p>European pilot projects: unknown.</p> <p>Project website: https://cordis.europa.eu/project/id/723365/results</p>	-	-	Digitalisation
A Measurement Tool to Determine the Quality of the Passenger Experience (METPEX), 2012-2015 	<p>Purpose: to develop a set of Key Performance Indicators (KPIs) which could be used by transport operators and authorities, local authorities and other interest groups to measure the quality of the whole journey experience which takes into account human (physiological, perceptual, cognitive, sensory and affective) socio-economic, cultural, geographic and environmental factors. The project also</p>	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
	<p>assessed the costs of ‘inaccessible transport’ for different sectors of society (such as those from low income groups, rural communities, older people, persons with disabilities and those with lower levels of literacy).</p> <p>European pilot projects: unknown.</p> <p>Project website: https://cordis.europa.eu/project/id/314354/reporting</p>			
Methodology for Describing the Accessibility of Transport in Europe (MEDIATE), 2008-2010 	<p>Purpose: to contribute to the development of inclusive urban transport systems with better access for all citizens by establishing a common European methodology for measuring accessibility to transport.</p> <p>European pilot projects: unknown.</p> <p>Project website: https://cordis.europa.eu/project/id/218684/reporting</p>	-	-	-
Transport Innovation Deployment for Europe (TIDE), 2012-2015 	<p>Purpose: to enhance the broad transfer and take-up of 15 innovative urban transport and mobility concepts throughout Europe and to make a visible contribution to establish them as mainstream measures. The TIDE partners made a range of new and feasible solutions easily accessible to address key challenges of urban transport such as energy efficiency, decarbonisation, demographic change, safety, and access for all and new economic and financial conditions.</p> <p>European pilot projects: unknown.</p> <p>Project website: https://cordis.europa.eu/project/id/313979/reporting</p>	-	Accessibility, affordability, reliability	Decarbonisation, population ageing
Mobility Schemes Ensuring Accessibility of Public Transport for All Users (ACCESS 2 ALL), 2008-2010 	<p>Purpose: defining concrete mobility schemes, guidelines and policy recommendations, ensuring accessibility of PT to all users, through the coordination of current research efforts, the production of common research roadmaps, the identification of best practice models and the appropriate use of ICT aids and networks.</p>	-	Accessibility	-

Document	Description	Mode/s	Theme/s	Trend/s
	<p>European pilot projects: unknown.</p> <p>Project website: https://cordis.europa.eu/project/id/218462/reporting</p>			
Electromobility in Urban Transport: a Multi-Dimensional Innovation: Socio-Economic and Environmental Effects (eMobilita), 2017-2020 	<p>Purpose: to study the conditions, prerequisites, and incentives for electromobility integration in urban transport and elaboration of a roadmap for its development through the creation of a network of academic and non-academic institutions from Bulgaria, Slovakia, Italy and Greece to:</p> <ul style="list-style-type: none"> explore the experience of the European countries in the integration of electromobility in urban transport and to identify good practice summarise direct and indirect effects (social, economic and environmental) of the introduction of electromobility in urban transport schemes; and create a roadmap with concrete measures for introducing electromobility in urban transport. <p>European pilot projects: unknown.</p> <p>Project website: https://cordis.europa.eu/project/id/734459</p>	-	-	Decarbonisation, digitalisation
Assessing the social and economic impacts of past and future sustainable transport policy in Europe (ASSIST), 2011-2013 	<p>Purpose: to provide the EU with sound policy advice on the possible social and economic impacts of future sustainable transport policies through desk research on studies and empirical results of Transport Policy Measures (producing a Handbook on Social and Economic Impacts of Sustainable Transport Policy) and empirical modelling.</p> <p>European pilot projects: unknown.</p> <p>Project website: https://cordis.europa.eu/project/id/265381</p>	-	-	-
Support Action to Contribute to the	Purpose: to take advantage of the structured research network set up in HUMANIST, in order to develop and widely disseminate knowledge in the area of	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
Preparation of Future Community Research Programmes in User Centred Design for Eco-Multimodal Mobility (DECOMOBIL), 2011-2014 	<p>human centred design of ICT for sustainable transport. DECOMOBIL will provide understanding on acceptability and usability of ICT for the population and setting up design guidelines and recommendations to avoid misuse and to allow user-friendly interaction with ICT functionalities.</p> <p>European pilot projects: unknown.</p> <p>Project website: https://cordis.europa.eu/project/id/288298</p>			
End-to-End Approach for Mobility-as-a-Service tools, business models, enabling framework and evidence for European seamless mobility (MaaS4EU), 2017-2020 	<p>Purpose: to provide quantifiable evidence, frameworks and tools, to remove the barriers and enable a cooperative and interconnected EU single transport market for the Mobility as a Service (MaaS) concept, by addressing challenges at 4 levels, (1) business, (2) end-users, (3) technology and (4) policy. This will be achieved by defining sustainable business models that support the cooperation across transport stakeholders, understanding user needs and choices, implementing the required technological infrastructure (a MaaS mobility hub) and identifying the enabling policy and regulatory frameworks.</p> <p>European pilot projects: unknown.</p> <p>Project website: http://www.maas4eu.eu/</p>	-	-	-
Poor IT-literacy or access				
No specific projects for this group have been identified. However, INDIMO examines <i>inter alia</i> 'non-connected users' and users which 'lack digital skills.' However, to avoid double-counting, this project has only been categorised once in this catalogue (see: 'Cross-user' projects above).				
PRMs (e.g. older people)				
Transport Needs for an Ageing Society (TRACY), 2011-2013 	<p>Purpose: to systematically study the needs of older people in the development of the future European transport system, with the results used to analyse the present situation, identify research gaps and contribute towards a strategy to tackle the challenge of transport in an ageing society.</p>	-	-	Population ageing

Document	Description	Mode/s	Theme/s	Trend/s
	<p>European pilot projects: unknown.</p> <p>Project website: https://cordis.europa.eu/project/id/285613</p>			
Transport Innovation for Disabled People Needs Satisfaction (TRIPS), 2020-2023 	<p>Purpose: to propose a co-design approach that allows people, disabled by inaccessible environments, to take the leading role in designing accessible and useable transport systems and to provide case studies that show how such co-designed mobility solutions can provide inclusive urban transport-for-all.</p> <p>European pilot projects: IT, BE, PT, BG, SE, HR.</p> <p>Project website: https://trips-project.eu/</p>	-	Accessibility	-
Growing Older, Staying Mobile: the Transport Needs of an Ageing Society (GOAL), 2011-2013 	<p>Purpose: to provide an action plan for innovative solutions to fulfil the transport needs of an ageing society. This action plan will be developed by state-of-the-art reviews, identification of possible and relevant societal developments and alternatives to transport. We identify relevant research gaps and product developments through contacts in the USA and Japan. The focus of GOAL is on land-based transport.</p> <p>European pilot projects: none.</p> <p>Project website: http://www.goal-project.eu/</p>	-	-	Population ageing
Mobile Together, 2013-2021 	<p>Purpose: to establish related ride-sharing communities through developing a strategy for implementing ride-sharing initiatives on a larger scale, a region-wide promotion of the ride-sharing idea and related concepts and a best practice guide with advice for implementation.</p> <p>European pilot projects: DE, SE.</p>	Shared mobility	-	-

Document	Description	Mode/s	Theme/s	Trend/s
	Project website: https://keep.eu/projects/16395/Mobile-together-EN/			
Remote areas				
Smart Rural Transport Areas (SMARTA), 2018-2020 	Purpose: to understand the market and framework in every European Country and to assess how sustainable, on-demand mobility solutions can help enhance the travel experience of diverse rural populations. European pilot projects: NL, LV, ES, DE, AT, FR, EL, IT, PT, RO. Project website: https://ruralsharedmobility.eu/	-	Accessibility, affordability, reliability	Decarbonisation
Smart Rural Transport Areas 2 – Demonstrators (SMARTA 2), 2019-2021 	Purpose: to design, pilot and assess smart, shared mobility solutions interconnected with public transport in four rural areas of Europe: East Tyrol (Austria), Trikala (Greece), Águeda (Portugal) and Brasov (Romania). European pilot projects: AT, PT, EL, RO. Project website: https://ruralsharedmobility.eu/	-	Accessibility, affordability, reliability	Decarbonisation
Demand-Responsive Transport to Ensure Accessibility, Availability and Reliability of Rural Public Transport (RESPONSE), 2020-2021 	Purpose: to develop and coordinate existing publicly funded transport services in the Baltic Sea Region by increasing the capacity and usage of best practices in the public transport sector to take advantage to crucial societal trends – the open data revolution, digitalisation and demand-orientation. European pilot projects: SE. Project website: http://response-project.eu/	-	Accessibility, affordability, reliability	Digitalisation
Regional Masterplan for the Future of Mobility (FUMObil), 2014-2020 	Purpose: to develop a regional sustainable transport and mobility plan through coordinated data analysis, stakeholder engagement and innovative solutions to improve inclusivity. European pilot projects: AT.	-	Accessibility, affordability, reliability	-

Document	Description	Mode/s	Theme/s	Trend/s
	Project website: http://www.regionfumo.at/fumobil/			
Women				
Transport Innovation Gender Observatory (TINNGO), 2018-2021 	<p>Purpose: to establish research hubs in several European countries, to create a database for analysis and dissemination of gender mainstreaming tools and open innovation, and the construction of conceptual frameworks and training for understanding gender in transport, e.g. gender road map, digital analysis, Gender and Diversity Action Plans.</p> <p>European pilot projects: FR, DE, EE, ES, PT, IT, EL, RO, LT, LV, SE, DK, FI.</p> <p>Project website: https://www.tinngo.eu/</p>	-	-	-
Revealing fair and actionable knowledge from data to support women's inclusion in transport systems (DIAMOND), 2018-2021 	<p>Purpose: to turn data into actionable knowledge with notions of fairness, in order to progress towards an inclusive and efficient transport system through the development of a methodology based on the collection and analysis of disaggregated data, including new sources, analytics and management techniques. This allows identification, design and evaluation of specific measures for fulfilling the needs and expectations of women as transport workers and users.</p> <p>European pilot projects: none.</p> <p>Project website: https://diamond-project.eu/</p>	-	-	Digitalisation
Young people and children				
Transformation of neighbourhoods in a child-friendly way to increase the quality of life for all (METAMORPHOSIS), 2017-2020	<p>Purpose: to transform neighbourhoods with a focus on children through:</p> <ul style="list-style-type: none"> • achieving behavioural change; • building the vision needed for such transformations; • answering basic research questions related to neighbourhood transformation; 	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
	<ul style="list-style-type: none"> achieving creative breakthrough innovations (in development, in design, in governance and in planning procedures) for public spaces in neighbourhoods and urban districts; developing and implementing children friendly mobility solutions; evaluating take-up, involvement, process and impacts using innovative evaluation methodologies; and Developing and implementing innovative transfer instruments to transfer Metamorphosis-innovations from city to city and country to country, also beyond the duration of the project. <p>European pilot projects: NL, RO, AT, IT, DE.</p> <p>Project website: https://www.metamorphosis-project.eu/</p>			
People on low income				
None identified.				
Other users				
None identified.				

Steer analysis. Note:  denotes full or partial funding from the EU.

Forthcoming projects

Table C.4: Projects with inaccessible results or outputs by user group

Document	Description	Mode/s	Theme/s	Trend/s
Cross-user				
Replication of innovative concepts for peri-urban, rural or inner-city mobility (CIVITAS RECIPROCITY), 2021-2023	Purpose: to help cities transform into climate-reliant and connected multimodal nodes for smart and clean mobility. To achieve this, the project will employ a four-	-	-	Decarbonisation

Document	Description	Mode/s	Theme/s	Trend/s
	<p>staged replication framework to help cities and municipalities:</p> <ul style="list-style-type: none"> • Identify the right innovative mobility solutions for all relevant mobility stakeholders and citizens; • Learn about requirements, processes and skills needed to put these innovative mobility solutions into action; • Accelerate the implementation of these solutions through guidance and matchmaking for business and finance; and • Share and build upon lessons learnt to enable fast wide-scale replication. <p>European pilot projects: unknown.</p> <p>Project website: unavailable.¹⁷²</p> <p><i>Note: project results not currently available.</i></p>			
Decarbonising Transport – Driving implementation actions (DTImplement), 2021-2023 	<p>Purpose: to support the transfer of innovative transport and mobility solutions into concrete policy actions and create a favourable environment for the implementation of sustainable and inclusive transport policies with a particular focus on innovative transport and mobility solutions that are capable to improve energy efficiency and reduce emissions of CO2 and local pollutants in the transport sector while being socially fair, fostering social inclusiveness and economic progress.</p>	-	-	Decarbonisation

¹⁷² For details, see: <https://cordis.europa.eu/project/id/101006576> and <https://civitas.eu/news/new-civitas-project-reciprocity-focuses-multimodality-cities>

Document	Description	Mode/s	Theme/s	Trend/s
	<p>European pilot projects: unknown.</p> <p>Project website: unavailable.¹⁷³ <i>Note: project results not currently available.</i></p>			

Steer analysis. Note:  denotes full or partial funding from the EU.

Studies

Table C.5: Studies by user group

Document	Description	Mode/s	Theme/s	Trend/s
Cross-user				
Review No 09/2018: Towards a successful transport sector in the EU: challenges to be addressed (Landscape review) (2018) 	<p>This report describes the state of play in key areas of the EU transport system (key trends, infrastructure development and decarbonisation), and analyses key challenges to be addressed with recommendations suggested to resolve such challenges.</p> <p><i>European Commission (2018). Review No 09/2018: Towards a successful transport sector in the EU: challenges to be addressed (Landscape review). Brussels: European Court of Auditors. Available from: https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=48256</i></p>	-	-	-
European Commission Report on the Impact of Demographic Change (2020)	<p>This report describes the drivers of demographic change in Europe (longer life expectancy, fewer births, ageing population, etc.) and analyses the impact of this change on the European social market economy in terms of, <i>inter alia</i>, infrastructure and access to services.</p>	-	-	Population ageing

¹⁷³ For details, see: <https://cordis.europa.eu/project/id/101021600>

Document	Description	Mode/s	Theme/s	Trend/s
	<p><i>European Commission (2020). European Commission Report on the Impact of Demographic Change. Brussels: European Commission. Available from: https://ec.europa.eu/info/sites/default/files/demography_report_2020_n.pdf</i></p>			
Sustainable development in the European Union Monitoring report on progress towards the SDGs in an EU context (2021) 	<p>This report monitors progress towards the UN Sustainable Development Goals in an EU context using an indicator set which comprises around 100 indicators and is structured around the 17 SDGs.</p> <p><i>European Commission (2021). Sustainable development in the European Union Monitoring report on progress towards the SDGs in an EU context. Brussels: European Commission. Available from: https://ec.europa.eu/eurostat/web/products-statistical-books/-/ks-03-21-096</i></p>	-	-	-
The Future of Road Transport (2019) 	<p>The report outlines present and future challenges for mobility, new mobility paradigms, infrastructure requirements, technologies, governance and cybersecurity, legislation and standardisation, and several other issues.</p> <p><i>Multiple authors (2019), The future of road transport, EUR 29748 EN, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-14319-2, doi:10.2760/524662, JRC116644. Available from: https://op.europa.eu/en/publication-detail/-/publication/c764dfe8-25fa-11ea-af81-01aa75ed71a1/language-en</i></p>	Car, bus (and other road modes)	-	-
Commission Staff Working Document: Competitiveness in Low-Income and Low-Growth Regions: The Lagging Regions Report (2017) 	<p>This report analyses the investment needs, growth determinants, macro-economic framework and need for structural reforms. Moreover, it already presents concrete ideas to address the obstacles to growth in the pilot regions of Poland and Romania.</p> <p><i>European Commission (2017). Commission Staff Working Document: Competitiveness in Low-Income and Low-Growth Regions: The Lagging Regions Report. SWD(2017) 132 Final. Brussels: European Commission. Available from: https://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/lagging_regions%20report_en.pdf</i></p>	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
CIVITAS Thematic Policy Note: Transport Poverty (2016) 	<p>The report provides a definition of transport poverty, analyses mobility and its socioeconomic effects on different user groups, provides an overview of policy and the regulatory context at the EU-level and suggests recommendations for tackling transport poverty.</p> <p><i>Dotter, Fred (2016). CIVITAS Thematic Policy Note: Transport Poverty. CIVITAS Initiative. Available from: https://civitas.eu/content/civitas-thematic-policy-note-transport-poverty</i></p>	-	Affordability	-
Innovative mobility and transport for the particular challenges of peri-urban areas - findings from a multi-criteria analysis in France (2019)	<p>This report provides a high-level summary of the characteristics of and challenges facing transport users in peri-urban areas (specifically in France).</p> <p><i>Ehrler, V. and Blanquart, C. (2019). Innovative mobility and transport for the particular challenges of peri-urban areas - findings from a multi-criteria analysis in France. Institut français des sciences et technologies des transports, de l'aménagement et des réseaux (IFSTTAR). Available from: https://www.polisnetwork.eu/wp-content/uploads/2019/11/2G-Verena-Ehrler.pdf.</i></p>	-	-	-
Global Roadmap of Action Toward Sustainable Mobility: Paper 2: Universal Urban Access (2019)	<p>The paper provides an overview of the state of play of transport in urban areas, an international measure of urban transport (rapid transit per resident ratio), a catalogue of possible measures for policy-makers to improve urban access to transport and a summary of mobility programmes across several case studies.</p> <p><i>Sustainable Mobility for All (2019). Global Roadmap of Action Toward Sustainable Mobility: Universal Urban Access. Washington DC, License: Creative Commons Attribution CC BY 3.0. Available from: https://pubdocs.worldbank.org/en/585041571411007093/Universal-Urban-Access-Global-Roadmap-of-Action.pdf</i></p>	-	-	-
Global Roadmap of Action Toward Sustainable Mobility: Paper 5: Safety (2019)	<p>The report provides an overview of transport safety, an international measure of transport safety (mortality caused by road traffic injuries), a catalogue of possible measures for policy-makers to improve safety in transport and lists summarises programmes in several case study examples.</p>	-	Reliability	-

Document	Description	Mode/s	Theme/s	Trend/s
	<i>Sustainable Mobility for All (2019). Global Roadmap of Action Toward Sustainable Mobility: Safety. Washington DC, License: Creative Commons Attribution CC BY 3.0. Available from: https://pubdocs.worldbank.org/en/472231571411015661/Safety-Global-Roadmap-of-Action.pdf</i>			
Global Roadmap of Action Toward Sustainable Mobility: Paper 6: Green Mobility (2019)	<p>This report presents an overview of green mobility, a catalogue of possible measures for policy-makers to reduce transport's GHG emissions, and a summary of mobility programmes in several case study examples. Transport emission projections by mode are also presented to 2050 for the OECD and non-OECD regions.</p> <p><i>Sustainable Mobility for All (2019). Global Roadmap of Action Toward Sustainable Mobility: Green Mobility. Washington DC, License: Creative Commons Attribution CC BY 3.0. Available from: https://pubdocs.worldbank.org/en/236681571411019437/Green-Mobility-Global-Roadmap-of-Action.pdf</i></p>	-	-	Decarbonisation
Cities as Spaces for Opportunities for All: Building Public Spaces for People with Disabilities, Children and Elders (2021)	<p>This report provides:</p> <ul style="list-style-type: none"> • An assessment of the evolution of the inclusion of people with disabilities in the design of cities in Latin American cities; and • A compendium of case studies on cities that have built spaces and transit systems that help remove the barriers which people with disabilities, elders, and small children face in cities (including an example from Spain). <p><i>Libertun de Duren, Nora Ruth, et al (2021). Cities as Spaces for Opportunities for All: Building Public Spaces for People with Disabilities, Children and Elders. Monograph ; 859. Inter-American Development Bank. Available from: https://publications.iadb.org/en/cities-spaces-opportunities-all-building-public-spaces-people-disabilities-children-and-elders</i></p>	-	-	-
How the Inaccessibility Index Can Improve	Within the context of a needs-based approach for transport planning assessment, this paper proposes an inaccessibility index, showcasing the utility of its application in Barcelona.	-	Accessibility	-

Document	Description	Mode/s	Theme/s	Trend/s
Transport Planning and Investment (2018)	<i>ITF (2018). How the Inaccessibility Index Can Improve Transport Planning and Investment. OECD Publishing, Paris. Available from: https://www.itf-oecd.org/inaccessibility-index-improve-transport-planning-investment</i>			
Transport Trends and Economics 2018–2019: Mobility as a Service (2020)	<p>This publication details Mobility as a Service (the concept, its objectives, the main actors, business models and development), its enablers, impacts on car- and bike-sharing, an overview of its challenges (costs, risks, revenue and infrastructure). The paper also briefly bullet-points supportive actions and policies for local authorities to accelerate/control the development of Mobility as a Service.</p> <p><i>UN Economic Commission for Europe (2020). Transport Trends and Economics 2018–2019: Mobility as a Service. ECE/TRANS/285. United Nations, Geneva. Available from: https://unece.org/DAM/trans/main/wp5/publications/Mobility_as_a_Service_Transport_Trends_and_Economics_2018-2019.pdf</i></p>	Cars, bikes, micromobility	-	Digitalisation, automation
Transport for Sustainable Development in the Economic Commission for Europe region (2011)	<p>This extensive report examines issues, progress, challenges and best practices in global efforts to achieve the transition to sustainable mobility in terms of more sustainable inland transport. More specifically, the report provides:</p> <ul style="list-style-type: none"> • a brief review of sustainable development and its implications for transport; • an account of general trends in Europe relevant to sustainable transport; • an explanation of transport's role for social and economic sustainability; • a discussion of the issues surrounding transport affordability; • an analysis of transport safety - specifically road traffic safety; and • a review the environmental issues of transport. <p><i>UN Economic Commission for Europe (2011). Transport for Sustainable Development in the ECE region. United Nations, Geneva. Available from: https://unece.org/transport/publications/transport-sustainable-development-ece-region.</i></p>	-	Accessibility, affordability, reliability	Decarbonisation

Document	Description	Mode/s	Theme/s	Trend/s
Transport for Sustainable Development - The case of Inland Transport (2015)	<p>A follow-up report to the above, laid out in the same format but with refreshed analysis and data. The report follows the same structure, including an assessment of trends, accessibility, affordability, safety, security, environmental impacts and modal shift insofar as it relates to sustainable inland transport.</p> <p><i>UN Economic Commission for Europe (2015). Transport for Sustainable Development – The case of Inland Transport. United Nations, Geneva. Available from: https://unece.org/transport/publications/transport-sustainable-development-case-inland-transport.</i></p>	-	Accessibility, affordability, reliability	Decarbonisation
Affordability of Public Transport in Developing Countries (2005)	<p>This report develops an Affordability Index to be used as a first indication of the affordability of fares in a particular city. The second half of this report describes the construction of this Affordability Index and then describes the results from applying this Index to 27 cities.</p> <p><i>Carruthers, Robin; Dick, Malise; Saurkar, Anuja. (2005). Affordability of Public Transport in Developing Countries. Transport Papers series; no. TP-3. World Bank, Washington, DC. World Bank. Available from: https://openknowledge.worldbank.org/handle/10986/17408.</i></p>	-	Affordability	-
Electric Mobility and Development (2018)	<p>This paper assembles evidence, viewpoints, and analysis on eMobility programmes. More specifically, the report investigates the history of eMobility programmes to 2018 (including examples of trends in uptake), highlights good practice and key challenges from around the world (on design, targeting, technological deployment, business models, and the energy-transport nexus) and provides detailed stakeholder views on eMobility programmes from a comprehensive range of stakeholders.</p> <p><i>World Bank; International Association of Public Transport. (2018). Electric Mobility and Development. ESMAP Paper; World Bank, Washington, DC. World Bank. Available from: https://openknowledge.worldbank.org/handle/10986/30922.</i></p>	Car, bikes	-	Decarbonisation
Poor IT-literacy or access				
None identified.				

Document	Description	Mode/s	Theme/s	Trend/s
PRMs (e.g. older people)				
Best practices guide on the carriage of persons with reduced mobility (2018) 	<p>This report presents a structured compilation of the 30 best practices that facilitate travel for PRMs (covering all modes of transport and the various aspects they involve, such as infrastructure, vehicles, technical solutions, processes and personal assistance) and acts as a guide to support the further development of policies, actions, measures or strategies with the goal of increasing accessibility for PRMs. The report also includes a literature review and analysis supported by user and expert surveys, interviews, analysis of the relevant EU legislation, and analysis of more than 100 case studies.</p> <p><i>Tim Breemersch, Eef Delhaye, Sebastian Vanderlinden, Péter Pápics (TML), Evangelos Bekiaris, Matina Loukeia, Angeliki Konsta (CERTH), Xavier Le Den (Ramboll)] (2018). Best practices guide on the carriage of persons with reduced mobility. Brussels: European Commission. Available from: https://op.europa.eu/en/publication-detail/-/publication/bb3b7e92-df40-11e9-9c4e-01aa75ed71a1.</i></p>	-	-	-
Mobility: Rights Obligations and Equity in an Ageing Society (2011)	<p>This document provides an overview of global demographic change describes intersections between age, disability and poverty, and ageing in the context of the urban-rural dimension. It focuses on the role of legal frameworks (e.g. the UN Convention on the Rights of Persons with Disabilities) on giving passengers rights and setting standards. The role of conditional funding, concessionary fares and reducing the need for travel in delivering accessibility and meeting social objectives respectively is also summarised.</p> <p><i>ITF (2011). Mobility: Rights Obligations and Equity in and Ageing Society. OECD Publishing, Paris. Available from: https://www.itf-oecd.org/mobility-rights-obligations-and-equity-and-ageing-society.</i></p>	-	Accessibility Population ageing	
Remote areas				
EU Rural Review 26: Smart Villages:	This report explores how digital and social innovation can be used in new, creative ways to improve basic services in rural areas. It further looks at national and regional	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
Revitalising Rural Services (2018) 	<p>approaches to creating an enabling environment, as well as how the Rural Development Programmes can catalyse rural service innovation.</p> <p><i>European Network for Rural Development (2018). EU Rural Review 26: Smart Villages: Revitalising Rural Services. Luxembourg: Publications Office of the European Union. Available from: https://enrd.ec.europa.eu/sites/default/files/enrd_publications/publi-enrd-rr-26-2018-en.pdf</i></p>			
Poland Catching-Up Regions Three: Rural Public Transport in Zachodniopomorskie (2019)	<p>The report describes three opportunities for tackling rural transport challenges in a rural, north-western region of Poland:</p> <ul style="list-style-type: none"> • Development of an e-module to identify transport service gaps and provide real-time information; • Deployment of Demand Responsive Transport (DRT); and • Knowledge development of DRT. <p>The report also includes an overview of DRT pilots in the region and lessons from other countries.</p> <p><i>Patella, Dominic Pasquale; Wolanski, Michal Piotr; Nieweglowska, Magda; Pierog, Mateusz Hubert (2019). Poland Catching-Up Regions Three : Rural Public Transport in Zachodniopomorskie. Washington, D.C.: World Bank Group. Available from: http://documents.worldbank.org/curated/en/419001562666842364/Poland-Catching-Up-Regions-Three-Rural-Public-Transport-in-Zachodniopomorskie</i></p>	-	-	Digitalisation
Global Roadmap of Action Toward Sustainable Mobility: Paper 1: Universal Rural Access (2019)	<p>This paper provides an overview of the state of play of transport in rural areas, a 'Rural Access Index,' a catalogue of possible measures for policy-makers to improve rural access to transport and a summary of rural mobility programmes across several case studies.</p> <p><i>Sustainable Mobility for All (2019). Global Roadmap of Action Toward Sustainable Mobility: Universal Rural Access. Washington DC, License: Creative Commons Attribution CC BY 3.0. Available from:</i></p>	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
	https://pubdocs.worldbank.org/en/662991571411009206/Universal-Rural-Access-Global-Roadmap-of-Action.pdf			
Women				
Women in European Transport with a Focus on Research and Innovation (2019) 	<p>This report analyses gender differences in the transport sector across the European Union (EU). It identifies key issues based on a survey of relevant literature and summarises EU policy initiatives and regulations that address gender equality and transport. The study examines the status and evolution of European research in tackling women's issues in transport and analyses women's participation in transport research and innovation activities. It assesses the progress to date and identifies challenges and opportunities concerning women and mobility. It concludes by providing policy recommendations to overcome the main barriers to gender equality in transport.</p> <p><i>Ortega Hortelano, A., Grosso, M., Haq, G., Tsakalidis, A., Gkoumas, K., van Balen, M., and Pekár, F. (2019). Women in European Transport with a Focus on Research and Innovation - An overview of women's issues in transport based on the Transport Research and Innovation Monitoring and Information System (TRIMIS), EUR 29833 EN, Publications Office of the European Union , Luxembourg , 2019, ISBN 978-92-76-09692-4, doi:10.2760/08493, JRC117687. Available from: https://op.europa.eu/en/publication-detail/-/publication/ee562f6e-cec7-11e9-992f-01aa75ed71a1/language-en.</i></p>	-	-	-
She Moves: Women's Issues in Transport (2014) 	<p>This report outlines women's use of transport and differences between women and men in the transport system in terms of road safety, transport security, active travel, etc. The report also describes the gender gap in the transport sector and actions which can be taken to improve female representation in the workforce (promotion, ergonomics, etc.).</p> <p><i>European Commission (2014). She Moves: Women's Issues in Transport. Directorate-General for Mobility and Transport, European Commission. Publications Office of the European Union. Available from: https://op.europa.eu/s/pcw5</i></p>	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
CIVITAS Thematic Policy Note: Gender Equality and Mobility: Mind the gap! (2014) 	<p>The report outlines gendered differences in mobility patterns, assesses developments in gender mobility data, gender-tailored mobility services and urban mobility planning and design for meeting gender needs, and provides recommendations for gender-sensitive mobility services and urban mobility planning.</p> <p><i>Cleaner and Better Transport in Cities (2014). CIVITAS Thematic Policy Note: Gender Equality and Mobility: Mind the gap! CIVITAS Initiative. Available from: https://civitas.eu/content/civitas-policy-note-gender-equality-and-mobility-mind-gap</i></p>	-	-	-
Gender Inclusive Climate Action in Cities (2019)	<p>This report outlines the case in favour of gender inclusive climate action, describes how climate change is gendered, describes how expertise in urban mobility planning is gendered, and outlines the role of women in leading on climate action. The report also provides recommendations for increasing gender expertise and women leadership in climate action.</p> <p><i>Women4Climate Initiative (2019). Gender Inclusive Climate Action in Cities. C40 Cities, Climate Leadership Group. Available from: https://w4c.org/sites/default/files/2019-02/W4C_REPORT_Gender%20Inclusive%20Climate%20Action%20in%20Cities_BD.pdf</i></p>	-	-	Decarbonisation
Making transport work for women and men: challenges and opportunities in the Middle East and North Africa region - lessons from case studies (2012)	<p>The report summarises the findings and recommendations of four case studies on gender and transport in the Middle East and North African region, detailing the challenges and opportunities facing women across each in terms of affordability, reliability, quality, and availability. The report concludes with recommendations on overcoming the identified challenges.</p> <p><i>World Bank; International Association of Public Transport. (2018). Making transport work for women and men: challenges and opportunities in the Middle East and North Africa (MENA) region - lessons from case studies. Washington, DC. World Bank. Available from: https://documents.worldbank.org/en/publication/documents-reports/documentdetail/220381468278678436/making-transport-work-for-women-men-challenges-and-opportunities-in-the-middle-east-and-north-african-region-lessons-from-case-studies</i></p>	-	Accessibility, affordability, reliability	-

Document	Description	Mode/s	Theme/s	Trend/s
	<i>and-men-challenges-and-opportunities-in-the-middle-east-and-north-africa-mena-region-lessons-from-case-studies.</i>			
Gender-Segregated Transport in Ride-Hailing: Navigating the Debate (2020)	<p>The report describes operational models for gender-segregated transport services, analyses the operational challenges and solutions in its deployment and whether it is beneficial for women's use of transport, and provides several case studies on its deployment (including two examples of gender-segregated transport from the United Kingdom).</p> <p><i>Roscoe, Alexa (2020). Gender-Segregated Transport in Ride-Hailing: Navigating the Debate. Washington, D.C.: World Bank Group. Available from: http://documents.worldbank.org/curated/en/635391596090142896/Gender-Segregated-Transport-in-Ride-Hailing-Navigating-the-Debate</i></p>	Shared mobility, taxis	Accessibility	-
Driving Toward Equality: Women, Ride-Hailing, and the Sharing Economy: Main Report (2018)	<p>This study describes the sharing economy and women's use of ridesharing, before assessing the challenges and opportunities facing women using and working in the ride-hailing sector. The report includes 5 country profiles, including 1 European country (United Kingdom).</p> <p><i>World Bank Group (2018). Driving Toward Equality: Women, Ride-Hailing, and the Sharing Economy : Main Report. Washington, D.C. Available from: http://documents.worldbank.org/curated/en/856531520948298389/Main-Report</i></p>	Shared mobility	-	Digitalisation
Global Roadmap of Action Toward Sustainable Mobility: Paper 3: Gender (2019)	<p>This paper assesses both female mobility and employment in the transport system and lists a catalogue of measures for policy-makers to improve female mobility and employment within the transport system.</p> <p><i>Sustainable Mobility for All (2019). Global Roadmap of Action Toward Sustainable Mobility: Gender. Washington DC, License: Creative Commons Attribution CC BY 3.0. Available from: https://pubdocs.worldbank.org/en/229591571411011551/Gender-Global-Roadmap-of-Action.pdf</i></p>	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
The Relationship Between Gender and Transport (2016)	<p>This report analyses the challenges facing women in transport (both in terms of using and working within the transport system) and presents strategies and mechanisms to make the gender dimension in transport projects mainstream. It does so through assessing travel behaviours, the relationship between gender and security in transport, gender in the transport labour market and considers practical evidence and project experience.</p> <p><i>Inter-American Development Bank (2016). The Relationship Between Gender and Transport. Creative Commons IGO 3.0. Available from: https://publications.iadb.org/en/relationship-between-gender-and-transport</i></p>	-	-	-
Counting Women so That Women Count: an International Survey of the State of Transport Data and Gender (2020)	<p>This report reviews the state of play in terms of transport data, and knowledge gaps regarding women's transport behaviours, as reported in a survey of over 140 transport professionals. Recommendations are also put forward for improving gender disaggregated data (building capacity, increasing diversity in the sector). A case study of female employees across a selection of airlines is also presented.</p> <p><i>FIA Foundation (2020). Counting Women so That Women Count: an International Survey of the State of Transport Data and Gender. Creative Commons Attribution - Non-Commercial 2.0. Available from: https://www.fiafoundation.org/media/791546/gender-data-report-pages.pdf</i></p>	-	-	-
Implications of COVID-19 on Women Professionals in the Kenya Public Transport Sector (2020)	<p>The report elaborates on the impact of COVID-19 on women professionals in the Kenyan public transport sector, presents the mitigation strategies and makes recommendations for policy-makers and other stakeholders to ensure sustainable public transport systems during COVID-19.</p> <p><i>Flone Initiative (2020). Implications of COVID-19 on Women Professionals in the Kenya Public Transport Sector. Available from: https://floneinitiative.org/wp-content/uploads/2020/08/FLONE_ImplicationsofCOVID-19_Report.pdf</i></p>	-	-	COVID-19

Document	Description	Mode/s	Theme/s	Trend/s
Young people and children				
Is It Enough for Programs to Train Youth if They Can't Get to the Job? The Challenge of Transport Costs in Addressing Youth Employment (2018)	<p>This document highlights the challenges faced by young people when using the transport system, and the effect of these costs on youth employment. Potential solutions to overcome these challenges are also discussed.</p> <p><i>Romero, Jose Manuel; Urquhart, Rob (2018). Is It Enough for Programs to Train Youth if They Can't Get to the Job? The Challenge of Transport Costs in Addressing Youth Employment (English). Solutions for Youth Employment Washington, D.C.: World Bank Group. Available from: http://documents.worldbank.org/curated/en/529441583127125523/Is-It-Enough-for-Programs-to-Train-Youth-if-They-Can-t-Get-to-the-Job-The-Challenge-of-Transport-Costs-in-Addressing-Youth-Employment.</i></p>	-	Affordability	-
People on low income				
Access to essential services for people on low incomes in Europe: An analysis of policies in 35 countries (2020) 	<p>This report examines access to six essential services (water, sanitation, energy, transport, financial services and digital communications) by people on low income in the 27 EU countries and in 8 non-EU countries. It shows that more needs to be done at national and EU level to guarantee accessible, available and affordable good-quality essential services to all in line with the European Pillar of Social Rights and makes several recommendations to achieve this. The report also highlights the importance of ensuring that support measures are backed up by comprehensive policy frameworks as well as effective monitoring, evaluation and governance mechanisms.</p> <p><i>Baptista, I. and Marlier, E. (2020). Access to essential services for people on low incomes in Europe. An analysis of policies in 35 countries. European Social Policy Network (ESPN). Brussels: European Commission. Available from: https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8340&furtherPubs=yes.</i></p>	-	-	-
ESPN Thematic Report on Access to Essential	Building off the report above, these thematic reports review – for each Member State – definitions for low-income people used in the context of access to services,	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
Services for Low-Income People – Country Reports (2020) 	<p>measures for facilitating access for low-income people to (<i>inter alia</i>) public transport and digital public services and provide an overview of national/subnational policy frameworks and reforms to support access to services for people on a low income.</p> <p><i>Multiple authors (2020). ESPN Thematic Report on Access to Essential Services for Low-Income People – Country Reports. European Social Policy Network (ESPN). Brussels: European Commission. Available from: https://ec.europa.eu/social/main.jsp?advSearchKey=ESPN_ess_serv2020&mode=advancedSubmit&catId=22&policyArea=0&policyAreaSub=0&country=0&year=0.</i></p>			
Transport, the poor and moving towards low-carbon societies (2013)	<p>This bulletin briefly summarises issues facing passengers on low income when using the transport system in Latin America and the Caribbean in terms of urban mobility, bus rapid transit, and social sustainability.</p> <p><i>United Nations Economic Commission for Latin America and the Caribbean (2013). Transport, the poor and moving towards low-carbon societies. FACILITATION OF TRANSPORT AND TRADE IN LATIN AMERICA AND THE CARIBBEAN Bulletin, Issue No. 318 - Number 2 / 2013. Available from: https://repositorio.cepal.org/bitstream/handle/11362/36368/FAL-318-WEB-ENG_en.pdf.</i></p>	-	Accessibility, affordability	Decarbonisation
Other users				
Assessment of Barriers and Opportunities Using Gender and Roma Lens in North Macedonia: Case of Transport (2020)	<p>This report details the challenges facing marginalised Roma communities in using the transport system in North Macedonia and includes analysis across multiple transport modes (walking, cycling, car, bus and coach) and themes (including accessibility, affordability, reliability and safety). Recommendations on overcoming these challenges are also briefly listed.</p> <p><i>Kurshitashvili,Nato; Hadzi-Vasileva, Kristina; Imeri,Bekim; Xiong,Jing; Vukanovic,Svetlana (2020). Assessment of Barriers and Opportunities Using Gender and Roma Lens in North Macedonia: Case of Transport. Washington, D.C.: World Bank Group. Available from:</i></p>	-	Accessibility, affordability, reliability	-

Document	Description	Mode/s	Theme/s	Trend/s
	http://documents.worldbank.org/curated/en/565711591156184199/Assessment-of-Barriers-and-Opportunities-Using-Gender-and-Roma-Lens-in-North-Macedonia-Case-of-Transport			

Steer analysis. Note:  denotes full or partial funding from the EU.

Guidance documents

Table C.6: Guidance documents by user group

Document	Description	Mode/s	Theme/s	Trend/s
Cross-user				
Topic Guide: Planning for More Resilient and Robust Urban Mobility (2021) 	The Topic Guide introduces the concept of resilience in urban mobility and presents the importance of integrating it into the Sustainable Urban Mobility Planning (SUMP) process. It presents a range of case studies from different cities such as Dublin, Madrid, Rotterdam and Helsinki, examining how pioneering CIVITAS projects such as ReVeal, Handshake, SPROUT and Park4SUMP are working in different fields towards increasing the resilience of cities. It also explores the challenges faced, goals achieved and lessons learnt along the way. <i>POLIS, and Rupprecht Consult - Forschung & Beratung GmbH (2021). Topic Guide: Planning for more resilient and robust urban mobility. Available from: https://civitas.eu/document/topic-guide-planning-more-resilient-and-robust-urban-mobility</i>	-	-	COVID-19, decarbonisation
Improving Transport Accessibility for All: Guide to Good Practice (2006)	This good practice guide provides guidance on improving transport accessibility through the following themes: the road and pedestrian environment, infrastructure, vehicles, new transport services, and private cars. <i>European Conference of Ministers of Transport (2006). Improving Transport Accessibility for All: Guide to Good Practice. OECD Publications Service, Paris.</i>	-	Accessibility	-

Document	Description	Mode/s	Theme/s	Trend/s
	<i>Available from: https://www.itf-oecd.org/content/improving-transport-accessibility-all-guide-good-practice.</i>			
Handbook on Sustainable Urban Mobility and Spatial Planning: Promoting Active Mobility (2020)	<p>This publication provides analysis of case studies and good practices examples from cities across the Euro-Asian region covering a wide array of thematic areas, including: the future of sustainable urban mobility; spatial planning in function of sustainable urban mobility and accessibility; public transport planning as a cornerstone of sustainable urban mobility; active mobility and how it promotes health and the environment; and the potential of Intelligent Transport Systems in an urban context. The publication puts forward a methodology for sustainable urban transport planning and introduces a concise set of key messages and recommendations</p> <p><i>UN Economic Commission for Europe (2020). Handbook on Sustainable Urban Mobility and Spatial Planning. ECE/TRANS/298. United Nations, Geneva. Available from: https://unece.org/transport/publications/handbook-sustainable-urban-mobility-and-spatial-planning.</i></p>	-	Accessibility	Decarbonisation
Poor IT-literacy or access				
None identified.				
PRMs (e.g. older people)				
Cognitive Impairment, Mental Health and Transport (2009)	<p>This paper presents a summary of the problems facing cognitively impaired passengers when using the transport system, an overview of what can be done to improve access (universal design, education and other practical steps) and shortlists recommendations for action.</p> <p><i>ITF (2009). Cognitive Impairment, Mental Health and Transport: Design with Everyone in Mind. OECD Publishing, Paris. Available from: https://doi.org/10.1787/9789282102183-en.</i></p>	-	Accessibility	-

Document	Description	Mode/s	Theme/s	Trend/s
Guidelines for Mainstreaming Ageing (2021)	<p>Although lacking a specific focus on transport, these guidelines outline five stages that support countries in establishing a Strategic Framework for Mainstreaming Ageing (getting started, analysis, vision and directions, identification of activities, and monitoring and evaluation). The guidelines were developed by the UNECE Standing Working Group on Ageing to support UNECE Member States in the implementation of the Madrid International Plan of Action on Ageing (MIPAA).</p> <p><i>UN Economic Commission for Europe (2021). Guidelines for Mainstreaming Ageing. ECE/WG.1/37. United Nations, Geneva. Available from: https://unece.org/population/publications/guidelines-mainstreaming-ageing.</i></p>	-	Accessibility	Population ageing
Age-friendly environments in Europe: a handbook of domains for policy action (2017)	<p>This handbook details good practice for policy-makers under several domains (including transport and mobility). Within this, the document provides an overview of <i>inter alia</i>: active mobility, public transport, and demand responsive transport, and provides a list of examples of policy interventions and initiatives grouped by action area and objective. It also provides resources, toolkits, and a list of further reading.</p> <p><i>World Health Organisation (2017). Age-friendly environments in Europe: a handbook of domains for policy action. WHO Regional Office for Europe. Available from: https://www.who.int/publications/i/item/9789289052887.</i></p>	-	Accessibility	-
Remote areas				
Smart Villages: Rural Mobility (2019) 	<p>This thematic briefing is focusing on rural mobility, aiming to highlight factors and conditions to be taken into account when designing the future policies to ensure that Smart Villages strategies enable rural communities to design and test mobility solutions.</p> <p><i>European Network for Rural Development (2019). Smart Villages: Rural Mobility. Brussels. Available from: https://enrd.ec.europa.eu/publications/smart-villages-rural-mobility_en</i></p>	-	Accessibility	-

Document	Description	Mode/s	Theme/s	Trend/s
Supporting Rural Youth: Overview of EU Policy Instruments and Funds, (2018) 	<p>This document outlines the main challenges facing young people living in remote areas and the main policy tools used to address their needs.</p> <p><i>European Network for Rural Development (2018). Supporting Rural Youth: Overview of EU Policy Instruments and Funds. Brussels. Available from: https://enrd.ec.europa.eu/publications/supporting-rural-youth-overview-eu-policy-instruments-and-funds_en</i></p>	-	Accessibility, Affordability, Reliability	-
Women				
Gender and Transport (2011)	<p>This paper presents an overview of the women's use of public transport (travel patterns, modal choice, under representation of women in transport-related occupations, etc.), provides three brief examples of good practice and provides recommendations for action (gendered data collection, improving women's participating in transport decision-making, taking account of the distinctive characteristics of women's mobility and employment of women in the transport sector).</p> <p><i>ITF (2011). Gender and Transport. OECD Publishing, Paris. Available from: https://www.itf-oecd.org/gender-and-transport.</i></p>	-	Accessibility	-
Handbook for Gender-Inclusive Urban Planning and Design (2020)	<p>The handbook presents the economic and social case for gender inclusion in urban planning, describes the challenges faced by women in the urban environment, provides an overview of best practice (including process, planning and project guidelines) and presents case studies in several countries (including Spain, Austria and Sweden) of effective urban planning.</p> <p><i>Terraza, Horacio Cristian; Orlando, Maria Beatriz; Lakovits, Carina; Janik, Vanessa Lopes; Kalashyan, Anna (2020). Handbook for Gender-Inclusive Urban Planning and Design (Vol. 2). Washington, D.C.: World Bank Group. Available from: http://documents.worldbank.org/curated/en/363451579616767708/Handbook-for-Gender-Inclusive-Urban-Planning-and-Design</i></p>	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
Gender Tool Kit: Transport—Maximizing the Benefits of Improved Mobility for All (2013)	<p>The toolkit provides an overview of the gender dimension to transport (in terms of travel patterns, modal choice, safety, etc.), outlines the main gender issues that should be considered, entry points, and potential gender-inclusive design features across several key transport subsectors (urban transport, rural roads, railways, etc.), and provides guidance on design and monitoring frameworks for transport projects.</p> <p><i>Asian Development Bank (2013). Gender tool kit: Transport—Maximizing the benefits of improved mobility for all. Mandaluyong City, Philippines. Available from: https://www.adb.org/sites/default/files/institutional-document/33901/files/gender-tool-kit-transport.pdf</i></p>	-	-	-
Young people and children				
None identified.				
People on low income				
None identified.				
Other users				
None identified.				

Steer analysis. Note:  denotes full or partial funding from the EU.

Policy documents

Table C.7: Policy documents by user group

Document	Description	Mode/s	Theme/s	Trend/s
Cross-user				
A Sustainable Future for Transport: Towards an Integrated, Technology-Led and User-Friendly System (2009) 	<p>This report outlines trends and challenges facing the European transport system (including ageing and decarbonisation), the European Commission's policy objectives and policies for sustainable transport.</p> <p><i>European Communities (2009). A Sustainable Future for Transport: Towards an Integrated, Technology-Led and User-Friendly System. Luxembourg: Publications Office of the European Union. Available from: https://ec.europa.eu/transport/sites/default/files/media/publications/doc/2009_future_of_transport_en.pdf</i></p>	-	-	-
Impact Assessment of the European Commission's Urban Mobility Package (2013) 	<p>Impact assessment to the European Commission's Urban Mobility Package which includes analysis on urban mobility challenges faced by users, stakeholders' viewpoints and impacts of the package on social inclusion.</p> <p><i>European Commission (2013). Commission Staff Working Document Impact Assessment: Together Towards Competitive and Resource-Efficiency Urban Mobility. European Commission. SWD/2013/0528 Final. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52013SC0528</i></p>	-	-	-
European Strategy for Low-Emission Mobility (2016) 	<p>The low-emission mobility strategy frames the initiatives that the Commission is planning in the coming years, and it maps the areas in which it is exploring options. It also shows how initiatives in related fields are linked and how synergies can be achieved.</p> <p><i>European Commission (2016). Communication from the Commission: A European Strategy for Low-Emission Mobility. European Commission. SWD/2016/244 Final. Available from:</i></p>	-	-	Decarbonisation

Document	Description	Mode/s	Theme/s	Trend/s
	https://ec.europa.eu/transport/sites/default/files/themes/strategies/news/doc/2016-07-20-decarbonisation/com%282016%29501_en.pdf			
Sustainable and Smart Mobility Strategy – putting European transport on track for the future (2020) 	<p>This Communication delivers the vision of a sustainable and smart mobility strategy from the Commission and highlights a series of flagship tasks and actions that are needed towards building a smart and sustainable European transport system, with the Green Deal as a benchmark.</p> <p><i>European Commission (2020). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions: Sustainable and Smart Mobility Strategy – putting European transport on track for the future. Available from:</i> https://eur-lex.europa.eu/resource.html?uri=cellar:5e601657-3b06-11eb-b27b-01aa75ed71a1.0001.02/DOC_1&format=PDF</p>			Decarbonisation Digitalisation Ageing population COVID-19
Commission Staff Working Document - Sustainable and Smart Mobility Strategy – putting European transport on track for the future (2020) 	<p>This document, used together with the Communication above, further details the sustainable and smart mobility strategy for the European Transport Area with supporting discussion on the challenges to sustainable, smart and resilient mobility.</p> <p><i>European Commission (2020). Commission Staff Working Document - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions: Sustainable and Smart Mobility Strategy – putting European transport on track for the future. Available from:</i> https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0331&from=EN</p>			Decarbonisation Digitalisation Ageing population COVID-19
The New EU Urban Mobility Framework (2021) 	This Communication presents the new EU framework for urban mobility to support Member States, regions, cities and other stakeholders in the transition to safe, accessible, inclusive, smart, resilient and zero-emission urban mobility through a clear focus on active, collective and shared mobility underpinned by low- and zero-emission solutions.			Decarbonisation Digitalisation Ageing population COVID-19

Document	Description	Mode/s	Theme/s	Trend/s
	<i>European Commission (2021). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions: The New EU Urban Mobility Framework. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0811</i>			
Poor IT-literacy or access				
None identified.				
PRMs (e.g. older people)				
Communication from the European Commission: European Disability Strategy 2010-2020: A Renewed Commitment to a Barrier-Free Europe (2010) 	<i>This strategy document sets out policy objectives for a barrier-free Europe with eight priority areas (including, <i>inter alia</i>, accessibility and participation). This document builds on the UNCRPD and takes into account the experience of the Disability Action Plan (2004-2010).</i> <i>European Commission (2010). Communication from the European Commission: European Disability Strategy 2010-2020: A Renewed Commitment to a Barrier-Free Europe. Brussels: European Commission. Available from: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM%3A2010%3A0636%3AFIN%3Aen%3APDF.</i>	-	-	-
Remote areas				
None identified.				
Women				
Communication from the European Commission: Striving for a Union of Equality: Gender Equality Strategy 2020-2025 (2020)	<i>This strategic engagement sets out objectives in five priority areas and identifies more than 30 concrete actions. It reaffirms commitment to gender mainstreaming: a gender equality perspective will be integrated into all EU policies as well as into EU funding programmes.</i> <i>European Commission (2020). Communication from the European Commission: Striving for a Union of Equality: Gender Equality Strategy 2020-2025. Brussels:</i>	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
	<i>European Commission. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0152.</i>			
Young people and children				
None identified.				
People on low income				
None identified.				
Other users				
None identified.				

Steer analysis. Note:  denotes full or partial funding from the EU.

Other resources

Table C.8: Other resources by user group

Document	Description	Mode/s	Theme/s	Trend/s
Country Mobility Dashboard (2020)	An international benchmarking report at the country-level showing mobility performance across several key performance indicators including: universal access, efficiency, safety and green mobility. <i>Sustainable Mobility for All (2020). Mobility Performance at a Glance: Country Dashboards 2020. Washington DC, License: Creative Commons Attribution CC BY 3.0. Available from: https://www.sum4all.org/data/files/mobilityataglancereport-2020-spread-web.pdf</i>	-	-	-
Policy Decision-Making Tool for Sustainable Mobility 2.0 (2020)	A catalogue of 194 policy measures which shows the impact of each policy on universal rural access, urban access, gender, efficiency, safety and green mobility to achieve sustainable mobility.	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
	Sustainable Mobility for All (2020). <i>Policy Decision-Making Tool for Sustainable Mobility 2.0</i> . Washington DC. Available from: https://www.sum4all.org/gratool/explorer-action			
Urban Data Platform Plus (UDPplus)	<p>This platform provides access to information on the status and trends of cities and regions and to EU supported urban and territorial development strategies.</p> <p><i>European Commission (ongoing). Urban Data Platform Plus. Joint Research Centre and the Directorate for Regional and Urban Policy. Available from: https://urban.jrc.ec.europa.eu/#/en.</i></p>	-	-	-
Consumer Markets Scoreboard (2008-2018) 	<p>An overview of EU citizens' assessment of the performance of 40 consumer markets across the EU27 based on a large-scale survey on consumers' perceptions and experiences on the functioning of key markets. Limited exposure to transport and mobility topics (airline services was the only relevant market identified).</p> <p><i>European Commission (2018). Consumer scoreboards: Tracking market functioning and the performance of relevant institutions from a consumer perspective. Available from: https://ec.europa.eu/info/policies/consumers/consumer-protection/evidence-based-consumer-policy/consumer-scoreboards_en</i></p>	-	-	-
Special Eurobarometer 406: Attitudes of Europeans towards urban mobility (2013) 	<p>This survey was designed to examine Europeans': transport habits, experience of transport problems in EU cities, opinions of measures to improve travel within cities, expectations for traffic improvements within cities and their opinions of who is responsible for these improvements.</p> <p><i>European Commission (2013). Special Eurobarometer 406: Attitudes of Europeans towards urban mobility. Directorate-General for Communication. Available from: https://data.europa.eu/data/datasets/s1110_79_4_406?locale=en.</i></p>	-	-	-
Special Eurobarometer 471: Fairness, Inequality	The purpose of the survey is to better understand citizens' views on fairness and inequality and factors influencing their perceptions. It also provides information on Europeans' inter-generational social mobility.	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
and Inter-generational Mobility (2018) 	<i>European Commission (2018). Special Eurobarometer 471: Fairness, Inequality and Inter-generational Mobility. Directorate-General for Communication. Available from: https://data.europa.eu/data/datasets/s2166_88_4_471_eng?locale=en.</i>			
Special Eurobarometer 479: Future of Europe (2018) 	<p>This survey considers the EU in today's world: the EU's main assets and challenges, the EU's values and the EU in the world economy. Then it tackles some aspects of political and social life in the EU and issues related to the future of Europe. The present survey also includes questions on climate change.</p> <p><i>European Commission (2018). Special Eurobarometer 479: Future of Europe. Directorate-General for Communication. Available from: https://data.europa.eu/data/datasets/s2217_90_2_479_eng?locale=en.</i></p>	-	-	-
Special Eurobarometer 485: Passenger Rights (2019) 	<p>The purpose of the survey is to understand EU citizens' views on passenger rights.</p> <p><i>European Commission (2019). Special Eurobarometer 485: Passenger Rights. Directorate-General for Communication. Available from: https://data.europa.eu/data/datasets/s2200_91_1_485_eng?locale=fr</i></p>	-	-	-
Special Eurobarometer 490: Climate Change (2019) 	<p>The purpose of the survey is to understand EU citizens' views on a variety of questions on current climate and energy policies and their wishes for future European action.</p> <p><i>European Commission (2019). Special Eurobarometer 490: Climate Change. Directorate-General for Communication. Available from: https://data.europa.eu/data/datasets/s2212_91_3_490_eng?locale=en</i></p>	-	-	Decarbonisation
Special Eurobarometer 495: Mobility and Transport (2019) 	<p>The purpose of the survey is to explore a range of factors relating to mobility, including daily and longer-distance travel amongst Europeans.</p> <p><i>European Commission (2019). Special Eurobarometer 495: Mobility and Transport. Directorate-General for Communication. Available from: https://data.europa.eu/data/datasets/s2226_92_1_495_eng?locale=en</i></p>	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
Special Eurobarometer 496: Expectations and Concerns from a Connected and Automated Mobility (2020) 	<p>This survey assesses Europeans' awareness and attitudes towards connected and automated driving.</p> <p>European Commission (2020). Special Eurobarometer 496: Expectations and Concerns from a Connected and Automated Mobility. Available from: https://data.europa.eu/data/datasets/s2231_92_1_496_eng?locale=en.</p>	-	-	-
Special Eurobarometer 503: Attitudes Towards the Impact of Digitalisation on Daily Lives (2019) 	<p>This survey assesses Europeans' views on the impact of digitalisation on citizens' daily lives (including device maintenance, data privacy and security, digital identification and others).</p> <p>European Commission (2019). Special Eurobarometer 503: Attitudes Towards the Impact of Digitalisation on Daily Lives. Directorate-General for Communication. Available from: https://data.europa.eu/data/datasets/s2228_92_4_503_eng?locale=en.</p>	-	-	-
Urban Europe: Statistics on Cities, Towns and Suburbs (2016) 	<p>The report presents data across 12 key topics relevant to European cities, towns and suburbs: the urban paradox, patterns of urban and city developments, the dominance of capital cities, smart cities, green cities, tourism and culture in cities, living in cities, working in cities, housing in cities, foreign-born persons in cities, poverty and social exclusion in cities, as well as satisfaction and quality of life in cities. For each theme, statistical information is presented in the form of maps, tables and figures, accompanied by a description of the policy context and a set of main findings.</p> <p>Eurostat (2016). Urban Europe: Statistics on Cities, Towns and Suburbs. Luxembourg: Publications Office of the European Union. Available from: https://ec.europa.eu/eurostat/documents/3217494/7596823/KS-01-16-691-EN-N.pdf/0abf140c-ccc7-4a7f-b236-682effcd10f?t=1472645220000.</p>	-	-	-
Quality of Life in European Cities Survey (2020) 	<p>This survey records citizens' perceptions of their own quality of life by Member State and includes examination of view on public transport, safety and inclusion, mobility and the health of cities.</p>	-	-	-

Document	Description	Mode/s	Theme/s	Trend/s
	<i>European Commission (2020). Quality of Life in European Cities Survey. Available from: https://ec.europa.eu/regional_policy/en/information/maps/quality_of_life/</i>			
EU Survey on issues related to transport and mobility (2015) 	This survey collects data on car use, on use of transport modes for long distance mobility as well as on some other policy relevant issues (e.g. the attitude towards internalisation of road external costs by means of road charging). The survey also examines individual characteristics of transport users and examines the most common trip types (frequencies, modes, etc.). <i>Fiorello D, Zani L. (2015). EU Survey on issues related to transport and mobility. Luxembourg: Publications Office of the European Union. JRC96151. Available from: https://publications.jrc.ec.europa.eu/repository/handle/JRC96151</i>	-	-	-
Rail Market Monitoring Survey (RMMS) (2007-2021) 	Detailed survey at the national level data albeit with more of a focus on railway operations (revenues, passenger numbers, expenditure, etc.) rather than user-specific data. Data on the quality of rail services is relevant for understanding railway service reliability – albeit at a relatively high level. <i>European Commission (2021). Rail Market Monitoring Survey (RMMS). Brussels. Available from: https://ec.europa.eu/transport/modes/rail/market/market_monitoring_en</i>	Rail	Reliability	-

Steer analysis. Note:  denotes full or partial funding from the EU.

European programmes, institutes, initiatives, and services

- C.26 This section lists key broader European programmes, institutes, initiatives and services which publish material relevant to this study and were central to the creation of the above inventory.

Table C.9: European programmes and initiatives

Organisation	Description	User group/s	Theme/s	Trend/s
Transport Research and Innovation Monitoring and Information System (TRIMIS) 	<p>TRIMIS analyses technology trends, research and innovation capacities and developments in the European transport sector, providing open-access information on the effectiveness of the roadmaps developed by the Strategic Transport Research and Innovation Agenda (STRIA) – providing a database of research projects and programmes.</p> <p><i>Available from: https://trimis.ec.europa.eu/</i></p>	-	-	-
Community Research and Development Information Service (CORDIS) 	<p>CORDIS is the European Commission's primary source of results from the projects funded by the EU's framework programmes for research and innovation (FP1 to Horizon 2020). A range of information is provided for each project, including: factsheets, participants, reports, deliverables and links to open-access publications.</p> <p><i>Available from: https://cordis.europa.eu/</i></p>	-	-	-
Eltis 	<p>Eltis facilitates the exchange of information, knowledge and experience in the field of sustainable urban mobility as Europe's primary observatory on the field.</p> <p><i>Available from: https://www.eltis.org/</i></p>	-	-	-
POLIS Network 	<p>POLIS is a network of European cities and regions working together to develop innovative technologies and policies for local transport.</p> <p><i>Available from: https://www.polisnetwork.eu/</i></p>	-	-	-
Eurocities 	<p>Eurocities is a network of major European cities working together to ensure a good quality of life for all.</p> <p><i>Available from: https://eurocities.eu/</i></p>	-	-	-
CIVITAS 	<p>CIVITAS is a network of cities dedicated to advancing sustainable urban mobility.</p>	-	-	-

Organisation	Description	User group/s	Theme/s	Trend/s
	<i>Available from: https://civitas.eu/</i>			
TEN-T 	The TEN-T programme consists of hundreds of projects – defined as studies or works – whose ultimate purpose is to ensure the cohesion, interconnection and interoperability of the trans-European transport network, as well as access to it. <i>Available from: https://ec.europa.eu/inea/en/ten-t/ten-t-projects</i>	-	-	-
KEEP.EU 	Keep.eu provides aggregated data regarding projects and beneficiaries of European Union cross-border, transnational and interregional cooperation programmes among the member States, and between member States and neighbouring or pre-accession countries.	-	-	-
European Institute for Gender Equality (EIGE) 	EIGE collects, analyses, processes and disseminates data and information on gender equality issues. <i>Available from: https://eige.europa.eu/</i>	Women and girls	-	-
European Leader Association for Rural Development (ELARD) 	ELARD is a network of Local Action Groups committed to involving all stakeholders in rural development at a local level. <i>Available from: http://elard.eu/</i>	People living in remote areas	-	-
European Conference of Transport Research Institutes (ECTRI) 	ECTRI is a European research association for sustainable and multimodal mobility, providing knowledge and advice to move towards a green, safe, efficient, and inclusive transport for people and goods. <i>Available from: https://www.ectri.org/</i>	-	-	-
European Platform on Mobility Management (EPOMM)	EPOMM is a network of governments (transport ministries) in European countries that are engaged in Mobility Management which aims to promote and develop Mobility Management and support active information exchange. <i>Available from: https://epomm.eu/</i>	-	-	-

Steer analysis. Note:  denotes full or partial funding from the EU.

D Contextual country dashboards

Introduction

D.1 The dashboards provided in this appendix provide some reference information for each Member State on a number of indicators, which are intended to help contextualise some of the challenges and opportunities described in this report. The indicators shown here cover:

- Area (i.e. size)
- Population
- Income
- Household spend on transport
- Vehicles per 1,000 persons
- Demographics relevant to the subject of this study
 - Degree of urbanisation
 - Age dependency ratio (ratio of those aged 15-64 to those older and younger than this range)
 - Women in labour force
 - Population at risk of poverty
 - Unemployment rate
 - Immigrant population (self-reported)
 - Population with internet access
 - Employed persons working from home
 - Limited in usual activities due to health problem
 - Individuals who have no or low overall digital skills
- Urban-rural typology
- Environment and sustainable transport
- Modal split for passenger land transport

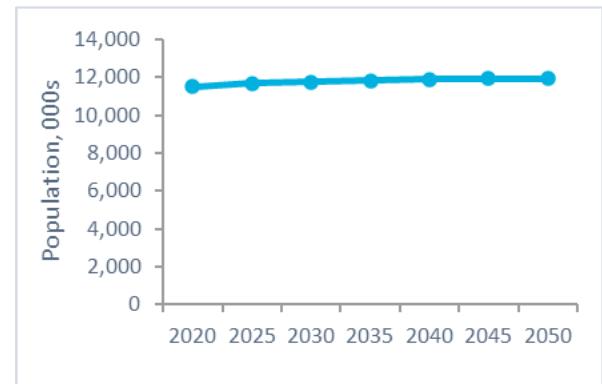
Belgium

Overview

Indicators	Value
Area size, sq. km.	30,700
Population (2020)	11,510,000
Population density, persons per sq. km. (2020)	377.3
Median income, PPP (2020)	€25,600
Household spend on transport, % of total (2019)	11%
Vehicles per 1,000 persons (2018)	511

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

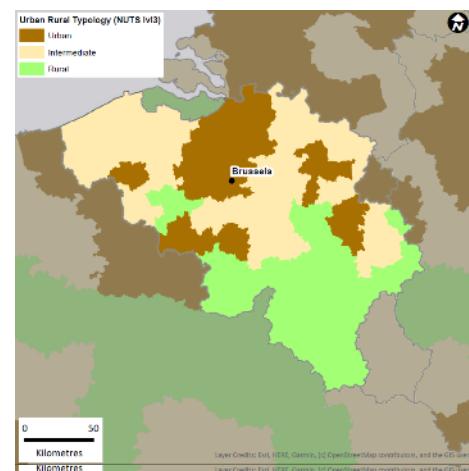


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	30%
Age dependency ratio (2019)	56%
Women in labour force, % (2019)	71%
Population at risk of poverty, % (2019)	20%
Unemployment rate, % (2019)	3%
Immigrant population, % (2019)	1.3%
Population with internet access, % (2019)	90%
Employed persons working from home, % (2019)	18%
Limited in usual activities due to health problem, % (2019)	18%
Individuals who have no or low overall digital skills, % (2019)	29%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

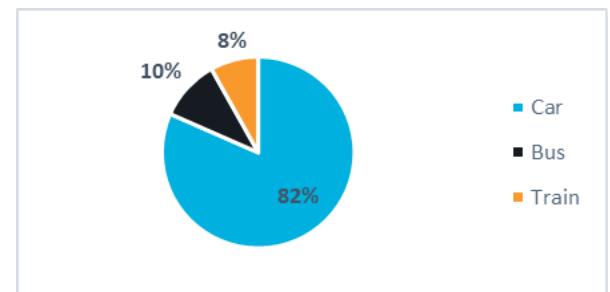


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	8.9
Transport CO2 emissions, kg per capita (2018)	2.28
Electric Vehicle share, % (2020)	1.6%
Electric Vehicle charge points per 100km of road network (2020)	4.2

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



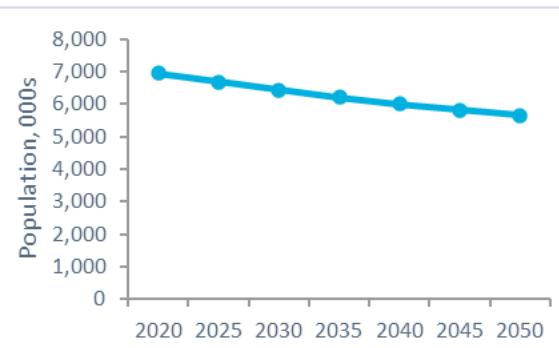
Bulgaria

Overview

Indicators	Value
Area size, sq. km.	111,000
Population (2020)	6,950,000
Population density, persons per sq. km. (2020)	63.4
Median income, PPP (2020)	€4,600
Household spend on transport, % of total (2019)	14%
Vehicles per 1,000 persons (2018)	396

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

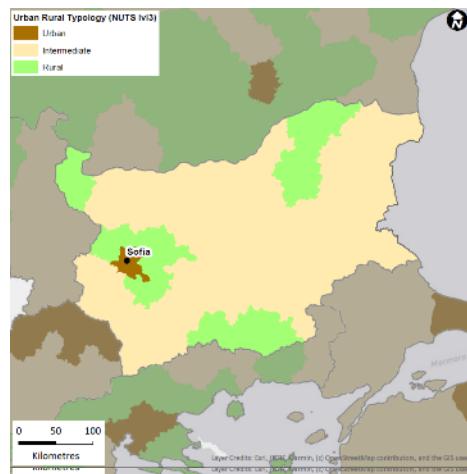


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	45%
Age dependency ratio (2019)	55%
Women in labour force, % (2019)	73%
Population at risk of poverty, % (2019)	33%
Unemployment rate, % (2019)	3%
Immigrant population, % (2019)	0.5%
Population with internet access, % (2019)	75%
Employed persons working from home, % (2019)	1%
Limited in usual activities due to health problem, % (2019)	13%
Individuals who have no or low overall digital skills, % (2019)	38%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

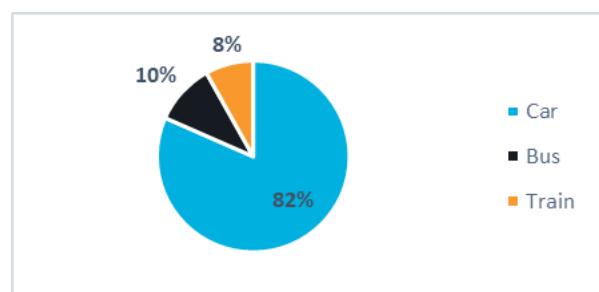


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	27.5
Transport CO2 emissions, kg per capita (2018)	1.40
Electric Vehicle share, % (2020)	2.3%
Electric Vehicle charge points per 100km of road network (2020)	0.7

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



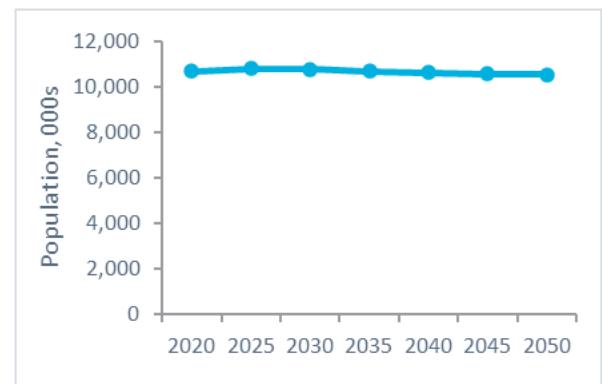
Czechia

Overview

Indicators	Value
Area size, sq. km.	78,900
Population (2020)	10,690,000
Population density, persons per sq. km. (2020)	138.2
Median income, PPP (2020)	€10,600
Household spend on transport, % of total (2019)	10%
Vehicles per 1,000 persons (2018)	540

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

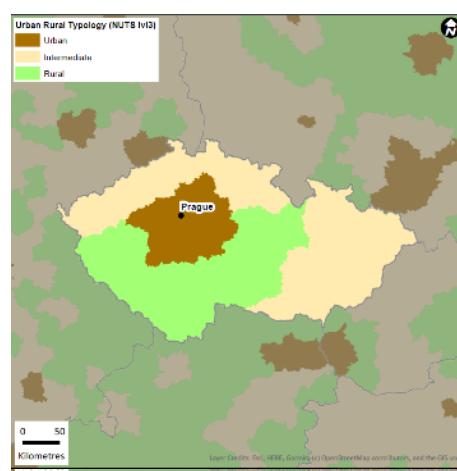


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	30%
Age dependency ratio (2019)	55%
Women in labour force, % (2019)	75%
Population at risk of poverty, % (2019)	13%
Unemployment rate, % (2019)	1%
Immigrant population, % (2019)	1.0%
Population with internet access, % (2019)	87%
Employed persons working from home, % (2019)	5%
Limited in usual activities due to health problem, % (2019)	21%
Individuals who have no or low overall digital skills, % (2019)	25%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

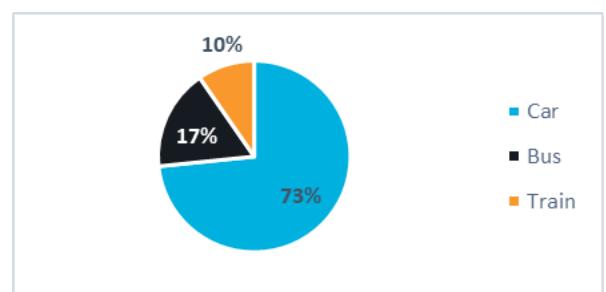


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	12.3
Transport CO2 emissions, kg per capita (2018)	1.79
Electric Vehicle share, % (2020)	0.3%
Electric Vehicle charge points per 100km of road network (2020)	0.6

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



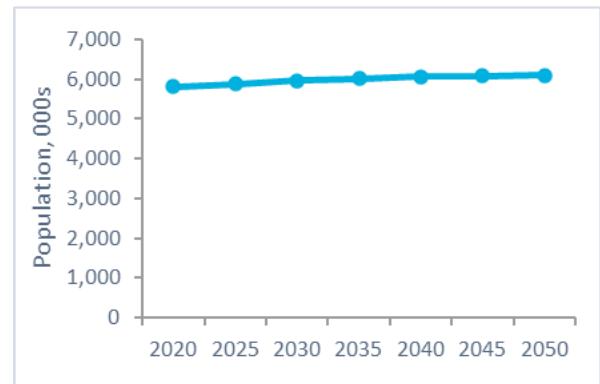
Denmark

Overview

Indicators	Value
Area size, sq. km.	43,200
Population (2020)	5,810,000
Population density, persons per sq. km. (2020)	138.5
Median income, PPP (2020)	€30,700
Household spend on transport, % of total (2019)	12%
Vehicles per 1,000 persons (2018)	447

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050



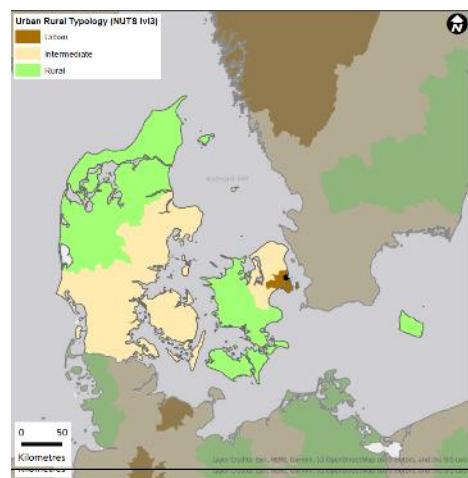
Source: Eurostat, [ACEA](#)

Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	38%
Age dependency ratio (2019)	55%
Women in labour force, % (2019)	77%
Population at risk of poverty, % (2019)	16%
Unemployment rate, % (2019)	4%
Immigrant population, % (2019)	1.1%
Population with internet access, % (2019)	95%
Employed persons working from home, % (2019)	21%
Limited in usual activities due to health problem, % (2019)	25%
Individuals who have no or low overall digital skills, % (2019)	27%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions



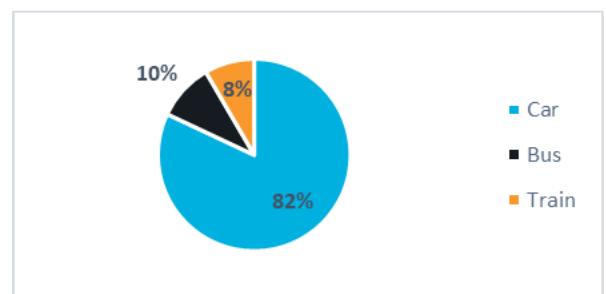
Source: Eurostat

Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	9.4
Transport CO2 emissions, kg per capita (2018)	2.31
Electric Vehicle share, % (2020)	2.3%
Electric Vehicle charge points per 100km of road network (2020)	3.8

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



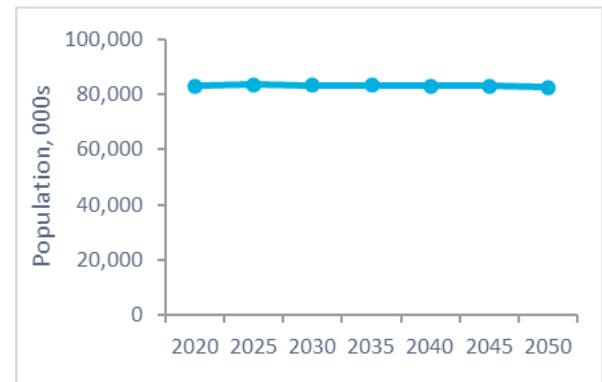
Germany

Overview

Indicators	Value
Area size, sq. km.	358,300
Population (2020)	83,140,000
Population density, persons per sq. km. (2020)	235.2
Median income, PPP (2020)	€23,500
Household spend on transport, % of total (2019)	14%
Vehicles per 1,000 persons (2018)	567

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

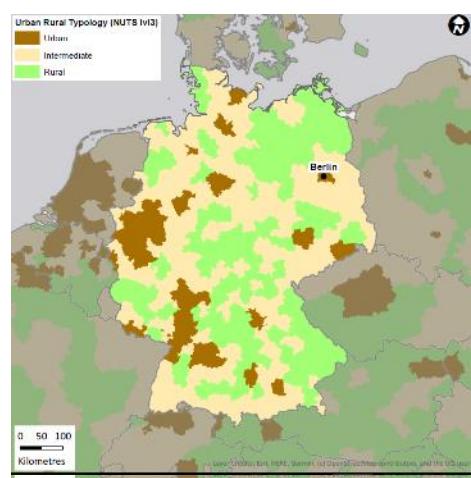


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	36%
Age dependency ratio (2019)	56%
Women in labour force, % (2019)	76%
Population at risk of poverty, % (2019)	17%
Unemployment rate, % (2019)	2%
Immigrant population, % (2019)	1.1%
Population with internet access, % (2019)	95%
Employed persons working from home, % (2019)	7%
Limited in usual activities due to health problem, % (2019)	15%
Individuals who have no or low overall digital skills, % (2019)	22%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

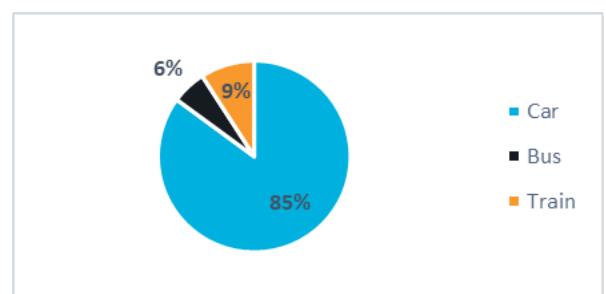


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	10.1
Transport CO2 emissions, kg per capita (2018)	1.97
Electric Vehicle share, % (2020)	1.4%
Electric Vehicle charge points per 100km of road network (2020)	17.6

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



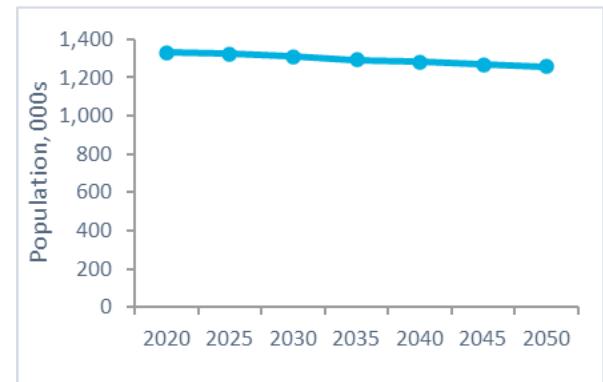
Estonia

Overview

Indicators	Value
Area size, sq. km.	45,300
Population (2020)	1,330,000
Population density, persons per sq. km. (2020)	30.5
Median income, PPP (2020)	€12,200
Household spend on transport, % of total (2019)	12%
Vehicles per 1,000 persons (2018)	563

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050



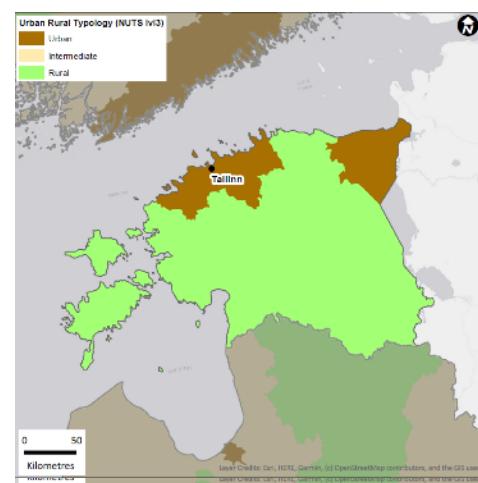
Source: Eurostat, [ACEA](#)

Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	61%
Age dependency ratio (2019)	56%
Women in labour force, % (2019)	69%
Population at risk of poverty, % (2019)	24%
Unemployment rate, % (2019)	3%
Immigrant population, % (2019)	1.4%
Population with internet access, % (2019)	90%
Employed persons working from home, % (2019)	14%
Limited in usual activities due to health problem, % (2019)	24%
Individuals who have no or low overall digital skills, % (2019)	29%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions



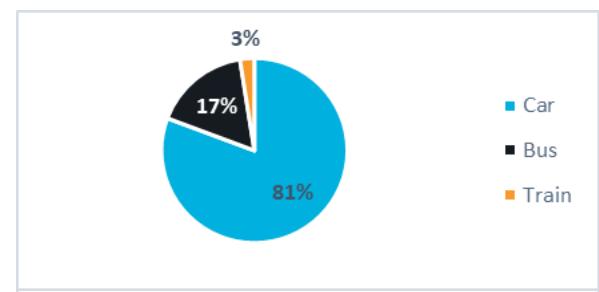
Source: Eurostat

Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	5.9
Transport CO2 emissions, kg per capita (2018)	1.80
Electric Vehicle share, % (2020)	1.4%
Electric Vehicle charge points per 100km of road network (2020)	0.7

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



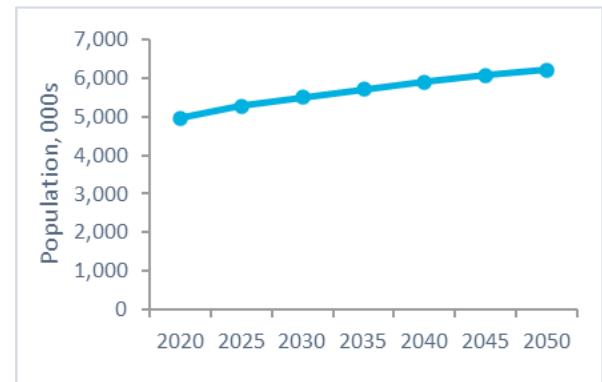
Ireland

Overview

Indicators	Value
Area size, sq. km.	69,900
Population (2020)	4,970,000
Population density, persons per sq. km. (2020)	71.9
Median income, PPP (2020)	€26,300
Household spend on transport, % of total (2019)	13%
Vehicles per 1,000 persons (2018)	445

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

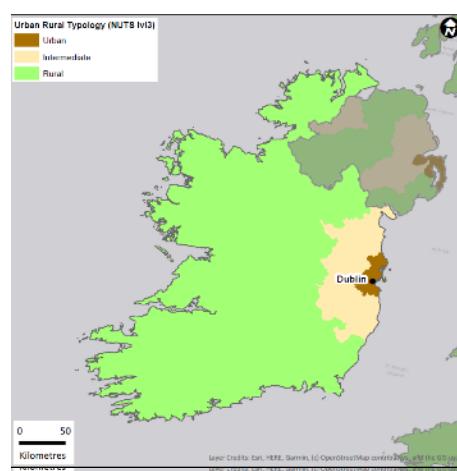


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	36%
Age dependency ratio (2019)	56%
Women in labour force, % (2019)	51%
Population at risk of poverty, % (2019)	21%
Unemployment rate, % (2019)	3%
Immigrant population, % (2019)	1.7%
Population with internet access, % (2019)	91%
Employed persons working from home, % (2019)	13%
Limited in usual activities due to health problem, % (2019)	11%
Individuals who have no or low overall digital skills, % (2019)	37%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

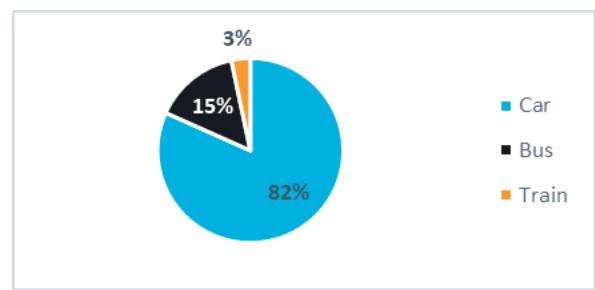


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	8.6
Transport CO2 emissions, kg per capita (2018)	2.45
Electric Vehicle share, % (2020)	2.8%
Electric Vehicle charge points per 100km of road network (2020)	1.1

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



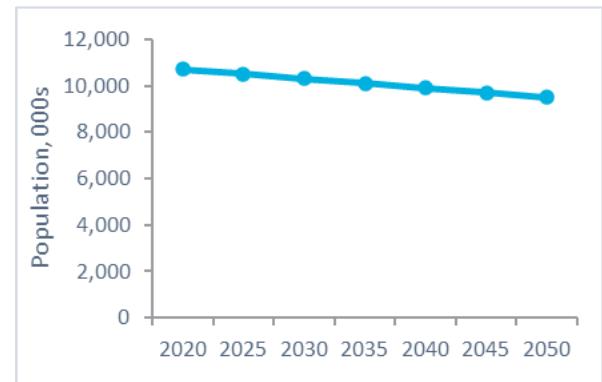
Greece

Overview

Indicators	Value
Area size, sq. km.	132,000
Population (2020)	10,700,000
Population density, persons per sq. km. (2020)	82.4
Median income, PPP (2020)	€8,800
Household spend on transport, % of total (2019)	13%
Vehicles per 1,000 persons (2018)	-

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

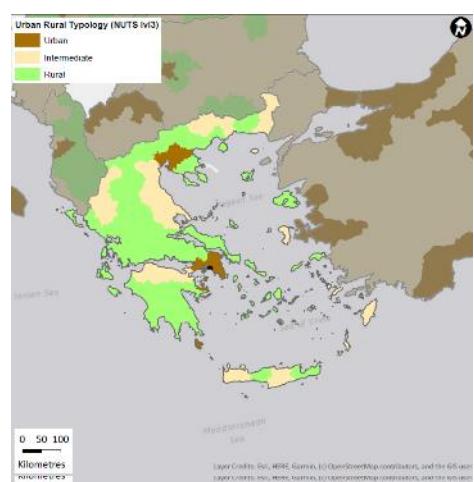


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	37%
Age dependency ratio (2019)	56%
Women in labour force, % (2019)	62%
Population at risk of poverty, % (2019)	30%
Unemployment rate, % (2019)	10%
Immigrant population, % (2019)	1.2%
Population with internet access, % (2019)	79%
Employed persons working from home, % (2019)	3%
Limited in usual activities due to health problem, % (2019)	14%
Individuals who have no or low overall digital skills, % (2019)	25%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

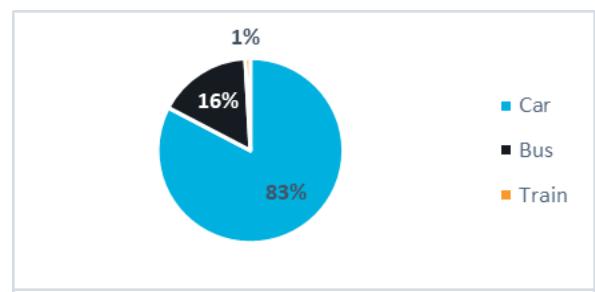


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	18.4
Transport CO2 emissions, kg per capita (2018)	1.63
Electric Vehicle share, % (2020)	0.5%
Electric Vehicle charge points per 100km of road network (2020)	0.1

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



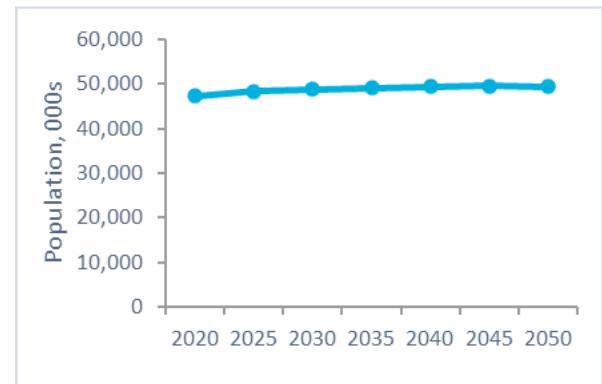
Spain

Overview

Indicators	Value
Area size, sq. km.	506,000
Population (2020)	47,320,000
Population density, persons per sq. km. (2020)	93.8
Median income, PPP (2020)	€16,000
Household spend on transport, % of total (2019)	12%
Vehicles per 1,000 persons (2018)	513

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

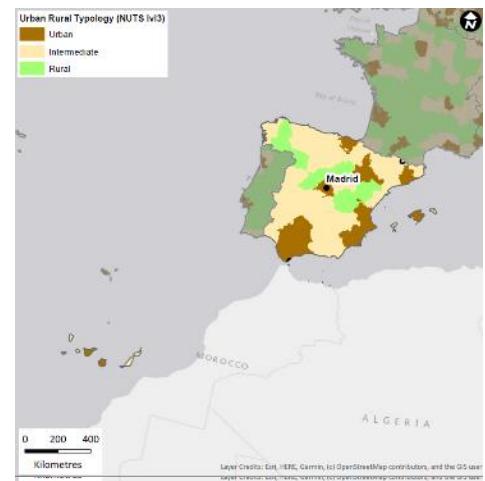


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	50%
Age dependency ratio (2019)	52%
Women in labour force, % (2019)	68%
Population at risk of poverty, % (2019)	25%
Unemployment rate, % (2019)	9%
Immigrant population, % (2019)	1.6%
Population with internet access, % (2019)	91%
Employed persons working from home, % (2019)	4%
Limited in usual activities due to health problem, % (2019)	15%
Individuals who no or low overall digital skills, % (2019)	33%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

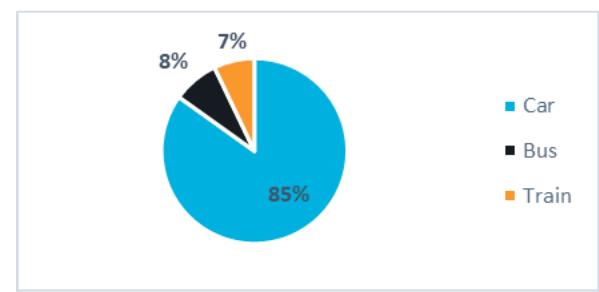


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	10.4
Transport CO2 emissions, kg per capita (2018)	1.91
Electric Vehicle share, % (2020)	1.6%
Electric Vehicle charge points per 100km of road network (2020)	0.9

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



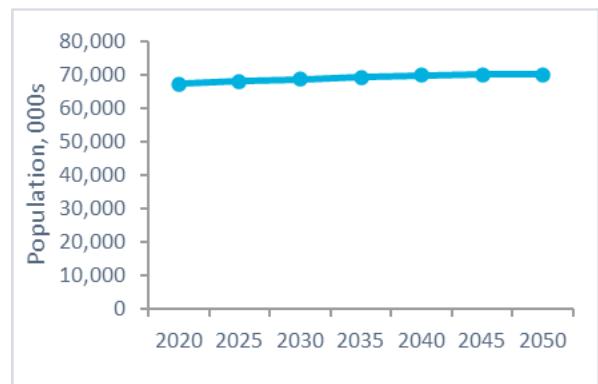
France

Overview

Indicators	Value
Area size, sq. km.	548,900
Population (2020)	67,200,000
Population density, persons per sq. km. (2020)	106.1
Median income, PPP (2020)	€21,800
Household spend on transport, % of total (2019)	14%
Vehicles per 1,000 persons (2018)	478

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

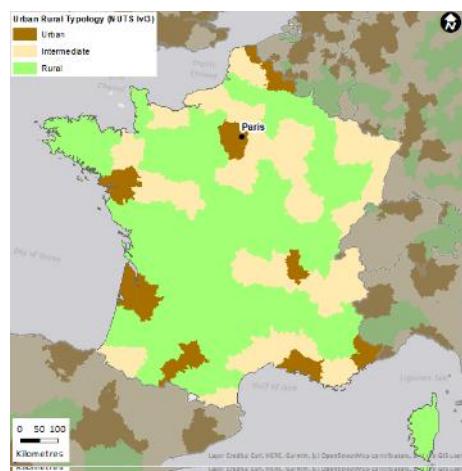


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	36%
Age dependency ratio (2019)	55%
Women in labour force, % (2019)	69%
Population at risk of poverty, % (2019)	18%
Unemployment rate, % (2019)	5%
Immigrant population, % (2019)	0.6%
Population with internet access, % (2019)	90%
Employed persons working from home, % (2019)	16%
Limited in usual activities due to health problem, % (2019)	16%
Individuals who have no or low overall digital skills, % (2019)	33%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

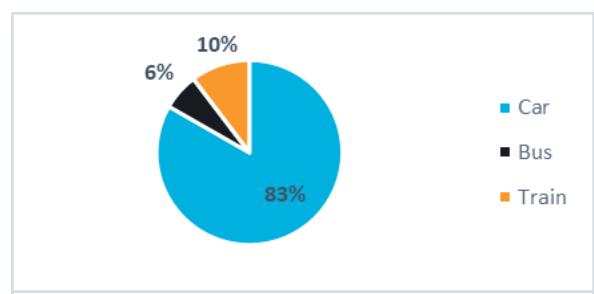


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	11.1
Transport CO2 emissions, kg per capita (2018)	1.97
Electric Vehicle share, % (2020)	0.6%
Electric Vehicle charge points per 100km of road network (2020)	2.8

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



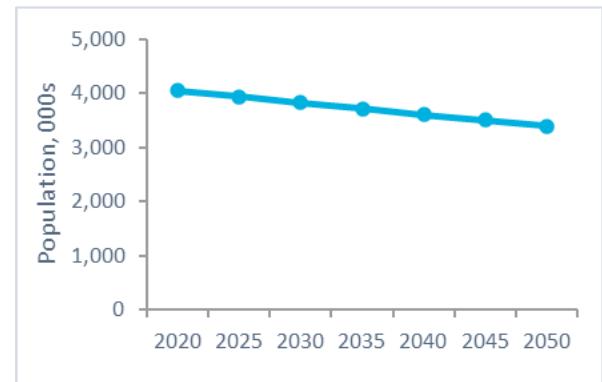
Croatia

Overview

Indicators	Value
Area size, sq. km.	56,400
Population (2020)	4,060,000
Population density, persons per sq. km. (2020)	72.8
Median income, PPP (2020)	€7,900
Household spend on transport, % of total (2019)	9%
Vehicles per 1,000 persons (2018)	409

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

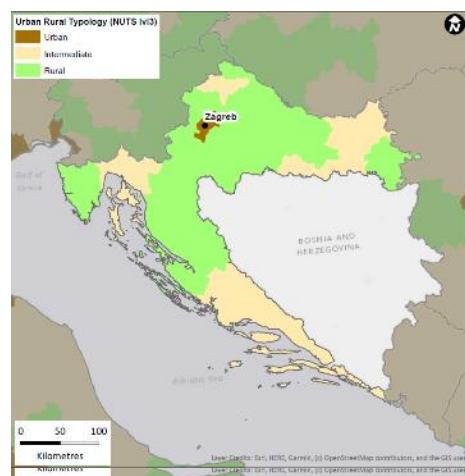


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	30%
Age dependency ratio (2019)	56%
Women in labour force, % (2019)	54%
Population at risk of poverty, % (2019)	23%
Unemployment rate, % (2019)	4%
Immigrant population, % (2019)	0.9%
Population with internet access, % (2019)	81%
Employed persons working from home, % (2019)	5%
Limited in usual activities due to health problem, % (2019)	24%
Individuals who have no or low overall digital skills, % (2019)	26%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

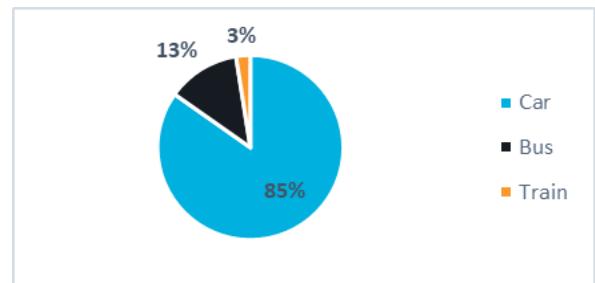


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	21.2
Transport CO2 emissions, kg per capita (2018)	1.58
Electric Vehicle share, % (2020)	0.2%
Electric Vehicle charge points per 100km of road network (2020)	2.3

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



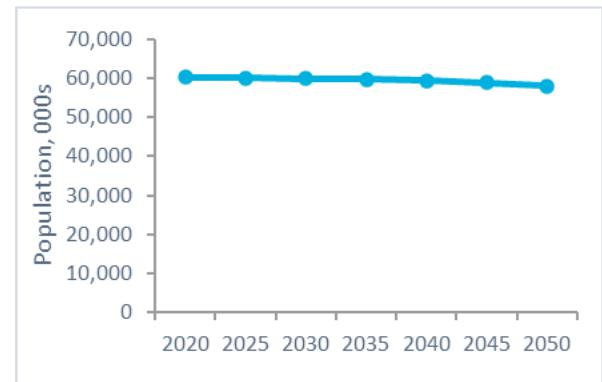
Italy

Overview

Indicators	Value
Area size, sq. km.	300,600
Population (2020)	60,290,000
Population density, persons per sq. km. (2020)	201.5
Median income, PPP (2019)*	€17,200
Household spend on transport, % of total (2019)	13%
Vehicles per 1,000 persons (2018)	646

Source: Eurostat, [ACEA](#). *Data not available for 2020

Population projections, 2020-2050

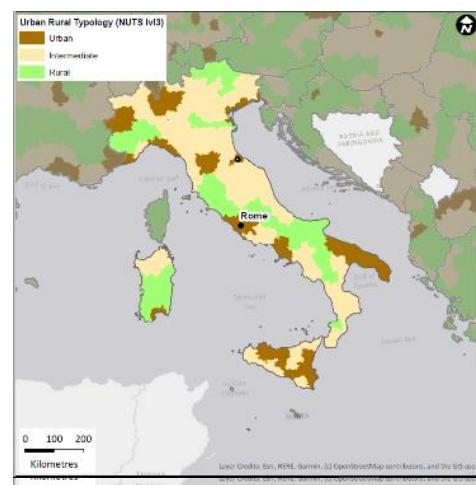


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	35%
Age dependency ratio (2019)	54%
Women in labour force, % (2019)	70%
Population at risk of poverty, % (2019)	26%
Unemployment rate, % (2019)	6%
Immigrant population, % (2019)	0.6%
Population with internet access, % (2019)	85%
Employed persons working from home, % (2019)	1%
Limited in usual activities due to health problem, % (2019)	17%
Individuals who have no or low overall digital skills, % (2019)	35%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

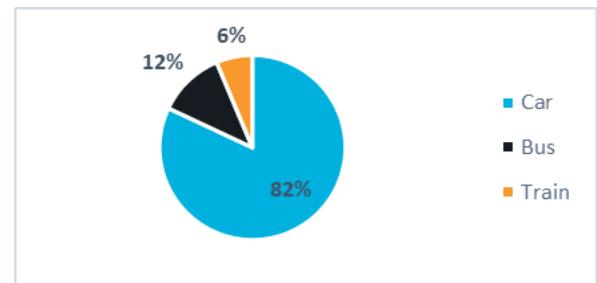


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	18.5
Transport CO2 emissions, kg per capita (2018)	1.73
Electric Vehicle share, % (2020)	0.9%
Electric Vehicle charge points per 100km of road network (2020)	3.7

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



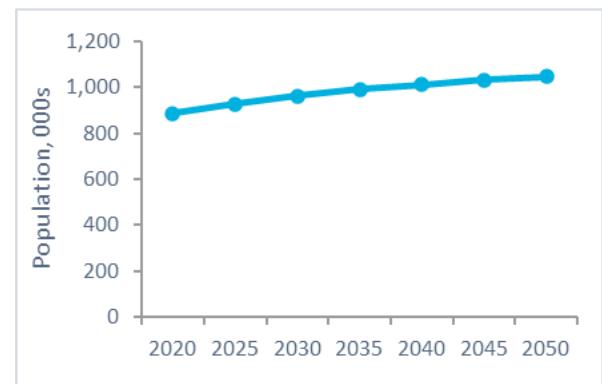
Cyprus

Overview

Indicators	Value
Area size, sq. km.	5,700
Population (2020)	890,000
Population density, persons per sq. km. (2020)	95.7
Median income, PPP (2020)	€16,700
Household spend on transport, % of total (2019)	15%
Vehicles per 1,000 persons (2018)	629

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

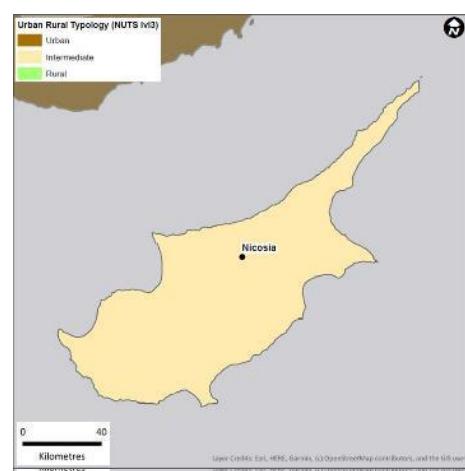


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	52%
Age dependency ratio (2019)	54%
Women in labour force, % (2019)	76%
Population at risk of poverty, % (2019)	22%
Unemployment rate, % (2019)	5%
Immigrant population, % (2019)	2.9%
Population with internet access, % (2019)	90%
Employed persons working from home, % (2019)	1%
Limited in usual activities due to health problem, % (2019)	17%
Individuals who have no or low overall digital skills, % (2019)	42%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

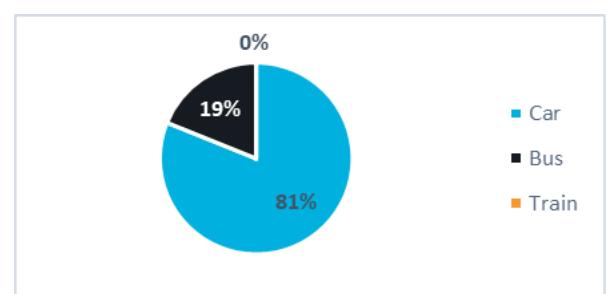


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	15.8
Transport CO2 emissions, kg per capita (2018)	2.36
Electric Vehicle share, % (2020)	-
Electric Vehicle charge points per 100km of road network (2020)	0.4

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



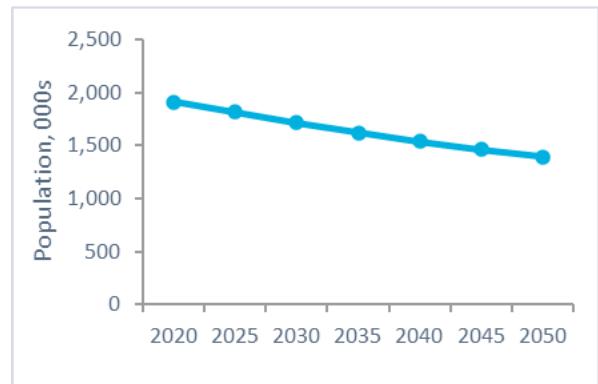
Latvia

Overview

Indicators	Value
Area size, sq. km.	64,600
Population (2020)	1,910,000
Population density, persons per sq. km. (2020)	30.2
Median income, PPP (2020)	€8,800
Household spend on transport, % of total (2019)	12%
Vehicles per 1,000 persons (2018)	369

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

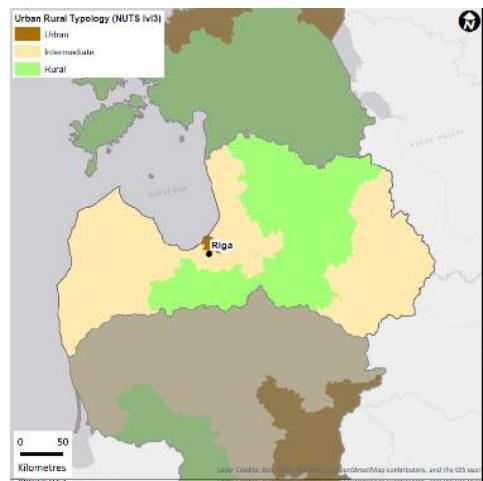


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	44%
Age dependency ratio (2019)	57%
Women in labour force, % (2019)	77%
Population at risk of poverty, % (2019)	27%
Unemployment rate, % (2019)	4%
Immigrant population, % (2019)	0.6%
Population with internet access, % (2019)	85%
Employed persons working from home, % (2019)	2%
Limited in usual activities due to health problem, % (2019)	31%
Individuals who have no or low overall digital skills, % (2019)	43%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

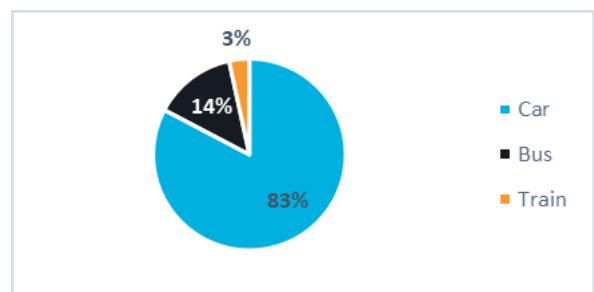


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	11.3
Transport CO2 emissions, kg per capita (2018)	1.78
Electric Vehicle share, % (2020)	0.1%
Electric Vehicle charge points per 100km of road network (2020)	0.4

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



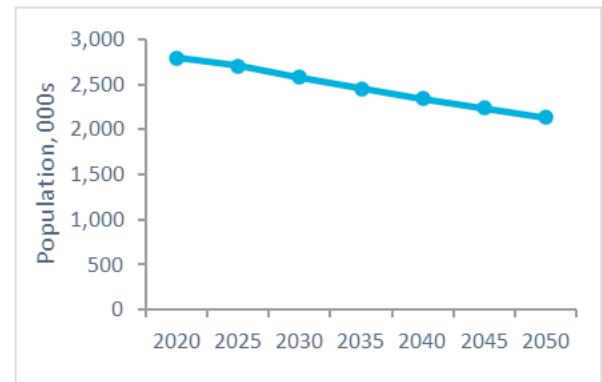
Lithuania

Overview

Indicators	Value
Area size, sq. km.	64,900
Population (2020)	2,790,000
Population density, persons per sq. km. (2020)	44.6
Median income, PPP (2020)	€8,800
Household spend on transport, % of total (2019)	16%
Vehicles per 1,000 persons (2018)	512

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

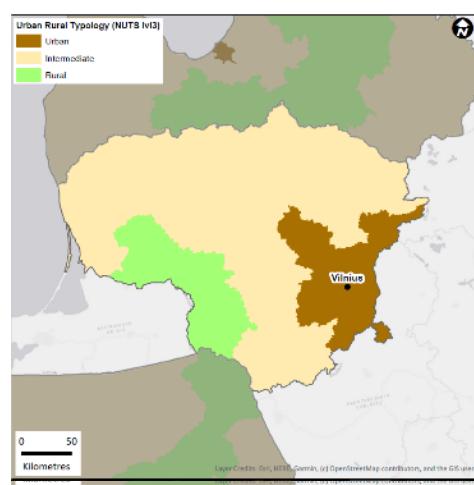


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	43%
Age dependency ratio (2019)	54%
Women in labour force, % (2019)	68%
Population at risk of poverty, % (2019)	26%
Unemployment rate, % (2019)	4%
Immigrant population, % (2019)	1.4%
Population with internet access, % (2019)	82%
Employed persons working from home, % (2019)	2%
Limited in usual activities due to health problem, % (2019)	25%
Individuals who have no or low overall digital skills, % (2019)	26%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

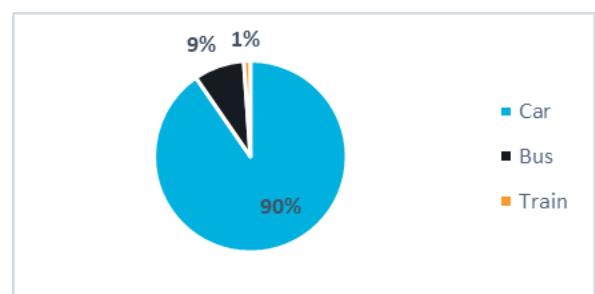


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	11.7
Transport CO2 emissions, kg per capita (2018)	2.19
Electric Vehicle share, % (2020)	1.6%
Electric Vehicle charge points per 100km of road network (2020)	0.3

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



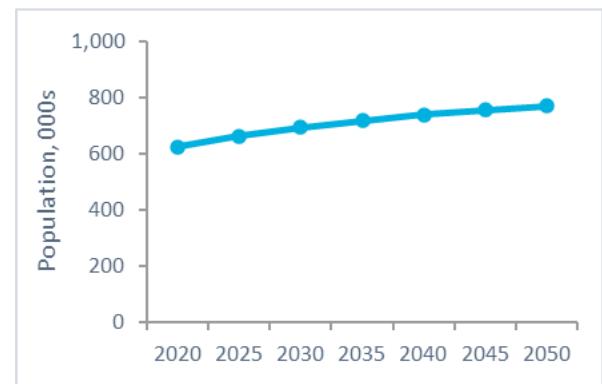
Luxembourg

Overview

Indicators	Value
Area size, sq. km.	2,600
Population (2020)	630,000
Population density, persons per sq. km. (2020)	239.8
Median income, PPP (2020)	€37,800
Household spend on transport, % of total (2019)	16%
Vehicles per 1,000 persons (2018)	676

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

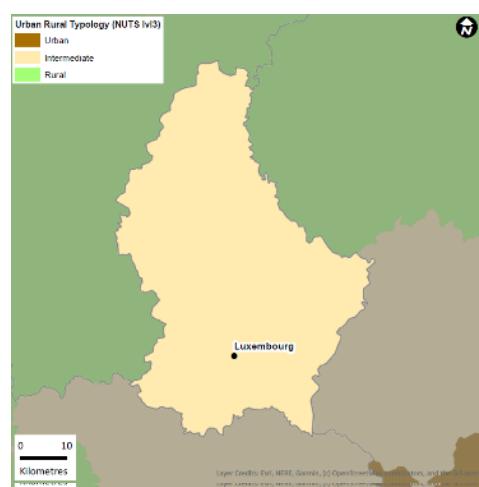


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	20%
Age dependency ratio (2019)	53%
Women in labour force, % (2019)	68%
Population at risk of poverty, % (2019)	21%
Unemployment rate, % (2019)	4%
Immigrant population, % (2019)	4.2%
Population with internet access, % (2019)	95%
Employed persons working from home, % (2019)	22%
Limited in usual activities due to health problem, % (2019)	18%
Individuals who have no or low overall digital skills, % (2019)	32%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

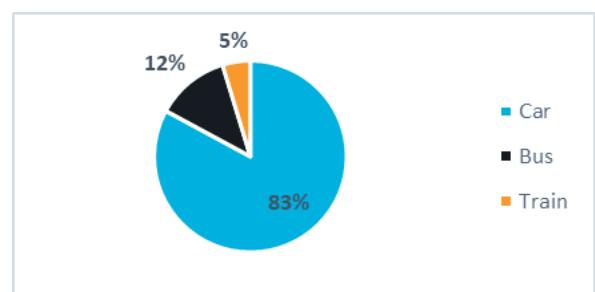


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	9
Transport CO2 emissions, kg per capita (2018)	9.52
Electric Vehicle share, % (2020)	1.8%
Electric Vehicle charge points per 100km of road network (2020)	31.6

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



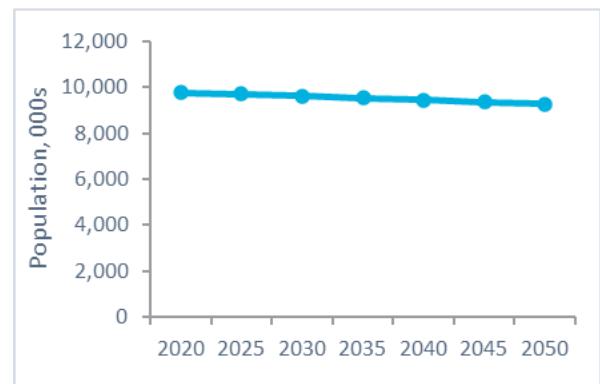
Hungary

Overview

Indicators	Value
Area size, sq. km.	93,000
Population (2020)	9,770,000
Population density, persons per sq. km. (2020)	107.1
Median income, PPP (2020)	€5,500
Household spend on transport, % of total (2019)	13%
Vehicles per 1,000 persons (2018)	373

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

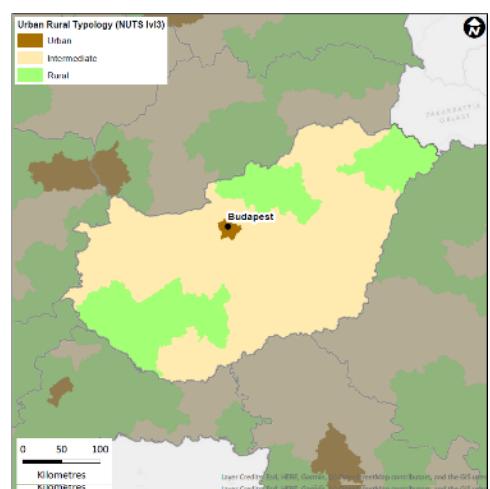


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	33%
Age dependency ratio (2019)	57%
Women in labour force, % (2019)	66%
Population at risk of poverty, % (2019)	19%
Unemployment rate, % (2019)	2%
Immigrant population, % (2019)	0.9%
Population with internet access, % (2019)	86%
Employed persons working from home, % (2019)	3%
Limited in usual activities due to health problem, % (2019)	18%
Individuals who have no or low digital skills, % (2019)	31%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

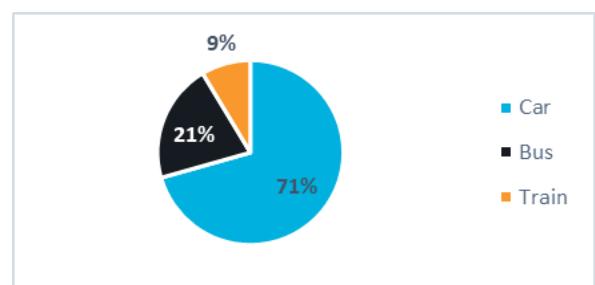


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	14.3
Transport CO2 emissions, kg per capita (2018)	1.42
Electric Vehicle share, % (2020)	1.4%
Electric Vehicle charge points per 100km of road network (2020)	0.3

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



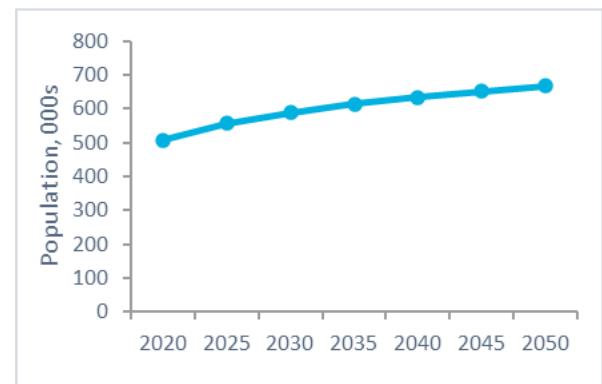
Malta

Overview

Indicators	Value
Area size, sq. km.	300
Population (2020)	510,000
Population density, persons per sq. km. (2020)	1595.1
Median income, PPP (2020)	€16,200
Household spend on transport, % of total (2019)	12%
Vehicles per 1,000 persons (2018)	608

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

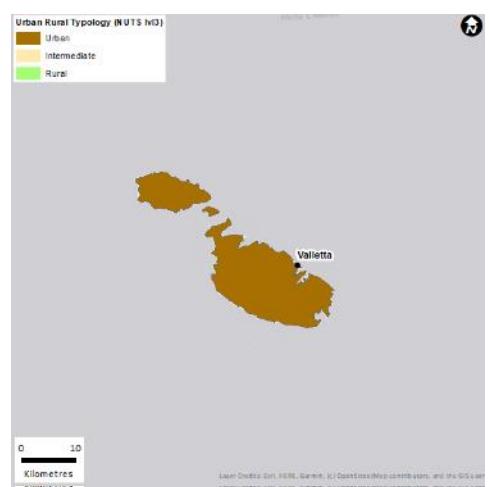


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	90%
Age dependency ratio (2019)	52%
Women in labour force, % (2019)	76%
Population at risk of poverty, % (2019)	20%
Unemployment rate, % (2019)	2%
Immigrant population, % (2019)	5.6%
Population with internet access, % (2019)	86%
Employed persons working from home, % (2019)	5%
Limited in usual activities due to health problem, % (2019)	9%
Individuals who have no or low overall digital skills, % (2019)	30%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

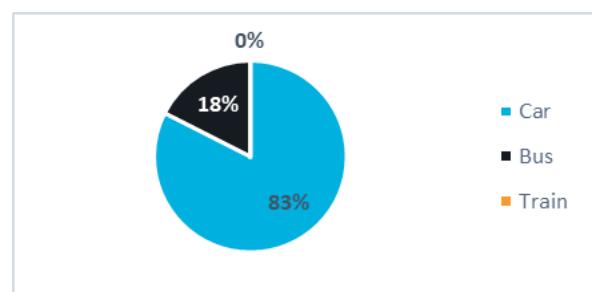


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	11.8
Transport CO2 emissions, kg per capita (2018)	1.37
Electric Vehicle share, % (2020)	-
Electric Vehicle charge points per 100km of road network (2020)	3.6

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



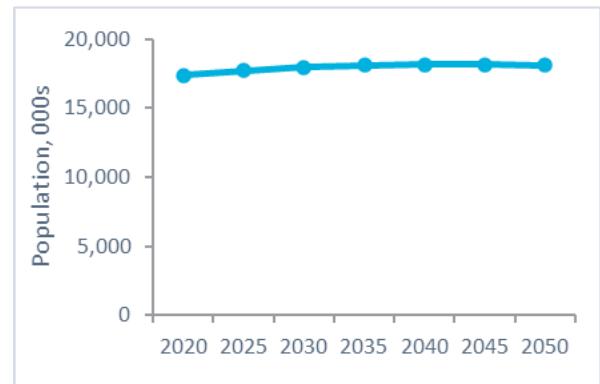
Netherlands

Overview

Indicators	Value
Area size, sq. km.	37,400
Population (2020)	17,400,000
Population density, persons per sq. km. (2020)	507.3
Median income, PPP (2020)	€25,800
Household spend on transport, % of total (2019)	12%
Vehicles per 1,000 persons (2018)	494

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050



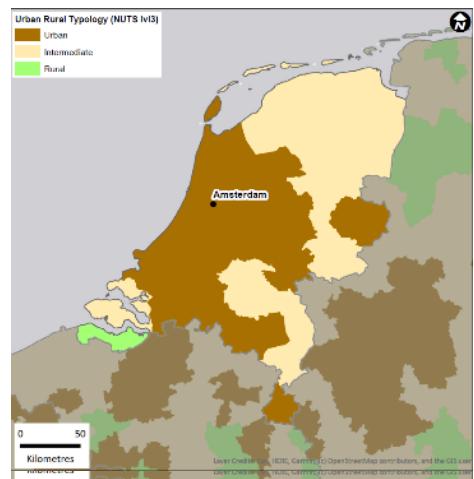
Source: Eurostat, [ACEA](#)

Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	56%
Age dependency ratio (2019)	61%
Women in labour force, % (2019)	72%
Population at risk of poverty, % (2019)	17%
Unemployment rate, % (2019)	2%
Immigrant population, % (2019)	1.2%
Population with internet access, % (2019)	98%
Employed persons working from home, % (2019)	23%
Limited in usual activities due to health problem, % (2019)	24%
Individuals who have no or low overall digital skills, % (2019)	16%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions



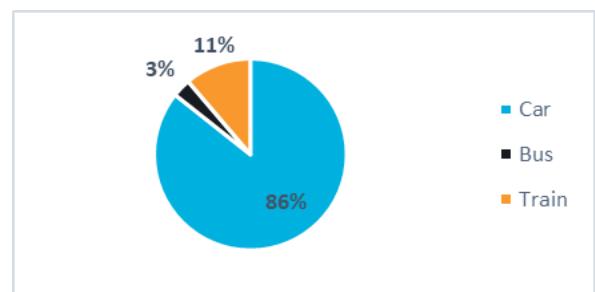
Source: Eurostat

Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	9.7
Transport CO2 emissions, kg per capita (2018)	1.81
Electric Vehicle share, % (2020)	4.6%
Electric Vehicle charge points per 100km of road network (2020)	36.4

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



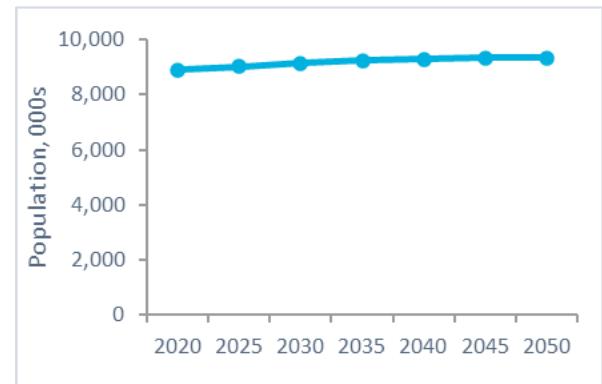
Austria

Overview

Indicators	Value
Area size, sq. km.	83,900
Population (2020)	8,900,000
Population density, persons per sq. km. (2020)	107.6
Median income, PPP (2020)	€26,500
Household spend on transport, % of total (2019)	12%
Vehicles per 1,000 persons (2018)	562

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050



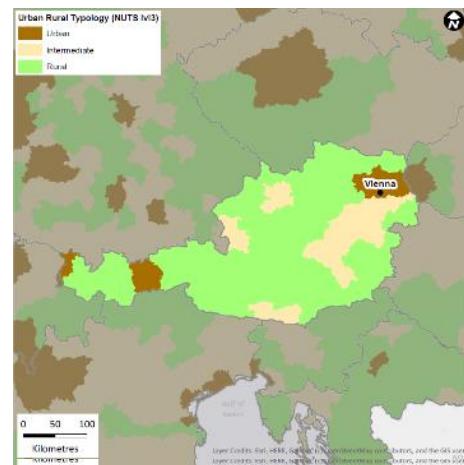
Source: Eurostat, [ACEA](#)

Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	31%
Age dependency ratio (2019)	50%
Women in labour force, % (2019)	65%
Population at risk of poverty, % (2019)	17%
Unemployment rate, % (2019)	3%
Immigrant population, % (2019)	1.2%
Population with internet access, % (2019)	90%
Employed persons working from home, % (2019)	12%
Limited in usual activities due to health problem, % (2019)	25%
Individuals who have no or low digital skills, % (2019)	22%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions



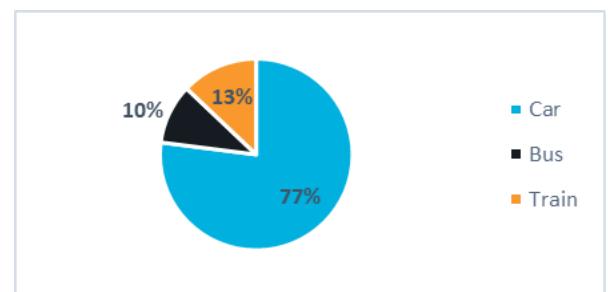
Source: Eurostat

Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	10.9
Transport CO2 emissions, kg per capita (2018)	2.74
Electric Vehicle share, % (2020)	1.6%
Electric Vehicle charge points per 100km of road network (2020)	3.4

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



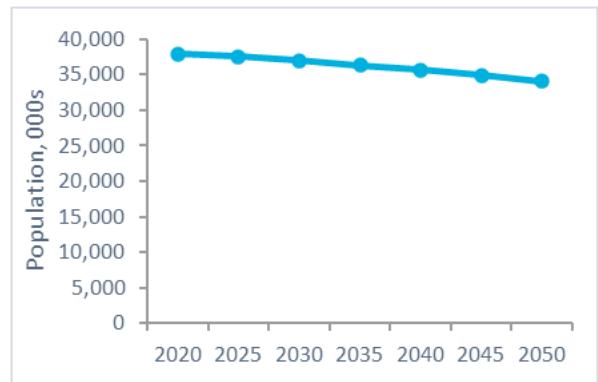
Poland

Overview

Indicators	Value
Area size, sq. km.	311,900
Population (2020)	37,940,000
Population density, persons per sq. km. (2020)	123.6
Median income, PPP (2020)	€8,000
Household spend on transport, % of total (2019)	13%
Vehicles per 1,000 persons (2018)	617

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

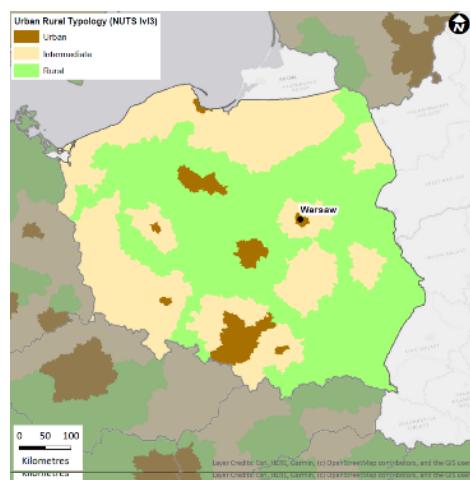


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	35%
Age dependency ratio (2019)	54%
Women in labour force, % (2019)	73%
Population at risk of poverty, % (2019)	18%
Unemployment rate, % (2019)	2%
Immigrant population, % (2019)	0.6%
Population with internet access, % (2019)	87%
Employed persons working from home, % (2019)	10%
Limited in usual activities due to health problem, % (2019)	17%
Individuals who have no or low overall digital skills, % (2019)	36%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

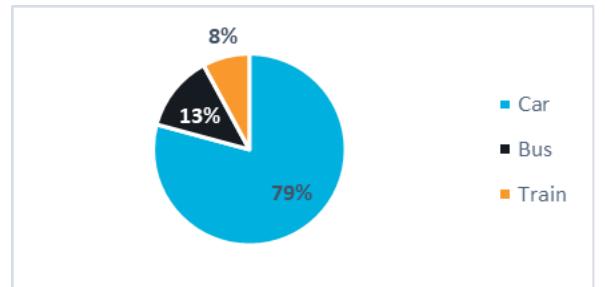


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	16.9
Transport CO2 emissions, kg per capita (2018)	1.72
Electric Vehicle share, % (2020)	0.3%
Electric Vehicle charge points per 100km of road network (2020)	0.2

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



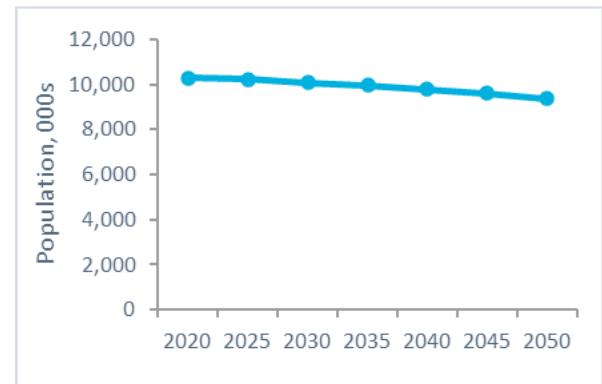
Portugal

Overview

Indicators	Value
Area size, sq. km.	91,900
Population (2020)	10,290,000
Population density, persons per sq. km. (2020)	113
Median income, PPP (2020)	€10,800
Household spend on transport, % of total (2019)	13%
Vehicles per 1,000 persons (2018)	514

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

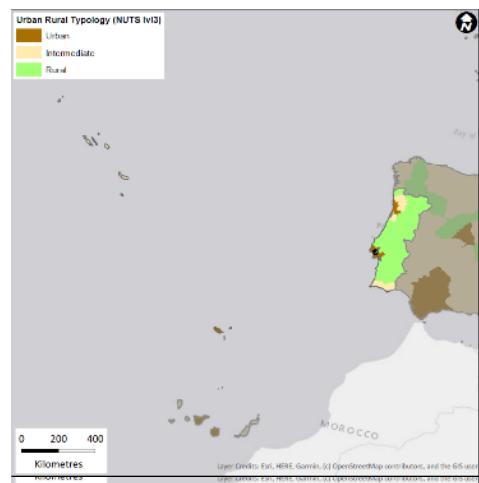


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	45%
Age dependency ratio (2019)	56%
Women in labour force, % (2019)	61%
Population at risk of poverty, % (2019)	22%
Unemployment rate, % (2019)	4%
Immigrant population, % (2019)	0.7%
Population with internet access, % (2019)	81%
Employed persons working from home, % (2019)	9%
Limited in usual activities due to health problem, % (2019)	25%
Individuals who have no or low overall digital skills, % (2019)	23%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

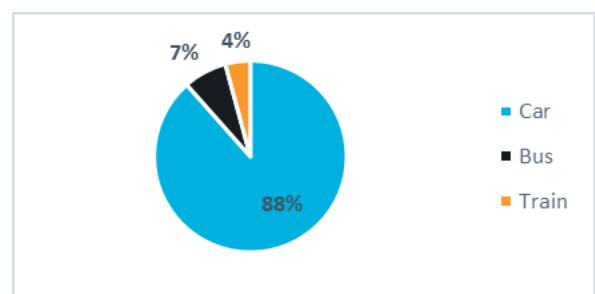


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	9.1
Transport CO2 emissions, kg per capita (2018)	1.67
Electric Vehicle share, % (2020)	1.0%
Electric Vehicle charge points per 100km of road network (2020)	12.5

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



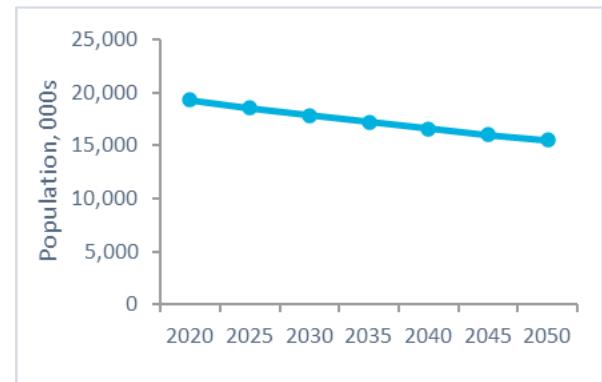
Romania

Overview

Indicators	Value
Area size, sq. km.	238,400
Population (2020)	19,280,000
Population density, persons per sq. km. (2020)	82.7
Median income, PPP (2020)	€4,300
Household spend on transport, % of total (2019)	12%
Vehicles per 1,000 persons (2018)	332

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

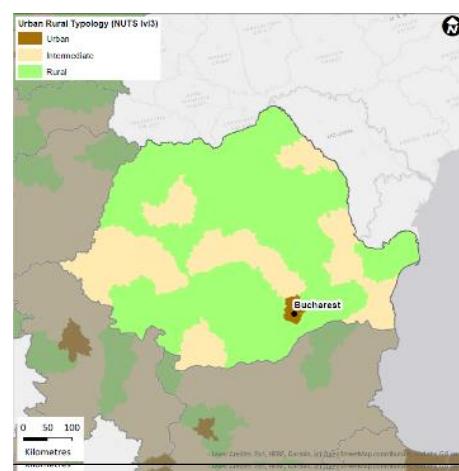


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	29%
Age dependency ratio (2019)	48%
Women in labour force, % (2019)	73%
Population at risk of poverty, % (2019)	31%
Unemployment rate, % (2019)	2%
Immigrant population, % (2019)	1.0%
Population with internet access, % (2019)	84%
Employed persons working from home, % (2019)	1%
Limited in usual activities due to health problem, % (2019)	19%
Individuals who have no or low overall digital skills, % (2019)	43%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

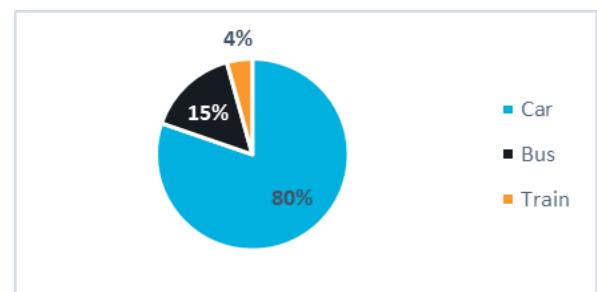


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	15.8
Transport CO2 emissions, kg per capita (2018)	0.95
Electric Vehicle share, % (2020)	0.2%
Electric Vehicle charge points per 100km of road network (2020)	0.4

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



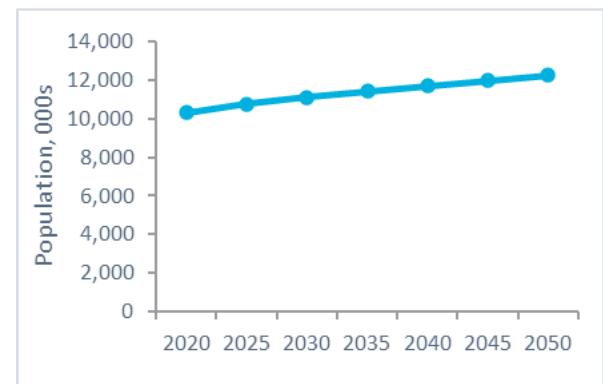
Slovenia

Overview

Indicators	Value
Area size, sq. km.	20,300
Population (2020)	2,100,000
Population density, persons per sq. km. (2020)	103.7
Median income, PPP (2020)	€14,700
Household spend on transport, % of total (2019)	17%
Vehicles per 1,000 persons (2018)	549

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

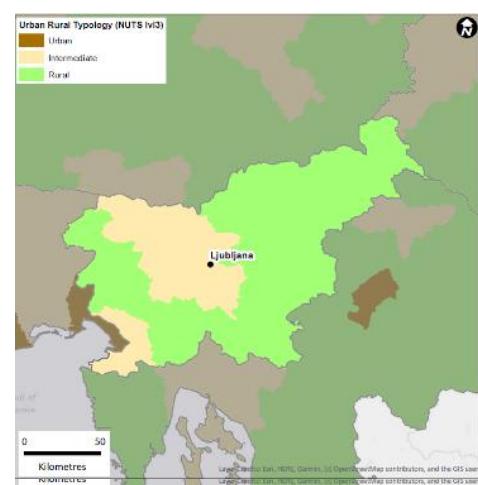


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	20%
Age dependency ratio (2019)	57%
Women in labour force, % (2019)	67%
Population at risk of poverty, % (2019)	14%
Unemployment rate, % (2019)	3%
Immigrant population, % (2019)	1.5%
Population with internet access, % (2019)	89%
Employed persons working from home, % (2019)	11%
Limited in usual activities due to health problem, % (2019)	20%
Individuals who have no or low overall digital skills, % (2019)	28%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

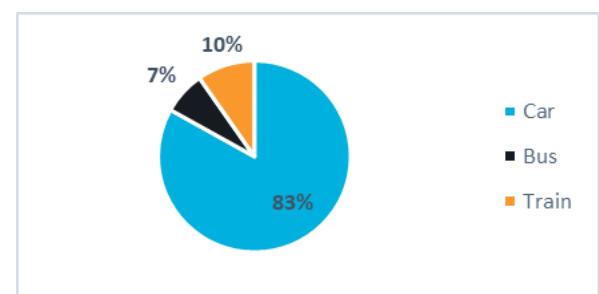


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	-
Transport CO2 emissions, kg per capita (2018)	2.76
Electric Vehicle share, % (2020)	0.4%
Electric Vehicle charge points per 100km of road network (2020)	1.6

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



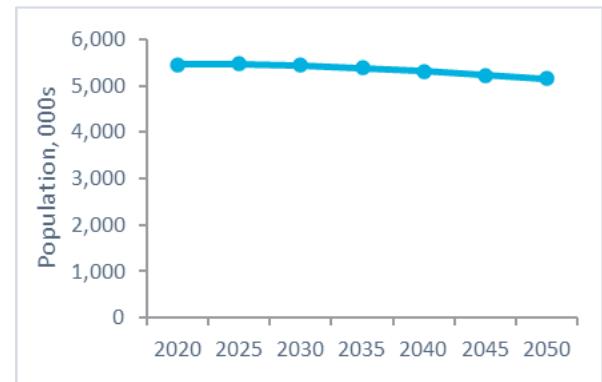
Slovakia

Overview

Indicators	Value
Area size, sq. km.	49,000
Population (2020)	5,460,000
Population density, persons per sq. km. (2020)	112
Median income, PPP (2020)	€8,700
Household spend on transport, % of total (2019)	7%
Vehicles per 1,000 persons (2018)	426

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

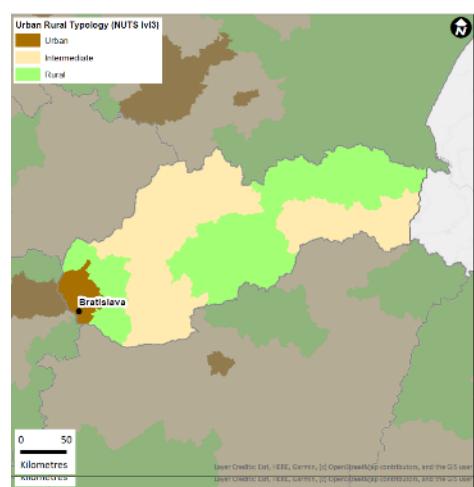


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	21%
Age dependency ratio (2019)	54%
Women in labour force, % (2019)	76%
Population at risk of poverty, % (2019)	16%
Unemployment rate, % (2019)	4%
Immigrant population, % (2019)	0.1%
Population with internet access, % (2019)	82%
Employed persons working from home, % (2019)	6%
Limited in usual activities due to health problem, % (2019)	22%
Individuals who have no or low overall digital skills, % (2019)	29%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

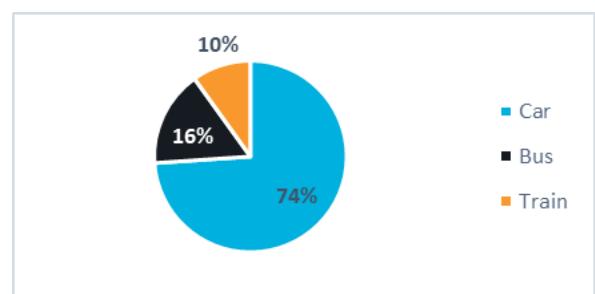


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	15.3
Transport CO2 emissions, kg per capita (2018)	1.41
Electric Vehicle share, % (2020)	0.5%
Electric Vehicle charge points per 100km of road network (2020)	1.1

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



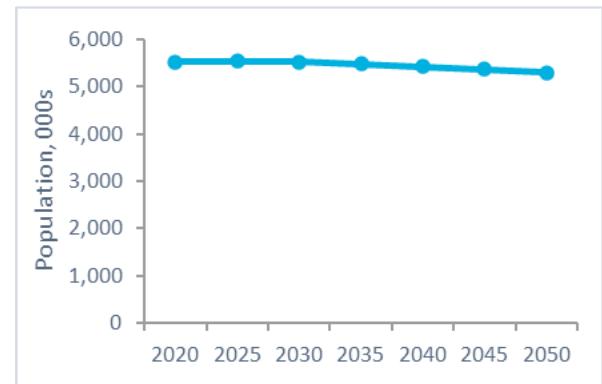
Finland

Overview

Indicators	Value
Area size, sq. km.	337,500
Population (2020)	5,530,000
Population density, persons per sq. km. (2020)	18.2
Median income, PPP (2020)	€25,500
Household spend on transport, % of total (2019)	12%
Vehicles per 1,000 persons (2018)	629

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050

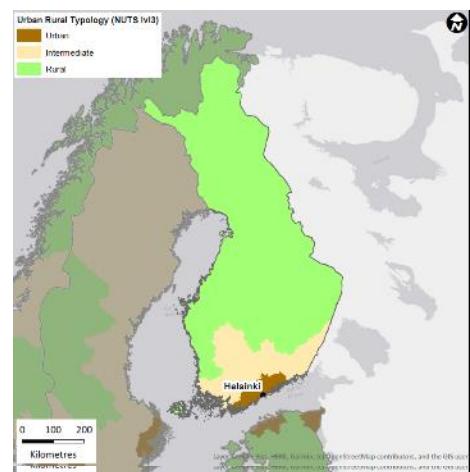


Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	39%
Age dependency ratio (2019)	44%
Women in labour force, % (2019)	80%
Population at risk of poverty, % (2019)	16%
Unemployment rate, % (2019)	5%
Immigrant population, % (2019)	0.6%
Population with internet access, % (2019)	94%
Employed persons working from home, % (2019)	18%
Limited in usual activities due to health problem, % (2019)	28%
Individuals who have no or low overall digital skills, % (2019)	19%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions

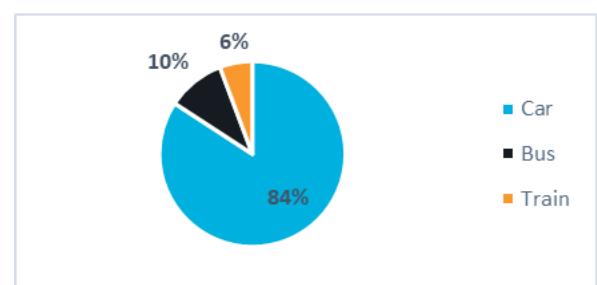


Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	5
Transport CO2 emissions, kg per capita (2018)	2.12
Electric Vehicle share, % (2020)	3.0%
Electric Vehicle charge points per 100km of road network (2020)	2.8

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



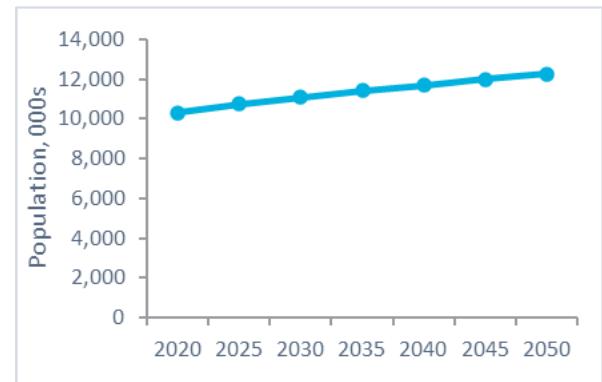
Sweden

Overview

Indicators	Value
Area size, sq. km.	449,700
Population (2020)	10,320,000
Population density, persons per sq. km. (2020)	25.2
Median income, PPP (2020)	€24,700
Household spend on transport, % of total (2019)	13%
Vehicles per 1,000 persons (2018)	476

Source: Eurostat, [ACEA](#)

Population projections, 2020-2050



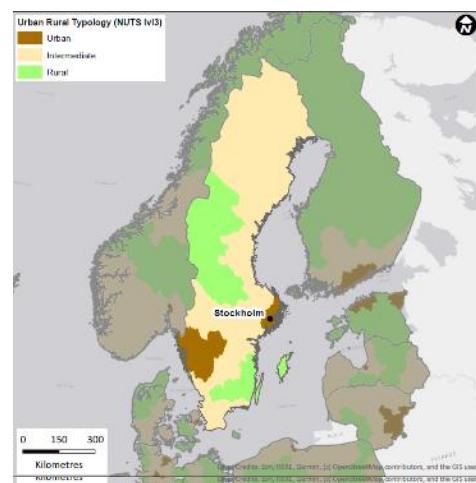
Source: Eurostat, [ACEA](#)

Demographics

Indicators	Value
Degree of urbanisation, % population living in cities (2019)	40%
Age dependency ratio (2019)	51%
Women in labour force, % (2019)	83%
Population at risk of poverty, % (2019)	19%
Unemployment rate, % (2019)	5%
Immigrant population, % (2019)	1.1%
Population with internet access, % (2019)	96%
Employed persons working from home, % (2019)	31%
Limited in usual activities due to health problem, % (2019)	9%
Individuals who have no or low overall digital skills, % (2020)	25%

Source: Eurostat

Urban-rural typology for NUTS level 3 regions



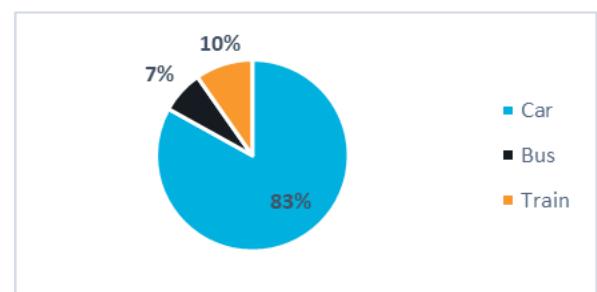
Source: Eurostat

Environment and sustainable transport

Indicators	Value
Average Air quality index (2020)	5
Transport CO2 emissions, kg per capita (2018)	1.60
Electric Vehicle share, % (2020)	4.4%
Electric Vehicle charge points per 100km of road network (2020)	4.1

Source: Eurostat, [ACEA](#)

Modal split of passenger land transport



E Inventory and mapping by Member State and user group

Challenges and opportunities

- E.1 The Terms of Reference require that the challenges and opportunities in terms of affordability, reliability, and accessibility per category of transport users/passengers are identified and clustered, and that this inventory is done at Member State level. The inventory developed in this section draws on a combination of desk research and responses received from stakeholders to describe relevant challenges/opportunities where specific evidence of these has been found in a given Member State. Our systematic review has covered:
- The 44 relevant EU-funded projects identified across a range of sources/databases (see Appendix C);
 - Studies (see Appendix C) that provided Member State-level analysis (for example ESPN country reports from the study on access to essential services for people on low income);
 - Structured desk research using key search terms in English and national languages to find relevant Member State documents, if available (for example national transport strategies, policy documents, country reports, etc.)
 - National recovery and resilience plans¹⁷⁴ published in the context of the coronavirus Recovery and Resilience Facility; and
 - National energy and climate plans (NECP)^{175 176}.
- E.2 The purpose of the inventory and mapping is twofold; to identify locally situated examples of challenges for users, and to compare the level of available information and understanding by Member State related to the social dimension of transport.
- E.3 The mapping exercise provides insight into how challenges faced by users overlap. To support the findings of the inventory and mapping, reference information for each Member State on a number of indicators, which are intended to help contextualise some of the challenges and opportunities has been collected and organised into dashboards for each of the Member States, which can be found in Appendix D.
- E.4 The tables that follow map out where specific evidence has been found in a Member State of challenges or opportunities related to each user group. A challenge or opportunity that has been found in multiple Member States is indicated through multiple ticks across different

¹⁷⁴ https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en#national-recovery-and-resilience-plans

¹⁷⁵ https://ec.europa.eu/info/energy-climate-change-environment/implementation-eu-countries/energy-and-climate-governance-and-reporting/national-energy-and-climate-plans_en

¹⁷⁶ The review of national recovery and resilience plans and national energy and climate plans found no references to the social dimension of transport.

columns. Descriptions may consolidate information found across different Member States to provide a broader description of the challenge.

- E.5 The absence of a ticked box for a Member State against a particular challenge or opportunity does not indicate that this issue is not applicable, only that specific evidence has not been found in the review of documents. However, the absence of evidence from the review of documents may also indicate a lower level of awareness, political will, or preparedness to address that issue.
- E.6 The inventory and mapping has identified a significant number of documented current challenges for users. In contrast, there has been a limited amount of information on anticipated future challenges.
- E.7 Although it has been easier to identify future opportunities than future challenges, the structure in which future opportunities are identified do not appear to be entirely actionable in many cases. A number of future opportunities are identified in aspirational vision or strategy documents, with focus on stating bold goals rather than outlining clear and actionable steps towards implementation. Some documents even identify this issue directly, highlighting that while policy documents acknowledge a certain social issue, they fail to outline actions towards addressing the issue.

Table E.1: Women

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
Best public transit service during commute hours on weekdays, worse service for those travelling at non-commute hours, for essential trips. Women make multiple, shorter journeys during the day, combining different modes of transport. Nature of trips means that frequency integration/multimodality of transport links due to non-radial flows is important, mismatch with actual service patterns in frequency/directionality. Travel behaviour (combine with another): women who are travelling at off-peak times; are chaining many trips together; feel unsafe waiting; are travelling alone; or are taking care of someone. Women are more likely to accompany others to medical appointments, with delays leading to missed appointment, repeated journeys and hence higher costs. To accommodate these delays, women must leave hours ahead of time.	Current Challenge Accessibility				✓		✓	✓			✓	✓								✓								
Unsafe travel conditions in relationship to other travellers (on transit and sharing rides). Women express fears in walking to and from stops and stations, concerns of harassment on buses and trains. Women face sexual harassment and aggression in public spaces and at stations.	Current Challenge Accessibility						✓		✓			✓																
Prevailing users of public transport: greater reliance on public transport. Women have less access to private vehicles but rely on them more. Women's mobility is directly affected by restricted access to public transport, which, therefore, plays an important role in empowering women and offering them access to opportunities and essential facilities (healthcare, education etc.). Lack of public transport makes it harder for women to access paid employment.	Current Challenge Reliability				✓		✓		✓				✓		✓													
Exposure to risk, inconvenience, and vulnerability can be amplified for the most disadvantaged women, for whom low income can intersect with health issues, disabilities, reliance on social services, lack of family or partner support, and lack of opportunities.	Current Challenge Accessibility								✓																			

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
Women are later adapters of smart mobility, impacted by digital exclusion. Women also have a higher risk aversion.	Current Challenge Accessibility										✓																	
Some women will choose a longer walking route if they perceive it as safer. Lack of adequate infrastructure. Access to stations, lighting etc.	Current Challenge Accessibility							✓			✓																	
Recognition of gender disparity in provision of service without clear strategy for how to address. Exclusion of stakeholder group in planning and design and decision making.	Future Challenge Accessibility									✓	✓								✓									
More negative impacts of economic crisis on women (incl. COVID-19). Continuation of large differences in remuneration of women and men.	Future Challenge Affordability					✓																						
Rationalisation of public transport disproportionately affects women and girls.	Future Challenge Accessibility												✓															
COVID-19 has led to situations of increased social distress including an increase of domestic violence.	Future Challenge Accessibility																✓											

Source: Steer review of national and local policy documents, mobility reports and research projects; stakeholder consultation | ✓ indicates specific evidence found in this Member State

Table E.2: Citizens with poor IT literacy or with limited access to the internet

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
Public transport fares are cheaper when purchased online and in advance, making it more expensive for this user group to use transport.	Current Challenge																										✓	
	Affordability																											
Digitalisation of the transport services will pose higher risk of social exclusion. The internet is a key source of travel information, so those without access or low IT literacy will have reduced access to traveller information. Internet/Apps are also used to purchase tickets, creating more barriers for riders who do not use web-based tools. Digital divide is pronounced for unemployed, older citizens and population with a low education level.	Current Challenge							✓		✓																	✓	
	Accessibility																											
Lack of comprehensive online mobility platform and fragmented traveller information online. Localised nature of transport/lack of national services means no centralised information on fares.	Current Challenge							✓																				
	Reliability																											
Digitalisation has reduced access to public services, particularly for those living in small towns. Services are being transferred to the e-space, which increases the vulnerability and depth of digital exclusion among people with few (or no) means and skills.	Current Challenge																											
	Accessibility																											
Smaller, more rural stations do not have onsite ticket sales representatives, requiring riders to buy a ticket online or at vending machines.	Current Challenge																											
	Accessibility																											
Transport systems are highly technology-led, creating challenges for this user group.	Current Challenge																										✓	
	Accessibility																											
Less access to computers among low-income individuals. Broadband/connectivity expansion programmes are delivered geographically (i.e. to remote areas), rather	Future Challenge																											

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
than by social exclusion. (Remote areas benefit, risk that those on low income will be excluded from schemes).	Affordability																											
Ability to use technology is important for accessing to demand-responsive transit, which has potential positive benefits for groups with lower-IT literacy such as older adults.	Future Challenge																										✓	
Internet connections are relatively affordable. Some Municipalities offering free access to Wi-Fi.	Accessibility																											
Training and reduced tariffs to access to internet are available at a national level. Initiatives aimed at improving digital literacy.	Future Opportunity														✓													
Affordability																												
While access to fixed-line broadband is more limited, mobile broadband penetration rates are much higher - potential for expanding access to internet through mobile broadband. Access to internet is increasing, or a high proportion of the populations already has access to the internet.	Future Opportunity																											
Accessibility																												
Introduction of innovative technologies accessible to people with disabilities or reduced mobility, orientation or communication to help make mobility experience better.	Future Opportunity																											
Affordability																												

Source: Steer review of national and local policy documents, mobility reports and research projects; stakeholder consultation | ✓ indicates specific evidence found in this Member State

Table E.3: Persons with disabilities and with reduced mobility (e.g. older people)

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE		
Combination: high travel costs, old-age poverty is increasing, pensions/disability payments have not increased at same rates as cost of living.	Current Challenge												✓																	
	Affordability																✓											✓		
Some discounts/services for PRMs/Older people are based on reserving ahead of time. For specialised vehicles for PRMs, must pre-order vehicle far in advance (up to 3 days). Reduced flexibility and requires higher familiarity with the service/scheduling tools.	Current Challenge		✓										✓	✓																
	Affordability																													
Disability related discounts which stop at adulthood.	Current Challenge																													
	Affordability																													
Best public transit service during commute hours on weekdays, worse service for those travelling at non-commute hours, for essential trips (impact to PRMs and older people).	Current Challenge							✓																					✓	
	Accessibility																													
PRMs/People with Disabilities may lack own transport, and lack flexibility in transport choices. Older adults are less likely to own a vehicle, more likely to rely on public transport.	Current Challenge					✓																								
	Accessibility																													
Anxiety related to treatment on transport dissuades from use (disrespect by youth, not offering seats, reserved (PRM) seats not being offered/made available, uncooperative drivers etc.).	Current Challenge																✓													
	Accessibility																													
Localised nature of transit / lack of national services means no centralised information on fares, little information available on internet. Timetables, route maps and fares are available from local bus and railway stations, tourist information offices, bookshops and newsagents.	Current Challenge																	✓												
	Reliability																													
Transport services for PRMs are inefficient for users.	Current	✓																												

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	
	Challenge																												
	Reliability																												
Limited knowledge of the options available. Older people and PRMs can benefit from access to online info but have technology barriers to access. Older users experience more difficulties accessing online mobility tools. People with disabilities are unaware of technological solutions that can provide them with mobility assistance (i.e. accessibility maps for persons in wheelchairs).	Current Challenge																											✓	
Frequently elevators undermaintained or broken.	Reliability / Accessibility																											✓	
Intramodality between intercity public transport (trains, buses and ferries) and urban transport needs improvement (facilities, services and tariffs), compounding personal accessibility challenges for PRMs. Inconsistencies between accessibility of different modes/services/routes creates challenges.	Current Challenge																											✓	
Rail transport (and trams) infrastructure fails to provide appropriate access for people with disabilities or reduced mobility (e.g. at stations, elevators, require wheelchair users to transfer to a seat, lack of ramps). Inadequate transport infrastructure, routes and vehicles, limited number of accessible vehicles.	Accessibility																											✓	
The majority of rural population is older and ageing. Intersection between the issues of poor rural mobility, and accessibility for older people. Accessibility challenges are compounded in rural areas. Public transport services in rural areas is even more challenging for PRMs.	Current Challenge																											✓	
	Accessibility																												✓

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
Negative views towards non-car transport. Road infrastructure that is car-oriented and characterised by the overall lack of space provided for other modes, creates environment that is not pedestrian friendly and often with infrastructure layout that is inaccessible to PRMs. Non-motorised transport is considered not important and undervalued, resulting in poor pavement condition, and used for parking, forcing pedestrians to walk on road.) Cycling considered leisure activity rather than transport.	Current Challenge Accessibility																		✓								✓	
PRMs may have limited help from others, or may have dependence on others for transport. May experience difficulty moving outside of their own neighbourhood.	Current Challenge Accessibility																											✓
Overcrowding is a barrier for PRMs, especially wheelchair users and persons with mental or visual impairments, due to space restrictions and difficulties in embarking.	Current Challenge Accessibility																											✓
Disparity in opportunities for user involvement between urban and rural, difference in presence of advocacy groups for PRMs. People with disabilities are unaware of opportunities to local participation and lack information about possible ways for user involvement.	Current Challenge Accessibility																											✓
Ageing population will increase requirements for accessible public transport infrastructure. Expensive to regularly renew rolling stock. Having rolling stock of all the same age limits opportunities for incremental renewal outside of the long-term replacement cycle, and the opportunity to introduce new accessibility technologies.	Future Challenge Accessibility															✓	✓										✓	
Employment gaps exist for PRMs. Important to remove any mobility related barriers to allow them access to paid employment.	Future Challenge Accessibility																											
New technology can provide potential benefits.	Future	✓		✓		✓								✓	✓			✓	✓								✓	✓

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
Real-time transport information. Automated Vehicles expand access for PRMs and people with disabilities. Demand responsive transport identified as a means to improve rural transport options. Navigation systems to support PRMs and other users with higher level of need. Accessible information, ticketing machines, apps which enable access for users with visual impairments, design to help users find accessible vehicles etc. Pilot new on-demand services to connect to essential destinations like healthcare.	Opportunity Reliability / Accessibility																											
Existing door-to-door services for PRMs and people with disabilities.	Future Opportunity Accessibility						✓																					

Source: Steer review of national and local policy documents, mobility reports and research projects; stakeholder consultation | ✓ indicates specific evidence found in this Member State

Table E.4: People living in remote areas (notably rural areas), segregated localities or in less developed regions where transport services are scarce

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	
High long-distance rail fares: lack of competition on long-distance trains. Higher/unaffordable costs of transport in rural areas. Inefficiencies of service can lead to higher costs for users. As rural public transport becomes less viable, costs for users may increase.	Current Challenge					✓																	✓			✓	✓		
	Affordability								✓																				
Parents cannot afford transport for children in rural areas.	Current Challenge																												
	Affordability															✓													
Poor access to public transport means higher costs associated with car ownership/use.	Current Challenge																											✓	
	Affordability																✓												
Low level of public transport service mainly focused on social service, low attractiveness of service lead to overtime decline of service. Buses do not stick to their schedules. Very long trips and travel times. Lower frequency, low to no service on weekend and off-peak hours. Continued decline in service if no action is taken to improve public transport. Absence of 'last-mile' options.	Current Challenge					✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	Reliability / Accessibility																												
Served by railway network but excessive journey times. Many stops on one route, poor network coverage.	Current Challenge																✓											✓	
	Reliability																												
In some rural areas, public transport is non-existent.	Current Challenge								✓																				
	Accessibility																												
Lack of stop infrastructure, real-time bus arrival information, safety issues.	Current Challenge																												
	Accessibility / Reliability																												✓

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	
Large number of bus companies operating, own rules and schedules, journeys in rural areas need careful planning and a good deal of local knowledge. Where local agencies do not organise public transit, areas rely on private bus companies which may leave the market.	Current Challenge Reliability												✓				✓			✓	✓								
The majority of rural population in some MS is older and ageing. Intersection between the issues of poor rural mobility, and accessibility for older people. Younger population leaving rural areas for more opportunities.	Current Challenge Accessibility				✓	✓				✓												✓						✓	
Car is considered as the most convenient, efficient and satisfactory means of transport. Transport challenges are compounded for who do not own or cannot drive a car (children, older people and some people with disabilities). Reliance on family members for transport. Challenges to access basic services. People in rural areas without access to a car are also more likely to experience loneliness, and can be combined with poor health and old age.	Current Challenge Accessibility					✓				✓	✓	✓					✓			✓								✓	
Cycling and walking are not as popular due to (sometimes) topography of the place, the lack of appropriate infrastructure and safety concerns (e.g. dangerous driving, no cycling culture). Lack of and/or poorly maintained infrastructure, including roads.	Current Challenge Accessibility									✓																		✓	✓
Limited access to Smart Mobility, which is concentrated in urban areas.	Current Challenge Accessibility												✓			✓													
Suburbanisation of employment, especially low-skilled employment, which is only reachable by car. Living in more peripheral area commuting in. Forced car ownership for people on low income moving out of cities because of affordability concerns.	Current Challenge Accessibility				✓	✓											✓			✓									
COVID-19 disproportionately impacted rural areas, challenges in ensuring that rural transport remains affordable through economic hardship.	Future Challenge Affordability												✓																

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE		
Rural depopulation makes it more challenging to run viable networks (related to aging pop.).	Future Challenge					✓									✓	✓	✓													
	Accessibility																													
Investment into rail networks / bus networks is focused towards urban areas.	Future Challenge																													
	Accessibility																													
Low level of public transport service mainly focused on social service, low attractiveness of service lead to overtime decline of service. Buses do not stick to their schedules. Very long trips and travel times. Lower frequency, low to no service on weekend and off-peak hours. Continued decline in service if no action is taken to improve public transport. Absence of 'last-mile' options.	Future Challenge					✓	✓																							
	Reliability / Accessibility									✓	✓																			
High long-distance rail fares: lack of competition on long-distance trains. Higher/unaffordable costs of transport in rural areas. Inefficiencies of service can lead to higher costs for users. As rural public transport becomes less viable, costs for users may increase.	Future Challenge																													
	Affordability																													
More cost-effective service with automation, possibility to bring back service where it had been rationalised.	Future Opportunity																													
	Accessibility																													
On-demand mobility (and other new mobility solutions) for low demand areas. Flexible services to connect rural areas to rail / other regional services	Future Opportunity					✓	✓																							
	Accessibility																													
Co-design of inclusive digital mobility services.	Future Opportunity																													
	Accessibility															✓														

Source: Steer review of national and local policy documents, mobility reports and research projects; stakeholder consultation | ✓ indicates specific evidence found in this Member State

Table E.5: Young people and children

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
Children more likely to be at risk of poverty; poverty risk strongly affects children living in single-parent households, children in households with three or more children as well as children in households with at least one foreign-born parent. Parents cannot afford transport for children in rural areas. Complex delivery mechanisms of transport costs reductions for children.	Current Challenge Affordability									✓		✓	✓															
People without a driving license (e.g. children) are dependent on the mobility of others. Young people are at particular risk of transport-related social exclusion due to lower incomes, depending on parents, not being old enough to drive or unable to afford a vehicle and being reliant on public transport.	Current Challenge Accessibility								✓																		✓	
Poor availability and insufficient public transport connections, especially at weekends.	Current Challenge Accessibility						✓																					
Streets that are car-oriented and characterised by the overall lack of space provided for all modes, create environment that is not pedestrian friendly. Access with prams is a challenge on current network. Walking is an important mode to access school, and in some cases also by bicycle.	Current Challenge Accessibility									✓																		
The younger, economically productive and more educated part usually leave rural areas due to low living standards, low transport accessibility, high unemployment, poorer access to public services and, more broadly, civic amenities and commercial services.	Current Challenge Accessibility						✓																					
Children from low income groups have more restricted school choices and are less able to access learning outside school hours.	Current Challenge Accessibility									✓																		

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
Challenges for children and young people in rural areas: access to transport to school is limited requiring parent drop-off; access to out-of-school activities is particularly a problem for low-income groups; travel to leisure activities is dependent on ride from parents, lack of transport may force young people to participate in activities or use services that are nearer to them, but not necessarily of the best quality. In rural areas, absence of good quality transport has been found to contribute to young people engaging in anti-social behaviour and experiencing boredom and frustration through lack of choice.	Current Challenge Accessibility							✓					✓						✓									
While school aged children have access to school buses, lack of transport options to preschool children. School buses not available but funded in different localities sporadically.	Current Challenge Accessibility																			✓		✓						
Existence of family allowances helps address costs of transport for children and young people.	Future Opportunity Affordability																			✓								
Provide pedestrian-friendly infrastructure. Promoting active and shared mobility to school.	Future Opportunity Accessibility					✓																						
Automated Vehicles expand access for people without licenses.	Future Opportunity Accessibility								✓																			

Source: Steer review of national and local policy documents, mobility reports and research projects; stakeholder consultation |✓ indicates specific evidence found in this Member State

Table E.6: People on low income and in particular at risk of poverty or social exclusion

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE		
Some reduced fares tied to EU residency/citizenship. No discounts for low-income riders or complex process or rules for discounts based on region, locality, systemic/bureaucratic barriers. Free transit access for unemployed persons but not working-poor.	Current Challenge Affordability				✓					✓			✓								✓	✓					✓			
People living in peri-urban region have lower income compared to cities, while the ticket costs are higher. Interurban costs are high. In regions without rail connections which are served by long-distance bus without fare reductions for low-income riders.	Current Challenge Affordability						✓			✓												✓								
Absence of measures to facilitate migrants' and refugees' access to public transport services, leaving them particularly disadvantaged in accessing public transport services. Political controversy over migration, lack of accommodation or policy for inclusion, access. Including needs/accessibility for migrants into planning and policy or risk exclusion.	Current Challenge Affordability									✓											✓									
Financial benefits given to families provide more benefits to higher income households.	Current Challenge Affordability																					✓								
Best public transit service during commute hours on weekdays, worse service for those travelling at non-commute hours, for essential trips (impact to those working non-regular hours.)	Current Challenge Accessibility								✓																					
Many residents from different language backgrounds and significant arrivals of asylum seekers. Limited outreach capacity combined with some procedural and bureaucratic rules, makes it not easy for newcomers to get information.	Current Challenge Accessibility																				✓									
Transport poverty, access to bicycles or public transport sometimes limited because of high fees.	Current Challenge																					✓								

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
	Accessibility / Affordability																											
No policy framework for improving access for people on low income, and no measures improving access in existing plans for combatting poverty - not treated as intersectional.	Current Challenge Accessibility											✓																
Public transport networks are particularly important for lower-income groups who rely on them for access to work and services, and may not have other options. Rationalisation of public transport networks adversely affects low-income groups.	Current Challenge Accessibility												✓															
Costs associated with private vehicle ownership are more burdensome for low-income individuals	Current Challenge Affordability																	✓										
Criminalisation of 'sleeping rough' or houselessness.	Current Challenge Accessibility																			✓								
People on low income and unemployed people, people with mobility impairments and older people in rural areas will potentially suffer the most if future challenges are not addressed.	Future Challenge Accessibility									✓																		
Presence of existing schemes for reduced costs for individuals on low income can be expanded upon / integrated into new services. Combine schemes to improve transport affordability with related issues that impact poverty and social exclusion i.e. access to housing.	Future Opportunity Affordability									✓															✓			
Tying increased use of public transport as an important tool for decarbonisation: reducing tariffs for public transport and expanding the transport network to increase use of PT.	Future Opportunity Affordability																								✓			

Description	Dimension	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
Prioritise integrating vulnerable groups in the development of MaaS schemes.	Future Opportunity Accessibility									✓																		

Source: Steer review of national and local policy documents, mobility reports and research projects; stakeholder consultation | ✓ indicates specific evidence found in this Member State

F Good practices (EU)

Introduction

- F.1 This Appendix details the good practices that have been identified as part of this study. We detail in Chapter 4 how they have been identified and selected.

Case study 1: Improving the transport network design to better fulfil the needs of users

Overview

Description

- F.2 The design of public transport networks, irrespective of the transport mode, defines what, how and when transport services will be offered¹⁷⁷. This design process is one of several steps involved in transport planning delivery and is usually influenced by a variety of factors, ranging from the strategic (e.g. public policy constraints and incentives) to the operational (e.g. user demand, affordability, reliability, and accessibility).
- F.3 Both the objectives of the public transport network¹⁷⁸ and planners' understanding of the needs of users (and non-users) are influential for the design of transport networks. The choices made by transport planners, therefore, likely reflect a range of strategic considerations above and beyond simple technical and operational analysis (e.g. vehicle range, capacity, etc.).
- F.4 The impacts of such choices can be wide ranging. For example, UNECE claimed that having a transport network which better accounts for the needs of women when using the transport system can help to promote gender equality and improve women's productivity¹⁷⁹.

Relevant user groups and challenges

- F.5 Public transport network design has particularly significant impacts on some user groups, examples of which are captured in Table F.1.

¹⁷⁷ Van Nes, Rob; Hamerslag, Rudi; Immers, Ben H. (Date unknown). *Design of Public Transport Networks*. Transportation Research Record 1202: Journal of the Transportation Research Board. Available from: http://onlinelibrary.wiley.com/doi/10.1111/j.1945-2814.1988.tb01202_010.pdf

¹⁷⁸ Nielsen, Gustav; et al. (2005). HiTrans Best practice guide 2: Public transport – Planning the networks. Available from: <http://www.civitas.no/assets/hitans2/publictransportplanningthe-networks.pdf>

¹⁷⁹ Report to the United Nations Economic Commission for Europe Executive Committee on the Implementation of the Priorities of the UNECE Reform for strengthening some activities of the Committee - The Inland Transport Committee and gender issues in transport (2008) Available from: <https://unece.org/DAM/trans/doc/2009/itc/ECE-TRANS-2009-07e.pdf>

Table F.1: Examples of transport-network-design impacts on specific user groups

User group	Impact
Women	In general, women's travel patterns are more complex and time-consuming ¹⁸⁰ . Furthermore, with respect to modal choice, women factor in additional considerations such as safety and security, in addition to journey time and cost ¹⁸¹ .
People living in remote areas	Public transport networks are not always well-tailored to the mobility needs of people living in remote areas ^{182,183} who are often afflicted by low service frequencies, poor connectivity, and substandard transport infrastructure. These challenges can prevent timely access to health services, education, shopping, and jobs ^{184,185} .
People on low income	Transport accessibility and affordability are critical factors for people on low income, as 'poverty, inequality and social exclusion are tied to personal mobility and to the accessibility of goods and services' ¹⁸⁶ .
Children and young people	Accessibility, affordability, and safety are particularly pertinent for young people and children, who usually depend upon older relatives or guardians to access the transport system. A lack of financial independence may also constrain young people's mobility, a characteristic which is more prevalent amongst young people.

Source: Steer analysis of cited reports.

F.6 In general, as reflected in the table above, accessible, affordable and reliable public transport networks influence numerous aspects of peoples' lives including access to health, education, and employment. Considerations for transport planners which reflect the social dimension of transport may include:

- how specific user groups' access to employment is affected by changes to the public transport network;
- how operating characteristics (e.g. multimodality) could be optimised to provide greater accessibility or reliability; and
- how accessibility and safety could be further enhanced in light of the needs of specific user groups.

¹⁸⁰ Ortega Hortelano, A., Grosso, M., Haq, G., Tsakalidis, A., Gkoumas, K., van Balen, M., and Pekár, F. (2019). [Women in European Transport with a Focus on Research and Innovation - An overview of women's issues in transport based on the Transport Research and Innovation Monitoring and Information System \(TRIMIS\)](#), EUR 29833 EN, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-09692-4, doi:10.2760/08493, JRC117687

¹⁸¹ Sustainable Mobility for All (2019). [Global Roadmap of Action Toward Sustainable Mobility: Universal Urban Access](#). Washington DC

¹⁸² Dotter, Fred (2016). [CIVITAS Thematic Policy Note: Transport Poverty](#). CIVITAS Initiative.

¹⁸³ Sustainable Mobility for All (2019). [Global Roadmap of Action Toward Sustainable Mobility: Universal Urban Access](#). Washington DC

¹⁸⁴ Multiple authors (2019), [The future of road transport](#), EUR 29748 EN, Publications Office of the European Union, Luxembourg, 2019

¹⁸⁵ Patella, Dominic Pasquale; Wolanski, Michal Piotr; Nieweglowska, Magda; Pierog, Mateusz Hubert (2019). [Poland Catching-Up Regions Three: Rural Public Transport in Zachodniopomorskie](#). Washington, D.C.: World Bank Group

¹⁸⁶ Dr. Gates, Shivonne, et al. (2019). [Transport and inequality: An evidence review for the Department for Transport](#). United Kingdom. NatCen Social Research.

Good practice: Improving the transport system to better meet the mobility needs of users in remote areas

Description of activities

- F.7 One project in Germany – Muldental in Fahrt¹⁸⁷ – provides a particularly good example of how changes to the design of the public transport network can improve how the transport system meets the needs of specific user groups. The project, involving the Mobility Authority, MDV, and Public Transport Operators, ZVNL (rail) and Regional Bus Leipzig (both publicly owned companies), sought to better connect people living in remote areas with the transport system through integrating transport network design at the regional level.

Target user groups of the good practice

- F.8 The main goal of the project was to increase the mobility offer to all the residents of the Muldental region, improving connectivity between Leipzig and Bad Lausick, Brandis, Colditz and Grimma.

Figure F.1: Location of the Muldental in Fahrt project in Germany



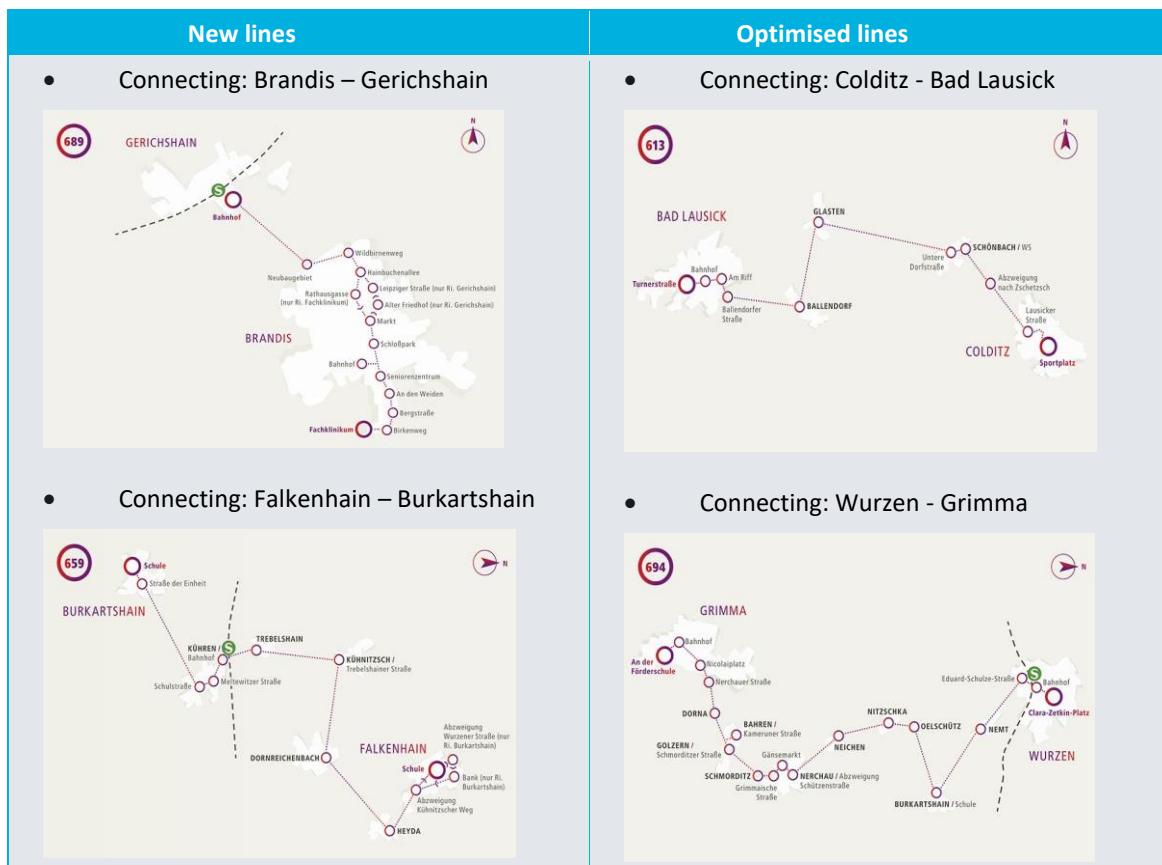
Source: Wikimedia Commons; Central German Transport Association (MDV).

Solutions provided by the good practice

- F.9 The Muldental in Fahrt project redesigned the entire bus network of the Muldental region, thereby expanding the network to accommodate localities with no prior access to public transport (i.e. remote areas).
- F.10 The project's first phase involved:
- the optimisation of two pre-existing bus lines; and
 - the creation of two additional lines.
- F.11 This improved the connection and mobility of the residents of eight different municipalities and several other surrounding towns.

¹⁸⁷ MULDENTAL IN FAHRT. SMARTA Smart Rural Transport Areas. Available from: <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Muldental-in-Fahrt.pdf>

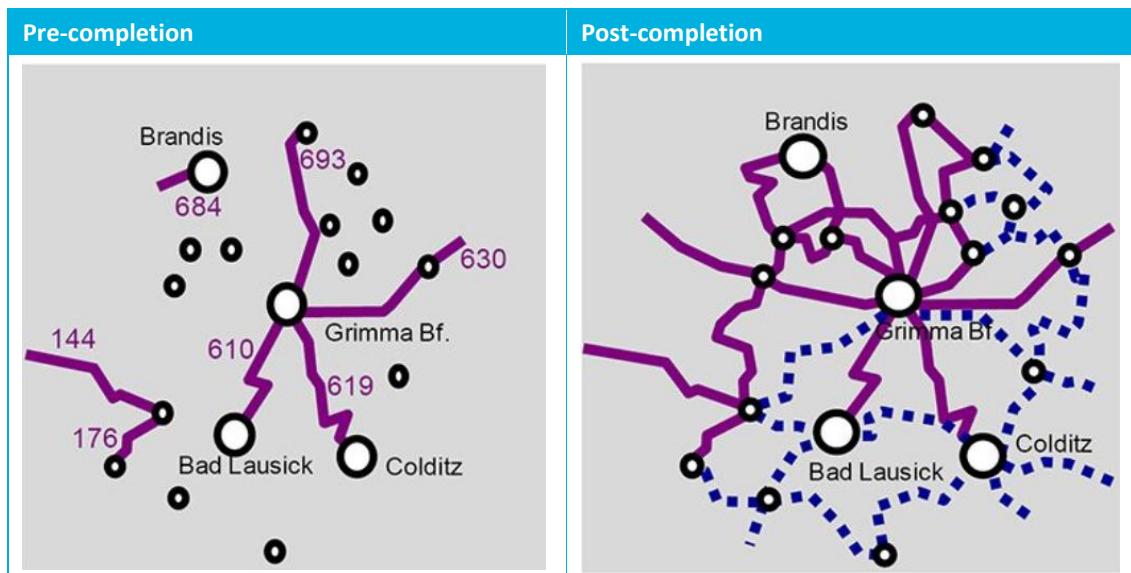
Table F.2: Network improvements, first phase: route development and optimisation



Source: Central German Transport Association (MDV)

F.12 The project's second phase introduced ten local (hourly) and three regional (two-hourly) bus lines to improve connectivity between four municipalities. A diagram of the improvements

Figure F.2: Network improvements, second phase: bus-route network improvements



Source: Steer analysis of Central German Transport Association (MDV). (*)Note: Purple lines denote hourly local services; blue dotted lines denote two-hourly regional services.

F.13 Furthermore, in 2019, an on-demand transport taxi service ('RufBus')¹⁸⁸ was implemented to complement the existing bus network in certain locations. The concept involves providing on-demand transport service for older people, PRMs, and those living in remote areas. We understand that the service has been afflicted by regulatory bottlenecks (unspecified) and low passenger uptake to date. Demand-responsive transport has been discussed in detail in this Appendix from paragraph F.95.

F.14 Finally, an integrated timetable has been implemented with the purpose of offering:

- a greater number of connections with other services;
- shorter distances between stops; and
- a cross-modal, synchronised departures and arrivals system for local buses and trains.

F.15 In general, the regional transport system has received the following improvements:

- Additional routes, connecting previously unserved areas;
- Extended timetables (more morning and evening services), allowing people to travel without the need of private transportation for work, access to healthcare, leisure, or otherwise;
- Higher service frequency during the weekends and holidays; and
- Coordinated connections across services and modes.

Results

F.16 The enhanced transport network provides several advantages to transport users, including:

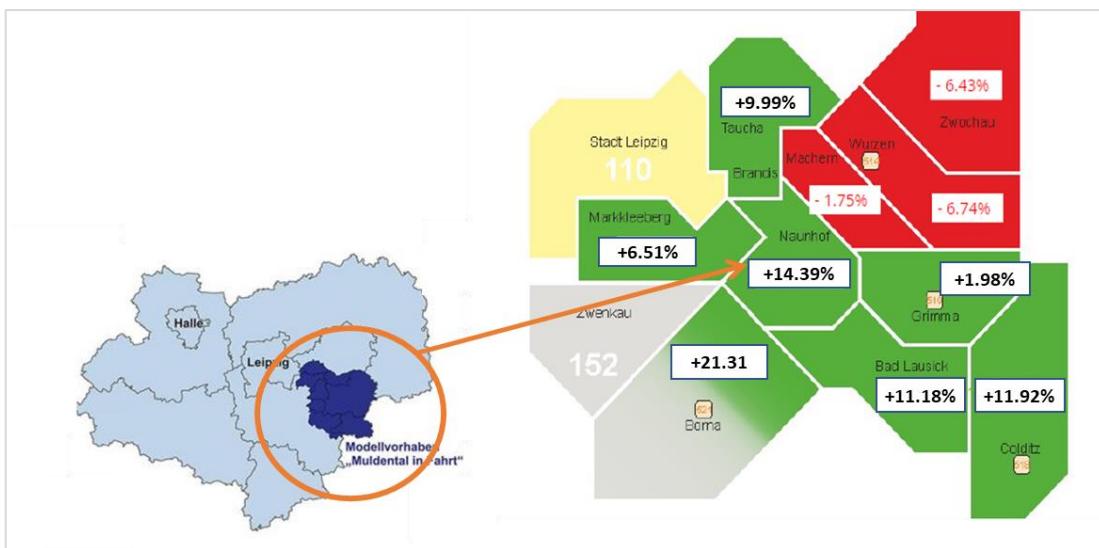
- People located in remote or underserved areas, or for those reliant on trip chaining (multiple stops or modes in one trip), who are now connected to the public transport network;
- Women, who may not wish or be able to travel during peak times, who now benefit from buses which do not only run at peak times; passenger safety may also have been improved through the introduction of new vehicles;
- Young people and children, who may be unable to drive a private motor vehicle, who benefit from the greater connectivity of services; passenger safety may also have been improved through the introduction of new vehicles.

F.17 Trips increased following the interventions above. After 18 months, mobility (passenger numbers) in the region increased by 14%, despite several external factors undermining traffic growth across the period¹⁸⁹.

¹⁸⁸ For details, see: <https://www.regionalbusleipzig.de/rufbus>

¹⁸⁹ Namely: persistent local rail transport problems, critical press coverage and the redirection of new lines.

Figure F.3: Passenger growth, July 2018 vs. August 2017



Source: Central German Transport Association (MDV). Edited by Steer.

F.18 Data for 2019 shows that mobility continued to increase in subsequent years. For example, in Grimma, passenger numbers increased a further 51% to the year ending March 2020 (just before the disruption associated with the COVID-19 pandemic) compared to the same period in 2019¹⁹⁰.

F.19 Information on the impact of the network redesign disaggregated at the user-specific level is not currently available.

Cost-benefit analysis

Table F.2: Overview of the costs and benefits of the good practice on improving the transport system to better meet the mobility needs of users in remote areas

Category	Benefits	Costs
General users, citizens, taxpayers	Improved connectivity and mobility options, increased frequencies (especially off-peak) Increased passenger safety Increased social benefits	No direct costs as a user. Indirect costs as taxpayer. Change in network
Women	As for general users	No direct costs as a user. Indirect costs as taxpayer
Poor IT-literacy people	As for general users	No direct costs as a user. Indirect costs as taxpayer
PRM	As for general users	No direct costs as a user. Indirect costs as taxpayer
People in remote areas	Increased transport provisions Improved connectivity and mobility options	No direct costs as a user. Indirect costs as taxpayer

¹⁹⁰ Slide 18. Boehme (2020). Muldental in Fahrt: Wie wird das neue ÖPNV-Netz angenommen? Available from: https://projekt.nachhaltiges-sachsen.de/download/2020-11-26_Praesentation_MDV_Boehme.pdf

Category	Benefits	Costs
	Reduced travel time and increased travel frequencies (especially off peak) Decreased reliance on private vehicles, better environmental outcome Increased social benefits	
Young people/children	As for general users	No direct costs as a user. Indirect costs as taxpayer
People on low income	As for general users	No direct costs as a user. Indirect costs as taxpayer
Transport providers	Increased passenger use	Network redesign cost and operational changes
Authorities	More inclusive spatial transport policy Better transport offer which potentially supports economic growth	Likely increased costs as network was significantly expanded and frequencies increased.

Source: Steer analysis

Lessons learnt

- Strong support amongst political stakeholders is key unlocking beneficial changes associated with public transport network redesigns;
- Intermodal connections can lead to an increase in ridership; and
- Marketing and stakeholder engagement can generate grassroots community support.

Other good practices

Good practice: Making cycling more attractive for women in the Netherlands^{191 192}

- F.20 Research shows that specifics aspects of bike lanes design are key for achieving high levels of cycling¹⁹³, which is essential for short trips and trip chaining (travelling on multiple modes or lines in a single journey) which are mostly made by women. However, women cycle less than men. In the Netherlands more than 50% of the bike trips are made by women or 49% in Germany¹⁹⁴. Women have expressed several reasons for not using bikes, including safety and sexism^{195,196}.

¹⁹¹ Pucher, John & Buehler, Ralph & Sgm, Francis. (2008). Making Cycling Irresistible: Lessons from The Netherlands, Denmark and Germany. *Transport Reviews*. 28. 495-5281464. 10.1080/01441640701806612

¹⁹² Laker, Laura. Ridding transport of gender bias is no simple task. *Smart Transport*. 2021. Accessible here: <https://www.smarttransport.org.uk/insight-and-policy/universal-access/ridding-transport-of-gender-bias-is-no-simple-task>.

¹⁹³ Pucher, John & Buehler, Ralph & Sgm, Francis. (2008). Making Cycling Irresistible: Lessons from The Netherlands, Denmark and Germany. *Transport Reviews*. 28. 495-5281464. 10.1080/01441640701806612.

¹⁹⁴ <https://www.theguardian.com/environment/bike-blog/2014/oct/03/the-reason-fewer-us-women-cycle-than-the-dutch-is-not-what-you-think-it-is>

¹⁹⁵ Yves Raibaud, CNRS, 2020, <https://lejournal.cnrs.fr/billets/femmes-et-hommes-sont-ils-egaux-a-velo>

¹⁹⁶ Cycling Action Network of New Zealand. ‘Why women bike, and why they don’t’ <https://can.org.nz/article/why-women-bike-and-why-they-dont>

F.21 The higher uptake of cycling in some countries is, in part, due to differences in transport network design. Namely, countries which have made efforts to improve cycling safety and convenience see a higher proportion of female cyclists (e.g. Netherlands). For example, segregated bike lanes protect cyclists from traffic, providing sufficient cycle-parking and integrating cycling with the wider public transport network makes cycling safer and more convenient. Furthermore, disincentivising the use of private vehicles creates calmer and safer traffic avenues and improves cycling safety, thereby allowing women to feel more comfortable when cycling, thus making cycling accessible to more women.

Transferability and scalability

F.22 The good practices discussed in this case study are readily transferable and scalable to other locations in Europe or elsewhere.

F.23 However, key challenges facing the deployment of such good practice in the context of the social dimension of transport include:

- the high level of political commitment required by regional powerbrokers;
- the financial resources required to improve services; and
- a lack of disaggregated data available for specific user groups.

Key Learnings: The deliberate inclusion of the social dimension in the design process for the public transport network can include, for example, integrating timetables across transport modes to increase connectivity, and rescheduling services to run throughout the day (not just to support commuting workers) to improve convenience, mobility and safety for different user groups. However, the widespread adoption of good practices such as these may require a relatively high level of political commitment and financial resources.

Case study 2: Involving local communities in mobility strategy development steps

Overview

Description of the theme

- F.24 Stakeholder engagement in the context of infrastructure and transport planning, development and implementation of transport policies is a crucial component of transparent and successful mobility planning. This is true across all levels of transport provision such as high-level/strategic plans (such as public policy and institutional framework) to more local levels of planning and implementation. Transport can be described as a derived demand and as a consequence it is the purpose of the transport network, and therefore transport planning, to meet the needs of a wide spectrum of users going about their daily lives.
- F.25 To best accurately understand the needs of transport users, and therefore the necessities of the current and future transport systems, a robust and thorough stakeholder engagement process is required or else risk not fully capturing the local realities and as a consequence the needs of different user groups¹⁹⁷.

Relevant user groups

- F.26 Stakeholder engagement is required across all impacted user groups. In the case of local, national and international transport plans this covers a wide range of users that may include: men, women, children, PRMs, older people, rural communities, as well as others. As a consequence of the broad nature of transport users it is common for user groups to be defined to those of specific interest, such as in this study. However, when taking this approach, it is important to be aware that the slightly arbitrary grouping of users will result in a number of intersectionalities whereby users may fall into multiple groups.

Main relevant challenges for users

- F.27 Beyond issues of transparency, methodology, or fairness, limited stakeholder engagement within the transport planning process can have multiple impacts on (among others) the accessibility, affordability, availability or connectivity of a transport service or infrastructure.
- F.28 In addition, the financial costs of retrospective changes to build infrastructure as well as the social cost of excluding users if their needs are not accurately accounted for in implementation can be significant in transport, meaning that it is essential that these needs are identified and adequately addressed from the outset.
- F.29 Rural communities which are generally smaller and more isolated geographically than metropolitan counterparts are also at risk of a lack of suitable stakeholder engagement in the planning process both locally (due to lack of funds) and nationally (where rural communities may not be included within national strategic focus). This has the potential to impact the connectivity of rural user groups.
- F.30 Other user groups are also not always reached out to, for instance citizens who do not speak the country language. Those with no digital or reading skills may also be excluded from

¹⁹⁷ Ana Drăguțescu, ICLEI ES; Paula Land ICLEI ES, Elma Meskovic, ICLEI ES. (2020). *Addressing gender equity and vulnerable groups in SUMPs*. Available: https://www.eltis.org/sites/default/files/sump_topic-guide_gender-equity_vulnerable-groups_final.pdf

consultation that rely on written forms whilst citizens with low income or migrants may not have the time or appetite for engagement.

Good practice: Involve local communities in all mobility strategy development steps of a city

- F.31 A good practice in Europe that helps to address some of the social challenges arising from insufficient stakeholder engagement is the ‘Cities 4 People (C4P) Mobility Labs’.

Overview of the C4P Mobility Labs

- F.32 Across a number of European (and international cities) the Citizen Mobility Labs are using a bottom-up approach¹⁹⁸ that makes use of a community-based and participatory model which allows local communities to be involved in all steps of mobility developments. The European cities where these labs are present are: Budapest (HU), Hamburg (DE) and Trilaka (EL) with international labs in Oxford (UK) and Istanbul (TR).
- F.33 The labs provide a space where interested community members are able to come together with mobility experts, policy-makers and other urban mobility stakeholders. The purpose of this is to ‘initiate new projects for their neighbourhoods or districts, and share outcomes in the forms of blueprints, codes, best practices and the like’¹⁹⁹. Local teams at the Citizen Mobility Labs ‘facilitate the work of the communities using creative methods for collaboration and co-creation techniques or suggesting methods and tools for data collection, idea generation and prototyping’.
- F.34 Tangible outcomes of the labs are publicised through a number of presentation days and ‘mobility hackdays’²⁰⁰ which also assist in drawing attention and involvement of different stakeholders.

Results

- F.35 A number of transport outcomes and initiatives have arisen as a consequence of the work and stakeholder engagement conducted at the Citizen Mobility Labs. An example of this is the ‘Mobility Point Network’ in Budapest, which was the scale-up project selected from the evaluated prototypes. The ‘Mobility Point Network’ offers multi-modal transport solutions for citizens travelling to the city centre. This was made possible through the collaboration of not just the city of Budapest but a total of seven mobility providers which essentially provide e-car, e-bike and e-scooter services in four central hubs of the 11th district of Budapest.
- F.36 The stakeholder engagement focus of the labs allowed the citizens of Budapest to pin down the mobility gap between the city centre and the Danube river bank (Buda side) and ultimately bring a sustainable transport system into action with over 30,000 users having benefited from the service.
- F.37 Alongside the tangible transport outcomes of the labs, the ‘Cities 4 People’ project have compiled a suite of resources with relevant engagement material, that includes the following:

¹⁹⁸ Approach based on progressing upward from the lowest levels of a system/activity

¹⁹⁹ Cities 4 People, <https://cities4people.eu/c4p-mobility-labs/>

²⁰⁰ A hackday is a design sprint-like event, in which computer programmers and others involved in software development and various experts collaborate intensively on specific projects.

- ‘Cities-4-People Toolkit of Core Outcome Set (COS) methodology and metrics for People Oriented Transport and Mobility²⁰¹ – A replicable co-creation approach developed by University College of London (UCL) to ‘define a common set of evaluation indicators (COS) of what should be measured in relation to the experience of transport and mobility based on the outcomes that matter to people in their daily lives’.
- ‘Citizen Mobility Kit²⁰² – A tool to illustrate the various stages of the collaborative development process, with suggested tools and methods that help in each stage. The kit also ‘functions as a platform to enhance the communication among the participants in the mobility communities and facilitate their engagement in the urban mobility innovation process’.
- ‘Deployment Toolkit & Replication Guide’²⁰³ – A detailed guide for the procedures of the ‘Cities 4 People’ approach which includes ‘action plans, obstacles/barriers, key success factors, methods applied, regulatory/legal concerns, hints and tips and a toolkit including blueprints and lessons learned’. This guide is aimed at providing meaningful recommendations to other European cities, regional agencies, and policy-makers.
- Final publication – A final publication from the project will distil the discussions from the final conference ‘Towards sustainable mobility – one neighbourhood at a time’ which focused on the 10 main messages for co-creation in mobility. These messages²⁰⁴ are:
 - Utilise the advantages of the neighbourhood level;
 - Invest in citizen participation;
 - Educate on the value of co-creation and provide training and resources;
 - Level the playing field (everybody is an expert, understand the citizens’ needs);
 - Be where the people are;
 - Allow experiments;
 - Ensure diversity and inclusivity in communities;
 - Manage expectations;
 - Evaluate and value the interpersonal and social results;
 - Look at the big picture.

Costs and timescales

- F.38 As mentioned above the Citizen Mobility Labs have resulted in a number of prototype and implemented transport initiatives across the five participating cities. The ‘Cities 4 People’ project has received grant funding from the European Union’s Horizon 2020 Research and Innovation Programme²⁰⁵ of EUR 4 million.
- F.39 The labs were in place for a total of three and half years between the months of May 2017 and November 2020. The resources mentioned above continue to be available but the ‘Cities 4 People’ project is closed.

²⁰¹ Ruth Bell, UCL; Paul Mullins, UCL. (2019). *A Cities-4-People Toolkit of COS Methodology and Metrics*, from https://cities4people.eu/wp-content/uploads/2020/01/D5.2_Public-publication_FINAL_UCL.pdf

²⁰² Available here: <https://cmk.cities4people.eu/>

²⁰³ Isabel Froes, Copenhagen Business School (CBS); Julie Nygaard, CBS; *D6.9 Report on Cities-4-People Deployment Toolkit & Replication Guide* from https://cities4people.eu/wp-content/uploads/2019/10/D6_9_C4P_external.pdf

²⁰⁴ Available here: <https://cities4people.eu/2020/11/18/resources-form-the-cities-4-people-project/>

²⁰⁵ Funding received from the European Union via the European Union’s Horizon 2020 Research and Innovation Programme under grant agreement No 723194.

Cost-benefit analysis

Table F.3: Overview of the costs and benefits of the good practice on local communities involved in all mobility strategy development steps of a city

Category	Benefits	Costs
General users, citizens, taxpayers	Increased participatory engagement with all users Better development of transport services to match user needs	No additional costs if funding comes from external sources.
Women	As for general users	Time involvement
Poor IT-literacy people	As for general users	Time involvement
PRM	As for general users	Time involvement
People in remote areas	No benefits	No costs
Young people/children	As for general users	Time involvement
People on low income	As for general users	Time involvement
Transport providers	Development of more adequate transport offer	Stakeholder engagement costs
Authorities	Increased participatory engagement with all users Better understanding of the user needs Better development of transport services to match user needs	Stakeholder engagement costs Increased engagement complexity

Source: Steer analysis

Other good practices

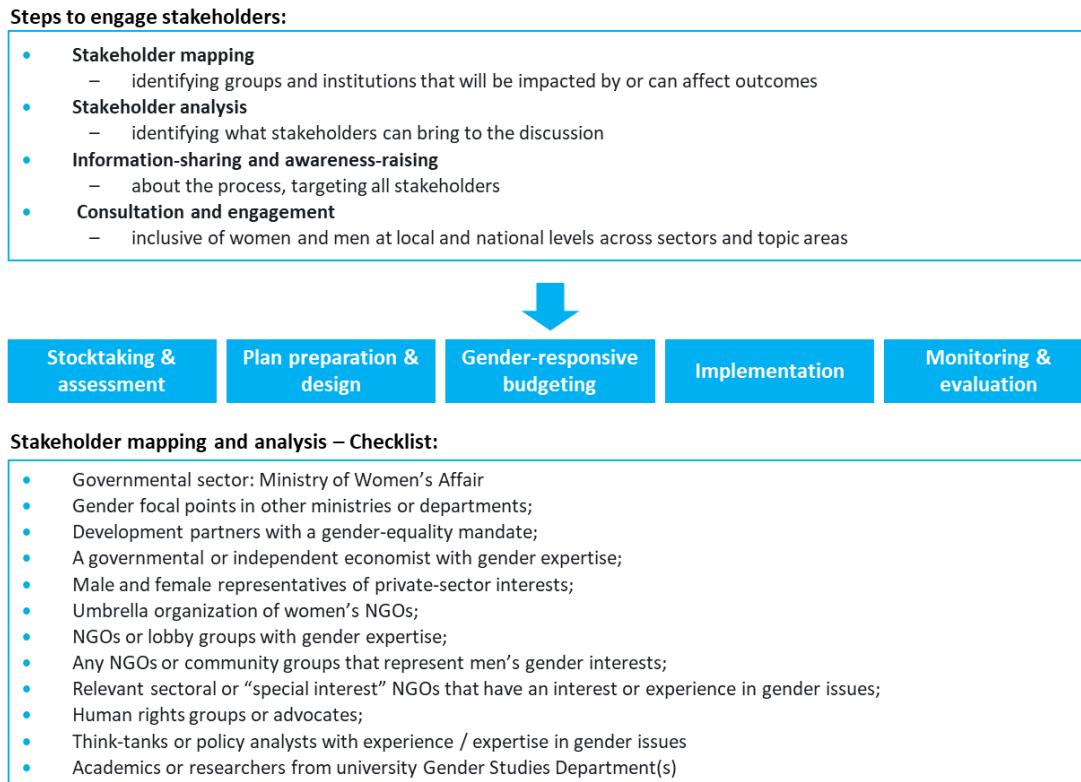
Good practice: Addressing gender equity and vulnerable groups in SUMPs

- F.40 As part of the CIVITAS ECCENTRIC project²⁰⁶, a document guide on addressing the gender equity and inclusivity within transport planning was developed. The target users of the document are mobility practitioners and local authorities, with the goal of illustrating how ‘the SUMP (Sustainable Urban Mobility Plans) process can be designed to address the accessibility needs of women and vulnerable groups of people, and provide insights to guide a gender responsive approach in policy, legislation and procedures for strategic urban transport planning’²⁰⁷.
- F.41 Part of this guide highlights a gender responsive engagement process to facilitate meaningful participation, outlined below.

²⁰⁶ <https://civitas.eu/projects/eccentric>

²⁰⁷ Ana Drăguțescu, ICLEI ES; Paula Land ICLEI ES, Elma Meskovic, ICLEI ES. (2020). *Addressing gender equity and vulnerable groups in SUMPs*. Available: https://www.eltis.org/sites/default/files/sump_topic-guide_gender-equity_vulnerable-groups_final.pdf

Figure F.4: Gender responsive engagement methodology and process



Source: Steer analysis of p.15 Drăguțescu et. al. (2020). *Addressing gender equity and vulnerable groups in SUMPs*. Available: https://www.eltis.org/sites/default/files/sump_topic-guide_gender-equity_vulnerable-groups_final.pdf

Good practice: Increasing women participation in project implementation

5.101 Another good practice that helps to address some of the social challenges for women arising from insufficient stakeholder engagement is the stakeholder consultation process that was employed as part of a World Bank-financed road sector improvement program in the country of Timor Leste²⁰⁸ ²⁰⁹. This included separate focus groups for both men and women which were directly aimed at increasing the participation of women in project implementation.

Transferability and scalability

F.42 The above examples of good practice, particularly from the 'C4P Mobility Labs' and the 'CIVITAS ECCENTRIC' projects are deemed highly transferrable to other contexts. This is principally due to the volume of guidance documents provided by these projects for use by transport planners and local transport authorities. However, a significant barrier to adopting such good practice elsewhere in Europe is financial. For example, 'C4P Mobility Labs' required EUR 4 million in grant funding over the project's three-year duration.

F.43 Scaling up or down stakeholder engagement, utilising such good practice, is also readily achievable. In general, however, it is important to consider how the users' needs change

²⁰⁸Ana Drăguțescu, ICLEI ES; Paula Land ICLEI ES, Elma Meskovic, ICLEI ES. (2020). *Addressing gender equity and vulnerable groups in SUMPs*. Available: https://www.eltis.org/sites/default/files/sump_topic-guide_gender-equity_vulnerable-groups_final.pdf

²⁰⁹Timor-Leste - Branch Roads Project: Environmental Assessment: Environmental and Social Management Plan (English). Washington, D.C.: World Bank Group. Available: <http://documents.worldbank.org/curated/en/567801556254807427/Environmental-and-Social-Management-Plan>

across geographies or with different intersecting characteristics. For example, children with disabilities and with reduced mobility may have distinctly different needs to other children or adults with disabilities and with reduced mobility when considered individually. There may also be additional duty of care requirements. Such complexity is compounded when we overlay changes in geography (i.e. urban, peri-urban, rural). Such considerations become more likely with larger projects which cut across multiple user groups, demographics, and geographies.

Key Learnings: The good practices within this theme of stakeholder engagement form an important part of wider mainstreaming activities and the creation of a more equitable and inclusive transport system. The transport outcomes of Citizen Mobility Labs highlight that collaborative and inclusive design processes can lead to successful transport initiatives and policy which accurately addressed the transport needs of a community. The transferability of engagement activities like this relies upon developing robust engagement processes and resources which can then reduce the cost barrier to wider stakeholder engagement in other areas across the EU. This could provide an opportunity for more remote and smaller communities to be consulted and their transport needs reflected in transport outcomes.

Case study 3: Free public transport

Overview

Description

- F.44 Free public transportation refers to public transportation which is funded through means other than collecting fares from users. In practice this means that public transportation becomes free for all users at the point of access. To cover the costs of running the network, other means of revenue-raising are used, such as use of public subsidies, or commercial sponsorship. One of the main theoretical arguments for a free public transport network is that private car use is subsidised by tax benefits and other public schemes as well as being free at the point of use. Making public transport free at the point of use should, therefore, effectively re-level the playing field between public transport and private cars²¹⁰.
- F.45 Free public transportation systems for all user groups are relatively rare, and the number of examples in Europe is quite small (in Estonia, across the entire Luxembourg, in some French cities: Dunkerque and Montpellier from 2023, city centre of Augsburg in Germany since 2020). Much more common, there are free fares for a certain portion of the local population – for example, free fares for schoolchildren – or free fares at certain times of the day – for example, at the weekend²¹¹.

Target user groups

- F.46 The user groups which benefit most from free public transportation tend to be those who are on low income and would otherwise struggle to afford the costs of using the transportation network. As stated elsewhere in this report, there is a high degree of intersectionality between low-income public transport users and other user groups, for example, migrants, older and/or young people.

Solutions offered by the good practice

- F.47 The core benefits of providing free public transportation are, very broadly: to increase patronage, to improve social integration and lower transport costs for the user. Note that whilst transport is free for the user, as there are no revenues from the fare box, costs for the public authority increase. Aside from the challenges of financial sustainability, free public transportation can also reduce the numbers of people using ‘active’ modes like walking and cycling, lead to a devaluation of the services possibly resulting in antisocial behaviours like vandalism, and cause overcrowding²¹². In addition, the new ridership attracted by free fares tends not to come from private cars – as such it is a policy which may have limited effectiveness when it comes to trying to implement mode shift from cars to public transportation and thus to reach decarbonisation objectives²¹³.
- F.48 As pressure comes upon cities and countries to reduce carbon emissions, improve air quality, and improve social equity and inclusion, making public transport use affordable and popular is

²¹⁰ Cats and Suslio, [Public Transport Pricing Policy – Empirical Evidence from a Fare-Free Scheme in Tallinn, Estonia, 2014](#).

²¹¹ Wojciech Kęblowski, [Why \(not\) abolish fares? Exploring the global geography of fare-free public transport](#), 2019.

²¹² Perone and Voliniski, [Advantages and Disadvantages of Fare-Free Transit Policy](#), 2002.

²¹³ Ibidem.

becoming ever more important. Against this backdrop, some cities are turning to free public transportation as a potential tool to achieve these overall policy objectives.

Good practice: Free public transport in Tallinn, Estonia

Description of activities

F.49 Since 2013, public transport has been free in Tallinn, Estonia. The main objectives of this project are to:

- promote modal shift from private car to public transport;
- increase the mobility of unemployed and low-income groups; and
- stimulate the registration of inhabitants as residents of Tallinn (therefore increasing municipal income tax) as transport is free only for registered city residents.

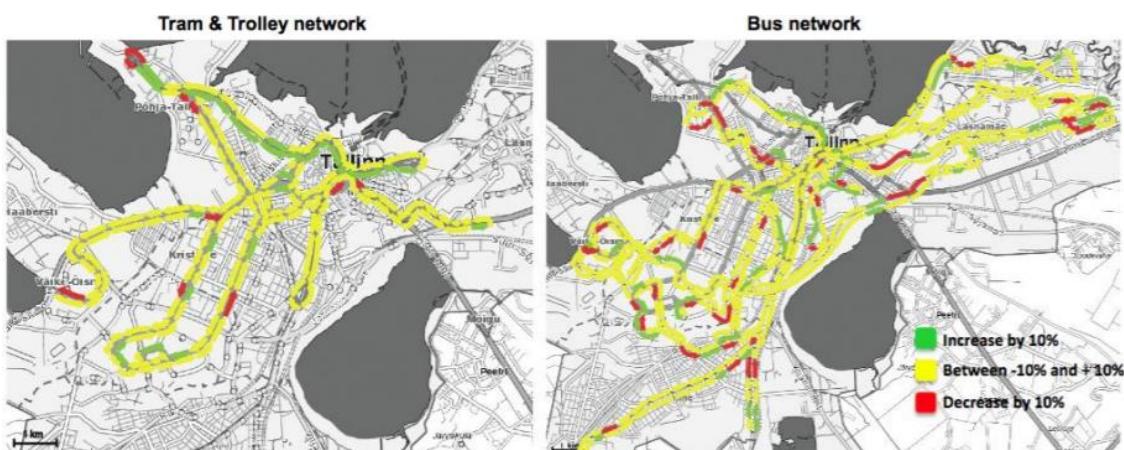
Target user groups

F.50 Transport is free for all individuals who are registered as residents in the city, while visitors are required to pay fares for the use of services²¹⁴.

Results

F.51 The results of the project have been relatively mixed. The average speed of the public transport network has remained constant (19.14km/h), but there have been some spatial changes, some of which are evident in the Figure below (F.5)²¹⁵. On average, speeds lower in the city centre (likely due to an increase in loading/unloading times), but slightly higher on the periphery²¹⁶. However, as the figure below shows, this pattern is far from uniform – variations in speed are generally very localised.

Figure F.5: Impacts of free public transport upon transit speeds, Tallinn



Source: Cats and Suslio, 2014

F.52 Overall, the number of people travelling by public transport has increased by approximately 3%. However, the average trip length decreased by approximately 10%, suggesting that people are possibly using the public transport network as a substitute for walking and cycling, rather

²¹⁴ [Fare-Free Public Transport, Tallinn, SMARTA, 2019](#).

²¹⁵ Cats and Suslio, [Public Transport Pricing Policy – Empirical Evidence from a Fare-Free Scheme in Tallinn, Estonia, 2014](#).

²¹⁶ Ibidem.

than shifting from longer-distance private car journeys²¹⁷. Some estimates suggest that although car mode share dropped by only 5%, walking and cycling mode share dropped by 40%²¹⁸.

F.53 In 2019, the city estimated that the scheme was providing a benefit of EUR 20,000 a year, through increased tax revenue due to increased residency in the city²¹⁹. However, analysis in 2021 by the Estonian National Audit Office concluded that free public transport has not reached its goal to reduce car journeys. It has managed to slow the fall in public transportation usage, but has not attracted a significant number of new users²²⁰. In addition, the costs of the scheme has gradually risen since it was initially implemented. Finally, it has caused some tension between the city region, where the scheme is in place, and surrounding areas. For residents of these surrounding areas, ineligible for the programme, it is unjust that they have to pay while residents of the city do not²²¹. In addition, the scheme may attract individuals and investment into the city, at the detriment of the surrounding area.

F.54 Overall, the Estonian National Audit Office recommended the following changes to the scheme:

- encourage authorities to consider alternatives to regular bus lines such as on-demand services in sparsely populated areas²²²;
- base further development of public transport services on the actual demands of all possible customers including today's car drivers;
- set out a clear and equal funding system for county public transport;
- create an information system assembling public transport data as well as a common ticket system nation-wide.

F.55 Ultimately, research examining the final impacts of free public transportation in Tallinn stated that: 'from a macroeconomic point of view, income inequality could be better addressed through adjustments to income tax schemes. [...] Alternatively, user-specific fare schemes could directly address disadvantaged travellers [and] groups and hence better address income inequality.'

Cost-benefit analysis

Table F.4: Overview of the costs and benefits of the good practice on free public transport in Tallinn

Category	Benefits	Costs
General users, citizens, taxpayers	Public transport is free, lowering of income barrier in transport decisions. Increase in the number of trips, decrease in the number of car trips.	No direct costs for users. Possible indirect costs for city taxpayers if the funding of the system draws from them Decrease in walking and cycling trips.

²¹⁷ ibidem.

²¹⁸ World Economic Forum, [Estonia is making public transport free](#), 2018.

²¹⁹ [Fare-Free Public Transport](#), Tallinn, SMARTA, 2019.

²²⁰ Kollinger, [Estonia's free county public transport did not fulfil goals](#), 2021.

²²¹ ibidem.

²²² ibidem.

Category	Benefits	Costs
	Change in spatial distribution of trips	Change in spatial distribution of trips
Women	As for general transport users	No direct costs as a user, indirect costs as a taxpayer
Poor IT-literacy people	As for general transport users	No direct costs as a user, indirect costs as a taxpayer
PRM	As for general transport users	No direct costs as a user, indirect costs as a taxpayer
People in remote areas	As for general transport users	No direct costs as a user, indirect costs as a taxpayer
Young people/children	As for general transport users	No direct costs as a user, indirect costs as a taxpayer
People on low income	As for general transport users	No direct costs as a user, indirect costs as a taxpayer
Transport providers	Possible increase in trips: need to increase transport offer	Possible increase in trips: need to operate more buses, get more drivers
Authorities	Increased residency in the city, increased attractiveness of area with free public transport	Unclear financial benefits, noting that the fare box of the transport provider need to be funded by the authority directly. No significant reduction in car journeys and reduction in active travel modes

Source: Steer analysis

Other good practices

Overview

F.56 Since the 1990s, there has been a gradual growth in the number of European cities with free public transport. For example the city of Hasselt (circa 75,000 inhabitants) in Belgium, Templin (15,000) in Germany and Aubagne and nearby municipalities (100,000 in total) in France. All of these initiatives were introduced with substantial additions to the network supply, and enjoyed a large increase in ridership. However, in all cases, only a very small proportion of this increase came from modal shift from cars.

Free public transport in Luxembourg

F.57 In 2020, Luxembourg made public transport free across the country. There are several factors which made this possible. Luxembourg is one of the smallest countries in Europe, with a population of approximately 630,000 people. Although the country has some suburban and rural areas – which have some transport provision challenges – these are smaller than in many other countries, by simple merit of the fact that Luxembourg itself is so small²²³. For this reason, making public transport across the country free is more similar to making public transport free across a large city, than it would be for larger countries. Additionally, prior to

²²³ Smarta, *Rural Shared Mobility Paper*, Luxembourg, 2019

making the network free to use, annual fare revenue only covered around 10% of the network's operating costs.

- F.58 Some of the motivations for introducing the policy were to reduce congestion, reduce inequality, and help to improve the environment. Unlike in Tallinn, where public transport is only free for residents, public transport is free for all users in Luxembourg, including visitors and commuters from outside the country's borders.
- F.59 Overall, the policy has seen a mixture of support and opposition: opponents suggest that it will do little to actually tackle inequality and congestion (for reasons already explored in the sections above). Supporters, however, cite the positive media attention that the country has seen as a result of the scheme, stating that running a media campaign of a comparable scale to promote the country would have cost significantly more than making fares free. At present, there is little quantitative evaluation of how beneficial or not the scheme has been for local residents, although there have been unsubstantiated suggestions that mode share to public transport has come from sustainable modes, rather than from private cars.

Transferability and scalability

- F.60 Theoretically, free public transport could be transferred to any municipality or country with a public transport network. However, in the case studies available, certain geographic, economic, and sociodemographic characteristics have historically proven to be more effective than others when implementing free public transport systems.
- F.61 First, it is more straightforward to implement a free fare system when the area has a discrete boundary and unified governance. For example, cross-border²²⁴ services can be difficult to incorporate into free public transportation networks. Similarly, if there are a range of different transportation operating bodies in a given area, it can be challenging to make them all commit to the provision of a free network. This is particularly the case if some operators are public sector, while others are private sector. In practice, this means that municipalities with unified transportation systems are often the areas where free public transport are most effective, or at least can be most easily deployed.
- F.62 Second, free public transport networks have tended to be more effective in municipalities which are relatively small scale. However, it is worth noting that this may simply be a reflection of the available sample: the majority of free public transport networks are small scale, with many covering a single line or neighbourhood. Many of the examples explored above are for relatively small municipalities (Tallinn's population is approximately 426,500, significantly smaller than many European capitals). There has not been enough time for the Luxembourg example to show clear results, but when it does, this might provide some more evidence about how effective free public transport is at a larger scale.
- F.63 Finally, the conditions for financial sustainability must be met. In some areas this may be easier than others. For example, in Aubagne, France, prior to the introduction of free public transport, user fares accounted for only 9% of the public transport budget. By contrast, fares accounted for 47% of Transport for London's funding income in 2019/2020²²⁵. Clearly, in areas where fares make up a large component of the income, it will be more challenging to make public transport fares free.

²²⁴ Including non-national borders, such as municipal boundaries.

²²⁵ Transport for London, [How we are funded](#), accessed 25/08/2021

F.64 Ultimately, although free public transport networks generate headlines, and may generate short-term goodwill amongst residents, they are not necessarily effective policies, nor are they suitable for every geography. Free public transport should be seen as one tool which could be used to help equity, given suitable financial, geographical, and social circumstances. For example, one of the most high-profile examples of proposed free public transport was the city of Paris, France, where, in 2018, the city's mayor initiated proposals to make the network free of charge²²⁶. Extensive pre-feasibility studies were carried out, which ultimately found the idea to be untenable²²⁷. Instead, public transport has been made free for those who are under 18, and those who are older than 65²²⁸.

Key Learnings: The outcomes of free public transport in Tallinn (the capital city of Estonia) and Luxembourg for user groups and the wider transport system have been mixed and could, therefore, show that free public transport is only one tool in a suite of measures which could be used to improve equity and inclusion in transport.

²²⁶ Bloomberg CITYLAB, Paris Gets Serious About Free Transit, Feargus O'Sullivan, 2018

²²⁷ International Railway Journal, Study rejects free public transport for Paris, 2018

²²⁸ Bloomberg CITYLAB, Free Transit for Riders Under 18? In Paris, It's Here. Feargus O'Sullivan and David Dudley, 2020

Case study 4: Deployment of services powered by autonomous technologies in areas with low public transport availability

Overview

What is a ‘connected and autonomous vehicle’?

- F.65 A connected and autonomous vehicle (CAV) is a vehicle that can drive itself with limited/no supervision of human operators, using advanced sensors, machine learning technologies and pre-programmed instructions. The technology allows for vehicle to vehicle (V2V) or vehicle to infrastructure (V2I) communications, which can help to manage traffic more efficiently through vehicle re-routing, better network performance, road and parking utilisation, etc.
- F.66 The following taxonomy is used internationally²²⁹ for the degree of vehicle automation:
- Level 1 – Driver assistance: Human driver with technological assistance, monitoring the driving environment and assisted in a lateral motion;
 - Level 2 – Partial automation: Human driver with technological assistance, monitoring the driving environment and assisted in a longitudinal motion;
 - Level 3 – Conditional automation: Automated driving system performs all dynamic tasks of driving (monitoring of the environment and motion control), but the human driver is expected to be available for occasional control of the vehicle;
 - Level 4 – High automation: The automated driving system controls the vehicle within a prescribed operational domain;
 - Level 5 – Full automation: The automated driving system can operate the vehicle under all on-road conditions with no design-based restrictions.

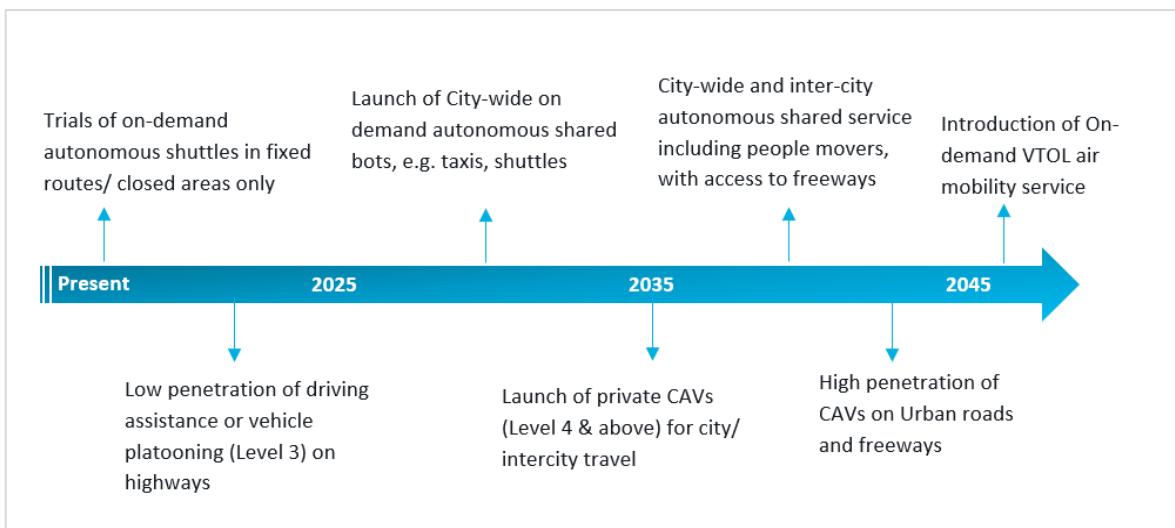
Timeline for connected and autonomous vehicles use

- F.67 While CAVs are being tested in several locations across the world, necessary regulations such as allowing testing of a vehicle on roads without the presence of a driver, fully autonomous vehicles capable of driving themselves under all traffic conditions amidst pedestrian and non-autonomous traffic, are not expected to be in place until 2025²³⁰. Across Europe, the below diagram highlights anticipated timeline for the launch of CAVs:

²²⁹ as prescribed by SAE International Standard J3016.

²³⁰ <https://www.bcg.com/publications/2016/transportation-travel-tourism-automotive-will-autonomous-vehicles-derail-trains.aspx>

Figure F.6:Timeline for the launch of CAVs



Source: Steer forecast of CAVs uptake (2020). Note that 'vehicle platooning' means decreasing the distances between cars or lorries using an automated system which is meant to increase the capacity of roads.

Types of connected and autonomous vehicles

- F.68 There are different types of CAVs available in the market for passenger transport which are built to serve different purposes and are currently being trialled across the world, including:
- Autonomous shuttles and buses for shared use;
 - Autonomous cars and taxis for personal transportation;
 - Autonomous air mobility.

- F.69 This good practice is focused on the first category which are currently used on road to primarily complement public transport services e.g. fixed route buses.

Possible benefits of connected and autonomous vehicles to its users

- F.70 Benefits of connected and autonomous vehicles are expected to be important, especially on some aspects such as reducing road accidents (on average 95% of accidents happen due to human error across Europe²³¹ according to a 2021 European Parliament document), reducing travel time (through route optimisation) and reducing transport emissions (as most connected and autonomous vehicles will use electric powertrains).

- F.71 In addition, this technology has the potential to address some of the key existing and future challenges of equity and inclusion in transport relating to some, but perhaps not all, user groups, such as:

- Provide an alternative to car travel: connected and autonomous vehicles are initially expected to be deployed as on-demand transport services, either as shared taxis or shuttles and buses. These can particularly help reduce the gaps in fixed route public transport services that exist in suburban or rural areas due to lower demand and/or improve first and last mile connectivity for the groups without an access to private cars including young, older people or people belonging to low-income groups;

²³¹ [Road fatality statistics in the EU \(infographic\) | News | European Parliament \(europa.eu\)](#)

- Support delivery of a personalised travel experience: connected and autonomous vehicles are expected to provide door-to-door transport services which may improve accessibility to transport for user groups who have special needs including older people or PRMs; and
- Reduce cost of travel compared to taxis: based on a comparative study by Arthur D Little²³², connected and autonomous vehicles are expected to reduce passenger.km costs from a possible range from 45% to 82% compared to taxis, mainly owing to both cheaper vehicle costs and cheaper operating costs (through increased reliance on the ride-sharing model similar to Uber, but without an Uber driver's costs).

Possible issues with connected and autonomous vehicles

- F.72 One of the main concern about large scale connected and autonomous vehicles adoption is around the safety of both connected and autonomous vehicles users and other road users e.g. pedestrians, cyclists, etc. In addition to that, deployment of connected and autonomous vehicles on public roads might cause some specific issues which may exclude them from accessing these services.
- F.73 Other concerns include the fact revealed by a survey²³³ that owners of self-driving cars would expect to use their private individual vehicles significantly more often once autonomous features were available, thereby adding traffic to the streets and lowering the quality of the mobility of users who need to rely on cars for their needs (including some PRMs for instance).
- F.74 Other possible issues include over-reliance on technology: most connected and autonomous services are likely to be on-demand taxis or shuttle services accessible via an app or a booking website. This may exclude the groups with poor IT literacy and with limited access to internet from accessing these services. Also, a wheelchair user accessing pavements or roads, for example, might be more concerned about safety about having automated vehicles on roads without any human supervision. Therefore, these issues need to be carefully considered while developing a transport service using connected and autonomous vehicles.

Good practice: Full-scale demonstrations of urban transport automation

Background

- F.75 AVENUE²³⁴, an EU funded project under Horizon 2020, aims to design and carry out full-scale demonstrations of urban transport automation in low to medium demand areas by deploying fleets of autonomous minibuses in 4 European demonstrator cities: Lyon (FR), Copenhagen (DK), Luxembourg (LU) and Geneva (CH) and 2 to 3 other cities.
- F.76 The objective of the AVENUE project is to test the feasibility of automated, on-demand, door-to-door transport service to potentially complement public transport services, and/or bridge the gap in public transport provision, particularly in sub-urban or rural areas.
- F.77 The trials also focus on improving passenger travel experience, specifically focusing on specific needs of different users such as older people, people with disabilities and other users. Alongside, evaluating road behaviour, testing the safety of connected and autonomous

²³² Arthur D. Little & UITP Future of Mobility 3 study:
https://www.adlittle.com/sites/default/files/viewpoints/adl_uotp_future_of_mobility_3.0_1.pdf

²³³ Same source as 216

²³⁴ [Public Deliverables – AVENUE \(h2020-avenue.eu\)](#)

vehicles usage (on public roads) and passengers' safety are central points of the AVENUE project.

Pilot objectives and specifications²³⁵

- F.78 As part of the AVENUE project, Keolis Lyon in collaboration with NAVYA piloted an on-demand level 4 autonomous e-minibus service called Navly (which does not require a driver, but a safety driver was present during the trials) in an open street environment, where the route and destinations were determined autonomously using a fleet management system. The vehicles were equipped with wheelchair accessibility to include persons with disabilities and with reduced mobility. The target was to deliver a system comprising of vehicles and services that independently select and optimise their destination and routes, based on the passenger demands.
- F.79 The main goals of the trial were to test:
- The full integration with public transport (to support integration of connected and autonomous vehicles with public transport);
 - Whether there could be fluid interaction between connected and autonomous vehicles and urban traffic;
 - The level of social acceptance of connected and autonomous vehicles by the public;
 - Whether the service can support local businesses in the area (such as hotels, restaurants, offices) through better access to their services;
 - The requirements for passengers' information and record any needed improvements.
- F.80 Also, given the novelty of the service (using connected and autonomous vehicles), the trial aimed to understand who the potential users of connected and autonomous vehicles might be and whether the introduction of connected and autonomous vehicles in the public transport system would result in a changed mobility behaviour.
- F.81 The first phase of the trial in Lyon ran for 3 years between 2016 and 2019, which covered 35,000 km and carried more than 55,000 passengers. During the trial, a user survey was conducted to determine the social acceptance and user experience of using connected and autonomous vehicles in order to understand whether they can be integrated with public transport to improve accessibility and reliability of public transport services and what might be the potential challenges.

F.82

Lessons learnt

- F.83 On-demand services using connected and autonomous vehicles can be considered a reliable and more accessible mode of public transport service compared to fixed route bus services, which can also cater to the need for a personalised travel (often unavailable with public transport options) by different user groups.
- F.84 Some of the key findings²³⁶ from the trial include:
- Given connected and autonomous vehicles are a new technology, social acceptance is very important. 74% of survey respondents agreed that connected and autonomous

²³⁵ [D7.5 First Iteration Lyon Scale Pilot Use Case Demonstration report_final_v3.1.pdf \(h2020-avenue.eu\)](#)

²³⁶ [D8.8-First-Iteration-Social-impact.pdf \(h2020-avenue.eu\)](#) – Pages 17-20

vehicles (or autonomous shuttles here) will be an important form of transport in the future;

- The most attracting advantages of deploying connected and autonomous vehicles for respondents were a higher flexibility (provide more opportunities, a higher level of freedom of choice), reduced environmental impacts and the hope that such shuttles could be booked on demand in the future;
- Regarding the participants' motivation to reduce the use of their personal car, 56% have pointed out to be motivated or highly motivated;
- When asked about the willingness to use the service, 31% agreed to be willing or very willing to use the service, while 22% stated a neutral positioning. This, however, means that about 48% participants are unwilling to use connected and autonomous vehicles (most likely owing to safety concerns) and therefore further trials and research in technology is expected in the area to gain consumer confidence;
- When asked about the willingness to pay to use connected and autonomous vehicles (or autonomous shuttles here), 18% affirmed to be willing to pay a higher price in comparison to the current price of public transport, 46% affirmed to be willing to pay the same amount of public transport; and 36% stated to be willing only to pay less than for public transport or nothing at all;
- The main concerns from connected and autonomous vehicles deployment were issues on liability in case of accidents, job losses (e.g. drivers), and safety including how connected and autonomous vehicles interact with other vehicles.

Cost-benefit analysis

Table F.5: Overview of the costs and benefits of the good practice on

Category	Benefits	Costs
General users, citizens, taxpayers	Positive societal acceptance, but remaining safety concerns Ticket price no higher than vehicle with driver	Loss of driver jobs Unclear liability/legal aspects in case of traffic accidents Increased costs of infrastructure (digital in particular) to support the vehicles
Women	As for general users	Lower degree of perceived safety with lack of driver, especially at night or in remote areas
Poor IT-literacy people	As for general users	In case of on-demand services, significant barrier to book as booking systems are all digital
PRM	Accessible vehicle Possibility of door-to-door transport	Unclear how autonomous vehicle will ensure independent boarding, management of ramps, etc
People in remote areas	Possible increased in transport offer in less well served areas, if well specified by authorities	Possible infrastructure costs (Internet 5G, well defined streets, etc) to allow services to access remote areas
Young people/children	Possibility of door-to-door transport	Lower degree of perceived safety with lack of driver Unclear how specific children seating requirements are being considered and supported

Category	Benefits	Costs
People on low income	As for general users	Ticket price as high as on vehicles with driver
Transport providers	No driver costs Reduced driving human error, reduced risk of driving fatigue Reduced environmental impacts (if energy provides from a sustainable source) Potential increased reliability	Higher acquisition costs of vehicle More complex maintenance needs
Authorities	Alternative to car travel Support delivery of a personalised travel experience Possible increased in transport offer in less well served areas, if well specified by authorities	Lack of human contact (negative perceived safety and PRM/children quality of service)

Source: Steer analysis

Other good practices

Good practice: Integration of autonomous shuttles in European cities

F.85 The 3-year long FABULOS project²³⁷ tested six pilots using autonomous shuttles in the cities of Helsinki (Finland), Tallinn (Estonia), Gjesdal (Norway), Lamia (Greece) and Helmond (Netherlands) to demonstrate the feasibility of connected and autonomous vehicles. A total of 2,807 passengers were taken on-board the shuttles and approximately 14,000 kilometres were driven in open road conditions across these cities. The pilots have been successful in demonstrating the functionality, interoperability, and security of introducing connected and autonomous vehicles in a variety of roads, weathers and cities.

F.86 Some of the key learnings from the pilots²³⁸ include:

- Small connected and autonomous vehicles (shuttles) enable efficient transport in areas where there is limited public transport, in particular for older people and very young children (who cannot use bikes or e-scooters, for example);
- Connected and autonomous vehicles can be operated on public roads along with other vehicles, but the drivers of the latter need time to get used to the autonomous shuttles.
- On-demand connected and autonomous vehicles make most sense when they are able to move beyond the fixed route/commissioned path;
- A collaborative approach between the local authorities and vehicle manufacturer/service operator is key to provide a smooth service and user experience. For example, in the Gjesdal pilot, getting transport service information into public transport apps for passengers was difficult without the help of a traditional bus service operator or a public transport authority involved in the process;
- Connected and autonomous vehicles need to perform in all weather conditions in order to be easily transferable to any setting. The vehicles used during the trial performed in the

²³⁷ [FABULOS Newsletter / Read the FABULOS project outcomes \(mailchi.mp\)](#)

²³⁸ [Deliverables - FABULOS](#)

urban Helsinki and sub-urban Gjesdal. Also in snow, fog, steep hills and other challenging conditions;

- Existing infrastructure sets the limitations and timeline to change it can be too long/expensive.

F.87 In terms of providing a smooth service and user experience, we also expect that representatives from different user groups would have been included as part of the collaborative approach between the local authorities and vehicle manufacturer/service operator.

Possible good practice: Trial integration of a connected and autonomous bus into day-to-day transport operations in Spain

F.88 While most connected and autonomous vehicles trials currently are using smaller vehicles including cars or shuttles (capacity to carry up to 15 passengers²³⁹), the first trial of an autonomous bus service was launched in Malaga²⁴⁰ (Spain) in March 2021. The trial is sponsored by Spain's Centre for Industrial Technological Development (CDTI), an agency which aims to develop technologies for the automation of vehicles in urban and industrial transport applications. The trial is still in the early stages and relevant findings have not been considered yet.

Possible good practice: Trial integration of a connected and autonomous bus into day-to-day transport operations in Scotland

F.89 Project CAVForth (United Kingdom)²⁴¹: A similar trial using larger connected and autonomous vehicles is about to take place in Scotland in 2022 on a 22km route from River Forth to Edinburgh using autonomous buses to evaluate the feasibility of providing fairly long-distance travel solutions using connected and autonomous vehicles. Retrofitted buses will be used for the trial and are expected to transport a mix of commuters, students, day trippers and tourists as well as novelty riders.

Transferability and scalability

F.90 These findings suggest that users could be willing to use connected and autonomous vehicles as mode of travel, and especially for last and first mile connections, if available, and possibly replace private car trips with them, when provided in a safe and secure way.

F.91 When deployed in areas with low public transport availability, these services can provide a reliable (and somewhat still affordable) transport choice to the users living in those areas, particularly those who do not have access to a car or are forced to purchase a car due to lack of alternative transport choices.

F.92 The availability of on-demand bookings, and door-to-door services can potentially also help address the needs of personalised travel for PRMs. This may also act as an alternative to fixed-route public transport provision to improve accessibility for non-car users such as young or low-income user groups, especially in sub-urban and rural areas with reduced services owing to low demand and financial unsustainability.

²³⁹ Based on the average capacity of CAV minibuses e.g. [Navya autonomous minibuses](#)

²⁴⁰ [Málaga launches Europe's first driverless electric bus - Cities Today \(cities-today.com\)](#)

²⁴¹ [Project CAVForth \(transport.gov.scot\)](#) and <https://www.fusionproc.com/first-glimpse-of-uks-first-av-level-4-full-sized-autonomous-bus-service/>

F.93 However, connected and autonomous vehicles are still in the pilot phase, and are not allowed on public roads yet. Trials on case-by-case basis are being conducted to evaluate safety and user acceptance of services using connected and autonomous vehicles.

F.94 When and if it becomes a mainstream travel mode, it is likely that connected and autonomous vehicles will be transferable to any location and scaled based on requirements of the area. There are, however, many pre-requisites for connected and autonomous vehicles deployment that should be considered by local transport authorities or planners as following:

- Political will and supporting legislations: public bodies need to authorise connected and autonomous vehicles projects as part of public transport services or license private operators to operate services using connected and autonomous vehicles depending on vehicle or technology used, area of operation or services provided. The road regulations might also need to be developed or modified to support connected and autonomous vehicles use;
- Built environment and infrastructure requirements: the local governments have to modify infrastructure (e.g. roadworks, lights signal control, 5G) to support connected and autonomous vehicles on public roads;
- Capital costs: while it is expected that it will be cheaper to operate connected and autonomous vehicles due to the lack of need for a human driver/supervisor and the ‘automated’ nature of the vehicles will interact efficiently with the traffic, the costs of procuring these vehicles will be significantly higher than existing minibuses;
- Integration is essential: on-demand connected and autonomous vehicles services would work as long as integration between all stakeholders (authorities, companies, users) is carefully planned.

Key Learnings: When deployed in areas with low public transport availability, services powered by autonomous technologies could provide a reliable transport service to users, particularly those who do not have access to a private vehicle or must have one due to lack of alternate transport choices. However, as for any travel model, authorities will need to ensure that they are deployed where user groups need them and that they are designed/planned/implemented to fulfil the needs of user groups and not just that of the ‘general public’.

Case study 5: Rural demand responsive transport

Overview

Description

- F.95 Demand responsive transport (DRT) can be defined as a transport service which operates dynamically – adjusting service characteristics (routes, frequencies, etc.) in response to real-time passenger demand rather than a fixed route and/or timetable. Typically, this involves transport users placing a trip request via telephone, web browser or a smartphone app. Requests are then processed by a central dispatcher (human or computer system²⁴²) to arrange pickup. This allows for a dynamic modulation of transport services in response to passenger demand.
- F.96 DRT is commonly used in the context of road transport. To date, relatively small vehicles (taxis and minibuses) have been used, likely reflecting DRT's more frequent deployment in low-demand areas and as a door-to-door service (smaller vehicles are better able to navigate narrower residential streets).

Target user groups of the good practice

- F.97 DRT is predominantly deployed to provide transport services to those living in remote areas (typically rural regions²⁴³ or islands), and/or to those who are least likely to be able to afford, own or otherwise use a car (typically older people, people with disabilities and with reduced mobility²⁴⁴, and young people and children²⁴⁵).

Challenges addressed by the good practice

- F.98 In general, DRT seeks to address the challenges facing transport users primarily in terms of the accessibility (i.e. connectivity and usability) of public transport networks. The high-level challenges facing users are summarised in Table F.3.

Table F.6: Matrix of challenges facing users addressed by the good practice

Theme	Challenges addressed
Connectivity	<ul style="list-style-type: none"> Services are too infrequent to be meaningful alternatives to other modes (cars) Services do not reach the user's property or the user's desired destination (sparse route networks) Services are too slow (long route networks)
Usability	<ul style="list-style-type: none"> Users are unable to use the public transport offer because the public transport does not fulfil their needs (stair-free access to vehicles, storage for wheelchairs) Users are unable or unwilling to access bus stops in remote locations (waiting in or traversing through hazardous conditions, e.g. walking in a road) Users are unable to access information on services

²⁴² Such as Shotl, an on-demand mobility platform with driver and user apps and management module developed in Spain. See www.shotl.com for further details.

²⁴³ e.g. Ring a Link Kilkenny (www.ringalink.ie).

²⁴⁴ The Rennes Metropolitan Area Handistar service (www.star.fr/handistar).

²⁴⁵ La Saire transport à la demande (<https://blog.padam-mobility.com/en/2019/12/03/meet-the-users-of-the-demand-responsive-transport-le-cotentin/>)

Theme	Challenges addressed
Affordability	<ul style="list-style-type: none"> Services are more expensive than private cars
Reliability	<ul style="list-style-type: none"> Services are less reliable than private cars

Source: Steer analysis

F.99 The causes of these challenges are complex and wide-ranging²⁴⁶ but can include:

- Low ridership;
- High operating costs;
- Large transport networks;
- Under-utilisation of vehicles;
- Lack of informative (e.g. real-time) service data;
- Lack of accessible infrastructure (e.g. no pavement on roads, no accessible vehicle or infrastructure, etc.)
- Behavioural factors and biases (resistance to change, perceptions on quality of transport, private cars as a mark of status and wealth, etc.)

Solutions provided by the good practice

F.100 DRT can help to address the challenges faced by users living in remote areas where 'traditional' public transport systems may struggle to provide affordable, well-connected and reliable transport services. DRT also allows operators to address the needs of other users such as people with disabilities and with reduced mobility by providing accessible vehicles and disability-awareness trained drivers.

Table F.7: Solutions offered by DRT

Causes of key user challenges	DRT solutions
Under-utilised vehicles	<ul style="list-style-type: none"> Dynamic 'free roam' service delivery (routes respond to real-time changes in demand), helping to maximise load factors and reduce 'dead mileage' (services running with no passengers). Increased demand resulting from: <ul style="list-style-type: none"> first and last mile service provision greater network connectivity greater availability of services
Low ridership	<ul style="list-style-type: none"> Increased demand resulting from: <ul style="list-style-type: none"> Precise fulfilment of the transport needs of users, both in terms of origin and destination and in terms of time of travel first and last mile service provision greater network connectivity (in some cases)
Lack of informative service data	<ul style="list-style-type: none"> Transit tracking through mobile apps to provide real-time journey data where electronic displays or paper timetables are unavailable at bus-stops²⁴⁷.

²⁴⁶ Liftango (2019). A Definitive Guide for Rural Demand-Responsive Transport (DRT) v.011020. Available from: www.liftango.com [Accessed 10/8/21].

²⁴⁷ It should be noted, however, that in areas with non-existent or poor mobile signal, reliance on connectivity (internet or phone signal) could exacerbate exclusion from the transport system.

Causes of key user challenges	DRT solutions
Lack of accessible infrastructure	<ul style="list-style-type: none"> Provision of accessible vehicles and disability-awareness trained drivers

Source: Steer analysis, Liftango (2019)²⁴⁸

Good practice: Rural demand responsive transport in Ireland

F.101 Ireland has considerable experience deploying DRT services in remote areas – developments which have been driven by its Rural Transport Programme²⁴⁹ established in 2006. The Programme has supported and funded 17 ‘Local Link’ coordination units organizing both DRT and scheduled services throughout the entirety of the Republic of Ireland (apart from Dublin). These coordination units arrange mobility services and provide the interface between transport users, operators and government. Notably, they do not own any vehicles or operate any mobility services, all of which are contracted from private operators.

F.102 This case study examines two of these ‘Local Link’ units in detail as examples of good practice within the context of DRT-provision: ‘Ring a Link Kilkenny’²⁵⁰ and ‘Local Link Donegal’²⁵¹.

Legal context

F.103 In Ireland, there are no specific laws, regulations or guidelines for forms of mobility services such as DRT. Notably, this may have created a situation where ‘Local Link’ units actively seek to avoid competition with larger, established bus operators – as highlighted in one report²⁵². It is unclear whether and how this may affect service delivery and growth.

Objectives

F.104 The good practice has the following objectives:

- Combat social exclusion by providing weekly travel services for all users in remote areas;
- Better connect villages and urban centres (e.g. Kilkenny and Carlow);
- Increase vehicle utilisation through efficient dispatching and ride-matching; and
- Improve the integration of rural transport services with existing services (including with healthcare-related transport).

Description of activities

F.105 At a high level, the two ‘Local Link’ organisations achieve these objectives by delivering:

- Solutions usable by all the population and especially those on low income (i.e. low fares);

²⁴⁸ Liftango (2019). A Definitive Guide for Rural Demand-Responsive Transport (DRT) v.011020. Available from: www.liftango.com [Accessed 10/8/21].

²⁴⁹ SMARTA (2019). Good Practice: Rural Transport Program. Available from: <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-Local-Link-Ireland.pdf>

²⁵⁰ SMARTA (2019). Good Practice: Ring a Link Kilkenny – Community Mobility Services in Rural Areas. Available from: <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Ring-a-Link.pdf>

²⁵¹ SMARTA (2019). Good Practice: Local Link Donegal – Integration of Community Health and General Mobility Services. Available from: https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Local_Link.pdf

²⁵² p.9. SMARTA (2019). Good Practice: Ring a Link Kilkenny – Community Mobility Services in Rural Areas. Available from: <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Ring-a-Link.pdf>

- New business concepts and solutions for improving the accessibility of rural areas (i.e. DRT); and
- Local initiatives involving the community to identify transport solutions (i.e. local stakeholder engagement to identify routes and service characteristics).

F.106 The DRT services deployed operate within a given area (a ‘route’). Notably, most services are not truly ‘on-demand,’ with several operating as little as one to two services per week. A brief description of the services provided is provided below.

Table F.8: Description of service frequencies by transport coordination unit

Unit	Service frequencies
Ring a Link Kilkenny	<ul style="list-style-type: none"> • 21 DRT routes providing door-to-door services • Services available from 1 to 2 days per week depending on the route; one exceptional route operates 5 services per day (35 per week) and connects with intercity bus services • The typical one-way fare is EUR 3 (max. EUR 6)
Local Link Donegal	<ul style="list-style-type: none"> • 40 DRT routes providing door-to-door services • Services available from 1 to 5 days per week depending on the route • The typical one-way fare is EUR 3 (max. EUR 6)

Source: SMARTA (2019) Good Practice: Ring a Link Kilkenny – Community Mobility Services in Rural Areas. Available from: <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Ring-a-Link.pdf>. SMARTA (2019). Good Practice: Local Link Donegal – Integration of Community Health and General Mobility Services. Available from: https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Local_Link.pdf.

F.107 This is supplemented with:

- Special evening services (to facilitate social events) and to combat the risk of drink-driving;
- To the extent possible, services are scheduled to connect with scheduled bus routes operated by the larger national carriers; and
- A call centre which is open from 09:00 to 17:00 Monday to Friday for registration, booking, and other enquiries. Booking is not available online or via a mobile phone application²⁵³.

Costs

F.108 Both Ring a Link (Kilkenny) and Local Link (Donegal) outsource the provision of vehicles, drivers and maintenance to third parties – the cost of which is not known. However, the dispatch and scheduling of vehicles is organised in-house. The cost of this can be proxied in terms of FTEs: Ring a Link (Kilkenny) employs 5 full-time staff in their operational headquarters and Local Link employs 6. This also includes staff involved in the provision of scheduled services, however.

Funding

F.109 Ring a Link (Kilkenny) and Local Link (Donegal) are both not-for-profit entities. They do not directly operate any of the services. Income is derived from both ticket revenue and national- and local- government funding. Fares are maintained to ensure services are affordable for all transport users:

- The typical one-way fare is EUR 3 (max. EUR 6);

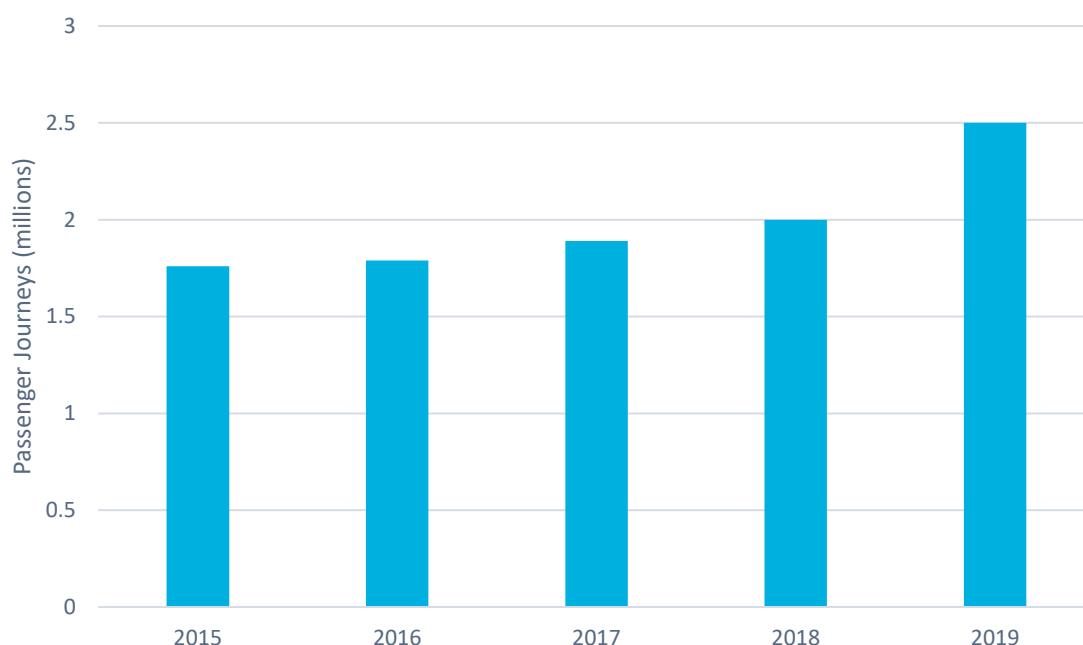
²⁵³ e.g. Shotl (see <https://www.shotl.com/> for details),

- Discounted fares are available on some routes for young people and children (EUR 2 for under-16s, children under 5 travel free) or those with a Free Travel Pass (older people and PRMs travel free); and
- All routes accept the Irish Free Travel Pass (for people with reduced mobility and older people).

Results

F.110 Overall, all ‘Local Link’ coordination units carried 2.5 million passengers in 2019, representing 1.1% of nationwide bus passenger volumes. Ridership has grown significantly, increasing by 42% between 2015 and 2019. Over this period, 60 new services were added, representing a 4.5% increase in the number of services provided. The figure below illustrates this growth.

Figure F.7: Local Link passenger volumes, nationwide, DRT and scheduled services (2015-2019)*



Source: Irish National Transport Authority, available from: <https://www.nationaltransport.ie/public-transport-services/rural-transport-programme/>. (*) Note: includes passenger volumes for DRT services (1,350) and scheduled services (75) operated by all 17 Transport Coordination Units supported by the Rural Transport Programme in Ireland.

F.111 It is expected that demand for Local Link services (both scheduled and DRT) will continue to grow because of the volume of unmet demand for mobility in rural areas and the increasing importance of providing alternatives to cars in rural areas in light of national greenhouse-gas reduction targets – on which Ireland has made limited progress according to its government²⁵⁴.

F.112 In addition to strong ridership growth:

²⁵⁴ Irish Environmental Protection Agency (2021). Press release: Ireland will not meet its 2020 greenhouse gas emissions reduction targets. Action is needed now to meet 2030 EU targets. Available from: <https://www.epa.ie/news-releases/news-releases-2021/ireland-will-not-meet-its-2020-greenhouse-gas-emissions-reduction-targets-action-is-needed-now-to-meet-2030-eu-targets.php>

- User satisfaction has been high – as identified through various market research and user attitudinal surveys carried out in the first decade of operations²⁵⁵;
- Resource utilisation (vehicles and drivers) has improved, reducing per passenger costs to maintain the affordability of the service;

Cost-benefit analysis

Table F.9: Overview of the costs and benefits of the good practice on rural demand responsive transport in Ireland

Category	Benefits	Costs
General users, citizens, taxpayers	Improved transport offer Increased social benefits	Limited direct cost as a user (decreased compared to use of taxi if that was previously the case). Indirect cost as a taxpayer
Women	As for general transport users	Limited direct cost as a user (decreased compared to use of taxi if that was previously the case). Indirect cost as a taxpayer
Poor IT-literacy people	As for general transport users	Limited direct cost as a user (decreased compared to use of taxi if that was previously the case). Indirect cost as a taxpayer
PRM	As for general transport users	Limited direct cost as a user (decreased compared to use of taxi if that was previously the case). Indirect cost as a taxpayer
People in remote areas	Increased transport provisions Decreased reliance on private vehicles, better environmental outcome Increased social benefits	Limited direct cost as a user (decreased compared to use of taxi if that was previously the case). Indirect cost as a taxpayer
Young people/children	As for general transport users	Limited direct cost as a user (decreased compared to use of taxi if that was previously the case). Indirect cost as a taxpayer
People on low income	As for general transport users	Limited direct cost as a user (decreased compared to use of taxi if that was previously the case). Indirect cost as a taxpayer
Transport providers	Increased passenger use	Increased costs related to additional drivers, vehicles and service implementation
Authorities	Better transport offer	Increased cost of provision (no figure stated)

Source: Steer analysis

²⁵⁵ However, new studies have not been commissioned to investigate whether user satisfaction has changed as a result of improvements to service coverage and the evolution of the service mix.

Lessons learnt

Success factors/strengths

F.113 Factors which were identified by the two schemes as aiding success of the good practice can be summarised as follows:

- Strong community involvement, leading to strong community support and acceptance²⁵⁶;
- A strong understanding of local needs, leading to better decisions on resource allocation (routes, vehicle frequencies, etc.);
- Buy-in from national and local government with continuous financial support committed²⁵⁷;
- A clear focus on target users: older people and passengers with reduced mobility, especially those living alone and without their own means of transport;
- A high level of customer support and training of all personnel;
- Cost-effective service provision; and
- Affordable fares.

Difficulties encountered/weaknesses

F.114 The primary difficulties encountered include:

- Insufficient scale of services meaning that the DRT services are not an effective or desirable substitute for a private car (DRT services typically operate once per week, and none operate 7 days a week or multiple times per day).
- The strong focus on older users and people with reduced mobility has led other users to assume that the services are reserved only for these users or to develop a negative perception of using them²⁵⁸.
- Lack of specific national or local policy or targets relating to the development of rural transport²⁵⁹;
- Local transport authorities (e.g. the Local Link coordination units) or local government lack the authority to develop mobility plans or determine mobility services in their area;
- Compliance costs (regulatory, compliance and administrative workload) to secure grant funding is considerable, particularly for smaller organisations like the Local Link coordination units; and
- The Rural Transport Programme which funds the 'Local Link' units has no institutional framework to guarantee its permanent, continued existence which makes it vulnerable to budget cuts in down-turns (the programme has survived both the 2008 and 2020 recessions, however).

²⁵⁶ For example, the services established have been built on a broad range of community-based initiatives, without undermining the sense of local ownership or leadership

²⁵⁷ EUR 15.8 million was allocated to all 17 *Local Link* schemes in 2018 from grants from central government (EUR 14.3 million from the Irish National Transport Authority; EUR 1.5 million from the Department of Social Welfare). This is in addition to funding from local government and ticket revenue.

²⁵⁸ Notably, as the scope and service types increased, the range of target users has increased. For some coordination units, all users living in rural area (including villages/small towns) who do not have access to a car are able to use the service, for whatever reason.

²⁵⁹ For example, although the Irish National Transport Authority's *Statement of Strategy 2018-2022* outlines some specific delivery goals for rural transport there are no specific, quantitative targets or goals identified. (e.g. '*continue to develop new and expanded services to better serve rural Ireland*' p.28. National Transport Authority (2019). *Statement of Strategy 2018-2022*. Available from: https://www.nationaltransport.ie/wp-content/uploads/2018/03/NTA_Statement_of_Strategy_2018-2022_ENGLISH.pdf)

F.115 It is notable that the IT systems deployed to facilitate the DRT service for both schemes were *not* identified as a key challenge to the projects' success. Since 2015, all Local Link units operate using a common Integrated Transport Management System (ITMS) to record service and passenger data. This was provided by the Irish National Transport Authority. Furthermore, other coordination units also use additional technologies to support DRT specifically. For example, Ring A Link Kilkenny uses an Intelligent-Transport-Systems-supported booking and reservation system (MobiRouter²⁶⁰) which provides a scheduling and planning module and mobile apps for drivers and passengers.

Transferability and scalability

F.116 The SMARTA project²⁶¹ assessed that the Local Link coordination units are 'reasonably transferable elsewhere in Europe'²⁶². This suggests that none of the conditions which were necessary for the success of the services were deemed to be unique to Ireland's specific operating contexts. Two necessary conditions were identified:

1. Good engagement and organisation at the community level, sustained over time, rather than any complex technical or operational capacity; and
2. Cooperation between the various agencies (sponsors, operators, organisers).

Key findings from other European research projects

F.117 This section summarises key findings from other European research projects. These findings can be used to:

- Better understand the effectiveness of DRT as a solution to transport users' needs; and
- Identify additional factors which can support or enhance the successful delivery of DRT.

F.118 The key findings identified are:

- DRT is popular with transport users;
- In some cases, DRT is more cost-effective than scheduled services;
- Government support remains a significant feature of DRT service provision; it is difficult, however, to separate this from the increased costs of providing transport in rural areas.

F.119 These findings are explained in turn in the tables below.

DRT is popular with transport users

Table F.10: Summary of findings from selected European research projects: user demand and satisfaction

Project	Key findings
Formentera Taxibus (ES) ²⁶³	DRT could be successfully used in the context of a remote island's transport system to:

²⁶⁰ See: <https://ddswireless.com/products/transit/mobirouter/>

²⁶¹ <https://ruralsharedmobility.eu/>

²⁶² p.8. SMARTA (2019). Good Practice: Ring a Link Kilkenny – Community Mobility Services in Rural Areas. Available from: <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Ring-a-Link.pdf>

²⁶³ p.84. Metze, A. & Tovaas, K. (2019). INCLUSION Project D3.3: Compilation of 51 case study profiles; overviews and in-depth investigations. Available from: http://www.h2020-inclusion.eu/fileadmin/user_upload/Documents/Deliverables/INCLUSION_D3.3_Compilation_of_50_case_study_profiles_v1_0_compressed_1_.pdf

Project	Key findings
	<ul style="list-style-type: none"> encourage modal shift away from vehicles: 44% of users previously travelled by car; and improve social inclusion: 5% of users were unable to make the trip previously by any means
Shotl Catalonia (ES) ²⁶⁴	<p>In rural areas of Catalonia, DRT solutions have resulted in:</p> <ul style="list-style-type: none"> ridership more than doubling in the weeks following the switch to DRT (from 6 passengers per bus to 16 with DRT in one town); additional bus stops being added (70% more in one town), meaning that previously underserved areas now had a bus stop accessible from their homes; the mobile phone app used by passengers is highly rated (4.4/5 stars); and average waiting times has dropped to as low as 15 minutes (up to a 5 times decrease compared to the previous situation);
Demand Responsive Transport in Castilla Y Leon (ES) ²⁶⁵	<ul style="list-style-type: none"> DRT services are preferred by a majority of users when given a choice between DRT and scheduled services: ‘in 2011, it was assessed that the 85,830 journeys carried out [by the DRT service] contributed to saving 59.62% of journeys planned by the conventional service’ Demand for the service has increased from 4,000 trip requests per month in 2008 to 16,000 in 2011 (a funding cut in 2012 distorts comparisons after this period, but passenger numbers have continued to grow from 2017 onwards) Users give a score of 4.75 out of 5 when asked to assess the service
Texelhopper (NL) ²⁶⁶	‘The use of public transport has tremendously increased, especially in the touristic summer months with lots of tourists. From 11 000 in Aug 2015 to 16 000 in Aug 2017 (+45%) and from 6000 in Dec 2015 to 6400 in Dec 2017 (+7%).’
Demand Responsive Transport in Middle Tejo (PT) ²⁶⁷	72% of users travelled on the DRT service multiple times.

Source: Steer analysis of SMARTA and INCLUSION project deliverables.

DRT can sometimes be more cost-effective than scheduled services

Table F.11: Summary of findings from selected European research projects: cost-effectiveness

Project	Key findings
Shotl Catalonia (ES) ²⁶⁸	‘The operational costs of the flexible service are 15% less than the former conventional line.’

²⁶⁴ <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Shotl-Catalunya.pdf>

²⁶⁵ p.6 <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Leon.pdf>

²⁶⁶ p.5 <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Texelhopper.pdf>

²⁶⁷ p.5 <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Tejo.pdf>

²⁶⁸ <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Shotl-Catalunya.pdf>

Project	Key findings
FlexiTec (BE) ²⁶⁹	'The cost of the service is reasonable. Trips with (no longer) existing traditional buses have a cost of 50 EUR/passenger while the Flexi-Tec trips have a cost around 10 to 15 EUR/passenger'
Formentera Taxibus (ES) ²⁷⁰	'The Formentera Taxibus service replaced a former fixed route bus service resulting in cost savings of over 40%' (note: this project relied on taxis usually used by tourists in the summer tourist season).
Demand Responsive Transport in Middle Tejo (PT) ²⁷¹	'It has been calculated that flexible transport services [DRT] are operated reducing the travelled Kms to 7% of the theoretical amount of Kms which could had been required to operate conventional bus services.'
FlexDanmark (DK) ²⁷²	An important success factor for FlexDanmark has been the displacement of scheduled services with low levels of ridership by the new DRT services, 'which provides better door-to-door service for the passengers and is less costly to operate for the agencies.' This is supported with the following key innovations ²⁷³ : <ul style="list-style-type: none"> • Services are automatically and dynamically assembled from a large pool of different providers; • Vehicle types are automatically and dynamically selected based on trip characteristics to improve cost-efficiency; and • Services are coordinated as much as possible with other subsidised transport services to make more effective use of scheduled services.

Source: Steer analysis of SMARTA and INCLUSION project deliverables.

F.120 Despite this, government subsidy remains a significant contributor of the funding of DRT services.

Government support remains a significant feature of DRT service provision; it is difficult, however, to separate this from the increased costs of providing transport in rural areas

Table F.12: Summary of findings from selected European research projects: government support

Project	Key findings
Texelhopper (NL) ²⁷⁴	The 'main funding source is the [local government] subsidy and the revenue from ticket sales. Both count for approximately 50% [of total funding].'

²⁶⁹ <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-FlexiTec.pdf>

²⁷⁰ http://www.h2020-inclusion.eu/fileadmin/user_upload/Documents/Deliverables/INCLUSION_D3.3_Compilation_of_50_case_study_profiles_v1_0_compressed_1_.pdf

²⁷¹ p.5 <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Tejo.pdf>

²⁷² <https://trapezegroup.co.uk/article/flexdanmark-nationwide-maas/>

²⁷³ https://hireach-project.eu/sites/default/files/HiReach_D3.2%20Case%20study%20description%20and%20analysis_v2_20190524_TRT.pdf

²⁷⁴ <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Texelhopper.pdf>

Project	Key findings
Demand Responsive Transport in Middle Tejo (PT) ²⁷⁵	'From the launch of pilot implementation (2013) to 2016 the operational deficit has been reduced from EUR 3.50 per kilometre to EUR 0.34. The tariff revenues covered 8% of the operation costs of the services in 2013 and 35% in 2016.'
Regiotaxi (NL) ²⁷⁶	'One passenger kilometre by Regiotaxi costs the government roughly seven times the amount of a public transport passenger kilometre.'

Source: Steer analysis of SMARTA and INCLUSION project deliverables.

Note: the fact that 'one passenger kilometre by Regiotaxi costs the government roughly seven times the amount of a public transport passenger kilometre' is *not* equivalent to claiming that Regiotaxi costs seven times to operate than traditional services as we would expect the level of government subsidy to be less for traditional, commercial, scheduled services (in more populous areas) to require significantly less subsidy than in rural areas.

Other findings

Table F.13: Summary of findings from selected European research projects: other findings

Project	Key findings
Formentera Taxibus (ES) ²⁷⁷	DRT can induce modal shift away from cars: 'the high level of mode shift from car and fixed route bus provides environmental benefits (estimated reduction in CO2 emissions of over 70%).'
Modena Taxibus (IT) ²⁷⁸	The quality of the supporting technology has a significant impact on use of the DRT service. A new software has been developed with the aim of improving the quality of information of the [Modena DRT] service. This has resulted in 'an increase of 17.3% of passengers ... compared to the [previous year] 2016-2017.'

Source: Steer analysis of SMARTA and INCLUSION project deliverables.

Key Learnings: Demand responsive transport (DRT) has been trialled for several decades and may present the opportunity to improve network connectivity for people living in remote areas, make services more affordable (for people on low income), and provide public transport services which contain a door-to-door service (for older people and PRMs, women and girls, and children and young people). Recently, deployment technologies have improved significantly towards more spontaneous, ride-hailing-style technologies. Overall, authority funding remains necessary, but DRT can sometimes be provided as cost-effectively as scheduled services.

²⁷⁵ <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Tejo.pdf>

²⁷⁶ <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-REGIOTAXI.pdf>

²⁷⁷ http://www.h2020-inclusion.eu/fileadmin/user_upload/Documents/Deliverables/INCLUSION_D3.3_Compilation_of_50_case_study_profiles_v1_0_compressed_1_.pdf

²⁷⁸ p.6 <https://ruralsharedmobility.eu/wp-content/uploads/2019/08/SMARTA-GP-Modena.pdf>

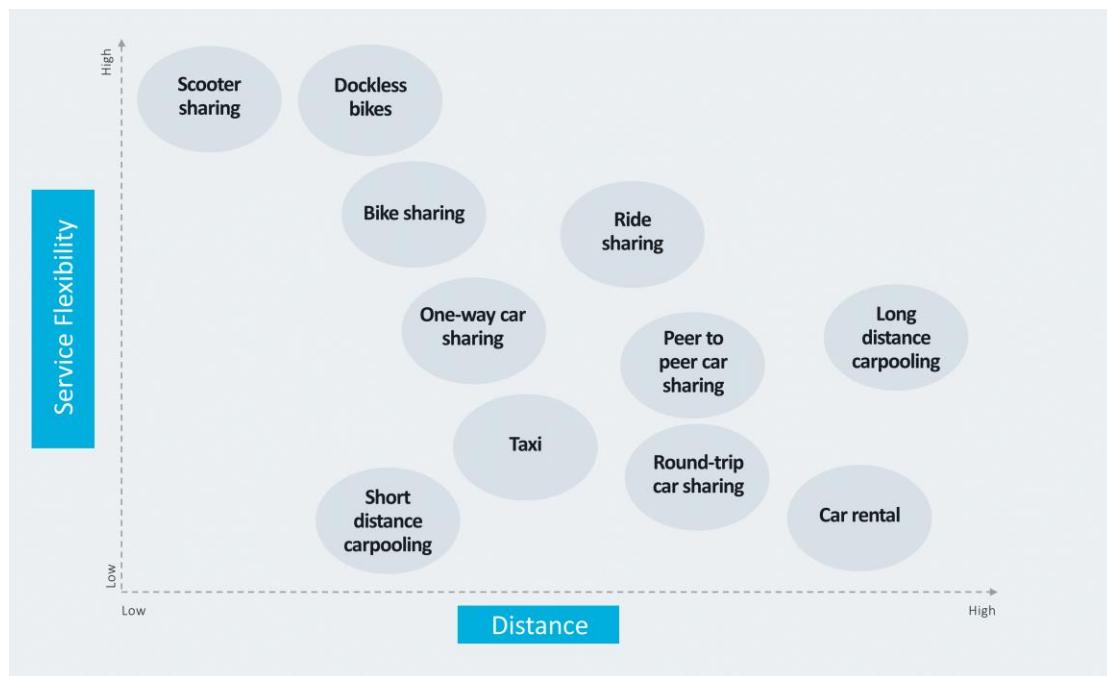
Case study 6: On-demand transport service tailored to young people and children, persons with disabilities and with reduced mobility

Overview

Description

- F.121 Shared mobility services offer potential to reduce reliance on privately-owned vehicles, provide more mobility choices and reduce greenhouse gas emissions. Shared mobility is a concept used to describe transport services that are shared among users. There are different ways of sharing transport services: it can be done in turns, such as in car, bike or scooter sharing where users use the same vehicle or mobility device but one after the other, or sharing can be done simultaneously when different users use the same vehicle or mobility device, as is the case in carpooling for instance.
- F.122 Shared mobility cannot necessarily be approximated solely to new forms of mobility where the convergence of different technology advances has made it possible to improve existing services and create new ones: some shared mobility modes, such as taxis and car rental have been around for a long time. In addition, although public transport is also by definition a shared mode, it is not typically included in the definition of shared mobility.
- F.123 As a result, there is no unique way to define which transport services are considered to be shared mobility. What can be meant by shared mobility is illustrated on the graphic below.

Figure F.8: Shared mobility models



Source: Schwartz, Joachim. Presentation at Car-Free Cities Working Group Seminar, London, 1999. – updated by Steer

- F.124 For the purpose of this case study, we have focused on four components of shared mobility services, described in Table F.10.

Table F.14: Shared mobility models included in this case study

Shared mobility model	Definition
Ride-hailing (on-demand taxis)	Vehicles owned by individuals (or companies) who provide pick-up and drop-off services to the users, with rides typically booked and paid for through an App
Carsharing	Vehicles (typically cars or vans) owned by an organisation and shared between different users, who may use them in turns
Shared micromobility	Similar to carsharing, bikes or e-scooters owned by an organisation and shared between different users, who may use them at different times
Ridesharing (or carpooling)	Privately owned vehicles shared for a trip

F.125 This case study draws evidence from European pilot projects which demonstrate how shared mobility can help mitigate transport challenges faced by different user groups in scope of this study.

Target user groups

F.126 The ‘new’ shared mobility services are primarily on-demand services accessible by digital applications, where a passenger can access real-time information on service availability, costs and then book and pay for a ride using the application on their mobile phones. These services are therefore targeted at some user groups: it should be noted that barriers exist for users with poor IT literacy, low income (who may not have access to a digital device or an internet connection), children and young people, older users possibly less IT-knowledgeable as well as some people with disabilities where digital devices do not address their needs. Though limited in supply currently, increasingly adapted shared mobility vehicles are being considered to meet the needs of persons with disabilities or reduced mobility.

Challenges addressed by the good practice

F.127 Shared mobility services can offer an alternative to private cars and therefore could play an important role in increasing transport connectivity and access to jobs, education, and amenities. They may provide the following benefits:

- Improve first and last mile connectivity (where public transport availability is limited)
- Offer an alternative to both short and long-distance car travel (particularly for people without an access to a car or less able to drive e.g. older people)
- Can be cost efficient compared to private car ownership (and therefore help reduce ‘forced car ownership’ e.g., for people on low income in remote areas)
- Offer the ability to track real-time vehicle information and therefore offers more information for the user, especially in case of disruption
- May improve transport efficiency where demand for transport services is low (remote areas), in the case where these services are available in these areas;
- Additionally, there can be some environmental benefits in the use of modes such as bike sharing or scooter sharing if they replace a transport mode other than walking, and if the electricity that powers them comes from sustainable sources (including battery recycling).

F.128 Most shared mobility services business model requires access to a technology platform or a digital application. Typically for the sharing ‘in turns’ of vehicles/mobility devices, the vehicles are owned and managed by an external operator who requires a licence/permit from the

authorities to operate their vehicles/mobility devices in the area. The services are generally funded by private companies and are provided at no extra cost to the authorities.

Good practice: On-demand transport service specifically tailored to children, older people and PRMs

Description of activities

- F.129 There are several shared mobility projects being piloted across rural and sub-urban areas in Europe which are aimed at reducing transport poverty, sometimes targeted at specific user groups. One such example is PickMeApp²⁷⁹, an on-demand transport service that offers a mobility solution specifically tailored to children, older people and PRMs. It offers a door-to-door service, which can be booked and paid for online. Users can be tracked, if required, through a GPS-enabled bracelet. The service currently operates in the cities of Potenza and Salerno.
- F.130 The service integrates innovative mobility elements, including flexibility for a door-to-door service, online booking and payments, GPS traceability of the vehicles and quality of service offered. An algorithm optimises multiple bookings and shared routes in order to make journeys suitable and affordable. Additionally, a unique feature of the service is the use of wearable tracking devices/ bracelets for the users.
- F.131 Launched in September 2017, PickMeApp has recorded the following results in the city of Potenza:
- Over 4,500 downloads of the PickMeApp Mobility App;
 - Approximately 3,800 registered users on the app and 1,300 profiled travellers;
 - Over 1,000 users have used the service at least once;
 - Approximately 5,000 uses in 2017 and 13,500 uses in 2018;
 - 100 trips on average per day.

Costs

- F.132 The cost of the service was comparable to taxi costs at EUR 4 per single trip, while being more flexible and reliable. The usage grew by almost 250% in the second year of operation (2018) which positively demonstrates the ability of this concept of shared mobility to address transport poverty needs when offered at a price point comparable to public transport and designed to fulfil specific user needs.

Cost-benefit analysis

Table F.15: Overview of the costs and benefits of the good practice on on-demand transport service specifically tailored to children, older people and PRMs

Category	Benefits	Costs
General users, citizens, taxpayers	Better inclusion of PRM. Decreased time and costs of travel for carers of children and older people.	Limited direct cost as a user.
Women	As for general transport users.	Limited direct cost as a user.
Poor IT-literacy people	As for general transport users.	Limited direct cost as a user.

²⁷⁹ <http://www.pickmeapp.it/en/>

Category	Benefits	Costs
PRM	Door-to-door mobility service, possibility of tracking through wearable devices.	Limited direct cost as a user.
People in remote areas	As for general users.	Limited direct cost as a user.
Young people/children	Door-to-door mobility service, possibility of tracking through wearable devices.	Limited direct cost as a user.
People on low income	As for general users.	Limited direct cost as a user.
Transport providers	Increased passenger use. Improved vehicle utilisation and route optimisation.	Increased costs related software platform use and transaction fees.
Authorities	Could be used as a solution for the provision of transport services aimed at specific user groups.	Increased cost of provision (no figure stated), if sponsored/subsidised by transport authorities.

Source: Steer analysis

Results

F.133 The following advantages and challenges of PickMeApp were identified as below.

Table F.16: Summary of advantages and disadvantages, PickMeApp

Advantages	Challenges
<ul style="list-style-type: none"> The flexibility of the service was highlighted as one of the main advantages. Women were particularly interested in the app not necessarily in relation to their own needs, but considering the needs of their kids and older members of the family; The tracking bracelet was perceived as a tool for allowing autonomy of children and young people; PickMeApp was also very positively received by female older participants as a way for being more autonomous and independent for their mobility needs despite the fact this particular user segment expressed no interest at all towards the digital components of the solution. Increased mobility because of the introduction of PickMeApp in the area was recognised, and prices offered on the market were not evaluated as a barrier or an increase in their monthly budget for transport. 	<ul style="list-style-type: none"> Some users showed hesitation to use the app based service (while the additional wearable solution was considered helpful), and suggested preference towards telephone-based bookings. Matching travel needs of different users located in remote locations might be difficult, and therefore this service appears more scalable in areas with relatively high population/ demand. Finally, a flat price of EUR 4 was considered a barrier to daily or frequent use, and a model with flexible prices differing by distance travelled was suggested to encourage more usage.

Source: Steer analysis of project HiReach reporting (D3.3 Mobility solutions and potential impacts report)

Other good practices

Good practice: App to connect potential car-sharers

- F.134 Ridesharing connects drivers with other users who wish to travel, thereby decreasing the costs (financial and environmental) of travelling by car without compromising its benefits. Fairfahrt²⁸⁰ is one such ridesharing platform, available in rural Germany.
- F.135 Using a smartphone app, Fairfahrt connects car drivers on their way to a specific place with potential passengers travelling in the same direction and pick them up at one of five designated stations rather than relying on word of mouth or other ‘closed’ groups such as employees from the same company, etc.
- F.136 A similar ridesharing technology, Boleia²⁸¹, is available in Portugal. Boleia is a smartphone application with over 15,000 registered users which facilitates long-distance and local carpooling by connecting drivers and passengers through the app. Boleia’s distinguishing proposition includes the following characteristics:
- The service is commission-free; and
 - Commuters and festival-goers are targeted through collaborations with large employers and events venues.

Good practice: Sharing of electric vehicles

- F.137 Dörpsmobil²⁸² offers passengers an alternative to personal car travel by using shared electric vehicle and also an associated rental car service. It has operated in Klixbüll, Germany since 2016. The rental service costs are quite nominal at EUR 3.50 per hour, with costs further reduced if there is an increase in the number of users using the car at the same time.
- F.138 In relation to bridging the gaps in short distance or first and last mile connectivity, shared micromobility (e.g. shared bikes and e-scooters) can also play a pivotal role particularly in areas with limited transport choices. In addition to shared bike services, many European cities have witnessed the introduction of shared e-scooter services to meet the personal mobility needs. It helps replace short distance car trips, and are also sometimes more reliable than public transport services owing to personalised route planning possibilities. However, scooters and bikes are mostly aimed at passengers with good balancing skills, travelling by themselves, without luggage or relatives and with reasonable knowledge of the area.

Transferability and scalability

- F.139 Shared mobility solutions offer a flexible and cost-effective alternative to car travel. When they are well designed and funded, they can address some of the challenges of different user groups, including for people located in remote areas, low income, children and young people, passengers with disabilities and with reduced mobility and women.
- F.140 The services can be easily transferred or scaled in areas with consistent mobile data coverage and amongst populations with high smartphone or internet literacy. In these areas, additional infrastructure is not required which accelerates implementation.

²⁸⁰ <https://fairfahrt.de/> [website unavailable as of 3/11/21]. For information, see <https://mobilitaetsprojekte.vcoe.at/fairfahrt-die-digitale-mitfahrbank-2019?>

²⁸¹ <https://www.boleia.net>

²⁸² [Dörpsmobil SH - Elektromobiles Carsharing im ländlichen Raum \(doerpsmobil-sh.de\)](http://doerpsmobil-sh.de)

- F.141 However, the financial viability of these services is driven by high user demand. In areas with low population density and a large number of low-volume routes, matching trips becomes much more challenging. It is unclear whether shared transport service providers will be able to profitably exploit such markets without financial support from local or central government.
- F.142 Furthermore, there are several issues pertaining to the specific user groups which may impede the widespread adoption of shared mobility solutions in all areas and by all users, including:
- Usability by people with poor IT literacy, including older people and PRMs, with respect to – in particular – smartphone literacy, confidence connecting to and using the internet, and awareness of technological limitations;
 - Usability by people with limited access to the internet (mobile or broadband), particularly people in remote areas or people on low income; and
 - Usability by women and girls and children and young people, who may not feel comfortable or safe travelling in others' private vehicles.
- F.143 However, there are clear and significant benefits associated with shared mobility concepts (namely economic and environmental) as identified in the sections above. Furthermore, it is possible that techniques used to increase user confidence with other modes (e.g. user training courses, free rides, etc.) could also be applied here.

Key Learnings: Shared mobility (new transportation concepts relating to the shared use of transport such as car-pooling, shared micromobility, ride-sharing, etc) offers a flexible and cost-effective alternative to private car travel, thereby helping to alleviate transport poverty and meeting the needs of some user groups. However, the exclusion of people with poor IT literacy or with limited internet access is a considerable barrier to the deployment of such concepts, including in rural settings.

Case study 7: Digital innovations for transport users with disabilities and reduced mobility

Overview

Scope

- F.144 In the context of transport, digital innovations can fall into one or more of a variety of application areas, summarised in the table below²⁸³.

Table F.3: Digital innovations

Application area	Definition
Virtual assistants	Programmes that understand human voice commands and provide information and/or complete tasks for the user.
Intelligent vehicles	Vehicles that are capable of taking information about their state and/or the surrounding environment; and are capable of processing the information acquired and making some level of decision.
Intelligent transport systems	Advanced information and communication technologies providing innovative services relating to transportation and traffic management to improve the safety, connectivity and efficiency of the transport system.
Smart ticketing ²⁸⁴	A digital alternative to traditional paper tickets, allowing journey data to be electronically stored to facilitate the purchase of and access to tickets.
Pre-trip concierge and virtualisation (PTCV)	Technology which provides information both before and during a trip to users as to familiarise them with all stages of their journey, and family members and caregivers to ensure the safety and whereabouts of the user throughout the journey. Typically employed for passengers with cognitive disabilities who are IT literate.
Gamification	The application of game mechanics (e.g. point scoring, competition, etc.) to encourage behavioural change or encourage engagement with a product or service.
Social media	Multi-way online networks that facilitate the sharing of information, ideas, photos and opinions in virtual communities.
Wayfinding technologies	Digital wayfinding technologies aid transport users' understanding of and navigation through complex environments – commonly in urban areas – in the form of electronic maps, and/or the provision of directions and other visual cues to minimise stress and simplify navigation.
Safe intersection crossings	Safe intersection crossings enable pedestrians to use mobile devices (connected to traffic and environmental interfaces) to cross an intersection safely.

²⁸³ For a more detailed explanation of each of these application areas (including examples of their application in transport), see: <https://trips-project.eu/wp-content/uploads/2020/10/TRIPS-D3.2-Report-on-Digital-Technology-Trends-Impacts-and-Related-Policies.pdf>

²⁸⁴ Smart ticketing has been notably used to foster the inclusion of asylum seekers in Europe (e.g. Sweden see '7.12 The Welcome Card' available from: http://www.h2020-inclusion.eu/fileadmin/user_upload/Documents/Deliverables/INCLUSION_D3.3_Compilation_of_50_case_study_profiles_v1_0_compressed__1_.pdf .

Application area	Definition
Assistive robots	A device that can take actions, perceive the surroundings and thereby can support people with disabilities which can interact directly with humans.
Facial recognition software	Facial recognition is a category of biometric software that maps an individual's facial features and stores this data. Applications of facial recognition technology in the context of transport are currently limited.
Ambient intelligence ('intelligent environments')	The application of artificial intelligence to environments, as to facilitate interactions between humans (users) and their environments through intelligent devices.

Source: Steer analysis of TRIPS Project deliverables, available from: <https://trips-project.eu/wp-content/uploads/2020/10/TRIPS-D3.2-Report-on-Digital-Technology-Trends-Impacts-and-Related-Policies.pdf>.

- F.145 Of the European research projects examined which provide good practices on the impact of digital innovations on specific transport user groups²⁸⁵, several provide information on pre-trip concierge and virtualisation (PTCV) technologies, which will be examined further in this chapter.

Description

- F.146 PTCV technologies (commonly delivered as mobile phone applications or 'apps') provide information both before and during a trip as to improve access to the transport system for users with cognitive disabilities. In general, apps such as GoOV (NL), App&Town (ES), Ways4Me (AT) and Atlas Sonore²⁸⁶ (FR) provide:

- Detailed route navigation;
- Dynamic public transport information;
- Travel deviations and alternative routes in the event of disruption;
- Dynamic travel instructions in a variety of formats at key journey waypoints;
- Continuous monitoring by family members, caregivers and connection to a helpline; and
- User training to practice using the app and become comfortable using the transport system.

- F.147 Some are also capable of taking into account specific user needs and select the most appropriate transportation services accordingly²⁸⁷.

Target user groups

- F.148 PTCV apps mainly address users with disabilities and with reduced mobility and older people – particularly those with cognitive and sensory disabilities who do not (or are unable to) use personal vehicles and are reliant on public transportation, friends and relatives, or specialised medical transport services for mobility. PTCV may also be used to facilitate access to the public

²⁸⁵ Projects: INCLUSION (<http://www.h2020-inclusion.eu/>), SMARTA (<https://ruralsharedmobility.eu/>), INDIMO (<https://www.indimoproject.eu/>), HIREACH (<https://hireach-project.eu/>), DIGNITY (<https://www.dignity-project.eu/>), TRIPS (<https://trips-project.eu/>), and SIMON (<https://trimis.ec.europa.eu/project/assisted-mobility-older-and-impaired-users>) [Accessed 13/9/21]

²⁸⁶ <https://www.ratp.fr/en/accessibility/audio-atlas-project-guide-yourself-more-easily-through-our-stations>

²⁸⁷ p.75 <https://trips-project.eu/wp-content/uploads/2020/10/TRIPS-D3.2-Report-on-Digital-Technology-Trends-Impacts-and-Related-Policies.pdf>; and <https://www.ablelinktech.com/index.php?id=2>

transport system for non-native speakers (e.g. asylum seekers) or the illiterate – this is not common, however²⁸⁸.

Challenges addressed by the good practice

F.149 PTCV apps make it possible for people with disabilities to access a wider range of mobility services. This helps overcome the following mobility challenges:

- Transport affordability (e.g. wheelchair accessible vehicles are usually larger and more expensive to purchase and run; taxis are more expensive than other forms of public transport);
- Transport availability (e.g. dedicated services for PRMs or transport in the personal vehicles of family members or friends may not always be available when needed); and
- Transport connectivity (e.g. dedicated paratransit services may not serve all destinations needed).

Solutions offered by the good practice

F.150 PTCV apps help to address these challenges by improving the accessibility of the wider public transport system by providing bespoke, live guidance, support and training, thereby helping to reduce usability barriers to public transport. Specifically, this is typically achieved through:

- Reducing the complexity of public transportation systems (e.g. advanced trip planning, pre-trip route-visualisation, and route navigation and service information available in accessible formats); and
- Providing support to the user throughout the journey including in the event of disruption (e.g. active and passive monitoring from caregivers and helpline support).

Good practice: App for users with cognitive disabilities to travel independently on public transport

Description of activities

F.151 GoOV²⁸⁹ is a PTCV service in the Netherlands, providing all of the features described above – some of which are explained in further detail below. The GoOV app can be used throughout the Netherlands²⁹⁰. The target user group is those with cognitive disabilities only.

F.152 Approximately 90% of users are secondary school students. This likely reflects both the particular route-to-market pursued by GoOV's developers²⁹¹ and the confidence with which young people are able to use mobile devices. Older passengers constitute most of the remaining users. There is also a version of the app with icons, that can be used by people who are illiterate or non-native speakers, have dyslexia, etc.

F.153 The company conducts thorough screening of user applicants through the intake process to assess the suitability of users (confidence using mobile devices, emotional control in stressful

²⁸⁸ p. 114 https://hireach-project.eu/sites/default/files/HiReach_D3.2%20Case%20study%20description%20and%20analysis_v2_20190524_TRT.pdf

²⁸⁹ <https://www.go-ov.nl/>

²⁹⁰ Apart from the Wadden Islands in the North Sea (albeit this represents just over 0.1% of the total Dutch population).

²⁹¹ Municipalities, where they are obliged to provide transport services to vulnerable user groups (i.e. schoolchildren with reduced mobility or hidden disabilities), stand to gain from the widespread use of the GoOV app by such users, due to considerable cost savings derived from the use of public transport rather than dedicated PRM transport (see *Costs*). This use-case has, therefore, been the app's primary route to market to date.

situations, etc²⁹²). Complementary training ensures that the user will be comfortable using the app to travel on conventional public transport.

- F.154 Users are also provided with extensive training which lasts between four and eight weeks in groups of 5 users (and their parents or caregivers). Training covers: an app tutorial, how to call for assistance, numerous practice trips alongside a review with supervisors, and a final debrief.
- F.155 Finally, GoOV also provides a journey-guarantee valid for both the outbound and inbound legs, whereby a taxi is dispatched in the event that the user becomes lost or cannot be assisted to the final destination through other means.
- F.156 At the time of writing, the app is only available on Android devices and is only available for download on the company's website.

Costs

- F.157 The cost of providing transportation services assisted by GoOV is approximately EUR 1,600 per user per year in the first year (reflecting training and set-up costs), falling to EUR 1,000 per student per year thereafter. A full breakdown of service prices is available online (in Dutch)²⁹³. By contrast, special needs transport to school by taxi costs EUR 3,000 per student²⁹⁴, which local municipalities bear the cost of. All figures are based on 2019 data.

Funding

- F.158 The use of GoOV-assisted public transport is significantly cheaper for local municipalities than specialist transport services for those with cognitive or sensory disabilities. Therefore, municipalities derive substantial savings – approximately EUR 11,500 per student over the student's term in compulsory education²⁹⁵ – thereby providing sufficient incentives for the municipality to not only pay for GoOV but also encourage its uptake.
- F.159 It is also possible for individuals to purchase the app (and associated services) privately.

Cost-benefit analysis

Table F.18: Overview of the costs and benefits of the good practice on App for users with cognitive disabilities to travel independently on public transport

Category	Benefits	Costs
General users, citizens, taxpayers	Better inclusion and autonomy of targeted users Better environmental outcome: decreased use of individual taxis or vans, increased use of public transport	Running cost decrease compared to taxi travel where user or taxpayer pay for transport provision. One-off cost increase to fund the costs of service delivery at the onset
Women	As for general users	Running cost decrease compared to taxi travel where user or

²⁹² HiReach

²⁹³ <https://www.go-ov.nl/tarieven/>

²⁹⁴ <https://www.go-ov.nl/interview-9292reist-de-5-doelen-van-goov/> and p.116 https://hireach-project.eu/sites/default/files/HiReach_D3.2%20Case%20study%20description%20and%20analysis_v2_20190524_TRT.pdf

²⁹⁵ Steer analysis of HiReach data on GoOV-assisted and specialist public transport costs in the Dutch school transport system. Note: GoOV is only available to those aged 11 and over; Dutch compulsory education ends at the age of 16.

Category	Benefits	Costs
		taxpayer pay for transport provision. One-off cost increase to fund the costs of service delivery at the inset
Poor IT-literacy people	As for general users	Running cost decrease compared to taxi travel where user or taxpayer pay for transport provision. One-off cost increase to fund the costs of service delivery at the inset
PRM	Independent travel, empowering of user Better transport choices and availability Guaranteed journey and assistance	Training time Running cost decrease compared to taxi travel where user or taxpayer pay for transport provision. One-off cost increase to fund the costs of service delivery at the inset
People in remote areas	As for general users	Running cost decrease compared to taxi travel where user or taxpayer pay for transport provision. One-off cost increase to fund the costs of service delivery at the inset
Young people/children	Independent travel, empowering of user Better transport choices and availability Guaranteed journey and assistance	Training time Running cost decrease compared to taxi travel where user or taxpayer pay for transport provision. One-off cost increase to fund the costs of service delivery at the inset
People on low income	As for general users	Running cost decrease compared to taxi travel where user or taxpayer pay for transport provision. One-off cost increase to fund the costs of service delivery at the inset
Transport providers	Delivery of transport service which fulfils users need of independent travel Cost decrease compared to taxi travel	Costs of service delivery include app technology, training of users, provision of assistance, provision of service guarantee, availability of staff to deliver the service
Authorities	Better service being delivered	Costs increases where some of the operator costs are funded by the authority

Source: Steer analysis

Results

- F.160 The app brings tangible benefits for transport users, as reflected in the feedback received. It contributes to independent travel, empowering its users and providing them with accessible transport rather than having to rely on assistance.

'I think if I hadn't had this app, I wouldn't have been able to finish my education. I could go to my internship with it independently. The app gave me more freedom'²⁹⁶.

'I use the app every day to go to school and back by bus. Everything in the app is clearly indicated, such as waiting times, which I find very pleasant'²⁹⁷.

- F.161 Although usage statistics are not readily available, a recent study (2019²⁹⁸) assessed that usage remains relatively low – at approximately 1,000 registered users, of which approximately 800 continued to use public transport. The reasons for this are multifaceted and are explained in more detail under *Transferability and scalability* below. In summary, low uptake is likely explained by a combination of the following:

- the relatively small target market;
- the focus to-date on secondary school students;
- the administrative hurdles and financial constraints of local municipalities and care institutions which provide relevant funding, resulting in a relatively slow roll-out across the Netherlands; and
- data availability constraints (open public transport data in other countries).

Lessons learnt

- F.162 Several lessons have been identified through the deployment of the GoOV app in the Netherlands and elsewhere in Europe:
- Integration of public transport open data is essential for the concept to function effectively;
 - The granularity of the data (e.g. whether bus stops are barrier free) is similarly important for rolling out the concept to users with physical disabilities;
 - GPS and cellular signal coverage must be suitably extensive;
 - Local taxi companies and a national call centre must be on board (and suitably trained); and
 - The current focus on students with cognitive disabilities creates a dependence on funding and support from local municipalities and healthcare institutions. Tapping into other funding streams (e.g. state disability benefit) can reduce this dependence.

²⁹⁶ <https://www.hartvannederland.nl/nieuws/speciale-app-helpt-jongeren-met-autisme-beperking-zelfstandig-reizen>

²⁹⁷ <https://www.go-ov.nl/eerste-ervaring/>

²⁹⁸ https://hireach-project.eu/sites/default/files/HiReach_D3.2%20Case%20study%20description%20and%20analysis_v2_20190524_TRT.pdf

Transferability and scalability

- F.163 GoOV pilots are being developed in several European countries outside of the Netherlands, including: Belgium, Germany, Finland and the United Kingdom.
- F.164 Real-time tracking and trip support form a core part of the GoOV app's offer, and sets it apart from other travel assistant apps. However, transferability and scalability is largely dependent upon the availability of real-time public transport data (schedules, service disruption, real-time vehicle tracking, etc.). In the Netherlands, all transport operators are obliged to share their data – including community bus services in rural areas (although this is not always real time). This also has the added benefit of helping to reduce operating costs, aiding affordability. In Germany, however, only approximately one quarter of public transport authorities provide open data on their public transport systems²⁹⁹.
- F.165 A second key barrier to expansion is the resource and administrative constraints of local municipalities and healthcare institutions. This complicates the deployment of pilot programmes to demonstrate the concept's operational effectiveness in new regions. This has delayed progress in Belgium, for example. In the Netherlands in October 2020, however, it became possible to pay for GoOV using individuals' state disability benefits (a 'Persoons Gebonden Budget') which may help to overcome this challenge³⁰⁰.
- F.166 Furthermore, the service is targeted towards those with cognitive disabilities, and less so towards users with physical or sensory disabilities. It is believed that the service could be expanded to users with physical disabilities in the future³⁰¹. This has been complicated by, *inter alia*, limitations on the level of detail of open-source data (e.g. on the accessibility of bus stops) and the accuracy of GPS tracking as a tool to accurately guide those with poor sensory perception through complex physical systems (e.g. underground metro stations).

Key findings from other European projects

APP&Town Compagnon (ES)

- F.167 App&Town Compagnon³⁰² is an innovative intelligent guidance system that enables autonomous navigation and multimodal public transport use for people with mild to moderate cognitive and physical disabilities. The app covers the metropolitan area of Barcelona. As with GoOV, the majority of uptake has been those with cognitive disabilities (rather than physical or sensory).
- F.168 The app adopts a different business model, and is reliant on city-government funding. However, this has resulted in relatively lengthy procurement and contractual procedures which have hampered the app's deployment.
- F.169 Other key findings include:
- Sourcing private financing to sustain the app's development and rollout is challenging (APP&Town Compagnon was reliant on state funds for projects supporting disability

²⁹⁹ P.119 https://hireach-project.eu/sites/default/files/HiReach_D3.2%20Case%20study%20description%20and%20analysis_v2_20190524_TRT.pdf

³⁰⁰ <https://www.go-ov.nl/met-je-pgb-vertrouwd-op-reis/>

³⁰¹ P.42 https://hireach-project.eu/sites/default/files/HiReach_D3.2%20Case%20study%20description%20and%20analysis_v2_20190524_TRT.pdf

³⁰² <https://www.appandtown.com/compagnon.html>

innovation projects to maintain cash flow), a particularly significant issue given the long procurement processes of government contracts and high upfront development costs;

- Collaborating with disability organisations is important for improving app usability; and
- Interest from cities and government stakeholders is important for deploying the app.

Ways4Me (AT)

F.170 Ways4Me³⁰³ is a smartphone application which is specifically tailored to the needs of the visually impaired and blind passengers, helping them to navigate public transport services by providing guidance and information about the transport system in Vienna. The app includes features such as trip planning, external and internal navigation functionalities and alerts notifications.

F.171 The key findings of this project include:

- Mobile apps can be used to guide people with poor sensory perception (e.g. blind passengers) through areas with poor or inaccurate GPS coverage with the appropriate technological infrastructure in place;
 - Ways4Me can read data from RFID chips, wireless LAN and QR-codes to facilitate navigate in underground, indoor settings (e.g. metro stations) when satellite navigation is not available or is of low accuracy (e.g. in areas with high-rise buildings)³⁰⁴.
 - The maintenance costs of this equipment was raised as a point of significance, however.
- The scheme was funded by the Austrian government (there was no need for private sector investment); and
- The scheme was promoted by Vienna's local transport operator (*Verkehrsverbund Ost-Region*, which works closely with government), which likely helped to accelerate deployment and uptake.

Key Learnings: New digital innovations are being deployed in the context of transport (e.g. virtual assistants, smart ticketing, pre-trip concierge and virtualisation and present significant opportunities for some user groups, here mostly students with cognitive disabilities and young people when using public transport independently. Good data, a clear funding stream and adequate support from authorities and operators is required for successful implementation.

³⁰³ <http://www.ways4all.at/index.php/de/ways4me>

³⁰⁴ For details, see: <http://www.ways4all.at/index.php/en/ways4me>

Case study 8: Integrated and seamless travel for persons with disabilities and reduced mobility

Overview

Description of the theme

- F.172 Mobility challenges exist for a wide range of users, with those related to accessibility and usability more commonly experienced by persons with disabilities and with reduced mobility (PRMs). Accessibility, and specifically usability, of the future transport network are key to ensuring that barrier free travel is possible for all users within this group. To achieve this ‘permanent innovation is needed within the transport sector’³⁰⁵ in ‘alignment with technological development, the transport sector should mainstream accessibility requirements and increasingly adopt a design-for-all perspective so that the largest possible number of citizens can use services without additional accommodations or retrofitting in the future’³⁰⁶.
- F.173 As result of the high diversity of disabilities and needs of persons with reduced mobility, PRM innovations are also wide ranging in scope. Low-tech solutions to barriers (such as steps) are available (e.g. ramps) as well as high-tech solutions (e.g. chairlifts). For high-tech solutions an opportunity arises, within the growing trend of digitalisation, for embedding of assistive and accessible solutions within transport planning and infrastructure. It has been evidenced that ‘most users, irrespective of the type of their impairments or disabilities, would welcome and make frequent use of wearables, artificial intelligence alerts, and robots, as well as autonomous wheelchairs and vehicles, which seem to cater not only to the needs of those with physical disabilities but also for those with intellectual disabilities’³⁰⁷. Although the development of such high-tech solutions may require significant financial investment, solutions that can be linked to ease of travel for all can assist in their successful development and implementation.

Relevant user groups

- F.174 Users defined within the context of persons with disabilities and with reduced mobility are wide ranging with a high diversity of disabilities (e.g. physical or cognitive) and as a result there a high level of intersectionality with other user groups defined within this study.

Main relevant challenges for users

- F.175 Persons with disabilities and with reduced mobility, including older people, might have accessibility, safety issues, and difficulties with adapting to change. Persons with disabilities and with reduced mobility is a highly heterogeneous group due to the high diversity of disabilities which can be permanent or temporary.
- F.176 Key challenges can include:

³⁰⁵ Alexadra Koenig, DLR; Martina Bagnasco, TBridge. (March 2021). TRIPS, Deliverable (No 17) D4.3. A Prioritised List of Potential Inclusive Mobility Solutions and barriers to adoption Drivers, from <https://trips-project.eu/wp-content/uploads/2021/04/D4.3-A-Prioritised-List-of-Potential-Inclusive-Mobility-Solutions-and-barriers-to-adoption-TRIPS.pdf>

³⁰⁶ Alexadra Koenig, DLR; Martina Bagnasco, TBridge. (March 2021). TRIPS, Deliverable (No 17) D4.3. A Prioritised List of Potential Inclusive Mobility Solutions and barriers to adoption Drivers, from <https://trips-project.eu/wp-content/uploads/2021/04/D4.3-A-Prioritised-List-of-Potential-Inclusive-Mobility-Solutions-and-barriers-to-adoption-TRIPS.pdf>

³⁰⁷ Tally Hatzakis, Trilateral Research Ltd. (February 2021). TRIPS, Deliverable 2.1 White paper on requirements for future mobility systems, from <https://trips-project.eu/wp-content/uploads/2021/06/D2.1-TRIPS-White-Paper.pdf>

- situational awareness, wayfinding in terminals, understanding any visual-based information, associated with reduced vision;
- understanding any sound-based information, which is of particular relevance in emergency situations, associated with reduced hearing;
- the need to overcome different heights or to overcome accessibility barriers and gaps, associated with reduced movement;
- higher than-average concentration of pollutants in or around vehicles, more crowded environments in respect to COVID-19, associated with severe allergies or health conditions;
- understanding how to use the transport system or situation awareness, associated with cognitive disabilities.

F.177 Age also plays a relevant role because physical and cognitive capabilities reduce over time and disabilities may increase or aggravate with age. At the same time, the complexity of transport systems, fares and options also make transport choices challenging to navigate for the youngest users.

F.178 The heterogeneity of users which fall within this group means that it is very difficult to accurately describe how any given trend (being decarbonisation, digitalisation and automation, an ageing population and COVID-19) will impact them. For example, digitalisation may assist people with impaired physical mobility, but present problems for those with cognitive or sensory disabilities. Additionally, in some cases, future trends may impact people with disabilities and with reduced mobility in ways that are not necessarily intuitive; for example, decarbonisation and the associated roll-out of electric vehicles may cause issues for PRMs, who may not be able to use charging infrastructure unless it is designed to accommodate their needs (e.g. in terms of height or space around the vehicle). Overall, because PRMs tend to be more car-dependent, any changes to the use of private cars (for example, through limiting access to city-centres in order to try and reduce a city's emissions), may disproportionately impact them³⁰⁸.

Good practice: integrated seamless travel in Germany

F.179 A good practice in Europe that highlights a suite of PRM innovations in the context of transport arises from the Integrated Seamless Travel project in Bochum in Germany³⁰⁹.

Description of activities

F.180 Bogestra – a public transport operator with underground and bus transport services – successfully implemented a series of measures to enhance the accessibility of public transport with a significant focus on the need for barrier free travel for PRMs. These measures were implemented across the spectrum of their operations, as described in Table F.13³¹⁰.

³⁰⁸ Transport for London, [Electric Vehicles Gauging interest among disabled and elderly drivers](#), 2016

³⁰⁹ Bogestra, [Information for people with reduced mobility](#)

³¹⁰ Tim Breemersch, Eef Delhaye, Sebastian Vanderlinden, Péter Pápics (TML), Evangelos Bekiaris, Matina Louka, Angeliki Konsta (CERTH), Xavier Le Den (Ramboll). (Nov 2019). *Best practices guide on the carriage of persons with reduced mobility*, from <https://op.europa.eu/en/publication-detail/-/publication/67385059-df42-11e9-9c4e-01aa75ed71a1>

Table F.19: Integrated seamless travel in Germany, measures introduced

Measure	Description
Passenger information to support independent travel	<ul style="list-style-type: none"> Two-sense dynamic passenger information (DPI) systems were placed at 151 public transport stops, providing visual and acoustic information about the lines departing from the stop and the departure time. The DPI displays the lines with the direction of travel and the current departure times, taking into account possible timetable deviations - i.e. the waiting times until the next departure. Information is also provided about diversions, operational disruptions and other events. The texts on the displays can also be announced on request using buttons near the display. Digital routing (with acoustic information for the visually impaired) was made available via the 'Mutti' app³¹¹. Alongside this, information on elevator failures and barrier-free stops was made available via online sources.
PRM assistance services	<ul style="list-style-type: none"> Assistance services available in Bochum and Gelsenkirchen provided to PRMs for free as long as they have a valid ticket for the journey. The assistance is not only provided to/from a bus stop, but also allows PRMs to be picked up from their front door and accompanied all their way to an administration, health appointment of any other destination. The service operates Monday-Friday between 9h and 16h and must be booked by phone or email 48h in advance.
Barrier-free infrastructure upgrades	<ul style="list-style-type: none"> Modifications were made to stops and stations to ensure barrier-free access alongside the addition of barrier-free elevators Installation of floor markings to indicate the position of vehicle doors on platforms at several stations Reduced height and braille ticket machines added (comprising 70% of the total number of operational ticketing machines)
Barrier-free vehicle upgrades	<ul style="list-style-type: none"> Additional accessible vehicles were added to the fleet with enlarged multipurpose areas for PRM access. Vehicles were also retrofitted with stop buttons at each seat, high-contrast interiors, and audible announcements to announce the closing of doors.
Staff training	<ul style="list-style-type: none"> Staff training – training was delivered to staff with the focus on PRM mobility to ensure that operator staff were sufficiently informed on how to appropriately assist PRMs (e.g. older people) across their journey. PRM passenger training – the provision of mobility and accessibility training courses delivered directly to PRMs with the aim to remove inhibition thresholds and barriers for various concerned groups across pre-journey, during-journey and post-journey phases.

Source: Steer analysis of project reporting

³¹¹ <https://www.keine-ist-wie-mutti.de/>

Cost-benefit analysis

Table F.20: Overview of the costs and benefits of the good practice on integrated seamless travel in Germany

Category	Benefits	Costs
General users, citizens, taxpayers	Better inclusion and empathetic service provided for PRMs as well as for other users	Limited cost increase where users or taxpayers pay for transport provisions
Women	As for general users, although may indirectly benefit	Limited cost increase where users or taxpayers pay for transport provisions
Poor IT-literacy people	As for general users	Limited cost increase where users or taxpayers pay for transport provisions
PRM	Better service provided, better safety delivered, less dissatisfaction and discomfort	Limited cost increase where users or taxpayers pay for transport provisions
People in remote areas	As for general users	Limited cost increase where users or taxpayers pay for transport provisions
Young people/children	As for general users, although may indirectly benefit	Limited cost increase where users or taxpayers pay for transport provisions
People on low income	As for general users	Limited cost increase where users or taxpayers pay for transport provisions
Transport providers	Better service being delivered, better awareness of users' needs, less complaints received	Infrastructure changes to support better accessibility Purchase of accessible vehicles Purchase of accessible communication systems Change in operating procedures Training cost for staff
Authorities	Better service being delivered	Costs increases where some of the operator costs are funded by the authority

Source: Steer analysis

Results

- F.181 Following the implementation of the measures described above, there has been an increase in demand for travel (including amongst PRM groups) and positive feedback has been received from transport users. The initiative has also been awarded the state prize of domestic security within the State of North-Rhine Westphalia.
- F.182 Increased numbers of PRM passengers following training and awareness sessions being delivered directly to PRMs has been a success that is mirrored when implemented elsewhere, such as in Stuttgart. Stuttgarter Straßenbahn (SSB) has provided training sessions four times a

year since 2002 directly to PRMs and persons with various disabilities³¹². The training is delivered by trained staff from the operator with the mission of reducing barriers to travel for transport users, including PRMs. The costs associated with running this training are integrated within the operating budget of SSB and are free to access for transport users. An additional benefit of these training sessions is that the co-operation between the operator and the passengers can lead to better optimisation of the public transport systems with the needs of PRMs and other user groups taken into account. This is important as there can be significant costs in modifications to transport provision for any user group and constructive engagement between stakeholders can help to ensure that measures are developed and implemented successfully.

Other good practices

Good practice: Seamless assistance for PRMs at Fiumicino airport

- F.183 At Rome Fiumicino Airport in Italy a seamless assistance service³¹³ for PRMs making use of rail services prior or post flight has been available since 2017. This service is provided by trained staff from both Rete Ferroviaria Italiana (RFI, rail infrastructure manager) and ADR Assistance (airport manager) who will support the passenger during the security check, luggage delivery and train ticket purchase travel phases.
- F.184 The services effectiveness has been measured from customer satisfaction, with PRM associations providing positive feedback with 371 services operated over the period August – December 2017³¹⁴.

Good practice: Coordinated accessibility measures in Toulouse³¹⁵

- F.185 In 2015 lower ticket validation modules were added to the existing entrance control equipment in Toulouse (France)'s metro system. This was implemented to allow people in wheelchairs with limited arm movement to validate their own tickets. These access points are now clearly marked on the network map with an identifying accessibility icon to enable those with low literacy or visual impairments to easily identify accessible locations. These measures have also been supported by the use of a mobile app that assists independent travel for persons with cognitive disabilities and other PRMs.

Transferability and scalability

- F.186 The transferability of the good practices above varies. For the soft solutions, such as staff and PRM accessibility training seen in Bochum, Stuttgart and Fiumicino, these are relatively cost efficient as well as efficient to implement across other infrastructure locations and scale appropriately. As shown in Fiumicino co-operation between operators and transport modes in delivering these services is possible and can be successful. There is also an opportunity for some of these measures to be delivered digitally, further reducing costs for operators, as

³¹² Ann Frye, Transport for London (TfL), Stephen Golden, (TfL), *Good Practice Guide*, from https://www.eltis.org/sites/default/files/tool/mediate_good_practice_guide.pdf

³¹³ <https://www.rfi.it/it/stazioni/pagine-stazioni/accessibilita.html>

³¹⁴ Tim Breemersch, Eef Delhaye, Sebastian Vanderlinden, Péter Pápics (TML), Evangelos Bekiaris, Matina Loukeas, Angeliki Konsta (CERTH), Xavier Le Den (Ramboll). (Nov 2019). *Best practices guide on the carriage of persons with reduced mobility*, from <https://op.europa.eu/en/publication-detail/-/publication/67385059-df42-11e9-9c4e-01aa75ed71a1>

³¹⁵ *idem*

demonstrated in Toulouse with the assistant travel app and GoOV app described in Good practice: App for users with cognitive disabilities to travel independently on public transport.

- F.187 For infrastructure and vehicle changes, such as those described in Bochum, modifications and fleet additions can be high-cost and as a result can take more time to implement. These costs, however, have been proven to be reasonable considering the increase in customer satisfaction and user uptake as a result of these measures being implemented. If soft solutions, such as PRM accessibility training, are used in parallel to these larger infrastructure developments and changes it can provide an opportunity for currently excluded transport users to make use of current transport provisions to the best extent possible.

Key Learnings: Investment in providing accessible infrastructure, via modifications to existing or new, both simple and sophisticated, can lead to increased satisfaction of PRMs whilst travelling as well as the removal of barriers for other user groups. Providing training directly to PRMs and other transport users can be an effective way of encouraging them to use more the transport infrastructure through highlighting accessible routes and removing barriers to their travel. However, these kinds of initiatives are potentially more powerful when used in parallel to larger infrastructure changes and upgrades, which often take time to design and implement, as it provides an opportunity for currently excluded transport user groups to make use of the current transport provision to the widest extent.

Case study 9: Innovations to better consider the transport needs of women

Overview

Description

- F.188 Innovation is defined as *the introduction of new things, ideas or ways of doing something*³¹⁶. In relation to transport and, specifically improvement of women or non-binary individuals' mobility, innovation could be anything from considering women's needs and perspectives explicitly to developing a service that directly aims to meet women's mobility needs. Innovation in this context may come from technological, institutional, organisational, operational or and policy solutions.

Challenges addressed

- F.189 One of the main inputs for planning transport networks is users' mobility data. Historically, this data has mostly been disaggregated by transport modes, but not by gender. However, mobility patterns are gendered³¹⁷. Women make up about half of the population but their mobility patterns and needs are complex due to the roles they have typically played in society – especially related to caring duties. Women's feeling of safety or perceived security are also important factors for their mobility.
- F.190 Transport frequently does not take gendered patterns into account, as traditionally, it has followed a male-oriented design focused on radial commuting journeys between home and work. Women and caregivers make nearly 50% more trips than men and non-care givers with more complex routes and trip chains and a wider variety of reasons for travel³¹⁸. They also accomplish their trips more often as pedestrians³¹⁹.
- F.191 Since traditional traffic planning has not prioritised pedestrian traffic there is still much work to be done to support intermodality and multi-purpose trip-chaining, a gender bias has been systematically created and needs correction for equitable mobility³²⁰.

Solutions offered

- F.192 There are a number of initiatives underway to both improve mobility for women and our understanding of women's transport needs at various levels. The remainder of this case study discusses these initiatives, including:
- The Wher App, used by and for women to rate the safety of specific streets;
 - The Living Lab, a gender-responsive, participatory transport-planning lab;

³¹⁶ Oxford Learner's Dictionaries. Available: <https://www.oxfordlearnersdictionaries.com/definition/english/innovation?q=innovation>

³¹⁷ European Institute for Gender Equality (<https://eige.europa.eu/>) and Stanford University. Gendered Innovations. Smart Mobility: Co-Creation and Participatory Research. Available: <http://genderedinnovations.stanford.edu/case-studies/mobility.html#tabs-2>

³¹⁸ Government Equalities Office. (2018). National LGBT Survey: Summary Report. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/722314/GEO-LGBT-Survey-Report.pdf

³¹⁹ International Transport Forum, OECD. (2018). Understanding Urban Travel Behaviour by Gender for Efficient and Equitable Transport Policies. Retrieved from <https://www.itf-oecd.org/sites/default/files/docs/urban-travel-behaviour-gender.pdf>

³²⁰ City of Vienna. (2011). Gender Mainstreaming Made Easy: Practical advice for more gender equality in the Vienna City Administration. Retrieved from <https://www.wien.gv.at/menschen/gendermainstreaming/pdf/gender-mainstreaming-made-easy.pdf>

- Vienna's Gender Mainstreaming policy, which offers a more comprehensive approach for the consideration of women's needs in relation to mobility;
- The City of Villiers le Bel Urban Planning guide, which provides a guidance on egalitarian urban planning; and
- Project DIAMOND, designed to gather data on women's use of transport and generate recommendations on how to achieve inclusiveness for women in transport.

Good practice: navigation app to provide perceived street safety information

Description of activities

F.193 A good practice of gendered innovations is *Wher*³²¹, an interactive phone navigation app created by Walk21³²² that provides women with information on the safety of the streets that they are using with the aim to allowing them to safely reach their destinations around main cities. This app is an example of a digital innovation, specifically focused on wayfinding through crowdsourced information. The app allows to search information about specific streets, find the safest route and leave/read comments about the roads in a number of cities in Italy. The users, called Wherriors, move around the city through other Wherriors' most recommended routes, which means that the app provides more accurate services the more women use it.

The app was launched three years ago in Milan and now covers more than 20 cities, mostly in Italy. It has been used by more than 50,000 users in Italy. Women rate roads with a few taps within the app, evaluating aspects such as the time of the day (morning, evening, and night), the level of street lighting and the amount of people along the way. In addition, users advise whether they would recommend using this route again, and write any other comment that may be useful for the app users.

F.194 To evaluate roads, Wher created a 'Mapping Guide' which gives useful tips on how to give comments and recommends mapping those streets that Wherriors know well. It encourages to start 'looking at [the streets] with new eyes... How are they illuminated? How crowded are they? How do you feel when you go through them?'³²³. Wherriors also can support other Wherriors' evaluations, by clicking 'agree' on their ratings.

Cost-benefit analysis

Table F.21: Overview of the costs and benefits of the good practice on navigation app to provide perceived street safety information

Category	Benefits	Costs
General users, citizens, taxpayers	No benefits unless user download the app and use it	No costs identified
Women	Better knowledge and information, increased perceived safety	No costs identified
Poor IT-literacy people	As for general users	No costs identified

³²¹ www.w-her.com

³²² Walk21 is an UK-registered foundation whose mission is to provide knowledge, capacity and advocacy in relation to effective walking policy and the benefits of walking. For information, see <https://walk21.com/>.

³²³ <https://w-her.com/guida-all-a-mappatura/>

Category	Benefits	Costs
PRM	As for general users	No costs identified
People in remote areas	As for general users	No costs identified
Young people/children	Better knowledge and information, increased perceived safety	No costs identified
People on low income	As for general users	No costs identified
Transport providers	No benefits	No costs identified
Technology providers	More users of the app	Cost of app development and technological tools
Authorities	No benefits	No costs identified

Source: Steer analysis

Results

Table F.21: Wher App users to March 2020, by city

City	Number of users (approximate)	Km evaluated (approximate)	Ratings entered (approximate)	Active Navigator or being mapped
Milan	1400	4,300	7600	Active navigator
Rome	1400	4,600	6000+	Active navigator
Torino	1000	3,100	5000+	Active navigator
Catania	100	1100+	1000+	Active navigator
Napoli	400	1700+	3000+	Active navigator
Florence	300	500+	1300+	Being mapped
Bologna	300	400+	2000+	Being mapped

Source: Steer, www.w-her.com

- F.195 Wher has launched Where Collabs, a programme intending to collaborate with local companies, authorities and associations. So far, Wher is collaborating with a university programme (Erasmus) and a private car share provider (Car2Go). It appears that there is an intention to eventually partner with local authorities; translating from crowdsourced information on barriers, challenges and what makes women feel safe when travelling, back to local authorities to use in order to inform planning and to address barriers would provide additional value to women using Wher, and travelling in locations where data is being collected.

Other good practices

- F.196 The good practice above is just one example of how innovation can help improve the mobility of women around cities. We present some others below.

Good practice: City of Vienna's gender mainstreaming

- F.197 A more comprehensive approach for the consideration of women's needs in relation to mobility is Vienna's gender mainstreaming policy in Austria. Since 1990, Vienna has included gender considerations in every aspect of the city's administration, especially in transport. In order to do that, the city has a specific government authority called Department for Gender

Mainstreaming. It is responsible for ensuring that the (transport) services of the City of Vienna are fair and fulfil the needs of various target groups and people's demands³²⁴.

- F.198 There, projects in public space such as roads, paths, squares, parks, or in the area of traffic planning are prepared and developed including gender considerations. For example, public lighting. The city is aware that women place high importance on safety in public spaces, as they feel more at risk in these locations than men. Thus, it has launched a campaign to study the lighting situation of city parks and has prepared a number of measures for critical pedestrian crossings³²⁵.

Good practice: gender-based urban planning guidebook

- F.199 In France, a guide on an egalitarian approach to urban planning (gender) has been produced by *Genre et Ville* organisation for the City of Villiers le Bel in 2018³²⁶. The gender-based approach to the urban planning guidebook aims to reflect on the challenges of adapting the design, renewal and management of urban spaces for all user groups, focusing on women's needs. It provides methods and tools on a number of relevant issues:

- How to approach and produce equality in the urban areas;
- Recommendations on egalitarian public space, focused on:
 - Mobility
 - Towards a sensitive and agile approach to urban planning;
 - Children.

Good practice: Address gender-specific needs in transport systems

- F.200 At a European level, project DIAMOND³²⁷ is a Horizon 2020 EU-funded and EU-wide project taking place across different Member States (ES, IE, IT, FR, etc.) and the UK. The research project is on-going (closing in January 2022), with a budget of EUR 2.6 million with its main goal to turn data into actionable knowledge with notions of fairness, in order to progress towards an inclusive and efficient transport system. The knowledge gathered in the data analysis will then be fed into a toolbox that will provide recommendations on how to achieve fair inclusiveness for women in each of the identified use-cases.

- F.201 Although in the early stages of the project at the time of writing, some useful material has been published. In particular four self-assessment matrices have been published to help transport organisations to self-assess their level of inclusiveness and fairness. The four areas of focus cover a number of themes addressing both women as users of transport services as well as women as employees of transport organisations. The matrices focus on established transport modes (public transport) as well as emerging new modes (autonomous vehicles and bike-sharing).

³²⁴ City of Vienna. Gender Mainstreaming in Vienna. Available here:
<https://www.wien.gv.at/english/administration/gendermainstreaming/>

³²⁵ City of Vienna. Public lighting - ways to implement gender mainstreaming. Available here:
<https://www.wien.gv.at/english/administration/gendermainstreaming/examples/lighting.html>

³²⁶ <http://www.genre-et-ville.org/wp-content/uploads/2019/06/Egalite-espaces-publics-septembre2018.pdf>

³²⁷ DIAMOND Project's website: <https://diamond-project.eu/>

F.202 We present below an extract from the self-evaluation audit model on bike-sharing level of inclusiveness and fairness.

Table F.22: Maturity model of bike-sharing schemes

Criteria	Description	Scoring key: Poor (1)	Scoring key: 2	Scoring key: Good (3)
CAPACITY TO MEET REQUIRED NEEDS (for all users)	Suitable bikes for those travelling with children, carrying packages and shopping.	Available bikes are not suited to riders travelling with children or travelling for shopping.	Measures have been identified to provide accessories to facilitate travelling with children or shopping – not yet implemented.	Ability to access a bike with child seat or basket for travelling with children or shopping.
	Promote cycling as a legitimate form of transportation in BAME ³²⁸ communities	No campaigns to promote cycling as a legitimate form of transportation for people of BAME background.	Measures identified to sensitise individuals of BAME background on cycling but not implemented.	At least 4 sensitisation campaigns targeted at BAME groups in a year.
	Bikes suited to local topography and weather conditions.	No plans to ensure the bikes and accessories are suitable for the local terrain and weather.	Plans identified to equip stations with bikes and accessories suitable for the local terrain and weather but not implemented.	Implementation of plans ensure stations are equipped with bikes and accessories suitable for the local terrain and weather.
	Available to people in low-income neighbourhoods, etc.	There are no facilities available in low-income communities.	Measures identified to site stations in low-income communities but not implemented.	Implementation of plans to establish stations in low-income communities. Ability to access a bike within 400m radius in these communities.
	ACCESSIBILITY: (for all users)	Location of docking stations - proximity and convenience (rural/urban and low income communities).	No docking stations in local residential neighbourhoods.	Measures identified to site docking stations in residential neighbourhoods – although not fully implemented as yet.
	Costs including membership fees	Absence of subsidised rates of cycle hire for low-income users (unemployed or students etc.).	Measures identified to subsidise low income users but not yet implemented.	Concessions and reduced costs for unemployed or students etc.

Source: <https://diamond-project.eu/project-materials/>

Good practice: flexible bus system centered around users' needs

³²⁸ BAME: a UK acronym for black, Asian, and minority ethnic

- F.203 A good practice of gender-responsive participatory planning in transport is the ‘real world laboratory’ set up in Schorndorf, Germany³²⁹. The Living Lab Schorndorf research, aimed to develop an ICT-based, flexible bus system centered around the users. The idea behind the project was to develop a needs-based and users-oriented local transport system, created with the user’s help and participation. In this mobility system based on mini-buses, the intention to travel is communicated via telephone, smartphone or internet, and then the system would efficiently adjust the route according to the users’ desired journeys³³⁰. The project created a new approach in order to ensure that the bus could meet the needs of several of the transport user groups, specially those who have special needs. The approach is called Transdisciplinary Development of Socio-technical Systems³³¹.
- F.204 This approach is a good example of how transport systems could be designed without reflecting a male bias, as it requires a high level of engagement with different types of users (such as women, young people, older people, or people with disabilities) during the entire creation process.

Transferability and scalability

- F.205 While innovation is often associated with the idea of technology, apps or new mobility, its actual meaning of ‘doing things a new way’ apply to a diverse set of tools and approaches. Because women’s mobility patterns and transportation needs have not traditionally been considered in transport planning, the act of examining the ways current transport services or planning approaches don’t meet women’s needs aligns with this definition of what is innovative. While gendered innovations can include technology or app-based solutions, they can also include re-examining current planning practices (e.g. shifting from engagement towards participatory design).
- F.206 Note also that innovation does not need to be tailored only to women to tackle some of the challenges they face in transport. Transport initiatives can also help a wider sample of different users if their designs do not have the same approach traditionally used. That is, a design where the needs of different user groups are not fully considered.
- F.207 Tools that can be used to crowdsource information about women’s barriers and needs when using transport can be extremely valuable inputs for problem identification. For this reason, sharing information collected through privately delivered innovations with authorities making decisions on transport is critical.
- F.208 And finally, through enacting high-level policy and integrating gender-mainstreaming throughout all government departments, improvements for women are more likely to be realised across different parts of their day-to-day experience, not just in their trips.

³²⁹ Schorndorf real-world laboratory. Available here: <https://www.hs-esslingen.de/en/mobility-and-technology/research-laboratories/projects/schorndorf-real-world-laboratory/>

³³⁰ Gebhardt, Laura; Brost, Mascha; König, Alexandra. An Inter- and Transdisciplinary Approach to Developing and Testing a New Sustainable Mobility System. Available: <https://www.mdpi.com/2071-1050/11/24/7223>.

³³¹ Transdisciplinary Development of Socio-technical Systems (the TraSy method) and follows the following cycle: ‘from (1) analyzing the behavior of potential users (2) over to the identification of user groups and possible use of the new system (3) to the generating of ideas and concepts and (4) lastly testing and evaluating the new system.’ Gebhardt et. al.. An Inter- and Transdisciplinary Approach to Developing and Testing a New Sustainable Mobility System. Available: <https://www.mdpi.com/2071-1050/11/24/7223>.

Key Learnings: On gender mainstreaming, as women's mobility patterns and transportation needs have not traditionally been considered with planning transport, the act of examining the ways current transport services or planning approaches don't meet women's needs can be considered innovative. In this sense re-examining current planning practices (e.g. shifting from engagement towards participatory design) can be seen as a gendered innovation. Through enacting high-level policy change and integrating gender-mainstreaming throughout all government departments, improvements for women are more likely to be realised across different parts of their day-to-day experience, not just in their trips. Secondly, innovations have also been seen specifically developed: tools that can be used to crowdsource information about women's barriers and needs can be valuable inputs for problem identification. For this reason, bridging the gap between information collected through privately delivered innovations and authorities presents an opportunity to improve decision-makers' understanding of women and girls' needs across specific themes (such as street or transport safety).

Case study 10: Disability awareness training

Overview

Description

- F.209 Transport operators and transport authorities have a responsibility to deliver accessible transport. Delivery of such services requires adequate planning, adequate processes and vehicles as well as trained staff. Whilst it is obvious that customer facing staff must be trained to provide accessible and fair services to all, non-customer facing staff should also be included in training as they specify, prepare and deliver transport solutions.
- F.210 There are cases where staff do not understand the needs of passengers with disabilities or are not adequately trained on how to address the needs of the customers, leading to a range of negative outcomes for the passengers: dissatisfaction at the lower end of the scale, from discomfort, not being safe, having difficulty in accessing transport services/vehicles or even being prevented from travelling.

Target user groups

- F.211 In that context, staff training is necessary. This can be achieved through provision of information, guidelines and training for customer facing staff from transport operators, personnel at contact points (information counters). The training provided to staff fosters greater awareness and understanding of passengers' needs with impairments, whether physical, speech or cognitive. It also supports the development of more inclusive policies, approaches, procedures and vehicles to other user groups such as women, children, older people or people who do not speak the main language.

Challenges addressed by the good practice

- F.212 There are many challenges that the user groups identified in the study face in using public transport, from because of lack of adequate transport or city infrastructure, a lack of understanding of the specific needs to be addressed, a lack of funding to pay for different process or infrastructure where needed, etc.

Solutions provided by the good practice

- F.213 Staff awareness training helps to ensure staff members know the appropriate actions to take when serving different users, such as giving extra time for boarding, securing wheelchairs, sitting and alighting, or for adequately assisting users with other needs. The effect of the staff awareness training is that it empowers passengers, allows staff to provide empathetic, gender equitable and safer transport³³².
- F.214 Ultimately, better staff awareness and improved attitudes towards user groups help remove barriers that prevent users from using public transport services (navigation, safety, usability, etc.). Better trained staff can also lead to improved safety and feelings of security while travelling, which is of particular relevance to women, children, migrants and older people.

³³² This to also acknowledge that there are a number of case studies which do focus on staff training especially related to engendering transport projects. However, it does appear that these cases are not necessarily in English, and paid for articles/journal publications.

Good practice: disability awareness training in Hungary

F.215 Disability awareness training was conducted in Budapest, Hungary as part of a pilot lab under the Horizon-2020-funded INCLUSION project^{333,334,335}.

Objectives

F.216 The Budapest lab focused on improving the usability of public transport to passengers with disabilities and with reduced mobility (due to disability, age, temporary or hidden disability, illiteracy, heavy luggage or otherwise). This was primarily achieved through training public transport staff to better understand the needs and capabilities of these users.

Description of activities

F.217 This was achieved through the adoption of a new training programme for all staff (operatives, inspectors, customer service employees, etc.) to better cater transport services to the needs of PRMs. The staff training programme consisted of four phases:

- Stakeholder workshop for user representatives to raise needs and discuss requirements;
- Reflection and synthesis of stakeholders' mobility needs to create a staff training handbook, in collaboration with PRM-representatives;
- Delivery of training to staff, in collaboration with PRM-representatives; and
- Evaluation of the impacts of the training on staff, volunteers and passengers.

Cost-benefit analysis

Table F.23: Overview of the costs and benefits of the good practice on disability awareness training in Hungary

Category	Benefits	Costs
General users, citizens, taxpayers	Better inclusion and empathetic service provided for PRMs as well as for other users	Very limited cost increase where users or taxpayers pay for transport provisions
Women	As for general users, although may indirectly benefit	Very limited cost increase where users or taxpayers pay for transport provisions
Poor IT-literacy people	As for general users	Very limited cost increase where users or taxpayers pay for transport provisions
PRM	Better service provided, better safety delivered, less dissatisfaction and discomfort	Very limited cost increase where users or taxpayers pay for transport provisions
People in remote areas	As for general users	Very limited cost increase where users or taxpayers pay for transport provisions
Young people/children	As for general users, although may indirectly benefit	Very limited cost increase where users or taxpayers pay for transport provisions

³³³ http://www.h2020-inclusion.eu/fileadmin/user_upload/Documents/Deliverables/inclusion_D3.4_publication_fin_web.pdf

³³⁴ http://www.h2020-inclusion.eu/fileadmin/user_upload/Documents/Deliverables/inclusion_project_D5.6_FINAL_web.pdf

³³⁵ http://www.h2020-inclusion.eu/fileadmin/user_upload/Documents/Deliverables/INCLUSION_-_D4.7_Budapest_-_Intermediate_version_-_Submitted.pdf

Category	Benefits	Costs
People on low income	As for general users	Very limited cost increase where users or taxpayers pay for transport provisions
Transport providers	Better awareness of users' needs, better service being delivered, less complaints received	Training cost for staff
Authorities	Better service being delivered	No costs identified

Source: Steer analysis

Results

F.218 The training programme is understood to have achieved the following results:

- A 20% increase in the number of passengers identified (and, therefore, assisted) by staff who are PRMs;
- A 20% increase in the number of PRMs who are either 'satisfied' or 'very satisfied' with public transport services;
- The transport operator improved its relationships with PRM stakeholders and saw broader improvements in its customer relations with passengers; and
- The creation of a more empathetic, gender equitable, and safer public transport network.

F.219 Resultantly, it has also been decided to extend the training to other employees from other Public Transport service providers across the city.

Other good practice examples

Good practice: independent public transport commute to school for students with intellectual disabilities

F.220 The MogLi Project³³⁶ was launched in the Germany city of Nordhorn in 2007. It was based on a program to support students with intellectual disabilities by enabling them to use public transport to commute to school independently. The key principle that forms the basis for the project is 'inclusion,' which is one of the principles of the United Nations Convention on the Rights of Persons with Disabilities.

F.221 Prior to the launch of the project all the students were taken to school from their home individually with door-to-door services, which was not very efficient. A series of actions were implemented, including creating a network of all stakeholders involved, detailed analysis of commuting routes to schools with the identification of barriers, and the design of responses to unforeseen circumstances.

F.222 In terms of driver training, a training approach was adopted. Given that bus drivers are required by law to undertake training 4 times a year in Germany, training of 150 drivers in relation to the project was conducted within the framework of the regular training sessions.

F.223 The training was divided into different areas of learning, from training on the facilities for persons with disabilities, to training to deepen understanding about intellectual disabilities and the characteristics of Down's syndrome and autism, for example. A self-experience

³³⁶ <https://www.iatss.or.jp/common/pdf/en/publication/booklet/07-3.pdf>

module was also added, through which drivers engage in practical learning. the last area of learning concerned methods of responding to and interacting with persons with disabilities.

Key outcomes of the MogLi Project

- F.224 One third of the students who participated in the programme were able to commute to school entirely independently. This has resulted in greater confidence, which is reflected in their behaviour other than the school commute. From a transport point of view, there are benefits too: cost savings of approximately 15% were recorded with children not needing to be taken individually to school. The savings generated are used to pay for the employment of the personnel required for the project, and are also used as a source of funding for promoting a barrier-free transport community.
- F.225 One of the potential outcomes from this project is its application to create social infrastructure that may be responsive to the needs of an aging society. This would help significantly in countries like Germany and Japan which have aging populations. The concepts and accumulated know-how of the MogLi project could be useful while considering the use of public transport by older people.

Transferability and scalability

- F.226 The following factors may constrain the effectiveness of transferring to different contexts (geographic, modal, economic, etc.) or scaling the good practice:
- Staff training can be costly and time consuming, for which operators may not face sufficient market incentives to fund; and
 - Other aspects of the transport system (e.g. barrier-free access to transport infrastructure) may constrain the extent to which PRMs are able to access transport

Key Learnings: Staff awareness training helps to ensure staff members know the appropriate actions to take when serving different users, such as giving extra time for boarding, securing wheelchairs, sitting and alighting, or for adequately assisting users with other needs. The effect of the staff awareness training is that it empowers passengers, allows staff to provide empathetic, gender equitable and safer public transport. Ultimately, better staff awareness and improved attitudes towards user groups help remove barriers that prevent users from using public transport services (navigation, safety, usability, etc.). Better trained staff can also lead to improved safety and feelings of security while travelling, which is of particular relevance to women, children, migrants and older people.

G Good practices (non-EU)

Equality Impacts Assessments in the United Kingdom

Overview

G.1 An equality impact assessment (EqIA) is a tool that helps public authorities ensure their policies, and the ways they carry out their functions, do what they are intended to do and for everybody. Carrying out an EqIA involves systematically assessing the likely (or actual) effects of policies on people in respect of disability, gender (including gender identity) and racial equality and, where required/selected, wider equality areas. This includes looking for opportunities to promote equality that may have previously been missed or could be better used, as well as negative or adverse impacts that can be removed or mitigated³³⁷.

Main relevant challenges

G.2 The UK equality act (2010), is the main statutory regulation forming the basis of anti-discrimination law in the United Kingdom. The Act explains that having due regard for advancing equality involves:

- Removing or minimising disadvantages suffered by people due to their ‘protected characteristics’³³⁸.
- Taking steps to meet the needs of people with certain ‘protected characteristics’ where these are different from the needs of other people.
- Encouraging people with certain ‘protected characteristics’ to participate in public life or in other activities where their participation is disproportionately low³³⁹.

G.3 Public sector bodies in the United Kingdom must take an ‘equality duty’ into consideration when implementing schemes. This duty requires public authorities, in the exercise of their functions, to have due regard to the need to:

- Eliminate discrimination, harassment and victimisation and any other conduct that is prohibited by or under the Act.
- Advance equality of opportunity between people who share a relevant ‘protected characteristic’ and people who do not share it.
- Foster good relations between people who share a relevant ‘protected characteristic’ and those who do not share it.

G.4 EqIAs can form an important step in discharging this duty. If a comprehensive EqIA is undertaken, and the recommendations of it are taken into consideration when designing and

³³⁷ [Equality impact assessment quick-start guide](#), Equality and Human Rights Commission, 2010

³³⁸ [Protected characteristics](#), Equality and Human Rights Commission, United Kingdom, 2021. Protected characteristics are certain characteristics (age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, sexual orientation) upon which people should not be discriminated against.

³³⁹ [Meeting the Equality Duty in Policy and Decision-Making](#), Equality and Human Rights Commission, 2014

implementing the scheme, the duty can generally be considered fulfilled. As such, although EqIAs themselves are not compulsory, they do represent an effective step towards completing a compulsory duty.

- G.5 A very simple example is provided by a recent EqIA undertaken in Villiers Street, London, where pedestrianisation was being extended. As detailed designs were being developed, the scheme promoter realised (through the development of an EqIA), that the bollards being added to the scheme unfairly discriminated against visually impaired people, who would struggle to navigate the new streetscape. The EqIA recommended that the colour of the bollards be changed for clearer visibility; at the time of writing the changes are currently being implemented.

Target users

- G.6 EqIAs are used across the United Kingdom, in a range of policy environments, including transport. They involve consideration of people who may use and/or be affected by a transport project (e.g. through provision of step-free access to station platforms), covering, at a minimum the following ‘protected characteristics’³⁴⁰:

- age
- disability
- gender reassignment
- marriage and civil partnership
- pregnancy and maternity
- race
- religion or belief
- sex
- sexual orientation

- G.7 It is not necessary that an EqIA explicitly references all of the above ‘protected characteristics’ – for example, transport projects tend to focus upon ‘protected characteristics’ which influence physical mobility and travel patterns as potential grounds for discrimination. For example, a recent EqIA conducted during the development of the ‘Green Spine’ walking and cycling route through London focused upon ‘protected characteristics’ such as age, disability, pregnancy and maternity, and sex, as these impacted the way that people physically move through space when walking or cycling.

Costs and Benefits

- G.8 The cost of an EqIA is usually minimal compared to the overall capital cost of the transport project or policy itself. The main cost is staff time, and an EqIA should be developed by someone who has a good understanding of how travel patterns and characteristics vary between different groups. Direct engagement with different users is encouraged, although not required – something that user groups have criticised.
- G.9 The benefits are that transport projects and policies can be designed to promote equalities, with any disproportionate negative impacts identified early so that appropriate modifications and/or mitigations can be put in place. This helps ensure that all members of society are accommodated for in the design of projects and policies – which has both a qualitative ‘social’ benefit and quantitative ‘economic’ benefit. In addition, using a standard EqIA methodology

³⁴⁰ [Protected characteristics](#), Equality and Human Rights Commission, 2021

provides authorities with a structured way of demonstrating how they have approached their duties with respect to ensuring equality and inclusion, even if the use of EqIAs is not a legal requirement.

- G.10 For example, two of the benefits of the Green Spine EqIA were that more segregation of walking and cycling was delivered, to protect younger and older people who are more likely to be walking and/or collide with a bicycle; and ‘rest points’ were added to walking schemes, to help ensure that people who are heavily pregnant and/or older people have regular places to rest.

Project timescales and timing of costs and benefits

- G.11 An EqIA can be conducted in parallel with the development of a transport project or policy – from the inception and design, through to implementation – and should not materially change its timescale. Running the EqIA in parallel to the development of the project or policy allows the EqIA to fully engage with it, ensuring that the EqIA has clear understanding of how the policy/project has evolved, and also offering the possibility that the EqIA can feed into the development of the policy/project, ensuring that it is equitably delivered. As such, the length of time that an EqIA takes should be proportionate to the scale of the scheme; for a minor intervention such as pedestrianisation of a street, an approximate timescale would be 2 weeks of analysis for a team of three people, while for a major project like the new high-speed rail line linking London to the North (HS2), it could take months (or years).
- G.12 The benefits of an EqIA should accrue over the lifetime of the project or policy; often if implemented effectively, these benefits will effectively be ‘invisible’: an effective EqIA ensures that everybody is effectively accommodated in the development of the scheme.

Criteria used for evaluation

- G.13 The ‘protected characteristics’ which are used for assessment in an EqIA have been outlined above. To determine how each of these ‘protected characteristics’ will be impacted by a new transport scheme a range of sources – such as publicly available data sources, survey data, consultation data, expert opinion – are used to develop a ‘baseline scenario’ which shows what the situation would be like without the project or policy. Then a comparison scenario is developed, which examines how each user group would be impacted should the scheme go ahead in its current formation. Any groups which will be disproportionately impacted can then easily be identified, and ameliorating actions taken.
- G.14 Evaluating the efficacy of the EqIA involves ex-post monitoring of transport project and/or policy impacts on different user groups, to enable evaluation of whether it has disproportionately affected certain groups. This can then be compared with the assertions of the EqIA.

Stakeholders’ views

- G.15 EqIA’s are considered important and useful by stakeholders – user groups, policy-makers, authorities, and scheme developers. They are seen as an effective standard methodology for considering issues of equity and inclusion. If conducted well, EqIA’s should incorporate a wide range of stakeholder’s views into their development. Key stakeholders’ views, and the public consultation records should be taken into consideration during an EqIA’s development. This should allow a process whereby complaints/insights from stakeholders can be incorporated into the development of an EqIA.

- G.16 There are, however, some critiques of the process. For example, Transport for All – an advocacy group which represents people with disabilities in London – states that the method is, in reality, more of a ‘tick box’ than a route to meaningful change, and want to allow greater citizen input into the development of new schemes³⁴¹.
- G.17 An example of good stakeholder consultation is provided by the Villiers Street EqIA. In the process of developing the EqIA, a large number of people noted that older individuals would struggle to access residential blocks. The EqIA reflects this, and accommodations have been made in order to ensure that older individuals have spaces to rest, and step-free access to key residential areas.

Results

- G.18 By providing a systematic understanding about how transport projects and policies can disproportionately impact on certain groups, EqIAs help to ensure that transport promotes equity and inclusion.
- G.19 The ultimate outcomes from this process can be very varied, from (in extreme cases) the complete cancellation of the scheme, to minor adjustments. For example, one of the recommendations of the Green Spine EqIA was that a single tree was removed as it would prevent people with impaired mobility and visibility from accessing the natural crossing point of an intersection (a desire line identified during detailed design development).

Obstacles to implementation or achievement

- G.20 EqIAs add the most value when they are included as integral part of the development of a transport project or policy from the earliest stages. This enables equity and inclusion to inform objectives and guide the development and selection of options, maximising the opportunity for schemes to promote equity and inclusion.
- G.21 The danger is, however, that authorities who are implementing these schemes have a low awareness of both different users’ needs, and two, the way that EqIA tools work/can benefit a project. This can mean that the authorities do not understand the value in incorporating an EqIA into project development from inception – instead it is seen as something that must be completed only for compliance/risk mitigation purposes.
- G.22 Critics state that EqIAs have become a ‘tick-box’ exercise, which means that they are completed in a cursory fashion, without due attention. This may be partially because there is no defined minimum level of engagement with users required – for example, an EqIA could be completed by a researcher using ‘desk-based research’ alone. Additionally, they are not actually legally mandated, meaning that there is no actual requirement for them to be completed.
- G.23 Ultimately however, the most practical (and common) issue to effective delivery of EqIAs is that they are often implemented at the last minute, just before a transport project or policy is implemented. This means that identified equity and inclusion concerns may be difficult to address. The biggest obstacle to effective delivery of EqIA’s is that they are introduced too late in the process, which means that the recommendations of the EqIA can be costly and difficult to implement.

³⁴¹ [Pave The Way](#), Transport for All, 2021

Transferability and scalability

Key Learnings: EqIAs are applicable to transport projects of all sizes, ranging from projects to improve a single street, through to major new investments in transport infrastructure or nationwide changes to transport policy. Naturally, the level of effort and detail for an EqIA should be proportionate to the expected scale of impact.

The one barrier which may prevent EqIA methods being transferred anywhere around the world is the definition of what a ‘protected characteristic’ is – in different jurisdictions, this can mean different things. However, adjusting the overall EqIA method to incorporate different interpretations of what these characteristics should be would not be a challenging task, and should not inherently undermine the benefits that EqIAs can bring as regards Equality and Inclusion.

Public transport and equity in Colombia

Overview

G.24 In Colombia, equity is an important guiding principle for the actions of public entities. This means equality for individuals before the law, the state, and equal social conditions, across the spectrum of the country's diverse population. The National Development Plan 2018-2022 – 'Pact for Colombia, Pact for Equity' – focuses explicitly on this topic, placing it at the top of the agenda for national entities. Its central objective was to 'to lay the foundations for legality, entrepreneurship and equity that will allow equal opportunities for all Colombians'³⁴². To this end, in September 2020, the National Planning Department decided that it needed to analyse the impact of public transport services on equity in cities, to help generate public policy recommendations on public transport and urban planning.

Main relevant challenges

G.25 This initiative was attempting to better understand the relationship between social equity, and other key factors such as inequality, gaps, social exclusion, socio-spatial segregation, spatial injustice and poverty. The connection between these different issues is somewhat cyclical, and the initiative aimed to understand how transportation and infrastructure fit into this cycle (and if transport and infrastructure investments could help to break this cycle). It aimed to provide a clearer understanding about how planning can help to encourage social equity, by providing a series of recommendations to help improve policy decision making about social equity and transport.

Location and passengers included

G.26 Four Colombian urban agglomerations: Área Metropolitana del Valle de Aburrá, Cali, Área Metropolitana de Centro Occidente and Pasto were analysed. The transport mode user groups that were used for analysis and presentation of results are:

- Private car users;
- Public Transport users;
- Motorcycle users;
- Non-motorised (pedestrians and cyclists) users;

G.27 In addition, the following socioeconomic groups were analysed:

- Workers;
- Students;
- Older people;
- Recipients of Sisben (social programme beneficiaries);
- Citizens with different educational levels.

G.28 Finally, users in the following geographies were analysed:

- Residents in areas of transport poverty,
- Residents in mixed-use areas;
- Residents by property valuation.

³⁴² [Bases Del Plan De Desarrollo](#), 2018-2022, Gobierno de Colombia, Departamento Nacional de Planeación, 2019

G.29 Overall, this data was used in conjunction with information about social class to build a picture of the types of users who are best provided for by the current transport network.

Results

G.30 The initiative helped to provide a clearer understanding of the close linkages between inequality and transport, showing that:

- People with less purchasing power are forced to live on the peripheries of cities, where land costs are lower, and opportunities and services are scarcer.
- Living a long way from opportunities means that people must travel further, spending more time to reach their place of study or work;
- Spending more time and money on obligatory activities (such as transport) limits the remaining resources available to do other recreational activities, diminishing people's enjoyment of city services.

G.31 This analysis made it possible to establish relationships between the selected socioeconomic variables and the concept of equity. This showed that, in all the cities studied, households dependent on public transport have the longest travel times. This limits the time available for other activities, curtailing access to different opportunities within cities. In all of the cities studied, those who can afford to, make greater use of private transport modes, increasing congestion and pollution and worsening the operations of public transport systems.

G.32 The study examined a number of potential interventions which could be used to reduce inequality, including:

- Subsidies to users;
- Subsidies to operators;
- Changes to transport infrastructure;
- Changes to transport operations.

G.33 It was recommended that subsidies were provided to students, older people, and people with low income. Operator subsidies were provided in all four urban areas. Infrastructure adjustments were made in 2 out of the 4 areas, and transport infrastructure and operational changes were made in 3 out of the 4 areas. It was recommended that these infrastructure interventions focus on improving the local environment of neighbourhoods, improving accessibility to, and provision of, local services, while remaining conscious of the fact that this could cause displacement from surrounding areas.

G.34 However, the study also recognised that there were a number of potential issues with these policies; for example, providing subsidies to users' risks misidentifying the types of users which need to receive the subsidy. If users who are not actually in need of subsidies are provided with subsidies, it could exacerbate, rather than ameliorate, inequalities. Conversely, if users who need subsidies are not provided with subsidies, they may justifiably feel that the subsidies are unfair and exclusionary. By contrast, if operators are provided with subsidies, there is a risk that they are disincentivised from providing a high-quality service, and/or risks being less valued by the consumer, due to the lower ticket prices.

G.35 Ultimately, the study recognised that no single intervention was the best way to tackle transport inequality, and that the specific geography of the urban area in question has a marked impact upon the type of intervention which is best suited to it.

Obstacles to implementation or achievement

- G.36 The main obstacle in the development of the model was to relate socioeconomic, demographic and urban variables with mobility variables. Two main areas of data existed, which needed to be brought together. For the first area, sources of information came from the national census, the location of facilities, and the database of social and economic conditions of vulnerable people in Colombia (SISBEN). For the second area data provided from household mobility surveys that provide information on the mode and other characteristics of the trips. Connecting these two types of variables required some mathematical and geospatial modelling. This then allowed comparison of a household's likely characteristics, with the underlying urban geography.
- G.37 Through the analysis, a number of caveats were noted, which highlighted the difficulty of actually achieving equity. These are summarised as follows:
- **Subsidising users:** may be hard to distinguish the correct users to subsidise, and subsidies may lead to potential operational issues around the delivery of services (e.g. people swapping subsidised cards).
 - **Subsidising operators:** fails to cater for those who suffer from transport poverty, potentially disincentivises operators from providing a better service, and could devalue the service in the eyes of the user.
 - **Changing infrastructure:** risks reshaping the city in negative ways, for example, by creating socially dysfunctional neighbourhoods (as has happened in 'The Projects' in North America, for example). Transport-orientated development can also take a long time (and substantial amounts of money), to implement.
 - **Changing operations:** similar to changing infrastructure, can take long periods of time and significant amounts of money.

Transferability and scalability

- G.38 The results from this initiative provide an information source for policy-makers about the links between socioeconomic inequality and transport provision. The initiative also demonstrated approaches to urban transport analysis which can be applied to other urban settings including the EU where relevant data is available (application to rural settings may be more challenging due to limited data availability). However, the approach does not explicitly identify the user groups which are most impacted, nor provide clear recommendations for interventions that should be implemented. It is important then that this information is used alongside local expertise and engagement with stakeholders, as part of a broader policy-making approach.

Key Learnings: This good practice on public transport and equity policy in Colombia provides several useful ideas and concepts which largely focus on improving decision-makers' understanding of the relationship between social equity, and other key factors such as inequality, gaps, social exclusion, injustice and poverty.

Firstly, it shows that the relationship between inequality, urban form, and transport, is complex, and can rarely be solved using a single intervention type. The intervention types tested in this study each had different strengths and weaknesses, meaning their efficacy varied by the specific geography of the urban area. Secondly, this good practice highlights the importance of data and sources. For example, in Colombia, there is good, localised, information about equality and social circumstances, which made

this project possible. Without this underlying data, it would have been impossible to develop such detailed results. Finally, the analysis highlighted that certain aspects of inequality are built into the material fabric of the city; something which is often intuitively known, but more challenging to quantitatively measure.

Stakeholder engagement strategies in India

Overview

- G.39 The Bus Rapid Transit System (BRTS) implemented in the city of Pune, and subsequently in the adjoining twin cities of Pimpri and Chinchwad (state of Maharashtra, India) is a good illustration of the benefits of detailed stakeholder engagement: in the first phase of the project, there was a lack of quality stakeholder engagement which created issues. A post-implementation study carried out by city authorities in association with civil society groups highlighted the need for detailed stakeholder consultations. This was remedied in later stages of the project.
- G.40 Phase 1 (2006-2008) of the BRTS project was first implemented in the city of Pune. As it was the first time that a BRTS project was being implemented in India, there was little understanding of all the areas requiring focus from all involved in the running of the project. Most of the focus was directed at technical aspects, perhaps without enough appreciation of how the different parts of the local civil society would be using the infrastructure, or how those affected by the project would respond to it.
- G.41 With the project having been through multiple jurisdictions and layers of approvals, it could have been assumed that a stakeholder strategy would have been in place but this was not the case during Phase 1.
- G.42 The project, while initially technically successful, met several obstacles in the first phase which could, in part, be attributed to the lack of detailed stakeholder engagement:
- There was some strong resistance which came primarily from users of private transport modes who realised that only buses would be able to use segregated lanes. There was only very limited stakeholder interaction with different road user groups while planning Phase 1.
 - A series of negative media reports were printed about the project following some accidents with private-transport vehicles entering the dedicated BRTS lanes, as there had been no media communication plan on the benefits of the project.
 - In October 2007, cycling lanes were constructed alongside the BRTS dedicated lanes. The lack of consultations while planning the cycling lanes led again to further resentment among commuters using private motorised transport modes.
- G.43 All these issues led to negative media reports and public perception of the project and contributed to slow approval of additional corridors for the city by the Pune Municipal Corporation (PMC)³⁴³. In addition, in 2007, the political party which had instituted the BRTS lost the local elections. The following administration enacted a series of measures to include all type of buses in BRTS lanes (rather than only the BRT ones) resulting in reduction of traffic speeds and increased congestion. As a direct result of the slow decision-making from the authorities, the funding for the BTRS project meant to be funded under the Sustainable Urban Transport Project (SUTP)³⁴⁴ of the World Bank was dropped.

³⁴³ Pune Municipal Corporation, 2015. Learnings from Pune Pilot BRTS Project.

https://rainbowbrtpune.files.wordpress.com/2015/07/learnings-from-pune-pilot-brt-project_may-2015-1.pdf, accessed on 12th August 2021.

³⁴⁴ The World Bank, no date. Implementation Completion Report (ICR) Review, Independent Evaluation Group.

<https://documents1.worldbank.org/curated/en/270641561147309273/pdf/India-IN-Sustainable-Urban-Transport-Project.pdf>, accessed on 16th August 2021

Main relevant challenges

- G.44 Urban infrastructure projects implemented across India do not always have a detailed stakeholder engagement process. In some cases, these processes are conducted as a check-box item, limited to the legality which they are required to adhere to. As a result, in quite a few projects, lack of stakeholder engagement in project planning and implementation ends up missing out on the intended results, and in a few cases exacerbates social and physical inequities, while also causing environmental damage. The Pune and Pimpri-Chinchwad Bus Rapid Transit System (BRTS) breaks this mould and develops an interesting pathway which can be carried out by other cities while implementing projects which are similar in nature.
- G.45 What we examine here is how prior to the launch of Phase 2 (in 2015), there was a concerted effort at improved and more detailed stakeholder engagements. The negativity around Phase 1 of the project necessitated an innovative approach: The Promotions and Outreach Programme (POP) was launched to understand and document Phase 1 learnings for Phase 2³⁴⁵. The detailed activities conducted as part of the POP contributed to build a positive image of the BRTS and helped users transition from the regular city bus service and other modes to the new BRTS.
- G.46 Once Phase 2 of the project was implemented, an after-implementation study was carried out to understand and detail responses and concerns to the project from these different stakeholders. The success of Phase 2 paved the way for planning and implementing Phase 3 (2016 onwards) of the project.

Improvements made to the stakeholder consultation and outreach activities

- G.47 An evaluation of Phase 1 which was carried out as a pre-requisite for Phase 2 of the project led to several suggestions. One of the key evaluation outcomes was the need for detailed stakeholder engagement strategies which would help in planning and implementing Phase 2 of the project. The improved consultation centred on key issues:
- There was a need to create a BRTS Vision document incorporating the plan for consultation of all relevant stakeholders, including development of a framework to identify stakeholder groups and main issues and stakeholder engagement strategies for different interest groups. This was missing from Phase 1 operations.
 - Development of a Promotion and Outreach Program: it was implemented considering the need to transition from the regular city bus service and other modes to the new Bus Rapid Transit system. It was thought to be essential that people understand the difference from the regular bus service, accept and effectively use the BRT system and its components. It was recognised by the project promoters that a good communication strategy is required to ensure a positive public view about the project.
- G.48 We illustrate below the framework that was developed to identify stakeholder groups and main issues³⁴⁶.

³⁴⁵ Pune Municipal Corporation, 2015. Learnings from Pune Pilot BRTS Project.

https://rainbowbrtpune.files.wordpress.com/2015/07/learnings-from-pune-pilot-brt-project_may-2015-1.pdf, accessed on 12th August 2021.

³⁴⁶ Pune Municipal Corporation, 2016. Rainbow Bus Rapid Transit in Pune Promotions and Outreach Programme – Final Report. <https://rainbowbrtpune.files.wordpress.com/2017/02/pmc-brt-pop-final-report.pdf>, accessed on 13th August 2021.

Table G.1: Stakeholder identification framework

Stakeholder groups	Stakeholder needs/key communication issues
Bus commuters	<ul style="list-style-type: none"> • This group would be the one immediately using the BRTS • Education of the system usage was required • Communication to help in a smooth transition from the old bus system to the new BRTS was required
Residential, commercial and workplaces along the corridor	<ul style="list-style-type: none"> • Primary catchment area for use of the BRTS • There were concerns related to creation of central lane and barricades that required U-turns for access to properties along the corridors, crossings (especially pedestrian crossings)
Institutional stakeholders	<ul style="list-style-type: none"> • Partners have a vital role in ensuring all aspects of the project run smoothly • A regular coordination forum between institutional stakeholders was essential to be set up • Institutional stakeholders must have a long-term institutionalised communication strategy
Politicians	<ul style="list-style-type: none"> • This group was critical for the BRT project to be successful • Information on all aspects of the project needs to be provided: benefits, costs, details of infrastructure and operations, methods of engagement of different constituencies
Environmental groups	<ul style="list-style-type: none"> • Environmental groups were strong proponents of BRT • They may be made partners for outreach and may be involved in public engagement efforts as they have a good understanding of BRT/ sustainable transportation.
Private vehicle users	<ul style="list-style-type: none"> • Experience in Pune and across the country showed that private motor vehicle users considered that BRT were going to be taking away 'their' road space. • The benefits of the BRT needed to be clearly articulated including as a potential mode of transport, a system that would reduce congestion, and would enhance safety for all modes • May be engaged in evolution of 'park and ride' facilities in the future as a potential user group
Industries	<ul style="list-style-type: none"> • Encouraged shift from private vehicle use to BRT use • Explored Corporate Social Responsibility activities to monitor and care of BRT facilities
Special user groups	<ul style="list-style-type: none"> • These include children, older persons, and people with disabilities • These groups were reached through schools and associations • Assess appropriateness of infrastructure for these groups;

G.49 Based on the framework, different stakeholder engagement strategies and outreach activities were developed:

- Stakeholder engagement:
 - Focus group discussions with Phase 1 project staff and non-profits: The aim of these meetings and the focus group event was to gather views about and learnings from the pilot BRT project which had been taken up in Pune nearly a decade ago. These discussions helped to highlight that the project was a pathbreaking effort. The pilot project has had institutional, physical, social, and technical gains.
 - Institutional stakeholders team-building workshops: An initial visioning workshop was done with the relevant senior institutional staff stakeholders. The Vision and

- aspiration expressed by this group was then taken forwarded and developed through a series of focus group discussions with more junior staff from the same key institutions.
- Meeting with elected representatives and politicians: Meetings with party leaders and municipal councillors along both BRT corridors, and with various NGOs were conducted to update about project progress and plans and to understand their concerns and those of the public in their wards.
 - Engagement with NGOs: Non-Government Organisations (NGOs) and activists were approached to understand their concerns and obtain their advice and support for the BRT promotions and outreach work. Detailed discussions and corridor visits were done to update about project progress and take their inputs. Specific concerns like safety of pedestrians while crossing speed breakers, alignment, security concerns on BRT stations, etc.
 - Outreach activities:
 - School outreach sessions: Students learnt about the causes and impacts of the present modes of transportation. The BRT Promotion and Outreach programme in schools focused on engaging students in activities to understand the need for sustainable urban transportation.
 - University outreach sessions: The learning outcomes were focused around increasing understanding about BRT, the features and advantages, personal behaviour and suggestions for project work related to transportation issues including non-motorised forms of transport. Through the discussions following the presentations, students have appreciated that priority to passengers using public transport/non-motorised forms of transport should be respected. Students also gave suggestions for easy ticketing, high bus frequencies, route connectivity and provision of incentives for students coming by buses/ non-motorised forms of transport.
 - Community outreach activities: Community outreach events were conducted primarily along the two BRT corridors, in residential areas of segments more likely to use the public bus transport system. The meetings were arranged through the Ward Offices, elected representatives, and the Urban Community Development Dept. The public events helped initiate a dialogue between the user group and the service providers.
 - Site visits:
 - Corridor visits and trial runs: Corridor visits were organised for a few key target audiences, with a view to obtain special insights pertinent to different segments of society as well as to promote the BRT. One such first effort was to invite the relevant board members to check the trial run and various technical systems. These features were explained to them in detail.
 - Sample rides: Free rides were an important component of the promotional campaign. Commuters were invited to try out the new system and give their feedback to help the project promoters to develop a service appropriate to the needs of the people

Results

- G.50 The improved stakeholder engagement strategy with different stakeholder groups including civic officials, commuter groups and the media during Phase 2 led to more inclusive designs and a more effective project. As a result of the improvements in the engagement with official stakeholders across all relevant jurisdictions (especially where the project was implemented)

gave this group a stronger sense of ownership. It helped accelerate the planning and implementation of additional corridors in the region.

- G.51 Engagement with the media and detailed engagement with other stakeholders also helped ensuring a more positive public perception of the project and led to reduced resistance of the BRTS. Finally, detailed stakeholder consultations with different road user groups helped plan the technical aspects of the project better and ensured access to a good platform to communicate what the project hoped to achieve and attract ridership for the project.
- G.52 Overall, other positive outcomes of the project where stakeholder consultation played a part included:
- Awareness and recognition of the BRTS: There is now an increased awareness of the BRTS as a sustainable and cost-effective transport mode in the area.
 - Comparison of BRT with regular bus services: BRT services were rated better on several parameters including quality of service, frequency, availability of route information and connectivity than regular bus services. There is a high level of satisfaction on infrastructure quality such as dedicated lanes, passenger signage, and bus quality.
- G.53 However, some areas of concern remain to be addressed such as:
- Pedestrian crossings are not adequate enough;
 - Bus timings and reliability needed to be addressed.
 - Quality of pavement was not satisfactory for differently-abled passengers, especially the continuity of pavements which continued to be a challenge.

Transferability and scalability

- G.54 Across Indian cities, there is significant emphasis on implementation of public transport projects. However, in most of these projects, there is seldom any effort towards detailed stakeholder engagement processes, beyond what is required by law. The BRTS case in Pune and Pimpri-Chinchwad offers an opportunity to change that narrative. The project and city authorities formally acknowledged that urban transport projects benefit immensely from detailed stakeholder engagement. However, that realisation did not happen overnight. It required considerable activism from civil society organisations which have traditionally worked or contested authorities to have a robust civil society participation as part of the project planning process. It certainly helps that Pune has had a rich history of citizen engagement – which has focused on participatory governance from different user groups, and in particular disenfranchised populations.
- G.55 One of the key lessons related to transferability is the need for active engagement of civil society in holding project and city authorities accountable towards community needs. Historically, places which have had active civil society participation in project planning and implementation have been more successful at helping co-create more inclusion in projects. Empathetic political leadership and having champions in bureaucracy is an important element which may be required for having detailed stakeholder engagement as part of the project planning and implementation process. We see civil society participation in different forms across India (which reveals that civil society participation is a key ingredient). Recently, in the case of Bengaluru, a civil society organisation (Janagraha³⁴⁷) started a sustained campaign to

³⁴⁷ <https://timesofindia.indiatimes.com/city/bengaluru/bengaluru-citizens-urge-mlas-to-table-unified-transport-authority-bill-this-assembly-session/articleshow/86122668.cms>, accessed on 21st October 2021

get elected representatives to go through, debate and pass a key piece of legislation related to creation of an Integrated Transport Authority for the city. The bill has been stuck for two years without much headway. The campaign spurred different voices from civil society – some of which pointed out that the bill needed to be placed in the public domain, so that it can be debated and opinions from different interest groups could be sought before getting it passed. The sustained effort made good headway, with elected representatives having understood the bill, and the nodal agency putting the latest version of the bill in the public domain. Thus, with sustained civil society participation, there is a good chance that the bill would become a law in the near future.

- G.56 A challenge related to transferability/scalability comes from the legal framework governing urban transport in Indian cities. Though urban transport is traditionally a provincial matter in India, public transport projects are usually capital-intensive requiring funding from the federal government. This translates into a legal framework which does not necessarily require detailed stakeholder engagement as part of the planning and implementation process. Even when such projects fully come under the mandate of provincial governments, local laws regarding detailed stakeholder engagement are likely to differ. Thus, best case practices which may have been followed in the case of Pune/Pimpri-Chinchwad BRTS would need to be contextualised for different contexts.

Key Learnings: In the context of emerging economies, it is important to think through urban transport projects before planning and implementing them, including through the engagement of stakeholders.

The cases study finds that effective stakeholder engagement allows for local communities to co-create the project while reducing negative externalities which may occur if such processes are not followed. It is also highlighted that a detailed stakeholder engagement strategy should be considered across all stages of the project life cycle. A pre- and post- project implementation strategy allows for this.

Demand and gender management strategies for sustainable mobility in Mexico City

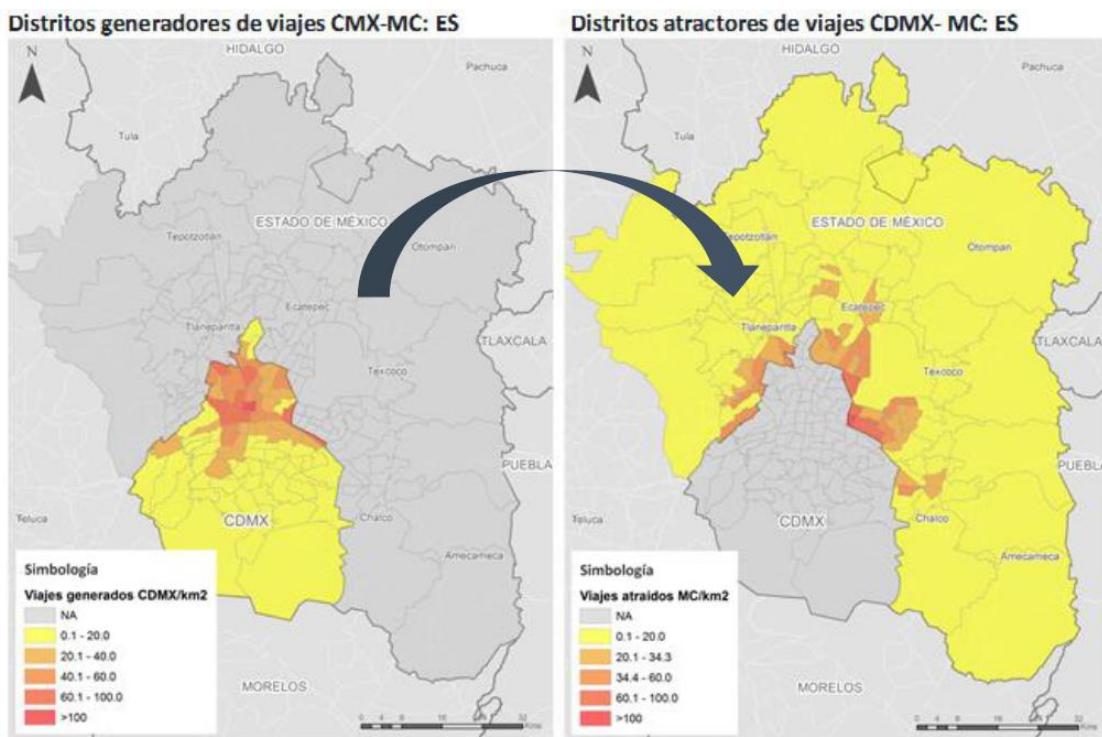
Challenge the policy/scheme was seeking to address

- G.57 In 2017, the Development bank of Latin America (*Corporacion Andina de Fomento – Banco de Desarrollo de América Latina*) implemented a series of projects, to try and better understand how gender and sustainable development intersect in urban contexts. One of these projects focused on Mexico City.
- G.58 The ultimate objective of the project was to understand how a new potential emissions reduction zone (known as the ‘Ecozona’), proposed by the Ministry of the Environment (SEDEMA), could impact life for citizens of Mexico City. To do this, transport behaviours and movement patterns were reviewed, to understand how different social groups might be impacted in different ways. This produced a range of powerful insights into the different movement patterns of different individuals around major cities. These insights should be of use for understanding how to more equitably and inclusively plan the future development of urban spaces and associated projects.

Location and passengers included

- G.59 The project was implemented in Mexico City – the capital of Mexico, located in the centre of the country. The municipal area is one of the largest in the world, and contains a total of more than 24 million people.
- G.60 The primary aim of the project was to understand how the movement patterns of individuals of different genders varied, and in turn, how this might impact the equity and inclusivity of future projects implemented in the city. As such, the analysis and results were first split by gender, allowing providing insights into this particular dimension of equity. However, the project also examined other aspects of users’ identities and journey types. These included: socioeconomic background, age, occupation (student, non-student, employed and unemployed), and journey type.
- G.61 The majority of this information came from the Origin Destination Survey of 2017 (*EOD Hogares, 2017*), and the National Institute of Statistics and Geography (*INEGI, 2018*). This information was analysed using a range of statistical tools, and mapped using Geographical Information Systems (GIS), to present a complete picture of how mobility and different social categories intersect in the city. An example of this is provided in the figure below (Figure G.1), which shows how different zones in the city and the surrounding state serve as sites of trip generation, and destinations.

Figure G.1: Example of GIS analysis used to conduct project



Fuente: Elaborado por Steer con información de EOD 2017

Costs and benefits

- G.62 The key benefit of the project was that it provided a location-specific, evidence-based framework for understanding how gender, mobility and equity intersect. This framework should be of use for future policy-makers looking to make urban spaces more equitable and inclusive.
- G.63 In a more material way, the project provided the foundation on which the 2019 Mobility and Gender strategy for Mexico City was developed. This plan is being used to guide the development of the city for the next 6 years, over the period in which the state government is in power³⁴⁸. This should ensure that the recommendations from the project are incorporated into the development of the city, making it a more inclusive and equitable place for citizens of all genders.
- G.64 The costs of the project were very limited; it was primarily academic in nature, and therefore the primary costs revolved around the gathering and analysis of information. There were no significant capital costs associated with it.

Criteria used for evaluation

- G.65 Before the project started, a range of pre-existing mobility and gender frameworks were analysed. This provided a founding set of criteria which could be used for evaluation. Some of the general information found in this review included:

³⁴⁸ Plan Estratégico de Género y Movilidad, Gobierno de la Ciudad de México, 2019

- Women generally have more limitations in their access to public transportation systems than men;
- Women carry a greater burden of ‘social labour’ than men (for example, child/geriatric care). This means that they make more trips related to care and for social purposes, not described as ‘economically valuable’ in traditional economic models;
- Gender roles and the expectations associated with them have a strong influence on travel behaviours and travel responsibilities;
- In general, studies which examine the movement of women spatially, show that in central, high-density urban areas, the gender ‘mobility gap’ is smaller when compared to peripheral, suburban areas;
- Perceptions of insecurity and violence on public transport impact the way which women use these services and nearby public spaces.

G.66 This information was used to develop a series of questions which guided the project. The project aimed to evaluate the information gathered through direct data collection ‘on the ground’ in the context of the points mentioned above. However, in conducting the review of existing frameworks, the project found that the frameworks currently available did not necessarily fit the objectives that the project was aiming to achieve. Specifically, none of the frameworks incorporated mobility of care, interdependence, and traditional and complex accessibility, or effectively show how these different themes intersected.

G.67 Ultimately then, the project aimed to tackle these themes, and add information or detail where traditional gender frameworks had significant shortfalls. It also aimed to produce a framework that was specific to Mexico City, representing the specific, material experiences that citizens of the city had when tackling daily mobility challenges.

Results

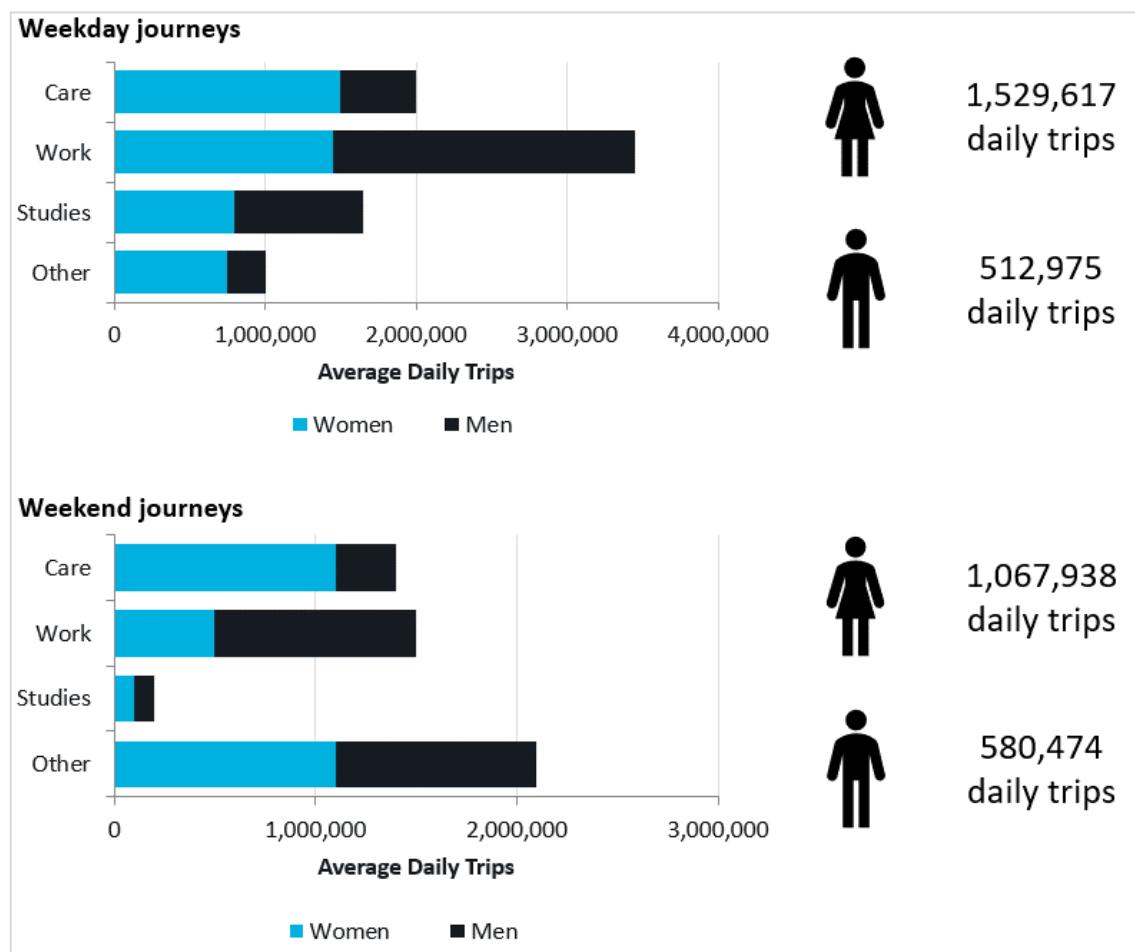
G.68 The project produced several important insights. First, a higher percentage of trips made by men use public transport (60% of trips), as compared with trips made by women (52% of trips). This is not consistent with what is observed in other cities in Latin America, such as Santiago, Buenos Aires and Montevideo or elsewhere in Europe, where women are more, not less, likely to use public transport.

G.69 Less surprisingly perhaps, modal decisions that users make vary more significantly by socioeconomic status for women than for men. This may partly be due to car availability; the study found that, 19% of women's trips involve the use of a car, while for men, this figure stands at 33%. The percentage of trips in which women drive increases as the socioeconomic level rises, but at all levels, women have less control over the use of private vehicles than men.

G.70 Additionally, men more frequently make use of bicycles to get around the city. This is consistent with trends observed in other Latin American cities such as Sao Paulo, Santiago, and Bogotá.

G.71 While women are responsible for just under half of business trips (41%), they are responsible for almost all care-related trips (75%). This indicates women have unequal job responsibility when productive and ‘social’ labour is considered. This broadly aligns with trends seen in other locations, and is partially reflected in the nature of trips that women take: their trips tend to be within the same district and shorter than men’s trips, with shorter travel times than men’s trips. These trends are most prominent in care-related travel. Figure G.2 provides an example of the analysis conducted as part of the project, which shows a breakdown of the care trips undertaken by men and women, on different days of the week, and for different purposes.

Figure G.2: Example of analysis conducted as part of the project: what is the breakdown of care trips for men and women?



Source: Steer analysis. **Care trips involve trips to pick up or drop someone off, as well as shopping.

G.72 While this study demonstrates general trends in the mobility of men and women in Mexico City, it does not capture the current power dynamics or the negotiations of women and men in making travel decisions that would come from a qualitative study.

G.73 The study's recommendations covered three areas:

- First, that the city should produce more data and information about different journey types. In particular, the origin-destination survey had limited information about non-linear trips, and not undertaken for work reasons. This makes it more challenging to accurately understand what gender-based inequalities currently exist in the city. In particular, questions about whether the person undertaking the journey is a care-giver, or if they own a car, would be useful. Ultimately, making sure that the Secretary for Women is involved the next time the origin-destination survey is designed was suggested as a good way of ensuring that this was tackled across the data-collection for the city.
- Second, that public policy should treat gender as an integral part of planning, not simply as an added bolt-on, which is later added. Meanwhile, however, there a number of key recommendations were identified, including improving walking infrastructure, as women tend to walk more than men, improving bus stops and transfer points by adding places where women can place baggage, and improve comfort and safety levels across the public transport network. In addition, more focus should be placed on interpeak journeys, as

women tend to make more interpeak journeys than men, and these types of journeys are currently poorly served by the public transport network.

- Third, planning should include a wider range of actors, including but not limited to women's groups, actors related to transportation planning and measurement groups, and finally, academic actors, who could contribute specific studies from specific approaches.

Obstacles to implementation or achievement

- G.74 The project highlighted a number of issues which prevented the implementation of gender sensitive mobility policies. These were: a lack of data which was disaggregated by data, making it hard to identify where issues were, a lack of female representation in public policy development and, poor options for care-related mobility. The proposed resolutions for these issues are highlighted in the recommendations above.

Transferability and scalability

- G.75 The framework used by this study should be transferable to any city or stakeholder wishing to study and implement gender sensitive public policies. The framework has been designed to operate at the scale of a single municipality, but could be scaled up to operate at a regional level, or down to operate at a neighbourhood level, depending on the availability of data at that scale. Theoretically, some aspects of the framework could also be adjusted to take account of other axes of social exclusion/inequality, provided that there is underling data, which can be connected to spatial movement and housing patterns.
- G.76 Clearly, however, there are some caveats to this transferability. Firstly, Mexico City is a very large city – one of the largest in the world – therefore prudence should be deployed when using these conclusions in cities of a markedly different scale. A city or region of a different density may also see different types of movement patterns, or different types of gender-specific behaviours.
- G.77 As such, the framework does have general applicability, but any application to a new context should only be undertaken with the guidance of local experts and stakeholders. This will ensure that the framework successfully balances the general insights provided by the study, and the local particularities which will need to be accommodated to successfully tackle inequality and equity challenges.
- G.78 In terms of the actual quantitative results that were generated by the project, and the trends they show: clearly, the issues that women or people of non-male genders face when moving around cities are common in many cities, due to the predominance of patriarchy around the globe. As such, some of the high-level results from this study, about the different movement types which women and men take, due to the traditional gender roles that predominate in this city, will provide useful case-study material for other cities. However, it must also be noted that some of the details in the conclusions will, almost certainly, be case-specific to Mexico City. As such, it would probably be unwise to use specific details in the conclusions in other contexts.
- G.79 This conclusion has already been highlighted as part of the study; comparisons with other Latin American cities found some close coherence in specific contexts, but also marked differences in other locations. Ultimately then, this should be treated as a useful good practice and specific example.

Key Learnings: This good practice examines Mexico City's framework for mainstreaming gender in the context of sustainable mobility. The framework has been designed to operate at the scale of a single municipality, but could be scaled up to operate at a regional level, or down to operate at a neighbourhood level, depending on the availability of data at that scale. Theoretically, some aspects of the framework could also be adjusted to take account of other axes of social exclusion/inequality, if there is underling data, which can be connected to spatial movement and housing patterns.

Recommendations under the framework included: data collection on specific user groups; treating gender as an integral part of the transport planning process (mainstreaming); and involving and engaging with a wide range of stakeholders as part of the planning process.

Key challenges highlighted by the project included a lack of: disaggregated data, making it hard to identify issues; and female representation in public policy development.

Advancing equity in the USA through the Link 21 programme

Overview

- G.80 The Link21 programme³⁴⁹ aims to connect urban and intercity rail throughout the Northern California Megaregion, in the USA. The goal is to connect, upgrade, and build upon the current passenger rail system with at the core of the program a new transbay rail crossing from Oakland to San Francisco. The program aims to deliver a more efficient, affordable and sustainable passenger rail network. Once implemented, the program will make it more convenient for people to take BART³⁵⁰ and Regional Rail (commuter, intercity, and high-speed rail), which would encourage more rail travel in the Megaregion.
- G.81 The Northern California Megaregion comprises 164 cities, 21 counties and four regions — the greater San Francisco Bay Area, the Monterey Bay area, the Sacramento area and the Northern San Joaquin Valley. The Megaregion accounts for 31.5% of California's population, totalling 12.7 million people.
- G.82 The project has four main goals:
- Transforming passenger experience;
 - Enhancing community and liveability;
 - Supporting economic growth and global competitiveness; and
 - Advancing environmental stewardship and protection.
- G.83 Equity is integrated into the programme in multiple areas including across the four main goals and the objectives. The inclusion of equity in the Link 21 project goes much beyond a 'checked-box' approach with its integration across all aspects of the project: advancing equity forms a cornerstone of Link 21's objectives. Link21 aims to design and build equitable passenger rail improvements that better serve priority populations and avoid negative impacts to megaregional communities. A key equity component of the project is to define 'priority populations'. In the US, equity analyses typically identify areas with population that have low income or have a higher proportion of BIPOC³⁵¹/minority population, as these groups have historically experienced discrimination, including an underinvestment in infrastructure in their communities, or in some case they have been directly harmed by infrastructure. It includes communities that limited opportunities due to their race, ethnicity, age, gender, class, language or disability status. For Link21, priority populations are identified based on a number of different economic, mobility, community and health/safety burdens as well as a number of demographic factors.
- G.84 Although advancing equity is a discrete objective of the program, it is also a theme that is interwoven into different areas of the program, from engagement to metrics used in alternatives evaluation, to the development of a travel demand and land use model.

Main relevant challenges

- G.85 Beyond the need to reduce traffic congestion in the Northern California megaregion, it has been recognised by policy-makers and transport planners involved in the Programme that whilst major infrastructure programs offer benefits to a broad range of communities,

³⁴⁹ [Link21 Program | Link21](#)

³⁵⁰ San Francisco Bay Area Rapid Transit

³⁵¹ BIPOC: US acronym for Black, Indigenous and People of Colour

historically however, these infrastructure programs have had disproportionately negative impacts on minority, low-income and disadvantaged communities. The Link 21 program aims to put equity at the centre of decision-making during all stages of the project life-cycle.

G.86 Specific challenges have been researched and documented with respect to the Link 21 good practice. These relate to the current state of equity in the megaregion. This has been measured in terms of variables which impact the Link 21 program. It shows that:

- Income: There are significant income disparities between different areas in the megaregion. Sacramento area and the North Joaquin Valley have the highest proportion of households with annual income less than 35,000 USD per year compared to the Bay Area which has the greatest number of households with income greater than 200,000 USD annually (2014-2019). However, there are some disparities within with some counties of the Bay Area with the highest degrees of income inequality in 2019.
- Housing and cost burden: The average rent in the Bay Area is 65% higher than the national US average. Since 2010, the proportion of households spending more than 30% of their household income on housing has increased for all households with an annual income less than 75,000 USD. It is pertinent to note that a greater number of households in priority populations are cost-burdened (43% of priority populations households spent more than 30% of their income on housing between 2015 and 2019).
- Race and ethnicity: The result of rising housing costs is the suburbanisation of poverty, which can be considered as a proxy for displacement. When disaggregated by race and ethnicity, it becomes clear that those negatively affected are Black and Latino Communities. This ties back to the fact that a higher proportion of Black and Latino residents earned less than 30,000 USD annually (which reflects racial disparities in wealth).
- Transport and Equity: Access to private and public transport is a determinant of equity. The proportion of households in priority populations areas without access to a personal vehicle is 12% compared to 5% of households in non-priority populations areas. In addition, a significant percentage of priority population households live more than a 1.5 kilometre away from regional rail networks.

G.87 Link 21 aims to positively impact priority populations by ensuring better access to rail proximity, advance quality of life, environmental outcomes, and create connections between living wage jobs and affordable housing while maintaining stable neighbourhoods and preventing displacement. Additionally, the project seeks to negate any harm to priority populations by preventing harm in the first place. This designation is used to review the distribution of project benefits or negative impacts, in order to ensure that benefits are allocated to priority populations and that priority populations do not disproportionately experience harms from the program.

How Link 21 plans to address these challenges

G.88 A central component of the project is advancing equity throughout the project life cycle. Advancing equity is an intersectional objective across all goals and objectives. It involves:

- Advance equity through prioritizing benefits for priority populations;
- Better incorporating equity into the project modelling tasks;
- Revisit and refine the definition of priority populations based on input from communities, experts, and through its community co-creation process.
- A co-creation process with priority populations in program development;

G.89 To practically advance equity throughout the project, Link 21 has instituted an equity evaluation framework and an equity strategy plan to benefit groups that are systematically marginalised with limited public transport/job/housing opportunities, or those that have been harmed by past transport projects:

- The equity strategy will serve as a roadmap for the project, making sure that outcomes and processes that advance equity are integrated into all components of the project.
- The equity strategy will evolve with the project, and it will be defined and influenced by community and stakeholder feedback, along with other factors.
- The Equity Strategy Plan and Equity Evaluation Framework which form an integral part of the 'Advancing Equity' agenda are detailed below.

Equity Strategy Plan

G.90 This plan will serve as a roadmap for the programme, making sure that outcomes and processes that advance equity are integrated into the work that is performed. The strategy will evolve with the programme, and it will be influenced by community and stakeholder feedback, changes in best practices information, and external conditions.

G.91 The initial steps of this process include developing a working Equity Statement, conducting 'landscaping' interviews with local agencies and equity advocates, and having one-on-one conversations with stakeholders to understand local needs and views and to identify past projects or concerns that need to be taken into account.

G.92 At the start of each new phase of the project, the Equity Strategy and analysis of the previous phase will be reviewed, new engagement will be conducted and the Equity Strategy will be reviewed accordingly by the team. In addition, the Equity Team will re-assess their strategy, which is informed by community guidance and focused on motivating issues, mitigation strategies, or managing change and new information.

Equity Evaluation Framework

G.93 This framework provides the equity component for the development and preliminary screening of alternatives in the Business Case Evaluation Framework. It is a direct response to the complexity of considerations that fall under the umbrella of equity. Equity needs and considerations will evolve during the development of the transport project, which typically has a multi-year planning and delivery process. In line with this need, the Equity Evaluation Framework has been developed to be adaptable over time and will be expanded upon prior to the commencement of each stage of the Business Case life cycle (Preliminary, Intermediate, and Final Business Case).

G.94 The Framework has been developed based on four key principles:

- Equity is not a single measurement or a checkbox that can be ticked;
- Equity is complex, multifaceted, and changeable;
- Process to determine how equity is measured must be equitable;
- Equity is integrated with other issues central to and external to Link21.

Integrating equity considerations in the business case

G.95 Understanding local perspectives on infrastructure projects and equity is an important context for the development of the Equity Evaluation Framework. Through landscaping interviews, key takeaways were established which were then integrated into the Business Case in the following manners.

- Motivate: This category contains the key elements of the project that are intended to advance equity, e.g. improving access to living wage jobs, connectivity, or environmental quality for priority populations. This category reflects how Link21 is intended to address inequity today and create a more equitable region upon completion.
- Mitigate: The potential negative impacts of Link21 need to be constantly reviewed, monitored and addressed. The goal is to avoid negative impacts rather than to simply lessen their severity. The Mitigate category includes all potential impacts that impede progress towards equity or lead to further inequity that must be prevented during planning, design, delivery, and operation of a project.
- Manage: This category is used to proactively identify issues that have not been accounted for in the ‘Motivate’ or ‘Mitigate’ categories and to act on them accordingly. This includes changes in policies or legislation, new census data, changes in conditions external to Link21, and emergent feedback that was not anticipated from communities.

Co-creation

- G.96 The project aims to advance equity through a process of co-creation. The co-creation model centres on engagement with community to identify priority populations and their specific needs. This model is important because traditional models of public workshops, town hall meetings are generally inaccessible to impacted communities, and they are often under-represented.
- G.97 Co-creation involves reaching out to impacted communities through Community Based Organisations (CBOs), interact with community members, build trust, and involved them actively in shaping the vision and objectives of the program. Knowledge gained through the co-creation process is then built into the technical infrastructure of the program. During this co-creation process, community members will be able to identify the goals and objectives that are most important to assessing benefits and equity advancement as well as areas of concern or disbenefit. Outputs from co-creation is going to be channelised into vision, objectives, and influence goals of the programme.

Incorporating equity in demand for transport and land use modelling

- G.98 The Link21 team is at the early stages of identifying how equity can be best integrated into demand for transport and land use modelling. Including the needs of different users and being able to model priority populations are areas of focus. Other priorities include modelling potential impacts of program-related displacement, and ensuring off-peak travellers are captured in modelling.

Transferability and scalability

- G.99 There is some potential for transferability and scalability of some of the aspects of Link21:
- Equity Evaluation Framework: The framework has been developed to be adaptable over time and will be expanded upon prior to the commencement of each stage of the Business Case life cycle (Preliminary, Intermediate, and Final Business Case). This framework provides the equity component for the development and preliminary screening of alternatives in the Business Case Evaluation Framework. This framework can certainly be contextualised and adapted to different geographies.
 - Co-creation: this concept can be transferred too. The Co-creation model centres on engagement with community to identify priority populations and their specific needs. The co-creation process focuses on innovative techniques of community engagement of

working with CBOs which work directly with vulnerable groups. The deep engagement with communities and allowing them to co-create the objectives and goals across the project life cycle is a unique feature which can be studied for its potential for scalability across geographies.

- Priority Populations: The approach adopted by project authorities to define priority populations and ensure that one of the main aims of the project is to positively impact these communities, while ensuring that there are minimal negative externalities on account of the project is worth considering for other urban transport projects. Similarly, the project adopts a forward-looking approach which allows revision/addition of priority populations across the project life cycle. This dynamic approach is yet another key component which can be adopted across geographies.

G.100 One of the potential challenges with the transfer and scalability of co-creation and the equity evaluation framework is that of political will. The concepts being pioneered in the Link 21 case are bold and represent a shift in equity and inclusion for urban transport projects. Implementing such concepts across emerging economies may face severe resistance from vested interests from administrations or other organisations. A move towards including these concepts would require strong political will, and clear demonstration of benefits.

Key Learnings: The good practice centres on the use of a ‘priority populations’ concept in California in the United States. For Link21, priority populations are identified based on a number of different economic, mobility, community and health/safety burdens as well as a number of demographic factors.

One of the key learnings identified is that there is a need to define vulnerable populations and ensure that the project in question positively impacts these communities. It is equally important to ensure that transport megaprojects do not negatively impact such communities (which may put them at further risk of disenfranchisement). The Link 21 project spends considerable time developing a detailed framework which captures vulnerable communities across the project area and makes an explicit promise in its vision and objectives that the project will positively impact user groups at risk of social exclusion.

A second key learning is that projects of this nature can benefit from the co-creation approach, where transport projects actively engage with community based organisations representing these groups, giving them a voice in co-creating the project objectives and goals. This would be carried out across the project life cycle.

H Major trends

Introduction

- H.1 Each of the challenges which this study focuses on are challenges which transport users already face today. However, this study aims to explore how these challenges may change in the future. As such, the major trends of decarbonisation, digitalisation and automation, an ageing population and COVID-19 provide a guide for our thinking about how future challenges for transport users may change in the future; which challenges may become more significant, which will be eroded, and new areas of consideration which may prove important, including new opportunities.
- H.2 As this study is focused on exploring transport social equity and inclusion, rather than understanding these future trends, the trends are only described at a high-level here. For each trend, sufficient detail is provided to understand how each it is expected to evolve, and why it is significant from a transport perspective.

Trends

Decarbonisation

- H.3 The transport sector is responsible for nearly one quarter of greenhouse gas (GHG) emissions in the EU. Decarbonising transport is an essential element of broader sustainable development strategies and transport is a key sector in terms of the EU's commitments under the Paris Agreement. Decarbonisation targets, in line with the European Green Deal's objectives of achieving a carbon-neutral EU by 2050 (in part through a 90% reduction in transport emissions), provide an impetus for rethinking future mobility³⁵².
- H.4 To achieve this decarbonisation of the transport sector will require a transformative change, ranging from introduction of major new infrastructure, to changes in the way that individual streets are designed.³⁵³ The European Union has provided overall guidance for how it expects this transition to be carried out and its Sustainable and Smart Mobility Strategy³⁵⁴ supports this. However, the scale and complexity of the challenge means that much decision-making and project delivery will be carried out at regional and local scales. In 2019, each Member State submitted a National Energy and Climate Plan (NECP), which provide high-level overviews of their plans for decarbonisation³⁵⁵. The details within these plans vary widely between Member States. For example, Finland's NECP aims to achieve carbon neutrality by 2035, and strengthen its carbon stocks and sinks³⁵⁶, while the Portuguese NECP focuses more

³⁵² European Green Deal: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

³⁵³ European Commission, [Final Report of the High-Level Panel of the European Decarbonisation Pathways Initiative](#), 2018

³⁵⁴ European Commission, [Sustainable and Smart Mobility Strategy](#), 2020

³⁵⁵ European Commission, [An EU-wide assessment of National Energy and Climate Plans](#), 2020

³⁵⁶ [Finland's Integrated Energy and Climate Plan](#), 2019

closely on the potential for decarbonisation to alleviate energy poverty and foster more sustainable development³⁵⁷. Below this scale, there are a wide range of projects and programmes which are aiming to help assist decarbonisation. For example, the European Commission recommends that individual urban areas undertake ‘SUMPS’ (Sustainable Urban Mobility Plans), in order to help reduce carbon emissions and improve the quality of life for citizens³⁵⁸.

H.5 Ultimately, however, there are some common themes which we expect will play an important part in decarbonising transport in the EU over the next 30 years. Some key themes related to the decarbonisation trend include:

- Electric and hydrogen (and other renewable and low-carbon fuels) vehicle roll-out and supporting infrastructure. This may cover private and public transport vehicles and also include the use of e-vans for deliveries.
- Shared Mobility (also related to digitalisation), with evolving roles in terms of provision for the public and private sector.
- Re-design of urban space – for example ‘15-minute cities’ (also related to COVID-19, through social distancing and changes in commuting patterns etc.).
- Active and sustainable travel – encouraging walking and cycling and transformation of local streetscapes. Modal shift from aviation to rail for short-haul journeys.
- Carbon taxation and congestion charging – changing the pricing of different modes of transport to support sustainability goals.

H.6 Many of these trends are already in evidence; the roll-out of electric vehicles and the necessary charging infrastructure is a clear example. The differential impact that decarbonisation has upon different components of society is also already being felt; most famously, the ‘Gilets Jaunes’ protest in France was, in part, sparked by a rise in fuel tax brought in for environmental reasons. Throughout our research for this study, we have noted that many projects aiming to reduce carbon emissions in urban areas aim to reduce the mode share of private cars, in favour of active modes and public transport. Clearly these types of schemes have the potential to bring many benefits for social equality and inclusion, but there is also a risk that they exclude those who are car-dependent or who cannot afford new cars with alternative fuels. This highlights the potential for decarbonisation to shift inclusion and social equity issues in new directions; changing the type, rather than necessarily increasing or reducing the volume, of users who face these issues.

H.7 It is also worth noting that many of these policies and schemes aim to drive decarbonisation through behavioural changes, driven indirectly through incentives/disincentives. Sometimes these policies do not have the intended impacts. For example, in Tallinn, free public transport has been introduced in order to make the city more equitable, and shift people from private cars to public modes. The policy has caused an increase in public transport mode share (of approximately 3%), but there is also evidence that it has shortened the average journey length. This suggests that people are now using the public transport as an alternative to short trips – such as those previously made on foot/using ‘active’ modes – rather than the longer

³⁵⁷ [Portugal, National Energy and Climate Plan, 2021-2030, 2019](#)

³⁵⁸ European Commission, [A Concept for Sustainable Urban Mobility Plans, 2013](#)

trips made using private cars³⁵⁹. Indeed, some estimates suggest although car mode share dropped by only 5%, walking and cycling mode share dropped by 40%³⁶⁰.

H.8 In summary, although many of the broad high-level policies for decarbonisation have already been mapped out, the actual impact that they may have is challenging to predict. Ultimately, these impacts will;

- Vary widely by social and economic geography;
- Be modulated by the impact of behavioural changes;
- Be influenced significantly by the emergence of new technologies; and,
- Depend on the financial incentives which are offered to consumers.

H.9 Therefore, although decarbonisation is a trend which is important and well-established, and will continue to be so in the future, it is very challenging to say with any confidence how it will manifest in the medium- to long-term. To do so would require carefully mapping the trend onto the material and social context of the geography in question, making use of some of the variables described above.

Digitalisation and automation

H.10 Digitalisation has reshaped transport in profound ways, and will continue to do so over the coming years. The advancement of new technologies linked to improved telecommunications and digitalisation mean that the possibility of increased automation of the transport network – most critically, of private cars – is becoming a feasible possibility in the foreseeable future. However, digitalisation and automation in smaller, less spectacular ways, is, and will continue to have, significant impacts upon transport; for example through changes in the way that we pay and navigate transport networks, or improving integration³⁶¹.

H.11 However, the changes brought by this technological progress risk excluding certain users, for whom the ‘status quo’ transport network of today functions effectively. For example, as digitalisation of public transport becomes more widespread, users may need to acquire a smartphone to navigate and pay for services, potentially excluding (among other groups); those with poor IT literacy, older people, and people on low income.

H.12 Innovative digital solutions, new business models (e.g. car sharing, collaborative models), and new services also bring challenges such as cybersecurity, supervision of unregulated service providers and potential threats for shared vehicle users. As well as accessibility, the needs of all impacted transport users should be considered when developing such new transport technologies and services to make sure that all users can make the most of the expected benefits in terms of safety and ease of travel.

H.13 Ultimately, once developed, autonomous technologies for private vehicles may enhance the mobility of those who are prevented from driving, such as older people or underaged population, or people with disabilities or medical conditions. Existing in-vehicle autonomous technologies, such as collision warning, lane-departure warning, parking assist, navigation assist, etc., are beneficial to older and less-experienced drivers, helping them to avoid

³⁵⁹ Claus Kollinger, Eltis, Estonia’s free county public transport did not fulfil goals, 2021

³⁶⁰ World Economic Forum: Estonia is Making Public Transport Free, 2018

³⁶¹ European Commission, [Sustainable and Smart Mobility Strategy, 2020](#)

accidents and improving their comfort. Such technologies can enable older people to use cars safely by compensating for the decline or loss of functional abilities.

H.14 However, amongst other factors, gender and age influence attitudes to new technologies and preferences with regard to their adoption due to a lack of skills, ability or desire, resulting in a gap in European transport and mobility as more such technologies are deployed. It is necessary, then, for standards and policies that support the advancement of digitalisation and automation in transport to be based on evidence that accounts for the needs of all users so as to address such divides.

H.15 Some key themes related to the digitalisation and automation trend include:

- Reliance for users to have access to information on-the-go, and decommissioning or substitution of fixed infrastructure (e.g. ticket vending machines).
- Demand Responsive Transport – more flexible transport provision with complex affordability, reliability and accessibility impacts. Also related to decarbonisation as a measure for mitigating emissions from public transport in rural areas which may still have to rely on fossil-fuel powered vehicles.
- Autonomous vehicles – an enabling technology with complex public perceptions towards it. Reliance on supporting infrastructure (e.g. 4G/5G network coverage and quality of road infrastructure) may limit deployment.
- Mobility as a Service (MaaS)³⁶². Greater integration of information sharing between operators and users. Challenges remain about how payments and information are shared.
- Digital payments – the centralisation and/or securitisation of this.
- Use of Artificial Intelligence – real-time data for traffic management, reducing road congestion and pollution.

H.16 Many countries within the EU are driving digitalisation and automation forwards, in the belief that they will encourage more rapid economic growth and provide opportunities for citizens. In addition, many of these changes have been further accelerated by the COVID-19 pandemic; many services have moved even further online, and interaction through digital interfaces has become the norm due to concern about close contact. As these changes progress, it is important to balance technological optimism of both transport authorities and technology manufacturers with an understanding of the human impact such changes may bring. Understanding how new technologies intersect with the user groups we have identified in this study will therefore be of critical importance for ensuring future equality and inclusion in the EU's transport network.

Ageing population

H.17 In 2019, more than 20% of the EU's population was 65 or older, and the share of people aged 80 or older is expected to increase more than 2.5 times by 2100³⁶³. This ageing population will cause a number of specific issues for transport. Most obviously, older people tend to face specific mobility issues, which will need to be accommodated if the transport network is to remain accessible to them. However this issue is not equally spread across the transport

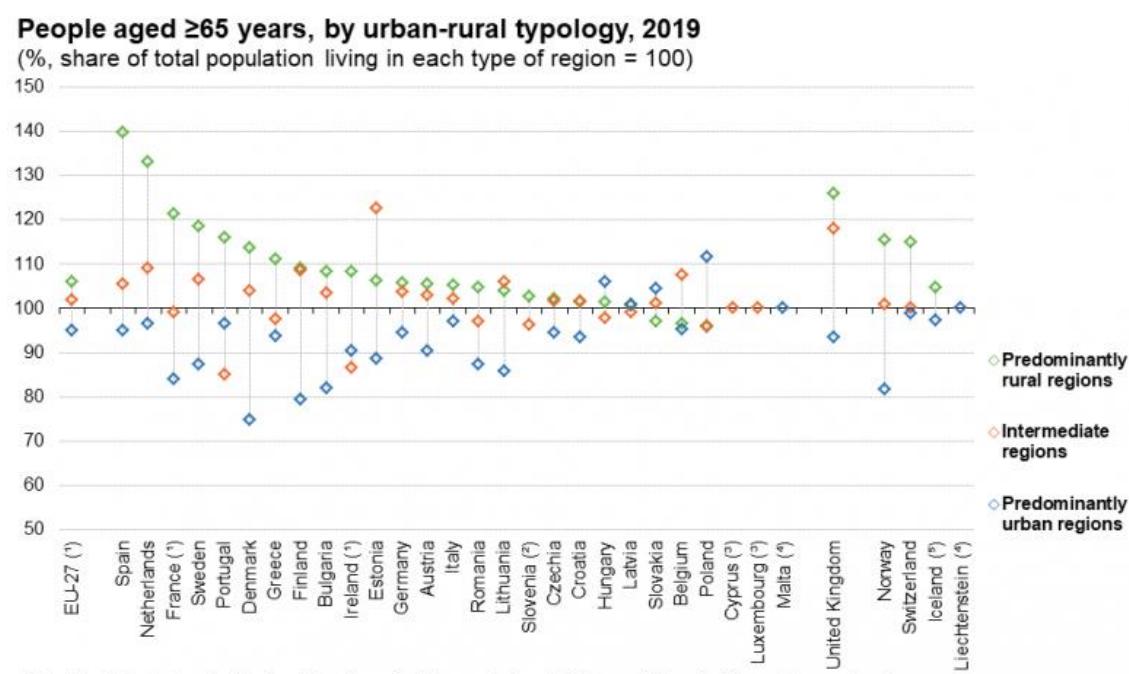
³⁶² Mobility as a Service (MaaS) is the integration of various forms of transport services into a single mobility service accessible on demand. To meet a customer's request, a MaaS operator facilitates a diverse menu of transport options, be they public transport, ride-, car- or bike-sharing, taxi or car rental/lease, or a combination thereof. For the user, MaaS can offer added value through use of a single application to provide access to mobility, with a single payment channel instead of multiple ticketing and payment operations. (<https://maas-alliance.eu/homepage/what-is-maas/>).

³⁶³ Eurostat, *Population structure and ageing*, 2020

network; first-mile and last-mile portions of journeys are often the most challenging for older people, as they frequently involve using ‘active’ modes. The intersection of digitalisation with ageing also presents a potential issue; older people are less likely to be digitally literate or connected, making it more difficult for them to access information or engage with increasingly digitalised transport networks. Older individuals may also be impacted by specific intellectual impairments/ailments, such as Dementia or Alzheimer’s disease, both of which have the potential to limit an individual’s ability to use a transport network. These issues are explored in more depth in the user group’s section.

- H.18 The demography of the EU’s ageing population is more complex than simply an increasing number of older people, however. Women tend to live longer lives than men, meaning that there is a disproportionate number of women who are older. Additionally, rural areas are ageing faster than urban areas, in large part due to the fact that younger people tend to move to cities due to the greater number of opportunities which are available to them there. Conversely, older people are more likely to move to rural areas for retirement, due to the cheaper cost of living and better natural environment available in rural areas. The result of this is illustrated in Figure H.1 below.
- H.19 Certain countries already have, and in the future will have, significantly older populations than others; for example, both Spain and Netherlands already have large rural areas with very aged populations. Dealing with these issues will require both an intimate understanding of local need, and overall vision of the demographic trends.

Figure H.1: Urban/Rural divide of EU’s ageing population



Note: the indicator is calculated as the share of older people (aged ≥65 years) living in different types of regions (predominantly urban, intermediate and predominantly rural), divided by the same share for the total population, expressed as a percentage.

(*) Estimates and/or provisional.

(?) Predominantly urban regions: not applicable.

(?) Predominantly urban and predominantly rural regions: not applicable.

(*) Intermediate and predominantly rural regions: not applicable.

(?) Intermediate regions: not applicable.

Source: Eurostat (online data code: urt_pjangrp3)

eurostat

Source: Eurostat, People aged ≥65 years, by urban-rural typology, 2019

COVID-19

- H.20 The COVID-19 pandemic has had a major impact upon many aspects of life, including personal mobility and the transport system. The roll-out of ‘lockdowns’ across much of the European Union effectively placed large portions of its population under de-facto house arrest, leading to one of the most significant, rapid changes in everyday life since the Second World War.
- H.21 The implications of COVID-19 have varied significantly by geography – different countries and regions within Europe saw different severities of impact at different times. This has been reflected in movement patterns; at times some areas have had relatively ‘normal’ transport patterns, whilst others have seen almost complete cessation of movement.
- H.22 The future impacts of the pandemic are almost impossible to predict. However, we can be confident that it has fundamentally shifted the trajectory of future socioeconomic development. As such, it will have a lasting effect upon people’s lives and work together, and may trigger long-term behavioural changes in transport use. An obvious, and much-discussed example, is possible de-urbanisation; with the discovery that many jobs can be completed remotely, the need for large portions of Europe’s population to commute to city-centre locations for employment is now being questioned by some³⁶⁴. The implications of such a shift for transport are clearly, potentially, profound. However, the likelihood of such a shift occurring at a wide scale is hard to ascertain; many firms have stated that they expect a return to office-based working, similar to a pre-pandemic norm with the hope of office workers returning to the office. Alongside this desire for office workers, it is noted that many workers jobs require onsite attendance (for example factory and sorting centres).
- H.23 Additionally, the supply of public transport options may be impacted by COVID-19. The shortfall in fare box revenues caused by falling passenger numbers in the pandemic has left many public transport operators unable to provide pre-pandemic levels of service. In some cases this has led to operators going completely bankrupt, or required significant government subsidy. What this will mean in the post-pandemic era remains to be seen, but will likely lead to shifts in the way that public transport is owned, funded and operated.
- H.24 Clearly much uncertainty about the future impacts of COVID-19 upon transport – and social equity and inclusion within transport – remain. In lieu of clear predictions, the factors in the figure below prove instructive. They can help to consider possible outcomes in terms of scenarios and the factors that are affecting mobility and transport, and how these factors may manifest for different user groups.

³⁶⁴ European Commission, [How to manage cities in the post Covid-19 period?](#) 2020

Figure H.2: Factors affecting mobility and transport in the context of COVID-19

				
Government restrictions and travel advisories <ul style="list-style-type: none"> Ability to travel locally, long-distance, internationally Availability of supporting services (e.g. hospitality) 	Perceived health risks and solutions <ul style="list-style-type: none"> Public confidence in measures to reduce risks Timing of treatments and/or vaccine Measures to protect transport workers 	Transport market landscape <ul style="list-style-type: none"> Transport supply Networks and fleets Level of service Availability of finance Government support 	Level of economic activity <ul style="list-style-type: none"> Demand for travel <ul style="list-style-type: none"> Commuting Business Leisure Visiting friends and family 	Behavioural changes: temporary or longer-term? <ul style="list-style-type: none"> Remote working Use of technology Videoconferencing Sustainability

Source: Steer analysis

- H.25 In looking to adapt the future transport system in response to the COVID-19 pandemic, it will be important to consider how different user groups experience relevant factors in different ways. For example, older people or people with caring responsibilities may be subject to greater health risks, and therefore feel unsafe using public transport. As a result, historical mobility patterns and choices may not provide sufficiently reliable evidence to inform new policies or services, with a more nuanced approach needed to anticipate future requirements.

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