

Analysis of the limits of the current transport offer and frameworks

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OCTOBER 2018

Deliverable No.:	D3.1
Deliverable Title:	Analysis of the limits of the current transport offer and frameworks
Version:	2.0
Project Number:	769819
Project Acronym and Title:	HiReach - High reach innovative mobility solutions to cope with transport poverty
Work Package No. and Title:	WP3 – Identification of new mobility options and business models
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Date:	24/05/2019
Status:	Final
Dissemination level:	Public
This document should be referenced as:	Chiffi C., Bosetti S., Grandsart D., Marinic G., Van Egmond P., D3.1 Analysis of the limits of the current transport offer and frameworks, HiReach project, October 2018

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Abstract

The Deliverable D3.1 presents a preliminary assessment of the limits and drawbacks of the current supply of public transport services and other available mobility options, in terms of inclusion and accessibility for the social groups targeted by HiReach (low income and unemployed, elderly people, people with reduced mobility, women, migrants and ethnic minorities, children and young people, people living in rural and deprived areas).

Having in mind where the resources to operate the services may come from, the research work, which was based on literature review of available studies, led to the classification of available mobility options in i) publicly contracted, ii) market-based and iii) community-based or informal ones. Key elements that have been considered in the analysis are: concepts and definitions, legislative and regulatory frameworks including sources of funding, market structure and business models, good practices and case studies.

About HiReach

HiReach aims at addressing the mobility needs of different groups vulnerable to transport poverty and social exclusion like people with temporarily or permanent reduced mobility, children, young and elderly people, women, migrants and ethnic minorities, low income and unemployed, to favour more inclusive and flexible mobility solutions. The project also analyses geographical and spatial elements affecting transport poverty to figure out mobility options that can simultaneously combine the needs of several groups in different target areas like urban-peripheral, peri-urban, rural, and remote or deprived territories.

By combining different attributes of available transport concepts and bottom-up initiatives with new operational schemes and IT applications, HiReach explores viable business models for small scale, modular and easily replicable mobility services that can be provided at affordable prices and/or with minimum subsidies. For the first time, community transport services, informal ridesharing and van pooling, innovative ride-hailing mobility services and on-demand public transport are assessed within the scope of a new collaborative and well-regulated business environment.

The HiReach mechanism for exploring, generating and testing inclusive mobility solutions is based on the creative work of startups and innovative entrepreneurs, but also on social innovation through the direct involvement of different social groups as developers, co-users and co-owners of the proposed solutions. HiReach is working in 6 EU study regions: Counties of Esslingen and Göppingen (Germany), Naxos and Small Cyclades (Greece), Inner Area Southern Salento (Italy), Guarda and Torres Vedras (Portugal), Buzau (Romania), North and South-East Luxembourg.

Disclaimer

This document is part of a project that has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 769819.

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Acronyms and abbreviations

ACRONYM	DEFINITION
ANED	Academic Network of European Disability Experts
AOM	Autorité Organisatrice de la Mobilité (Organising Mobility Authority)
CTAs	Commercial Transport Apps
CTS	Community Transport Services
DRT	Demand Responsive Transport
EPCI	Établissement Public de Coopération Intercommunale (Public Institution of Intercommunal Cooperation)
FFPT	Free Fare Public Transport
ICT	Information and Communications Technology
NEBs	National Enforcement Bodies
NTA	National Transport Authority
OAs	Organising Authorities
P2P	Peer-To-Peer
PHVs	Private Hire Vehicles
PKB	Annual Personal Km Budget
PRM	People with Reduced Mobility
PSO	Public Service Obligations
PT	Public Transport
PTAs	Public Transport Authorities
SCoT	Coherence Territorial Scheme
SGEI	Service of General Interest
TAD	Transport À la Demande (Demand responsive transport)
TfL	Transport for London
TNC	Transportation Network Companies
TSI-PRM	Technical Specifications for Interoperability relating to accessibility of The Union's Rail System for Persons with Disabilities and Persons with Reduced Mobility
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities
W2W	Wheels 2 Work

Executive summary

Work Package 3 (Identification of new mobility options and business models) has a pivotal role in the HiReach workflow. It embeds the activities of the second step of the project ("Explore"), bridging the first step ("Analyse", directly linked with WP2 – Analysis of mobility needs and capabilities) with the third and final one ("Develop", i.e. WP4 – Development of mobility solutions). In this second step, HiReach is going to explore and critically assess existing innovative organizational and operational frameworks aimed at delivering new mobility solutions; as well as new, efficient, inclusive, affordable and accessible mobility solutions and public transport models.

Before identifying existing and/or innovative solutions, business models and operational frameworks, there was a preliminary task, whose outcomes are reported in **this deliverable D3.1**, based on (interim) results of the first phase of the project, in which the reasons behind transport exclusion are analysed and discussed. Such mobility challenges allow for a preliminary assessment of the limits and drawbacks of current supply of PT systems and services, in terms of inclusion and accessibility for the targeted social groups.

First of all, the **mobility behaviour, needs and capabilities of the user groups targeted by HiReach** (low income and unemployed, elderly people, people with reduced mobility, women, migrants and ethnic minorities, children and young people, people living in rural and remote areas) are described by summarising the outcomes of the desk research carried out in WP2 (Analysis of mobility needs and capabilities). Transport poverty and the reasons behind transport exclusion are analysed and discussed. These elements are key to assess to what extent available mobility options are fit for the needs of vulnerable to exclusion user groups.

Having in mind where the (financial) resources to operate the services may come from, the research work, based on literature review of available studies, leads to the **classification of available mobility options** in i) publicly contracted, ii) market-based and iii) community-based or informal ones, depending on the respective frameworks by which they are regulated and funded.

Besides adaptations and overall improvement of conventional public transport services (typically scheduled bus and rail services) to be "fitted for all", quite often special and dedicated services are organised and funded by public authorities: school buses, door-to-door minibus/van services for people with disabilities or healthcare needs, but also demand responsive transport (DRT) services in low density and rural areas or in off-peak times.

These options can be "**publicly contracted**" and delivered by public transport operators or local businesses (e.g. taxi companies in rural areas), but also directly organised by the public entity (own-account services include for example transport of people with temporary or permanent disabilities operated by rehab centres or hospitals, or transport of pupils operated by the school itself). Different levels of governments, from municipal to regional and national, can also provide fare reductions or free passes to use public transport directly to certain vulnerable categories (e.g. pupils, elderly people or low-income/unemployed).

Tailored mobility services are also offered on the market by private players that can operate within different legislative frameworks ranging from highly regulated to almost totally deregulated competitive regimes. Private professional providers of flexible and personalised transport services are single-owned/licensed taxi companies, taxi centrals and car/minibus hire with driver companies (also called private hire vehicles or PHVs) and nowadays also transportation network companies (TNC), intermediaries that aggregate passenger trips' requests via websites and mobile apps and connect them with operators (but also private drivers) who offer transport services. Car and bike sharing services are other examples of market-based options.

Last but not least, informal, **peer-to-peer and community-based mobility options** complete the overall picture of how mobility options are offered to vulnerable user groups in Europe. These solutions include informal ride-sharing, shared "village cars" and Community Transport Services (CTS) provided by not-for-profit entities receiving minimum subsidies.

Key elements that have been considered in the analysis and presented in a concise way are: concepts and definitions, legislative and regulatory frameworks including sources of funding, market structure and business models, good practices and case studies (whenever relevant).

Distinctive mobility attitudes from each analysed vulnerable group converge to **fundamental requirements of availability of suitable, reliable and affordable transport options**, possibility to reach nearby or distant destinations and opportunities in reasonable travel time by using vehicles, infrastructures and services that are fully accessible, safe and easy to use. Also, an inclusive mobility system should offer a range of options, used in combination or in alternative to one another, other than profiling and offering only different services for different users (e.g. special or school transport).

Overall, this preliminary analysis led to the following main clusters of limits and drawbacks of the current transport offer and frameworks:

- **Flexible and inclusive mobility options still not a key component of the transport system.** An inclusive notion of public transport should therefore properly consider also more flexible and integrated schemes, combining all forms of subsidized collective passenger transport, that are quite often operated by local companies (including taxis or car-hire with driver) or community transport organisations, with the complementary or additional services these can offer to the people, on the market or informally.
- **Absence of a well-balanced and fair competition.** Existing regulation is mode-specific, i.e. different rules apply to taxi services, education transport, community transport, bus transport, seated patient transport, etc. This has implications on many levels e.g. driver licensing, operator licensing, route licensing, tax, VAT, insurance, eligibility for public subsidy, whether a fare can be charged, etc.
- **Lack of adequacy of available mobility options.** Collective vehicles, particularly smaller ones including taxis, should be properly equipped to accommodate different needs (e.g. transport of children and people with reduced mobility). Also, a lack of understanding of how flexible and inclusive transport services work leads to a reluctance to actually use them. Simplifying as much as possible the fare structure as well as the route patterns and timetables is important to make the system easier to understand.

Definitely the **attribution of competences to different public entities**, in absence of a proper organising authority optimising and integrating all forms of passenger transport (scheduled and demand-responsive public transport, special needs and educational, etc.) can negatively impact on a proper inclusive transport offer.

The **level of available public funding** for supporting more inclusive and integrated passenger transport schemes calls for different sources to be pooled together in order to be more cost-effective. Instead of planning standalone services covering only one specific target group (e.g. rural communities or students) efforts should be oriented in pursuing combined (and therefore inclusive) transport solutions.

1 Introduction

This chapter has the goal to introduce the purpose and scope of the Deliverable, within the workflow of Work Package 3 (Identification of new mobility options and business models). It also provides an overview on how inclusive mobility is provided in Europe, presenting a classification of available mobility options in i) publicly contracted, ii) market-based and iii) community-based or informal ones, depending on the respective frameworks by which they are regulated and funded.

1.1 Purpose and scope

1.1.1 Background

Work Package 3 (Identification of new mobility options and business models) has a pivotal role in the HiReach workflow. It embeds the activities of the **second step of the project** ("**Explore**"), bridging the first step ("Analyse", directly linked with WP2 – Analysis of mobility needs and capabilities) with the third and final one ("Develop", i.e. WP4 – Development of mobility solutions).

In this second step, HiReach is going to explore and critically assess existing innovative organizational and operational frameworks aimed at delivering new mobility solutions; as well as new, efficient, inclusive, affordable and accessible mobility solutions and public transport models.

Before identifying existing and/or innovative solutions, business models and operational frameworks, there was a **preliminary task**, whose outcomes are reported in this deliverable D3.1, based on (interim) results of the first step of the project, in which the reasons behind transport exclusion are (being) analysed and discussed¹. Such mobility challenges allow for a preliminary assessment of the limits and drawbacks of current supply of PT systems and services, in terms of inclusion and accessibility for the targeted social groups.

Then, a series of frameworks and mobility solutions in different geographical areas and in different countries will be researched, in order to identify '**best practices**' and to determine which aspects of these solutions are leading to an improved accessibility, mobility and equity in prioritised areas. The wider legislative, planning, regulatory,

¹ WP2 is partially overlapping with WP3. At this stage, the analysis of vulnerable to exclusion user groups has been based mainly on desk research, which was finalized in July 2018 and reported in Deliverable D2.1 - Mobility in prioritised areas: mapping the field, while fieldwork to gather inputs from final users from selected study regions across Europe is still ongoing (it will be reported in D2.2 - Mobility in prioritised areas: inputs from the final users).

stakeholder structure and policy framework will also be assessed in the respective Member States and Regional authorities.

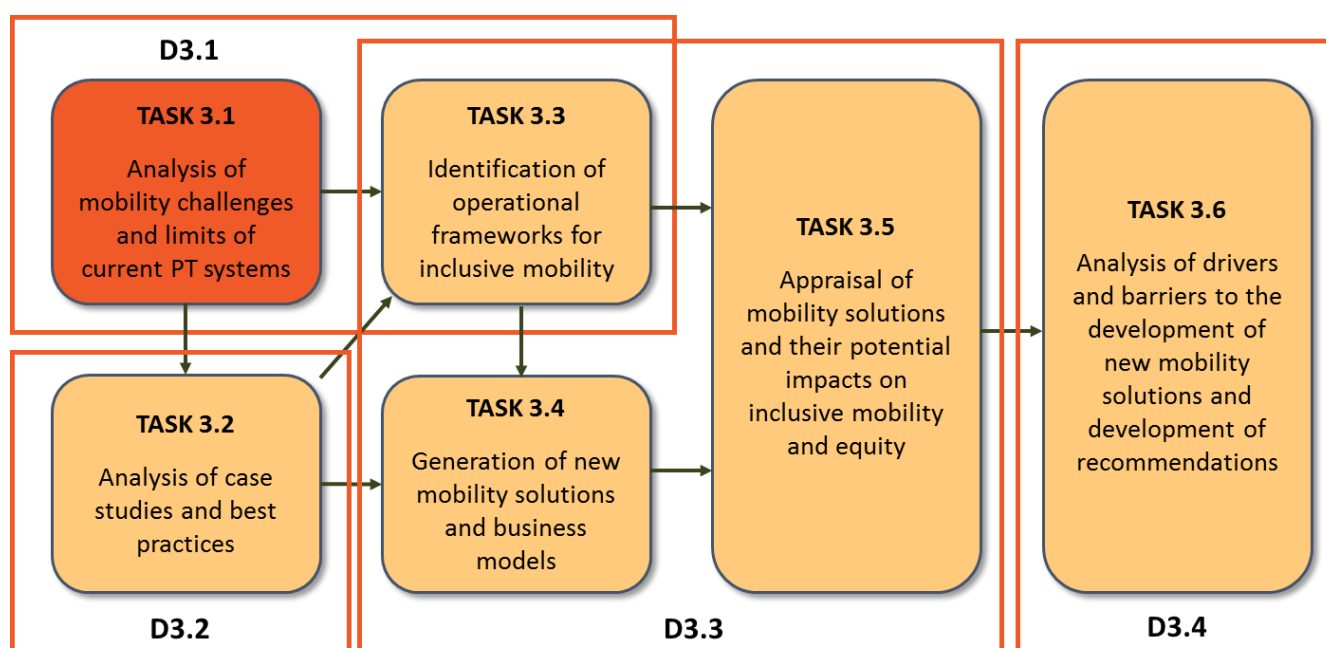
HiReach aspires to go beyond innovative but already implemented or piloted experiences, to explore creative business models for the needs/problems identified while analysing the targeted transport demand. To this end, a **multidisciplinary workshop** for European researchers, industry representatives, end-users and policy makers (at local, regional and national level) will be organised. In this workshop HiReach will invite, amongst others, innovation scientists, industrial engineers, ICT specialists, spatial planners and transport experts.

The feasibility and desirability of the business models generated from the workshop and subsequent elaborations will be assessed taking into account the following basic research questions: What are the possible limitations to the use of new transport solutions by each target group (e.g. IT illiteracy of elderly persons)? What are the potential economic and equity effects of the solutions? Do we need institutional and legal changes to implement the solutions and are these changes realistic?

Besides, the HiReach participants of **focus groups installed in WP2 will be engaged** to assess the identified innovative transport solutions which may rectify the identified issues/improve the capabilities of the solutions and allow to understand to which degree these innovations might affect their behaviour or their direct involvement as prosumers.

As final outputs of WP3, the **critical assessment of the explored mobility concepts** will feed **recommendations** on how to implement mobility solutions to cope with transport poverty. Recommendations will be tailored for different stakeholders: public authorities, operators/new enterprises, users, in the form of guidelines and manuals.

Figure 1-1: D3.1 in the workflow of HiReach WP3 (Identification of new mobility options and business models)



Source: Own elaboration

1.1.2 Structure of the document

This document reports on a preliminary assessment of the **limits and drawbacks of the current supply of public transport services** and other available mobility options, in terms of inclusion and accessibility for the social groups targeted by HiReach. It is based on the first outcomes of WP2, as far as the mobility challenges and reasons behind transport exclusion of vulnerable user group are concerned.

Having in mind where the **(financial) resources to operate the services** may come from, the research work, which was based on literature review of available studies, led to the classification of available mobility options in i) **publicly contracted**, ii) **market-based** and iii) **community-based or informal** ones, depending on the respective frameworks by which they are regulated and funded.

Key elements that have been considered in the analysis and presented in a concise way are: **concepts and definitions, legislative and regulatory frameworks including sources of funding, market structure and business models, good practices and case studies** (whenever relevant).

It is worth recalling that selected case studies and examples of innovative and inclusive mobility solutions are being analysed more in depth in Task 3.2 and will be reported in Deliverable 3.2 (Innovative mobility solutions: case study description and analysis), while the identified frameworks will be further analysed in Task 3.3 and reported in Deliverable 3.3 (Mobility solutions and estimation of their potential impacts on inclusive mobility and equity).

The deliverable is organised along six chapters.

This introduction (**Chapter 1**) offers a first glance of the deliverable background and goals, as well as an overview on how inclusive mobility is provided in Europe.

Chapter 2 describes the mobility behaviour, needs and capabilities of the user groups targeted by HiReach (low income and unemployed, elderly people, people with reduced mobility, women, migrants and ethnic minorities, children and young people, people living in rural and remote areas). In this respect, the outcomes of the desk research carried out in WP2 (Analysis of mobility needs and capabilities) are summarised.

The following chapters, then, provides an overview of the different mobility options able to meet the needs of vulnerable to exclusion user groups. These accessible and inclusive mobility solutions vary from the adaptation of universal public transport to more special or specifically-designed transport services (either subsidized – **Chapter 3** - or offered on the market – **Chapter 4**), but include also community-based and more informal mobility options (**Chapter 5**). The chapters describes the main characteristics of the different mobility services or options currently offered to the different social groups and highlights the legal framework under which these options can be offered and the role of public entities (as contracting authorities) and mobility providers, either transport operators or local communities, in delivering them. In this respect, it provides further insights and more detailed examples from different, representative, European countries.

Finally, **Chapter 6** summarises the frameworks and key aspects, presents the assessment of the limits and drawbacks of the current transport supply and draws the conclusions of this preliminary analysis.

1.2 How inclusive mobility is provided in Europe

Geographical factors and specific mobility needs of different social groups lead to the provision of adapted or dedicated transport options to improve or complement the offer of mass public transport.

Special needs of vulnerable social groups influence a wide number of attributes and characteristics of public transport options: side or rear access underfloor wheelchair lifts or manual ramps, accessibility design of stops, tailored seats for children, provision of tailored information through audio messages, low floor and kneeling systems on buses, etc. Accessibility standards and universal design solutions can be either prescribed by law and/or included in contracts between the public entity subsidizing or supporting transport options and the operators offering the service.

Besides adaptations and overall improvement of **conventional public transport** services (typically scheduled bus and rail services) to be “fitted for all”, quite often **special and dedicated services** are organised and funded by public authorities: school buses, door-to-door minibus/van services for people with disabilities or healthcare needs, but also demand responsive transport (DRT) services in low density and **rural areas** or in off-peak times.

These options can be “**publicly contracted**” and delivered by public transport operators or local businesses (e.g. taxi companies in rural areas), but also directly organised by the public entity (own-account services include for example transport of people with temporary or permanent disabilities operated by rehab centres or hospitals, or transport of pupils operated by the school itself).

Different levels of governments, from municipal to regional and national, can also provide fare reductions or free passes to use public transport directly to certain vulnerable categories (e.g. pupils, elderly people or low-income/unemployed).

Tailored mobility services are also offered on the market by private players that can operate within different legislative frameworks ranging from highly regulated to almost totally deregulated competitive regimes. Private professional providers of flexible and personalised transport services are single-owned/licensed taxi companies, taxi centrals and car/minibus hire with driver companies (also called private hire vehicles or PHVs) and nowadays also transportation network companies (TNC), intermediaries that aggregate passenger trips' requests via websites and mobile apps and connect them with operators (but also private drivers) who offer transport services. Car and bike sharing services are other examples of market-based options.

Last but not least, informal, **peer-to-peer and community-based mobility options** complete the overall picture of how mobility options are offered to vulnerable user groups in Europe. These solutions include informal ride-sharing, shared “village cars” and Community Transport Services (CTS) provided by not-for-profit entities receiving minimum subsidies.

In the following chapters, the different legal frameworks and characteristics of the above mentioned mobility options will be analysed distinguishing between i) publicly-contracted (Chapter 3), ii) market-based (Chapter 4) and iii) community-run solutions (Chapter 5). Limits and drawbacks of the different frameworks as well as the level of accessibility and inclusivity of these services will be also assessed.

2 Satisfying mobility needs of vulnerable to exclusion user groups

This chapter describes the mobility behaviour, needs and capabilities of the user groups targeted by HiReach (low income and unemployed, elderly people, people with reduced mobility, women, migrants and ethnic minorities, children and young people, people living in rural and remote areas). In this respect, the outcomes of the desk research carried out in WP2 (Analysis of mobility needs and capabilities) are summarised. Transport poverty and the reasons behind transport exclusion are analysed and discussed.

These elements are key to assess to what extent available mobility options are fit for the needs of vulnerable to exclusion user groups.

2.1 User groups targeted by HiReach

Transport poverty, understood as the inability of fulfilling one's daily and basic transport needs, is intricately linked to social disadvantage and social exclusion.

The social dimension of the transport system, in general, and the relevance of access to transport for social inclusion, in particular, have already been acknowledged and considered in a number of transport policies and initiatives at EU and Member State levels. However, there is the need to ensure that the most vulnerable user groups are de facto addressed in transport policies and mobility solutions.

Within the scope of HiReach, a set of seven vulnerable user groups are considered (Figure 2-1). They have been identified based on the discussion reported in HiReach project Deliverable 2.1 - Mobility in prioritised areas: mapping the field (Kuttler et al. 2018).

Figure 2-1: Vulnerable to exclusion user groups targeted by HiReach



Source: Own elaboration

Arguably, each vulnerable user group experiences transport poverty differently, as they exhibit distinctive mobility features and requirements, and/or varying socio-economic variables and spatial specificities. Moreover, their relevance in the European social framework is different (e.g. women alone account for half of the population), while their underlining characteristics can be temporary/transitional (e.g. linked to a specific age) or permanent (as having a disability or being part of an ethnic minority).

Of importance is also the cumulative effect of several forms of transport poverty. Indeed, one may fall into more than one single group. Typical examples include elderly people living in rural or deprived areas, or low income or unemployed women. These people are therefore particularly vulnerable and exposed.

2.2 Mobility behaviour, needs and capabilities of each vulnerable user group

The impact of the transport and socio-economic features of disadvantage are different for each vulnerable segment, since each one exhibits unique mobility features and requirements.

Low income and unemployed people rely on the less costly modes of transport, being: walking, cycling and public transport. For longer distances, their primary mode is the latter.

There are important differences between low income and unemployed people: the latter have fewer compulsory travels (as they do not work) and tend to have more free time. Consequently, unemployed people can spend more time travelling and are in a better position to adjust their mobility needs to the conditions of the transport system.

This situation may be explained by the lower value of time for low income and unemployed people, hence they may use the less costly modes (e.g. walking or public transport), which are also typically the slowest ones. Added to this, these people tend to live in areas with lower house rents, which are mainly located away from the prime and central urban areas. The outcome is the need to travel for longer distances. As often these areas are poorly served by public transport, people either must accept unsuitable jobs (or must decline better jobs that are inaccessible) or must commute for very long periods, reducing their available time, quality of life and income.

Sometimes accessibility is so poor that people are **forced to car ownership**, which further stresses their limited monthly budgets and reduces the ability to generate wealth (necessary to move to better areas and to find better jobs).

There is then the need to provide suitable accessibility to these people, so that they can have more opportunities for social interaction and higher chances of finding better jobs.

Elderly people are another segment with particular mobility requirements. Enhancements in the EU healthcare services, in population nutrition and liveability, large pensions, among other factors, resulted in a continuous increase of the average life expectancy over the last decades. More importantly, people continue to be active for more years.

As a result, elderly people have increasingly intensive mobility patterns (e.g. visiting relatives and friends, taking children to school, attending health or religious services, or shopping), particularly considering that they are normally unoccupied.

Even so, aging leads to cognitive problems and physical impairments, which limits car driving and creates diverse transport-related barriers (e.g. reaching bus/metro/tram/train stops, accessing bus/metro/tram/train vehicles, difficulties of reading and understanding information – timetables or destinations, or even fear and apprehension of travelling alone). Public transport system should therefore be adapted to the specific needs of the elderly.

People with reduced mobility is a highly heterogeneous group, due to the high diversity of disabilities (e.g. physical or psychological, temporary or permanent). In common is the fact that the standard transport system (means and modes) exhibits some sorts of barriers, limiting their mobility. It is thus unsurprising that the most frequent mode of transport of this segment is the car as passenger. The mobility difficulties are aggravated in case of low income people, with limited access to cars. Age also plays a relevant role, because physical and psychological capabilities reduce over time.

In this segment, the physical conditions of the transport system (mean of transport) are crucial to support an independent life, fulfil the mobility needs and increase the social interactions.

Women have in general less access to private vehicles, consequently, they are more likely to use public transport than men. Therefore, access to public transport is of paramount importance not only for fulfilling their mobility needs, but also for their empowerment and independence.

Moreover, women have less free time than men, since they are engaged in childcare, domestic work, caring for elderly or sick relatives. Also, women are more likely to work in part-time, closer to home or not work at all, to gain free time. Consequently, poor mobility can have a very high negative impact on their quality of life and well-being.

This situation is particularly relevant in rural areas and is aggravated in case of low income people as the cost of transport imposes further limitations on their mobility.

Migrants and ethnic minorities have gained increased visibility in recent years, as social and political unrest in several regions neighbouring the European Union develop. They are two segments at high risk of poverty for a number of reasons.

They tend to have (very) limited financial capabilities, not only because they might have fled from their home (without possessions) but also because inoccupation and unemployment rates are relatively high in this segment. Consequently, they are less likely to own a car.

In addition, language is another barrier to integration in local communities (e.g., finding a job or getting a driver's licence) or to access public transport systems, as information is commonly available in the national language (except for the biggest cities).

Due to these dynamics, these people tend to live together in communities, often in social rented houses in the periphery of the cities. Low income areas are often poorly served by public transport services, which further aggravates the mobility situation and limits opportunities for social interactions. Unsurprisingly, the main modes of transport of this group of people are walking and public transport.

Children and young people are amongst the main users of public transport (above all, because they have not reached the legal age to possess a driver's licence). Hence,

accessibility to the transport system is of utmost relevancy to the fulfilment of their daily mobility needs.

Low income segments or people living in rural areas may encounter additional difficulties. Firstly, because those areas tend to be served by low quality public transport services (e.g. low frequency, reduced number of routes and destinations). Secondly, fares can be another barrier for low income people. This situation is particularly relevant in secondary and tertiary education as there are fewer schools, forcing people to travel more in longer routes (resulting in higher fares).

Additionally, in areas of poor accessibility, often there are limited opportunities for walking, cycling or using public transport independently, which is particularly relevant in this segment. As a consequence, parents drive children directly to the school.

Finally, **people living in rural and deprived areas** are particularly vulnerable. Services and activities are sparsely distributed in rural areas, commonly concentrated in the more densely populated areas. Hence, people tend to travel more and longer in these regions.

In addition, quality and maintenance of roadways tend to be inferior and, commonly, cycle lanes are not existent. Walking and cycling is thus more unsafe and often impractical (compared with urban areas). Public transport services are also relatively limited, in terms of frequency and routes. Also, the more rural is an area, the farther apart are the public transport stops. Thus, accessibility to public transport is often insufficient, which reduces the opportunities for social interactions.

Consequently, people living in rural areas are often **forced to own a car**, because it is the only mode of transport able to fulfil their mobility needs. Transport-disadvantaged groups, such as non-car owners, low income and unemployed people, elderly, women, migrants and ethnic minorities, and young people, see their mobility opportunities further aggravated.

The main transport related characteristics of these user groups are summarised in the table below.

Table 2-1: Transport-related behaviour, needs and capabilities of vulnerable to exclusion groups

SOCIAL GROUPS	BEHAVIOUR, NEEDS AND CAPABILITIES
Low income and unemployed	<ul style="list-style-type: none"> • Low-income people and the unemployed are particularly reliant on local public transport services, since in many cases they cannot afford a private car or other means of transport • In fact, the use of private transport modes is closely related to income levels • Low income and unemployed in remote areas often rely on private vehicles, posing a substantial financial burden on households (forced car ownership) • Low income groups are often confronted with the need to walk and cycle in unsafe conditions for longer periods and routes • Availability of public transport and affordable fares affect employment opportunities and access to basic services • Low income people tend to be less mobile, limiting themselves to

SOCIAL GROUPS	BEHAVIOUR, NEEDS AND CAPABILITIES
	those compulsory trips, such as to work, health services or food shops
Elderly people	<ul style="list-style-type: none"> • The elderly rely heavily on public transportation • Although the elderly generally travel less than young people, there is a general trend towards increased transport demand on the part of elderly people, resulting from improved health, more travelling options, better foreign-language skills, and lifestyles ("forever young" megatrend) • Older Europeans are likely to use public transport in particular for leisure activities (for example, for shopping, visiting friends and relatives); they also use public transport to take children to school and to other after-school activities and to access healthcare facilities • Improved health and longevity may also lead to more cycling (see also e-bikes) • Older people experience mobility limitations caused by increasing cognitive problems and physical impairments • High levels of car ownership can hinder the transition to other means of transportation that could somewhat compensate for increasing cognitive problems and physical impairments • Public transport plays a crucial role in elderly people's mobility, especially in rural areas, supporting an independent life and access to basic services, and indeed reducing social isolation • In using public transport, the elderly face many transport-related barriers linked to difficulties in reaching bus stops or accessing vehicles, fear of falling and apprehensions about personal security, difficulties in reading timetables and destinations
People with reduced mobility	<ul style="list-style-type: none"> • There is a wide diversity of disabilities or impairments: reduced vision, reduced hearing, reduced movement, psychologically/mentally cognitively challenged • Disabled people travel less than non-disabled even if they have similar needs • Access to transport has a significant impact on the quality of life and independence of people with disabilities • People with reduced mobility may be less likely to benefit from access to standard means of transport if they are not designed taking their needs into account • In fact, people with a disability tend to rely on private transport to access services and for day-to-day activities; they often depend on car availability and/or the support of relatives that chauffeur them by private transport or accompany them in public transport • Physical accessibility may also be hindered by inaccessible transport stations and poor-quality pedestrian environments around stops • Accessible transport information systems are of paramount importance for disabled people with sensory impairment or learning

SOCIAL GROUPS	BEHAVIOUR, NEEDS AND CAPABILITIES
	<p>disabilities</p> <ul style="list-style-type: none"> • Transport staff are sometimes unaware of the needs of disabled people and may not always be available or able to provide the required support • Special transportation services can improve mobility for persons with reduced mobility, but can lead to the exclusion from the sphere of regular public transport
Women	<ul style="list-style-type: none"> • Women are more likely to use public transportation than men, since in general they have less access to private vehicles • For women, public transportation plays a crucial role in empowerment, access to opportunities and independence • Poor mobility and access to transport can prevent women from entering the labour market or lead women to choose less profitable jobs because they are closer to home or easier to travel to, even in the case of self-employment • Women usually have less free time than men, being engaged in childcare, domestic work and caring for elderly, sick or disabled relatives, and are therefore more likely to work part-time, take on jobs nearer or better connected to home (even if low-paid), or to decide not to work at all. Thus, women are more likely to combine trips/make trip chains than to make separate trips. Therefore, commuter services may cater less to women's needs. • Women are less likely than men to engage in 'extreme commuting', defined as a one-way commute of 90 minutes or more
Migrants and ethnic minorities	<ul style="list-style-type: none"> • Immigrants are less likely to own a car than natives, owing to their less favourable economic conditions (buying a car and getting a driver's license is costly) • Car access is lower among female immigrants than among males, the gap being wider than that observed in the case of natives • Immigrants are thus more likely to walk and to use public transport than natives, even if female migrants may find the latter less comfortable because of security issues • Cycling appears to be more popular among natives than among immigrants, especially immigrant women • Language barriers and racial/religious discrimination
Children and young people	<ul style="list-style-type: none"> • Children's independent mobility has seemingly declined during the past 30 years, with trends of increased car usage and accompaniment by adults • Young people, especially pupils and students, are the most frequent users of public transportation • In many western countries car use is increasing less than before, or even declining, particularly for young people who seem to be less

SOCIAL GROUPS	BEHAVIOUR, NEEDS AND CAPABILITIES
	<p>car-oriented than previous generations</p> <ul style="list-style-type: none"> • Young people exhibit increasingly multimodal behaviour • New status symbols are not cars but internet and phones - cycling is more fashionable amongst young urban professionals than driving • Poor availability of public transport and high fares may prevent young people from having access to education, work and social interactions, especially for those living in rural and poorly transport-connected areas and/or low-income families • Negative impact on children's health and safety of increased traffic and reduced independent mobility and walking
People living in rural and deprived areas	<ul style="list-style-type: none"> • There is wide variation in PT use with respect to the level of urbanisation: residents in large towns are almost twice as likely to use urban public transport weekly compared to those in small to middle-sized or in rural villages • In rural areas mobility needs are mostly satisfied by the use of cars • People living in remote and low-density rural areas usually have to cope with poor and infrequent public transport services • Observed differences in the use of public transport across areas with different levels of urbanisation reflect not only the availability, but also the accessibility, of public transport in terms of proximity to bus, metro or tram stations

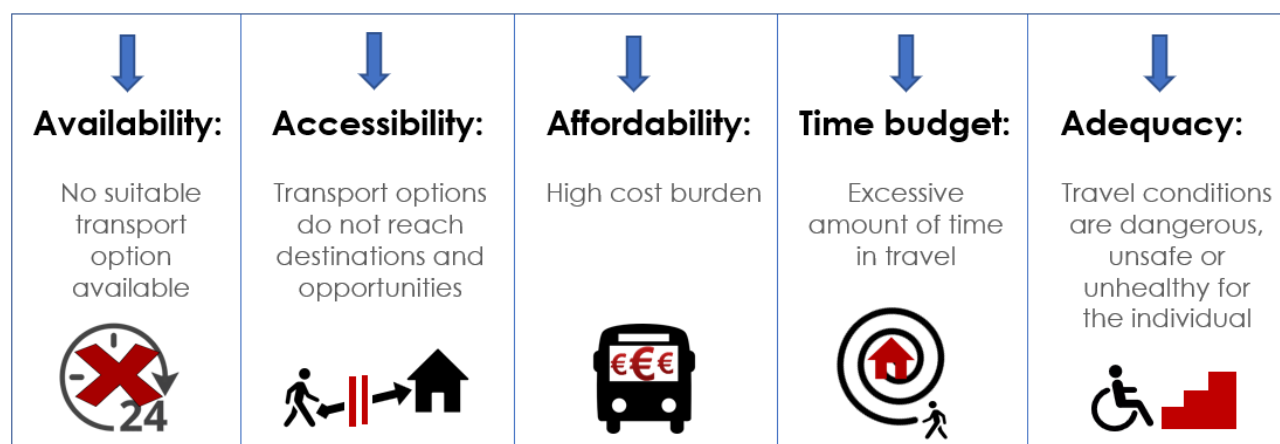
Source: Own elaboration

2.3 From transport poverty to inclusive mobility

As discussed in HiReach project Deliverable 2.1 (Kuttler et al. 2018), an individual is transport poor if, in order to satisfy their daily basic activity needs, at least one of the following conditions is not met to satisfaction:

- There is no transport option available that is suited to the individual's physical condition and capabilities (**availability**),
- The existing transport options do not reach destinations where the individual can fulfil his/her daily activity needs, in order to maintain a reasonable quality of life (**accessibility**),
- The necessary weekly amount spent on transport leaves the household with a residual income below the official poverty line (**affordability**),
- The individual needs to spend an excessive amount of time travelling, leading to time poverty or social isolation (**time budget**),
- The prevailing travel conditions are dangerous, unsafe or unhealthy for the individual (**adequacy**).

Figure 2-2: Conditions of transport poverty



Source: Own elaboration, after (Lucas et al. 2016)

Hence, these basic transport conditions need to be secured and improved to create inclusive mobility options for vulnerable individuals. When unmet, these become barriers that can have different impacts on each targeted social group as shown in the following table.

Table 2-2: Main mobility barriers affecting vulnerable to exclusion user groups

SOCIAL GROUPS	AVAILABILITY	ACCESSIBILITY	AFFORDABILITY	TIME-BUDGET	ADEQUACY
Low income and unemployed	✓	✓	✓	✓	
Elderly people		✓			✓
People with reduced mobility		✓		✓	✓
Women	✓	✓		✓	✓
Migrants and ethnic minorities			✓	✓	✓
Children and young people	✓		✓		✓
People living in rural and deprived areas	✓	✓	✓	✓	

Source: Own elaboration

Availability (including reliability) and *affordability* are crucial for those with **low income and no access to cars**. *Availability* and *accessibility* of destinations are major barriers for people living in **rural and deprived areas**.

Adequacy is the most meaningful transport barrier for those who suffer from **disability** to some extent. Again in terms of *adequacy*, for **elderly and women**, safety in transport is a fundamental precondition for using public transport options. Negative experiences can lead to avoidance of public transport. Healthy travel conditions are crucial for **children and young people** and the absent of proper information on available mobility options (e.g. in different languages) can affect a lot **migrants and ethnic minorities**.

The analysis of social and spatial disadvantages supports a focus on increasing accessibility for all vulnerable groups, in order to increase the potential for activity participation.

However, the analysis in WP2 pointed out that low mobility individuals can experience relative disadvantages in highly mobile societies. Individuals with low levels of mobility may also have **unmet or unrecognized mobility needs** that are out of sight for these individuals, due to lifelong experiences of disadvantage, habits and routines or gender roles. Hence, increasing accessibility of destinations and opportunities can secure basic needs, but life satisfaction and mental well-being may still be reduced due to the inability to “keep up” with others in society.

Thus, in addition to accessibility, it is crucial to increase **motility** – the potential to move. It is important to increase the mental horizon and the capacity to plan and shape one's own life for members of vulnerable social groups.

Due to the significance of early travel socialization as well as the importance of travel for accumulation of social and network capital at an early age, disadvantaged children and young people should have the opportunity to travel and experience a wide range of mobility solutions. Also, for elderly people, not only access to basic services is crucial, but also the *ability to move* is relevant for being part of social networks and maintaining a meaningful life at old age.

Hence, elderly and mobility impaired people need to be informed and enabled to explore all the different mobility options that are available. While traditional gender roles and gender-based mobility models are steadily becoming less common, it is important to challenge transport policy and planning by including gender perspectives more strongly in these domains.

3 Publicly contracted mobility services

This chapter addresses the “publicly contracted” mobility services, which are delivered by public transport operators or local businesses (e.g. taxi companies in rural areas), but also directly organised by the public entity (own-account services include for example transport of people with temporary or permanent disabilities operated by rehab centres or hospitals, or transport of pupils operated by the school itself).

Besides adaptations and overall improvement of conventional public transport services (typically scheduled bus and rail services) to be “fitted for all”, quite often special and dedicated services are organised and funded by public authorities: school buses, door-to-door minibus/van services for people with disabilities or healthcare needs, but also demand responsive transport (DRT) services in low density and rural areas or in off-peak times.

The chapter describes the main characteristics of the different mobility options currently offered to the different social groups and highlights the legal framework under which these options can be offered and the role of public entities (as contracting authorities) and mobility providers in delivering them. In this respect, it provides further insights and more detailed examples from different, representative, European countries.

3.1 Public transport

3.1.1 Regulatory framework and market structure

The regulatory framework is an important determining factor for the way in which public transport services are designed, planned and delivered.

At EU level, Regulation (EC) no. 1370/2007 (European Parliament and Council of the European Union 10/23/2007) deals with the organisation and funding of public transport services in the Member States. “Public transport” is defined as “**passenger transport services which are of general economic interest provided to the public without discrimination and continuously**”.

The Regulation establishes the conditions in which competent authorities in EU Member States can intervene to guarantee the provision of public passenger transport (by road and rail) as a service of general interest (SGEI): they can award exclusive rights to public service operators, grant them financial compensation and/or define general rules for the operation of public transport that are applicable to all operators. The Regulation also determines how public procurement should be organized.

If a competent authority decides to grant an operator an exclusive right and/or compensation in exchange for discharging **Public Service Obligations** (PSO), this needs to be done within the framework of a public service contract. Public service obligations aiming at establishing maximum tariffs for (certain categories of) passengers may also be established through general rules.

Competent authorities can (subject to certain reservations) either provide public transport services themselves or directly assign them to an internal operator. A trend can be observed towards 'municipalisation' of services of general interest such as local transport. In many German and Austrian cities, for instance, municipal ownership is the norm and not the exception (Andrei 2016).

Direct award is also possible for rail transport² and, as a consequence, the regional and suburban rail market in Europe is so far still dominated by the large incumbent operators in most Member States (Dauby 2016) and 'small contracts'³. In other cases, Public Transport Authorities (PTAs) must award PSO contracts by means of a competitive tendering procedure, which may be subject to negotiation.

In the case of PSO, **payments are made to PT companies** in order to guarantee a minimum quality of public transport, for example in remote areas or at late hours, or to provide lower fares for certain groups (e.g. children, elderly, persons with reduced mobility). Without additional **public funding**, many such services would (probably) not be provided as they would not be profitable or cost-covering, even though they are important for social reasons and for society's welfare as a whole.

There are two basic types of **public service financing mechanisms**: *gross cost* contracts and *net cost* contracts. In the first case, the authority pays the operator for providing the agreed services and keeps ticket revenues. In the second case, revenues from ticket sales go to the operator as part of its payment for providing the services (Poliak et al. 2015; van der Ploeg et al. 2016). Net cost contracts are increasingly used because they provide a strong incentive for operators to increase ridership, to innovate and to enhance customer satisfaction (Caramello-Álvarez 2017).

The text of the EC Regulation 1370/2007 does not specify the type of authority or the level of government at which public service operations are dealt with. It simply states that the competent authority is "*any public authority or group of public authorities of a Member State or Member States which has the power to intervene in public passenger transport in a given geographical area or any body vested with such authority.*"

In other words, it is up to the Member States to decide **which authorities are competent** for public passenger transport in a given area. There appears to be little consistency between Member States in terms of both the number of competent authorities (which can vary from just one to over 2.000) and the size of their area of competence, both of which tend to depend upon the size of the country (Steer Davies Gleave 2016).

Steer Davies Gleave's "Study on economic and financial effects of the implementation of Regulation 1370/2007 on public passenger transport services" concludes that **sources and amount of public funding available for public transport services, as well as the proportion**

² It should be noted though that, as part of the Fourth Railway Package (2013), the Commission has adopted a proposal to amend Regulation 1370/2007 and introduce mandatory competitive tendering for public service contracts for passenger transport by rail as well, as from December 2019.

³ These are contracts with an average annual value estimated at less than 1 million € or less than 300.000 km/year; for SME with no more than 23 vehicles the thresholds are 2 million € or 600.000 km/year.

of costs paid by users through ticket prices, vary widely across Europe (Steer Davies Gleave 2016).

The study provides a good overview of competent authorities and funding sources for public transport in EU Member states as shown in the following table.

Table 3-1: Public transport market structure in Europe

MEMBER STATE	COMPETENT AUTHORITIES	NUMBER OF COMPETENT AUTHORITIES	FUNDING SOURCES	COMPETITIVE ENVIRONMENT
Austria	Regional authorities	9	Federal government	Unclear
Belgium	Regional authorities	3	Unclear	Lack of competition, direct awards used
Bulgaria	Municipal authorities	265	Unclear	Unclear
Croatia	Regional and large municipal authorities	22 regions + largest cities	Unclear	Unclear
Cyprus	National authority	1	National government	Main public transport mode is bus, small and medium size operators
Czech Republic	National, regional and municipal authorities	960	Regional and municipal government	Unclear
Denmark	Regional authorities	7	Unclear	Well established tendering processes, no political interference in decision of transport authorities. Long experience of competitive environment
Estonia	Counties and municipal authorities	228	All governments	Competitive tendering for the provision of subsidised bus transport services was made compulsory in 2000 before entry into force of 1370/2007. In certain areas, including the capital bus contracts have continued to be awarded directly to publicly-owned companies.
Finland	Regional and municipal authorities	35	Regional and municipal governments	Competitive tendering is now becoming the preferred method of award in Finland
France	Municipal, departmental and regional	288	Municipal, departmental and regional authorities,	The vast majority of operators are private but 68% of the networks (and 78% of trips) are operated by the 2 largest companies (Transdev and

MEMBER STATE	COMPETENT AUTHORITIES	NUMBER OF COMPETENT AUTHORITIES	FUNDING SOURCES	COMPETITIVE ENVIRONMENT
	authorities		business tax	Keolis).
Germany	Regional and municipal authorities	430	Federal and regional governments	The vast majority of urban transport contracts are directly awarded, but there is a large share of subcontracting.
Greece	Regional and municipal authorities	338		No competition in local public transport procurement in Greece
Hungary	Municipal authorities	116	Unclear	In Budapest, move towards more competitive tenders
Ireland	National authority	1	National government	Political aim to create and increase competition
Italy	Regional and large municipal authorities	25	National and regional governments	Previous legal requirement of mandatory use of competitive tendering, with high renewal rate of previous incumbents
Latvia	Regional and municipal authorities	10	State and local subsidies	A significant share of the transport operators are nationally owned
Lithuania	Municipal authorities	60	Municipal governments	Unclear
Luxembourg	National authority	1	National government	Unclear. Private companies provide transport services, but there seem to have been limited changes in the 3 main operators over the years
Malta	National authority	1	National government	Competitive tender covering the provision of the entire transport system of the island ran into difficulties and resulted in a change of operator by 2015
Netherlands	Provincial and city-region authorities	15	Unclear	Long experience of competitive tenders, as well as a mature supplier base of ten large transport operators
Poland	Municipal authorities	2,500	Unclear	Unclear
Portugal	State and municipal authorities	3 + all other municipal authorities	Unclear	In the largest cities, state-owned companies tend to be directly awarded contracts. This may differ in other municipalities.

MEMBER STATE	COMPETENT AUTHORITIES	NUMBER OF COMPETENT AUTHORITIES	FUNDING SOURCES	COMPETITIVE ENVIRONMENT
Romania	Local authorities	Unclear	Unclear	Unclear
Slovakia	Regional and city authorities	8 regions + largest cities	Regional and municipal governments	Gradual move from direct awards to competitive tenders. Half of bus operators are privately owned.
Slovenia	Cities	7	Unclear	System is being transitioned from direct award of concessions without a public tender, to new tender documentation for the award of concessions.
Spain	Autonomous communities and municipalities	139	Unclear	Avanza is the leader of the urban bus transport operations in Spain with 20% of the market, that otherwise is directly awarded to publicly-owned operators in about 40% of the market. The remaining 60% is operated through concession contracts.
Sweden	Regional authorities	21	Unclear	The vast majority of transport contracts are competitively tendered to private operators. Well established tendering processes.
United Kingdom	Regional and metropolitan authorities	Approx. 60	National, regional and metropolitan	Apart from London, deregulated market. In London long experience of competitive practices.

Source: Steer Davies Gleave 2016

Public Transport Authorities (PTAs) are well established in large urban areas throughout Europe, whereas in small urban and rural areas the responsibility for transport related activities is less well defined and several organisational structures can exist, ranging from centralised structures where responsibility is split across multiple local authority departments to decentralised organising authorities that can rely on outsourced private sector agencies or independent statutory bodies similar to metropolitan PTAs (SRM and UNIABDN 2012).

The right to transport (enabling users – including vulnerable groups like children, elderly and people with physical impairments – to travel in reasonable conditions in terms of access, quality and price) is generally included in national legislation (International Transport Forum 2011).

All public service contracts have to follow procedures for **public procurement**. However, competent local authorities are free to define the public service obligations, the geographical areas concerned and the contract type. They may establish the parameters for compensation payment, the nature and extent of any exclusive rights granted and, if they wish, impose specific social or quality standards. As a consequence,

the quality of public transport varies between Member States and also between regions within single Member States.

Sources and levels of public funding available for public transport services vary widely across Europe and have suffered in many areas as a result of the 2008 financial crisis. This has forced some authorities to make significant changes to the PSO services, to stop infrastructure improvements or to increase fares paid by users (Steer Davies Gleave 2016).

Local public transport (i.e. bus and rail services) has come under increasing pressure due to cuts in subsidies as a result of funding reductions to local councils.

Vulnerable user groups, more likely to use PT services for purposes that are different from commuting to school or work in peak hours, as well as people living in low-density rural or deprived areas, were the ones most negatively affected by the subsequent cuts in PT services and frequencies.

3.1.2 How inclusivity is dealt with in public transport provision

When looking at the different dimensions influencing transport poverty as presented in Section 2.3, limits and drawbacks of public transport can be highly dependent on how the service is organised, which standards and specifications are followed (e.g. as part of the national/local legislation) and how flexible and inclusive is the public transport system as a whole.

This can be partly influenced by regional characteristics such as differences in geography, population density etc., but partly also to different levels of commitment from (local, regional, national) authorities.

In competitive public procurements awarded under a net cost contract, public transport operators can usually offer additional services or improved standards to the minimum PSO levels, thus contributing to increase the overall level of inclusivity of the PT system.

The following table presents an overview of the different limits and drawback of a public transport system as well as a (non-exhaustive) list of possible solutions to overcome such barriers.

Table 3-2: Elements affecting inclusivity of a public transport system

TRANSPORT POVERTY DIMENSIONS	MAJOR LIMITS AND DRAWBACKS	EXAMPLES OF SOLUTIONS TO OVERCOME BARRIERS
AVAILABILITY	<p>Areas not served by public transport (e.g. rural areas and peripheral settlements)</p> <p>Limited service time (e.g. absence of PT in the early morning or in night hours)</p> <p>Lack in legislation (e.g. absence of norms for rural or flexible public transport)</p> <p>Long-term contracts not allowing adaptations/extension of the service</p>	<p>Proper geographical coverage of the PT system</p> <p>Availability of mobility options in low peak hours</p> <p>Possibility to implement demand-responsive transport services</p> <p>Existence of tailored solutions (e.g. for rural transport)</p>
ACCESSIBILITY	<p>Destinations not reachable by public transport</p> <p>Absence of integration between short-distance and long-distance public transport</p>	<p>Implementation of demand-responsive transport services</p> <p>Dedicated special transport</p>

TRANSPORT POVERTY DIMENSIONS	MAJOR LIMITS AND DRAWBACKS	EXAMPLES OF SOLUTIONS TO OVERCOME BARRIERS
	<p>networks</p> <p>Absence of integration between special/dedicated (e.g. healthcare/school) and universal public transport services</p>	<p>services and universal PT fully integrated (e.g. train/bus + DRT/taxi)</p> <p>Flexibility and adaptability of the PT scheme (e.g. change of routes and type of services)</p>
AFFORDABILITY	<p>High cost in case of absent tariff integration and need to combine more PT services</p>	<p>Integrated fare system</p> <p>Reduced fares</p> <p>Free pass schemes</p>
TIME BUDGET	<p>Long travel time because of PT network design and change of lines</p> <p>Low frequency of scheduled services</p>	<p>Reliability of the service</p> <p>Adequate frequency of scheduled services or</p> <p>Direct services</p>
ADEQUACY	<p>Infrastructures and vehicles not accessible to people with reduced mobility (PRM)</p> <p>Old vehicles not obliged to meet new accessibility standards</p> <p>Unsafe/unhealthy stops and stations</p> <p>Poor information and language barriers</p> <p>Staff not adequately trained</p>	<p>Enforcement of accessibility prescriptions</p> <p>Public transport accessible for everyone</p> <p>Infrastructure design taking into account gender equality principles</p> <p>Provision of tailored information for migrants and ethnic minorities</p> <p>Staff awareness and training programmes</p>

Source: Own elaboration

Availability of public transport options and “reachability” (i.e. accessibility) of places and opportunities in reasonable travel times are largely dependent on the level of public funding and the overall quantity and quality of the public transport offer.

A number of technical standards and normative prescriptions to improve accessibility (and thus adequacy) of public transport vehicles and infrastructures to people with reduced mobility (PRM) exists both at EU and national level. The overall legal framework encompassing all transport modes is presented in section 3.2 together with a clustering analysis of the situation in each EU Member State.

What can be highlighted here is that in general urban buses and local trains, as well as stops and urban rail nodes, are well fitted for PRM whereas the situation changes substantially in rural areas and on inter-urban and regional links. As an example, in France only 40% of inter-urban buses is equipped with systems allowing PT usage to people with different ways of moving (children, young people, the older, people with disabilities, people carrying babies or shopping, pregnant women, etc.), 28% of vehicles announce with audio messages the next stop (Cerema, Direction technique Territoires et ville 2015).

Several schemes addressing *affordability* of public transport have been thought of and implemented in Europe, typically recognizing reduced fares or free tickets/passes for vulnerable user groups. These schemes tend to exclude certain social groups such as non-residents and include youth, students and senior citizens who are exempted from paying public transport fares (Cats et al. 2017). Others have gone to greater lengths in providing citizens with adequate urban mobility solutions.

Case study: Free fare public transport in Tallin, Estonia

On 1st January 2013, the capital city of Estonia, Tallinn, introduced a free fare public transport (FFPT) scheme that aimed to encourage less private car ownership and an increased use of public transport, while at the same time improving mobility of unemployed and low income residents (Cats et al. 2017). Around 40% of the unemployed reported that FFPT improved their job finding prospects.

Studies show that public transport usage increased among age groups 15-19 and 60-74, very low income (up to 300 Euro/month) and those who are out of employment and cannot afford proper education. Moreover, since these groups are considered the most sensitive to price change and received special discounts before the new policy was introduced, the FFPT scheme has promoted greater public transport use (Cats et al. 2017).

There are two main areas of intervention that can be further analysed in relation to **inclusivity of public transport**. The first deals with **demand-responsive transport services** applied to the PT sector whereas the second focus relies on how **rural transport** is organised and supported in Europe. These are presented in the following subsections.

3.1.3 Demand responsive public transport

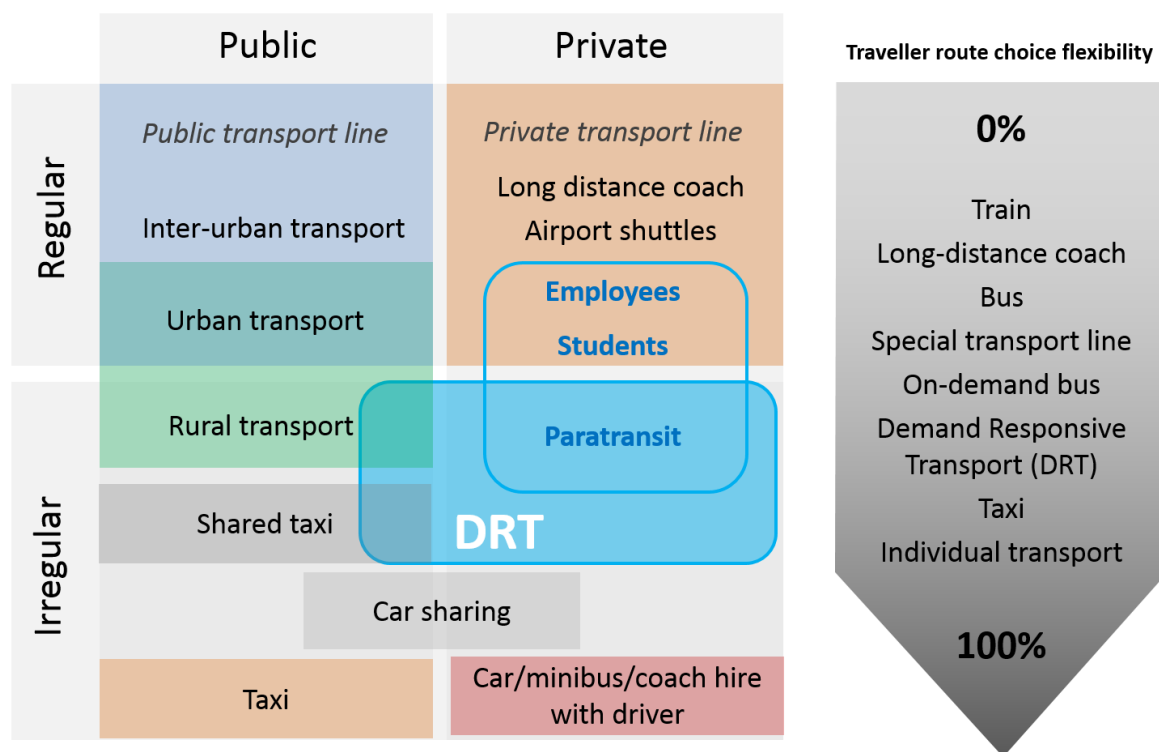
In Europe, a wide number of subsidised Demand Responsive Transport (DRT) services have been implemented by local public transport operators as first mile/last mile access to high frequency rail/express bus corridors or in substitution of fixed-route scheduled PT lines (in addition or in combination with dedicated services for disabled people, the elderly or school children)⁴.

Within the existing (quite extensive) literature, there does not appear to be one generally accepted definition of what exactly constitutes a DRT system. The term refers to any kind of **flexible transport that is situated somewhere between traditional public transport and taxis**, whereby day-to-day service (in terms of route, timetable, vehicle capacity, etc.) is influenced and adapted to the user demand.

⁴ For example, within the CIVITAS Initiative, DRT services have been tested and implemented in Toulouse, Bristol, Funchal, Ljubljana, Porto and Genova.

Active DRT services can be classified according to the different transport categories and service types as reported in the following matrix (AMTU 2015). DRTs are also put in relation to the level of flexibility of different transport options.

Figure 3-1: Classification of DRT services in relation to the different transport categories and service types



Source: adapted from AMTU 2015

In some cases, as mentioned above, DRT services are available to the general public (with schoolchildren as an important sub-segment) as a form of public transport, in situations where demand is too low for conventional buses (e.g. in rural areas, during the weekend or at late hours). Other DRT services, as presented in the following sections, are aimed at and restricted to specific user groups such as disabled or elderly people (in such cases, often as a form of community transport).

The term DRT covers a **wide range of options** that can be differentiated according to for example scheduling type (fixed, semi-flexible or fully on demand), route type (fixed, fully flexible, fixed route with possible deviations), origin-destination relationship (one to one, one to many, many to one, many to many), origin-destination service (door-to-door or via predetermined checkpoints) (Enoch 2004).

According to the purpose served, Brake et al. (2007) distinguish the following types of DRT:

1. **Interchange DRT** provides feeder links to conventional public transport;
2. **Network DRT** enhances public transport either by providing additional services, or by replacing uneconomic services in a particular place or at certain times;
3. **Destination-specific DRT** serves particular destinations such as airports or employment locations;

4. **Substitution DRT** occurs where, instead of complementing conventional bus services, a DRT system totally (or substantially) replaces them.

Generally, these types of DRT can overlap and involve both public and private passenger transport companies.

DRT services have existed since the early 20th century so the concept is not new; however, advances in technology (e.g. in-vehicle GPS systems, integrated booking software, etc.) have led to a new wave since the 1990s.

DRTs can cover small-niche markets or be part of larger scale and integrated public transport systems like the *RegioTaxi* in the Netherlands, *PubliCar* in Switzerland, *FlexDanmark* in Denmark and the DRT schemes implemented in the Spanish regions of Catalonia and Castilla y Leon. Some of these schemes will be further analysed and assessed within the HiReach Deliverable 3.2 (Innovative mobility solutions: case study description and analysis).

For flexible public transport services, it could be difficult to predict the optimal amount of kilometres needed to satisfy the travel demand. The level of transport offer should be in any case predetermined in order to calculate the final subsidy bill. Government-funded programs to initiate innovation (e.g. the *Rural Bus Challenge* in the UK) are helpful. However, it should be taken into account that new initiatives take a long time to grow and generate enough patronage (Haffenden 2008; Daniels and Mulley 2010; International Transport Forum 2014).

Technology has helped to solve a lot of issues with regard to for example route planning, navigation, communication, vehicle brokerage, etc. Especially large scale, complex DRT networks require advanced technical solutions in order to be able to operate efficiently.

For example, in Scandinavia, a large part of the subsidized transport market uses a booking, planning and dispatching system called "Planet", originally developed by Volvo in the mid-1980s. The above mentioned *FlexDanmark*, a public company created by the Danish PT authorities, has purchased a license for Planet and has adapted it to its specific needs under the name *FlexTrafik* (Cazemier et al. 2012). It allows a fully automated dispatch, choosing from a large amount of operators. The system works well and is characterised by a high level of competition and transparency (Sørensen 2014). On the other hand, for small, less complex schemes (for ex. only 2 or 3 vehicles), such high-tech and tailor made solutions are not always needed, so care should be taken that unnecessary costs are avoided (Enoch et al. 2006; Clavel et al. 2012).

3.1.4 Public transport in rural areas

According to a recent study about public transport provision in rural areas (International Transport Forum 2014), low and dispersed population combined with strong competition from private cars make it difficult to operate profitable conventional public transport services in rural and remote areas, leading also to higher unit costs for providing these services.

Rising operating costs for bus services and constraints of public funding have eroded the ability of local authorities to subsidise public transport at previous service levels. This has led to a vicious circle of increasing fares or cutting back the existing services levels.

In rural areas, it is difficult for conventional public transport to meet different accessibility needs of different user groups. Authorities responsible for transport typically cover a wide mix of population sizes and densities. Further, many different authorities are responsible for the administration, procurement and planning of various passenger transport services.

This has led to concerns over increasing costs and attempts to increase coordination among different authorities in order to gain savings. This combined with lack of funding under the stringent economic conditions have led several countries to look at alternatives for public transport provision. Indeed, the application of global access to public transport services has proven difficult in rural areas.

Still, **conventional public transport** has an important role in providing accessibility in many regions. There is scope for adopting better marketing and service quality improvements to stimulate use, as well as for reducing costs. While not necessarily always suited to the lowest-density flows, such scope should be explored as well as pursuing alternative options.

International experiences show that improving service quality, marketing and information provision can increase number of passengers and reinforce the commercial viability of the industry. Types of improvements include higher service levels (for example through increasing comfort by reducing seating density) and using smaller vehicles or simply better marketing and information provision and focus on service reliability (for example through providing real-time travel information with mobile applications). Some of these experiences have been successful and resulted in improved frequencies and connections in rural areas.

Conventional public transport is not suited for all links and public transport provision in rural areas should be part of a broader transport strategy, integrated with local or regional transport plans. It is important to identify publicly funded minimum service levels regionally and locally. **New forms of services** should complement the conventional transport providing feeder traffic to strategically defined critical links. For example, publicly funded transport services should not necessarily provide direct access from a rural area to city centres but to the closest travel centres or a collection point.

Demand-responsive transport is seen as one of the key options to meet public transport challenges in rural areas. Demand-responsive transport is considered particularly suitable for rural areas because of its flexibility, and ability to adapt to local needs. While on cost per trip basis it may be more expensive than 'conventional' public transport, experiences indicate a willingness for both car users and existing bus users to use these services at a higher fare than existing bus fares. However, demand-responsive services should be part of a broader, multimodal package of solutions, supplementing regular public transport services.

A national rural (transport) policy is missing in many countries, even though there are some good examples, such as Ireland and France.

Case study: Local Link Rural Transport Programme in Ireland

In 2018, the Irish National Transport Authority (NTA) launched its first strategic plan for the Local Link Rural Transport Programme (2018-2022) (Transport for Ireland 2018). Regular and

demand responsive bus services are contracted by the NTA and managed by 17 Local Link offices⁵.

Before the restructuring programme (2014-2015), there was a myriad of funding streams for the provision of rural transport services; now there are two main ones i.e. from the Department of Transport, Tourism and Sport and the Department of Social Protection (Free Travel Pass Scheme). In addition, some bus services are provided on a commercial basis, i.e. without state subsidy.

The amount of funding for the Rural Transport Programme has increased from 10,05M Euros (2015) to 14,3M Euros in 2018 (Transport for Ireland 2018).

Case study: Public transport planning in rural France

In August 2015, the French Parliament adopted the "Energy Transition for Green Growth" Law no. 2015-992 that introduced for the first time a specific mandatory travel plan for rural areas called rural mobility plan. It has to be elaborated and adopted by the competent association of municipalities and other local public authorities (*syndicats mixtes*) within the wider coherence territorial scheme (SCoT).

In France the notion of rural territories includes "small urban areas" (group of communes, rural and urban settlements consisting of a cluster of 1,500 to 5,000 jobs that attracts at least 40% of the resident population) and other sparsely populated areas below this threshold. In terms of transport planning jurisdiction, these are often referred to as "interurban territories" located out of the perimeter of competence of an organising mobility authority (*autorité organisatrice de la mobilité* or AOM).

In its guidelines *Le plan de mobilité rurale: Élaboration, mise en œuvre et évaluation* (Cerema 2016), CEREMA suggests to include in the perimeter of rural mobility plans also low density areas under the influence of an urban agglomeration or an AOM but with scarce or poor accessibility to public transport, railway stations or other multimodal nodes.

CEREMA guidelines provide assistance in creating, implementing, monitoring and evaluating rural mobility plans and draw on some local experiments and well-established practices. In line with purposes of the national law that explicitly associate collective transport, car sharing and non-motorized modes, CEREMA underlines that mobility in rural areas cannot be targeted by just one solution but needs an integrated approach combining different options adapted to each area.

The public transport offer currently present in French rural areas ranges from classic scheduled bus or local railway lines (TER) to town shuttles, demand-responsive services and school transport.

In territories outside the competence of an AOM, these services are paid by the Regions that can also pass the responsibility and funding to county councils (*département*) or directly to inter-municipal bodies (*Établissement public de coopération intercommunale*).

⁵ <https://locallink.ie/en/>

or EPCI). Contracted public transport operators may subcontract taxis or smaller “occasional collective transport” companies to substitute regular scheduled bus services with general public demand responsive services where demand is too sparsely scattered.

When the provision of public transport is characterised by distant “entry points” (stops or stations), low frequency, and higher travel times (i.e. 1.5 longer than car travel), the need of covering by car the first mile to access public transport can easily become a full private car trip from home to the final destination.

Structuring classic scheduled and fixed-route public transport services is not considered a valid option when passing from the offer of minimum peak-time public transport rides to certain categories (e.g. school children, elderly people) to the more challenging objective of consistently shifting the modal share towards more environmentally friendly options. Town shuttles or TAD (*transport à la demande*) are considered more viable solutions as well as the modification and integration of existing local services like taxis, school buses or ambulances to offer more generalised public transport options to rural communities.

There is certainly a need for a **better coordination of transport services in rural areas**. This may imply coordinating different types of transport services provided by public authorities. Coordination of public transport services, especially special transport services, provides several efficiency gains through grouping passengers together, improving the utilisation of existing vehicle stock and more generally through economies of scale. Since different authorities contract with different companies this limits the ability to coordinate. In addition to institutional barriers to better coordination, different management systems and concerns regarding rights of certain user groups are limiting possibilities for improved efficiency.

Better coordination could potentially also result in a more efficient use of the existing vehicle fleet as same vehicle is in use throughout the day for different types of services. Indeed, sufficient vehicle capacity is often available to provide public transport services but it is not necessarily utilised effectively.

Improved coordination may also involve opening up the special transport services (such as provided for special rights groups) to all citizens or pooling passengers to travel together. This may be a challenge as it can be considered as a decrease in the service level for those who previously enjoyed privileged services.

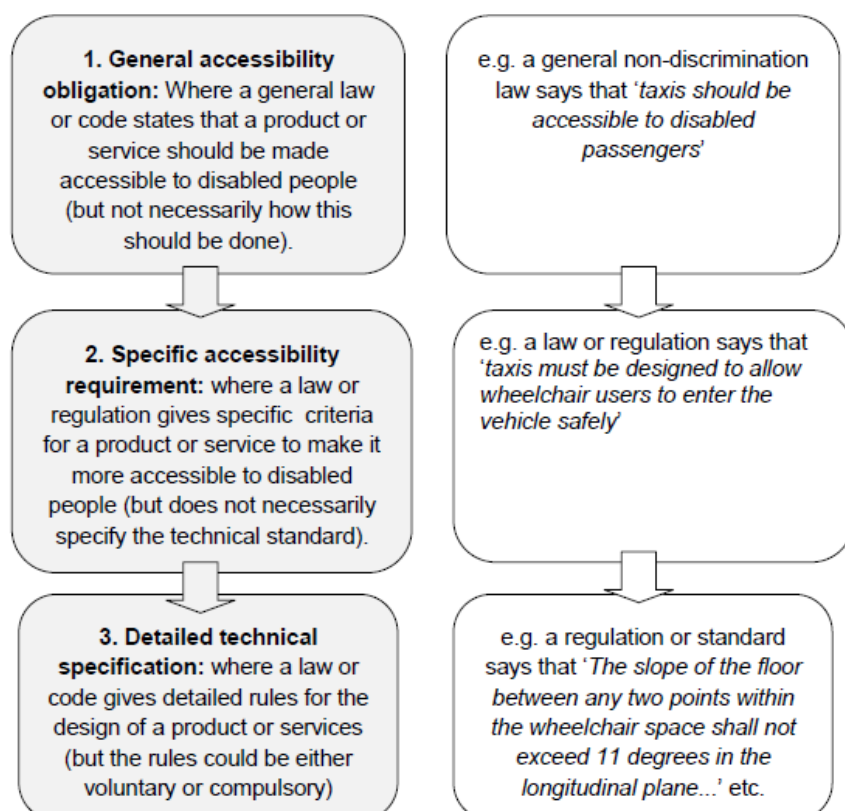
Today freight, mail and passengers are moving separately. In areas of particularly low density population, combining transport services primarily provided for other purposes with passenger transport services can be an attractive option. In some countries the postal service operator is also a major bus operator. Combining postal services with passenger transport might be appropriate especially in cases where population is aligned on a linear corridor.

New concepts will not remove the need for public funding for core services in many rural areas – but they can stop the increase in unit costs for providing those services. Sustainability of funding is still a key to support economic activity and promote social equity also in rural areas.

3.2 Transport for people with reduced mobility

Accessibility specifications and requirements can be transposed in more general terms, indicating specific criteria or providing detailed technical rules that a product or service should meet in order to be accessible to people with disabilities.

Figure 3-2: Types of accessibility specifications and requirements



Source: Academic Network of European Disability experts 2013

Within the **European Disability Strategy 2010-2020** (European Commission 2010) there is a key commitment to *"Ensure accessibility to goods, services including public services and assistive devices for people with disabilities"* and making progress on this issue at European level is seen as a *"precondition for participation in society and in the economy"*.

The proposed Directive called European Accessibility Act (European Commission 2015) aims at supporting Member States to achieve national commitments and obligations under the United Nations Convention on the Rights of Persons with Disabilities (UNITED NATIONS December 2006) regarding accessibility. It includes three Annexes and an Implementation Plan.

Transport-related general obligations as well as specific and technical requirements refer to accessibility of vehicles, infrastructures (e.g. stations), equipment and travel information. A distinction can be also made between legislative acts that confer individual rights on passengers with disabilities and norms that seek to improve the access to the transport services, primarily through the provision of assistance.

At EU level, disabled passengers and those with restricted mobility – i.e. elderly or people travelling with infants – share the same rights wherever they travel in the European Union and across all forms of transport.

In the last years, **passengers' rights** have been extended from air and rail to cover also transport by sea, inland waterways, bus and coach. Specific rights for people with reduced mobility complement more universal ones like the right to information or compensation in the case of delay or cancellation and refer to three main elements:

- 1) free of charge assistance both at terminals and on-board vehicles,
- 2) non-discrimination and acceptance of reservation and transport;
- 3) proper training of the personnel who need to provide assistance.

The overall objective is to allow them to have the same possibilities to travel as other citizens.

In the following table, an overview of disabled passengers' rights and limits of the current EU framework per transport mode is presented.

Table 3-3: Overview of specific rights for passengers with reduced mobility in EU Regulations

TRANSPORT MODE	EU REGULATION	SPECIFIC RIGHTS FOR PASSENGERS WITH REDUCED MOBILITY	EXCEPTIONS AND DRAWBACKS
Air	Regulation (EC) No 1107/2006	<p>Prohibition for air carriers to refuse reservation or boarding to passengers because of their reduced mobility or disability.</p> <p>Free-of-charge assistance to enable them to use air transport on an equal footing with other passengers.</p> <p>Assistance provided in airports (on departure, arrival and during transit), and on board aircraft (for example, the transport of mobility equipment and the carriage of guide dogs for the blind).</p> <p>Financial compensation for loss or damage of their mobility equipment.</p>	<p>Airlines can refuse reservation or boarding due to applicable safety requirements or when size of the aircraft or its doors makes boarding or carriage of that person physically impossible. Some "safety reasons" are not sufficiently defined and have no common rules of assessment.</p> <p>Damaged mobility equipment is capped by the Montreal Convention (i.e. no distinction between regular check-in luggage and mobility equipment): maximum amount of compensation in the event of loss, damage or destruction equals approximately €1260 which is quite low when considering real mobility equipment costs.</p>
Sea and inland waterways	Regulation (EU) No 1177/2010	<p>Non-discriminatory treatment and specific assistance free of charge for disabled persons and persons with reduced mobility both at port terminals and on board ships;</p> <p>Financial compensation for loss or damage of their mobility equipment.</p>	<p>Fare discrimination still existing (i.e. extra ticket for the personal assistant/ assistance dog and for wheelchair accessible cabins).</p> <p>Exception to transport or booking by persons with disabilities for safety reasons is unjustified and is mostly due to design inaccessibility of ports and ships.</p> <p>Accessibility difficulties at some river ports, which may not all have level access for wheelchair users.</p> <p>Need to notify assistance 48 hours beforehand also in case of short-distance commuting trips.</p> <p>There is a limitation on the number of pieces of mobility equipment that must be accepted on board.</p>
Rail	Regulation (EC) No 1371/2007	<p>Non-discriminatory access to transport at no additional charge when buying a ticket or making a reservation;</p>	<p>Passengers are requested to give 48 hours' notice of their assistance needs before departure. In several European countries much shorter notice periods have been achieved (i.e. no pre-notification in Spain, 1</p>

TRANSPORT MODE	EU REGULATION	SPECIFIC RIGHTS FOR PASSENGERS WITH REDUCED MOBILITY	EXCEPTIONS AND DRAWBACKS
		<p>Upon request, disabled persons and persons with reduced mobility shall be provided with information concerning the accessibility of rail services and trains;</p> <p>Rail undertakings and station managers shall make all reasonable efforts to ensure that trains and other rail services are accessible;</p> <p>Rail undertakings and station managers should provide assistance free of charge on board trains and at staffed stations;</p> <p>Financial compensation for loss or damage of their mobility equipment.</p>	<p>hour in 100 Dutch stations, 3 hours in selected Belgian stations, 12 hours in Austria and Denmark).</p> <p>The regulation allows assistance to be provided during certain working hours.</p> <p>Exemptions can be granted to national, urban, suburban and regional passenger rail services.</p> <p>After 3 December 2024, EU Member States cannot grant any exemptions to the application of the regulation.</p>
Bus and coach	Regulation (EU) No 181/2011	<p>Long-distance regular services, i.e. of more than 250 km: specific assistance free of charge for disabled persons and persons with reduced mobility both at terminals and on board and, where necessary, transport free of charge for accompanying people.</p> <p>Additional provisions for regular services of less than 250 km: non-discriminatory treatment of disabled persons and persons with reduced mobility and financial compensation for loss or damage of their mobility equipment in case of accident.</p>	<p>From 31 March 2018, all carriers must organise disability awareness training for their staff but no standardised and certified training scheme exists across countries.</p> <p>The feedback from EU Member States on designating accessible bus and coach terminals varies a lot and is not in line with user feedback from certain countries.</p>

Source: Own elaboration

The European Commission's proposal for a revision of the Regulation No 1371/2007 on rail passengers' rights and obligations (COM(2017) 548 final) aims at improving some elements like the abolishment of exemptions for disability-related provisions, assistance to be available at all times when trains are operating and more clear competences of the National Enforcement Bodies (NEBs). However, the issue of pre-notification still has not been solved in the proposal for the revision (BEKIARIS et al. 2018). Moreover, passengers' rights mainly cover long-distance trips and not (necessarily) local public transport.

Passing from general and specific accessibility obligations to **detailed technical specifications**, other norms are prescribed at EU level:

- Regulation (EU) No 1300/2014 on technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility (TSI-PRM) covers issues related to vehicles and infrastructures such as width of doors, positioning of toilets and wheelchair accessible seats, accessibility of lifts, escalators, ramps, floor surface, boarding facilities, handrails, pictograms/signage and visible information systems. EU Member States are obliged to apply the rules of Regulation (EU) No 1300/2014 on all new and renewed stations and rolling stock. Therefore, as a matter of fact, a very large number of stations & rolling stock is not yet accessible to PRM.
- Directive 2016/797 on the interoperability of the rail system within the EU provides that both the infrastructure and rolling stock subsystems must be accessible to persons with disabilities in order to ensure access on an equal basis with others. This Directive will enter into force in 2020.
- In rail transport, technical requirements are specified in a number of standards (e.g. EN 16584, EN 16585, EN 16586, EN 16587) that also define the associated criteria and, where appropriate, indicate methodologies to allow a proper assessment.
- Similar technical specifications are set by Directive 2009/45/EC on safety rules for passenger ships whereas Directive 2001/85/EC relates to special provisions for Class I vehicles (city buses).
- Multimodal travel accessibility is not yet covered within a complete regulation apart for the aspects that relate to multimodal travel information and planning services (Directive 2010/40/EU on Intelligent Transport Systems and the Digital Single Market strategy) that prescribes information provision to be compatible with assistive devices as well as covering specific information on accessibility of the trip itself like realistic transfer times, accessibility of interchange terminals, travel disruption, etc.

Apart for the above-mentioned needed improvements prescribed by EU norms, the linked national legislation presents several differences from country to country⁶.

⁶ An updated and comprehensive report on both EU and national references that complement and integrate the above-mentioned legislation (e.g. including also prescriptions on road infrastructures and public transport) is available at DOTCOM, the Disability Online Tool of the EC (<https://www.disability-europe.net/dotcom>). It is constructed from a large database of information about national laws, policies, strategies and initiatives in the Member States of the European Union,

A recent study carried out for the European Parliament's Committee on Transport and Tourism (BEKIARIS et al. 2018) has clustered the EU Member States according to their achievements in terms of transport accessibility for people with reduced mobility.

Table 3-4: Clustering of European countries based on transportation accessibility

MODEL	COUNTRIES	MAIN CHARACTERISTICS	KEY RECOMMENDATIONS
Front-runners	Cyprus, Estonia, Latvia, Luxembourg, Malta	Usually small EU Member States, where overall accessibility is easier to be applied holistically and controlled. Main barriers are related to available funding limitations in some cases to apply all accessibility measures across all modes of long-distance and local transport.	Life-long training of staff on accessibility issues is required, to implement successfully enhanced accessibility of infrastructure and systems. Accessibility attributes of the means of transport and stations need to be properly presented to the local and visitor with disabilities in a one-stop-shop manner and using accessible formats.
Self-regulated ("Nordic" countries)	Denmark, Sweden, the UK	The actual level of transport accessibility is good to very good but may also vary across the country and the modes, as it is mostly based upon social norms, guidelines, codes of practice and self-regulation rather than on strict and detailed legislation.	Harmonise implementation of staff training and info on transportation means accessibility countrywide. Apply non-conformity measures (penalties) for the few inaccessible services or local "islands".
Improvers	France, Finland, Germany, The Netherlands	These are the front-runners of the future. They work both on legislative and implementation levels in a systematic way, aiming to achieve a very high transport accessibility level sometime between 2022 and 2025. They also have the resources to guarantee that the proper implementation will be in place without very big delay.	Measures on staff training and information provision on accessibility level are not well integrated countrywide and should be included within the accessibility promotion legislative and implementation packages.
Provincial	Austria, Belgium, Italy, Spain	Accessibility varies a lot across the various provinces/regions and not only for local transport. Also the local level of accessibility is not very well	Need for minimum requirements on transport accessibility at country level. Minimally staff training and accessibility level information need to be

its candidate countries and other associated countries. The tool is hosted and managed by the Academic Network of European Disability Experts (ANED).

MODEL	COUNTRIES	MAIN CHARACTERISTICS	KEY RECOMMENDATIONS
		known across the country.	harmonised countrywide.
Mixed	Czech Republic, Slovakia	Good accessibility level of long-distance transport but not so good for local transport.	More harmonised funding is required for improving the accessibility of local transport and coordinating local municipal plans and efforts.
Gap of implementation	Bulgaria, Greece, Portugal, Romania	The legislative framework is adequate to good. But the implementation lags behind; mainly due to financial limitations.	<p>Adopt realistic targets.</p> <p>Prioritise actions and channel resources to the highest priority areas.</p> <p>Put in place a monitoring and non-conformity sanctions system to check the step-wise implementation.</p> <p>Adopt and apply lower cost interventions, such as staff training and accessibility level information systems.</p>
Late-starters	Croatia, Lithuania, Slovenia	Transport accessibility is regulated but implementation is mainly "pushed" to the future. Also there seems to be missing an overall accessibility plan for the country and all transport modes.	<p>Cover all transportation modes accessibility issues under a single act, including "soft" measures on staff training and info provision.</p> <p>Prioritise and follow implementation closely, utilizing relevant governance schemes.</p>
Low-achievers	Hungary, Ireland, Poland	Both the legal framework and the implementation require improvements. Either there are gaps or key exceptions. In some cases the situation is even legally reverting (i.e. for Hungary) to less accessibility being guaranteed.	<p>Strengthen the legislative framework on transport accessibility.</p> <p>Apply it across transport modes (including rail, sea, air, etc.), without exemptions.</p> <p>Make a national implementation plan and follow it through.</p>

Source: BEKIARIS et al. 2018

Besides the provision of dedicated facilities and accessibility features on public transport vehicles, **special needs or dedicated transport services** are also organised by public authorities namely:

1. School transport for children with disabilities or special education transport;
2. Seated patients transport as opposed to patients who need ambulances;
3. Impaired people and elderly special public transport.

In Europe, **contracting agencies of special needs transport services** can be the National Health Service or Social Security, the local health service (e.g. hospitals) but also the regional, provincial or municipal governments. In countries where the health care system is financed also from private obligatory insurances (e.g. the Netherlands), medically necessary transportation is organised by private insurance companies (Cazemier et al. 2012).

In France, the National Health Service pays for the transport of patients in and out of hospitals. These trips are prescribed by doctors and enable patients to choose between using taxis or a "light sanitary vehicle" (*véhicules sanitaires léger* - type of hire car with driver restricted to only carrying seated patients) without paying for the fare. School transport of children with disabilities is paid for by the county governments (*Départements*) and is carried out by equipped buses, while in low density areas it can be carried out by taxis and minibuses (Darbéra et al. 2012).

Whereas special school transport and seated patients transport services are widely implemented in all EU Member States being a mandatory normative prescription, the provision of **dedicated transport services to support impaired people** to remain active and connected to their families and communities is notably less common.

Public authorities at all levels are engaged in improving accessibility of the whole transport system mainly by retrofitting existing infrastructure and investing in more accessible vehicles (typically public transport ones). Geographical characteristics (e.g. in rural and peri-urban areas) might influence the provision of non-medical special services to support people with visible and less visible impairments.

These can be embedded in wider PSO public transport contracts (e.g. a network DRT service that is also accessible to people with reduced mobility) or procured via dedicated tenders or assigning minimum subsidies to community transport organisations (charities and associations with a social objective as described in Chapter 5).

Case study: the Valys transport scheme in the Netherlands

In the Netherlands, a national transport scheme called Valys is in place⁷. Presented as "socio-recreational transport outside the region for travellers with reduced mobility", it allows and helps this vulnerable social group to reach distant destinations or areas not covered by the local public transport system.

For shorter trips the Dutch Social Support Act (WMO) prescribes that municipalities should provide transport to maintain social contacts for the elderly and the disabled. In addition, the Ministry of Education, Culture and Science covers the transportation of children with reduced mobility which is typically carried out by small taxi companies.

The Valys scheme offers three different options and levels of service (Basis, Accompanied and Free pass), combining reduced taxi fares, intermodality between train and taxis (with reduced train tickets) and further assistance and information.

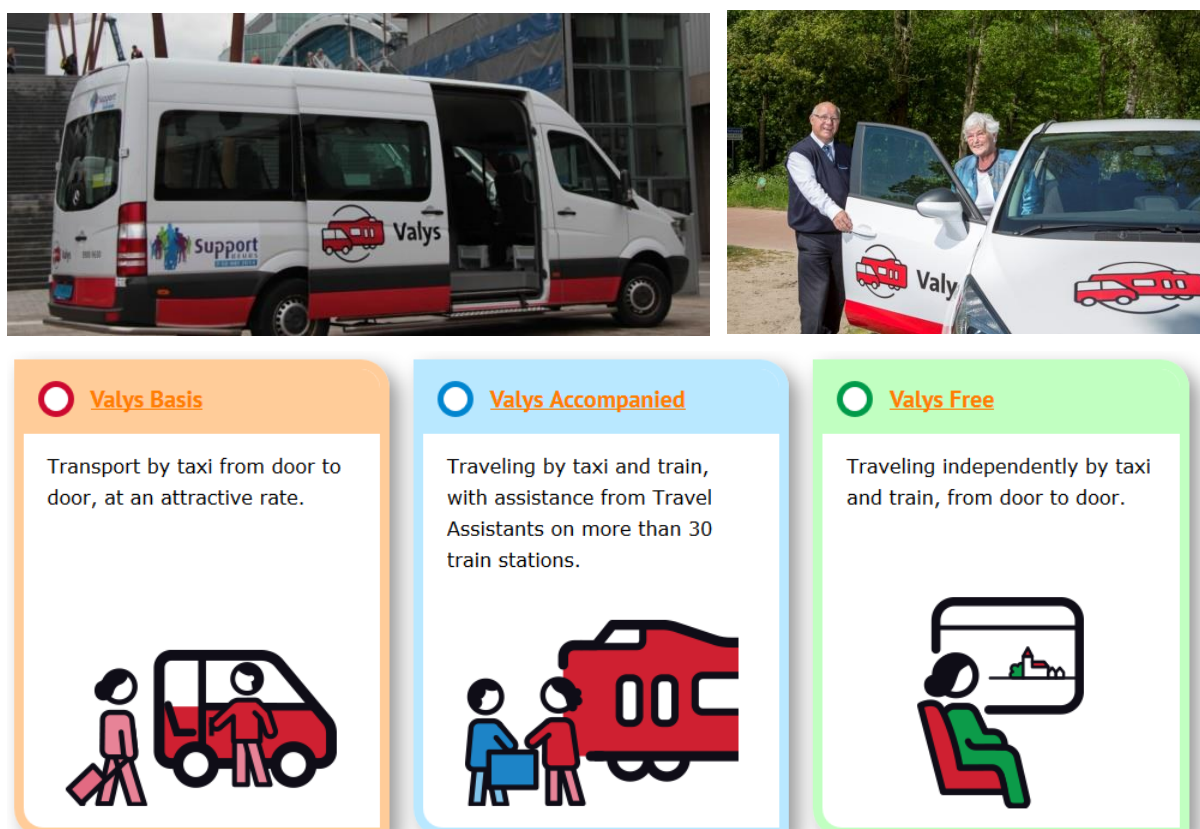
Valys pass holders receive an annual personal km budget (PKB) of 600 km but in case of serious mobility impairment they can apply for a high PKB of 2,250 km/year.

Valys clients can travel by taxi for € 0.20 per km (commercial tariff is € 1.13 per km), use the same reduced tariff or free pass also for one or more companions and have access to further assistance and information also through special portable devices. The service is

⁷ <https://www.valys.nl>

organized and awarded via a tendering procedure by the Ministry of Health, Welfare and Sport and currently run by the company Transvision BV. Taxi companies with vehicles equipped to transport people with reduced mobility operate as subcontractors.

Figure 3-3: Valys vehicles and types of mobility options



Source: Taxintelligence.nl, Taxipro.nl, Valys.nl

In Sweden, special public transport (*särskild kollektivtrafik*) for elderly and disabled persons is a municipal responsibility and by law municipalities have to grant individual permits, set the service level and decide the fees for the service. About 4% of the Swedish population is eligible for special public transport (Cazemier et al. 2012).

3.3 School transport

School transport can be defined as the transfer of students to and from school, school events and activities. Whereas in many areas in Canada or the US, specially designed school buses (often painted in yellow) are used for student transport, this is less common in Europe.

A recent study (Kotoula et al. 2017) has examined and compared the school transportation system in several European countries (Greece, France, Switzerland,

Germany, Sweden, Finland, UK). The authors conclude that different methods are used for school transport and the mix of services and solutions is also different from country to country.

Table 3-5: Different methods for the school transportation completion around Europe

TRANSPORT MODES	GREECE	FRANCE	SWITZERLAND	GERMANY	SWEDEN	FINLAND	UNITED KINGDOM
Use of buses either owned or leased (under bidding process)	✓	✓	✓		✓		
Use of public transport offering reduce fares		✓		✓	✓		✓
Use of public transport free of charge	✓	✓			✓	✓	
Use of public transport with provision of special services (scheduled routes)				✓			
Use of private taxis	✓	✓	✓	✓		✓	
Transfer by parent on compensation	✓	✓					
Alternative modes (walking, bicycling)			✓				✓
Walking School Bus							✓
Personal transit services on monorail					✓		

Source: Kotoula et al. 2017

In order to evaluate whether students are entitled to school transport, two main aspects are considered: firstly, the distance from home to school and secondly, the students' age. In both cases, the exact eligibility criteria vary according to national legislation or local provisions. In some countries, only the distance criterion is taken into account (e.g. in Finland); in other countries age is the most relevant criterion (e.g. in France).

Other factors such as special (mobility or education) needs or road safety also influence the provision of the services. For example, in Norway municipalities are responsible for funding school transport if the roads are particularly difficult or dangerous, even if the distance from home is low (International Transport Forum 2014).

Often school transport is completely free for compulsory school aged children. This also applies to children (of any age) with special needs or disabilities.

School transport can be organised as dedicated door-to-door service (e.g. for small children and using purpose built vehicles) or as special bus rides. In some cases, the students, or their parents, are entitled to reimbursement for their travel costs by public transport (e.g. in Germany) and under specific circumstances also by car (e.g. in France).

Students may also receive an allowance if they move closer to the school – with the purpose of attending it – which is applicable in Greece and Sweden (Kotoula et al. 2017).

In Europe, schools – including school transport – are mostly a responsibility of local or regional authorities. Governments and municipalities may organise school transport themselves but in many cases it is provided by private operators, following a public bidding process.

School transport is indispensable for the society because it ensures children's access to learning and education.

The high expenses caused by the duty to provide free concessionary travel for school children can lead to reductions made in the discretionary element of education transport (e.g. funding school transport above the statutory age) (International Transport Forum 2011). National norms could also prescribe the use of purpose built school buses and the provision of special assistance on-board.

School transport is funded from education rather than transport budgets, which may in some cases lead to a situation whereby school transport and other transport services aimed at the general public are completely separate from each other (International Transport Forum 2011, 2014).

In many rural areas, school travel plays a major role in rural public transport. Peak capacity is dictated by the demand for school travel. In remote rural areas school transport can be the only kind of public transport available.

Seeing that the resources (vehicles) are available anyway, this creates a lot of potential for integration with other types of services. Hybrid services could provide a combination of a fixed school run, a less flexible route serving commuters and passing by the train or bus station, and in between peak hours a DRT service to other destinations such as shopping centres, hospitals, rest homes, etc. (Daniels and Mulley 2010). Besides such complementary service patterns at different times of day, more direct integration may also be possible, by opening up school transport for other users e.g. commuters, visitors to a nearby market etc. (International Transport Forum 2014).

This is currently the type of solution that the French departmental public transport authorities responsible for school transport outside of the urban agglomerations are working on: extending their services and becoming a key player in rural and peri-urban mobility, converging school and other scheduled services in a more network-based approach (International Transport Forum 2014).

3.4 Incentives and subsidies for unemployed and low-income people

The **price of the service** has a central role when analysing different mobility options for unemployed and low-income persons (Motte-Baumvol et al. 2010).

First, access and capabilities of mobility decline as the income declines, and the unemployment further exacerbates the issue. As a consequence, the lower income pushes these households to areas with lower price of housing which usually provide less public transport options and therefore higher transport costs and forced use of private

transport. On the other hand, lowering transport costs could lead the job-seeker to search for employment in areas that are not in proximity of the household and therefore improve the possibility of employment.

According to the EU survey "Attitudes of Europeans Towards Urban Mobility" (European Commission 2013), Europeans are of the opinion that, to improve urban transport, prices need to be lowered (59% of all respondents) and public transport should be improved (56% of all respondents). The survey findings give a clear indication that price has a substantial impact on mobility and in consequence, on society.

There are cases that exemplify how economic reasons could negatively affect households. For instance, as a consequence of increasing prices and decreasing income, the economic crisis in Spain (2006-2014) has impacted poor households most since they were unable to reduce their transport expenses that rose from 8.3% of their total expenditure in 2007 to 9.6% in 2013. (Cats et al. 2017). In addition, the Spanish transport authorities decided to reduce the frequency of bus services rather than to close bus routes completely and this further impacted primarily on low-income users. On the other hand, high-income households who use public transport less intensively responded less negatively to economic hardship (Cascajo et al. 2018).

Governments can promote job access for unemployed or to sustain the family income through the provision of **reduced fares** (e.g. 50% of the regular public transport or taxi fare) or **free public transport pass** but also through **direct monetary incentives**.

Case study: transport provisions for unemployed people in the UK

In the UK, Transport for London (TfL), the local government body responsible for the transport system in the City of London, issues **Jobcentre Plus Travel Discount Cards**. In order to implement the scheme, TfL collaborates with Jobcentre Plus which is an employment service under the UK Department for Work and Pensions. Jobcentre Plus' role is to provide services to those attempting to find employment. The Jobcentre Plus Travel Discount Card is provided to those that are aged 18-24 and unemployed for 13-39 weeks, are aged 25 or over and unemployed for 13-52 weeks or if actively engaged with a Jobcentre Plus adviser. Cardholders are entitled to a 50% discount on selected rail tickets.

An additional scheme in the UK is **Wheels 2 Work** (W2W). This scheme offers affordable transport to individuals who have difficulties accessing public or private transport while at the same time looking for employment. To successfully carry out this service, W2W uses mopeds or scooters, however, some schemes offer the possibility to use bicycles or other transport solutions. The scheme is particularly useful for people living in isolated, rural areas where public transport is not easily accessible. A total of approximately £20 per week is charged to rent a mode of transport.

4 Market-based mobility services

This chapter focuses on mobility services that are of a commercial nature, with the objective of resulting in a profit to the entity that owns or has invested in the means of providing the service.

Market-based mobility options includes more traditional ones like on street taxis and pre-booked private hire vehicles (PHV), but other solutions are nowadays offered by vehicle sharing and ride hailing companies that can directly or indirectly operate a fleet. New business models have been developed within the so-called shared economy paradigm, favoured by technology advancements and the spreading across the population of smartphones that allowed the shared mobility market to gain a sufficient scale and viability of different solutions.

4.1 Taxis

4.1.1 Market segments

Taxis are vehicles with an available driver for hire that enable general public to travel from point-to-point in urban and non-urban metropolitan areas (Aarhaug 2014). The vehicles are licensed cars or vans registered for a maximum of nine persons. Being operated in a publicly regulated market, as public service, taxis are commonly considered to be part of public transport, despite not having regular schedules, routes and set stations.

In a typical taxi service passengers have to book (or hail in the street) a taxi vehicle, and pay a fare and eventual booking fees for the provided transport service. In several cases, the taxi company invests in the vehicle and license, and then rents it to a driver, who in turn executes the work and pays a certain fee. Taxi companies can also provide to taxi drivers the bookings (e.g. from the company's dispatching centre), their payment system, insurance and training. In other cases drivers are self-employed and own the vehicle and the license.

There are **four major market segments**: hail, taxi rank, pre-book and contract. These segments have their own specific functioning and potential challenges to regulators.

The on-street **hailing market** segment is the most commonly known and can be found in larger cities with high taxi densities. Hailing a taxi means flagging it down on the street if that taxi is vacant and randomly picking up passengers. Requesting a taxi by hailing means uncertainty for the customer. This is due to the fact that the customer does not know when the next vacant taxi will be available.

Hailing a taxi service poses some difficulties for people with reduced mobility, since it requires the person to move next to the roadside, which is not always possible. In addition, there is no guarantee that a person with special equipment (e.g. wheelchair) will be able to safely enter the vehicle, nor that the taxi driver will be able to assist.

Taxi ranks or stands are temporarily used by taxis to pick up customers. They are usually present near major transport hubs such as airports, railway stations and hotels. Despite

being very popular, taxi ranks remain difficult to locate by vulnerable user groups particularly in rural areas that are penalized and unserved.

Over time, on-street hailing and stand-based access modes have been supplemented with the advent of **telephone and radio-dispatch reservation centres**. This market segment was a revolutionary novelty in the taxi sector, as the customer is empowered to order a taxi from a dispatcher, who then identifies a vehicle for the requested trip. The increased use of the smartphone and the emergence of tailored apps that make use of geolocation functionality of both customers and drivers have nowadays revolutionised the pre-booking of taxi rides with e-hailing. As a consequence, as the technological entrance barriers have been removed, there is no more need for costly equipment on board of each vehicle.

This market segment establishes a positive relationship between dispatching companies and customers if the latter is satisfied with the service. However, when analysing the usefulness of this service for vulnerable user groups, it is noteworthy to mention that this service is not a valuable alternative to public transport for children and youth, people with reduced mobility, migrants and ethnic minorities and people living in rural and deprived areas. One of the reasons for this is the cost to reach areas which are far away from urban centres.

High availability of taxi services through apps could facilitate the use for ICT-skilled persons, but on the other hand also hinder the use for those who are not, or lack certain capabilities, for example have sight difficulties, or do not master the language such as migrants and ethnic minorities.

Contracts can be also established between taxi companies and public authorities for the transport of school children, the elderly and people with reduced mobility (Aarhaug 2014). Some local authorities also fund Taxicard schemes for disabled people who have difficulty using public transport. Card holders can travel in licensed taxis at reduced fares (Cazemier et al. 2012).

4.1.2 Regulation and deregulation of the taxi industry

One of the initial reasons to regulate taxi services was to avoid lengthy price bargaining between drivers and customers (Darbéra 2017). Moreover, typically regulations are imposed on taxi companies with regard to market entry (license acquisition), operating permits, fares, service standards, mandatory insurance levels and the obligation to provide service to passengers regardless of neighbourhood or time of day (Strong 2015).

Taxi regulations in Europe vary from country to country, and are in the majority of Member States done on a national level, with the exceptions being Belgium and the UK. For example, in Ireland, there are no entry regulations while in France these are strict. National regulations are also often supplemented by regional or local level regulations (Frazzani et al. 2016). As a result, the regulation could even vary from city to city as it is the case in the UK, Denmark and Norway (Aarhaug 2014). This fragmentation in terms of regulation across Europe does not depict a clear image for the customer, therefore creating uncertainty and disadvantage.

Typical regulation addresses several issues as mentioned above. **Entry regulation** is of importance when analysing the impact of the number of taxis available. The most important reason behind regulating the number of taxis is to avoid monopolies. Taxi companies should be able to compete with one another on a level-playing field, as a

company that has a larger fleet is capable of providing services with lower costs and meet demand easily compared to a company that has just a few vehicles (Cetin and Deakin 2017). Price regulation is interrelated with entry regulation since the customer has to have clear information on the real cost of a ride. Providing clarity to customers also prevents situations which could lead to bargaining the price.

Two additional reasons why entry regulation is put into place is to address negative externalities and how the taxi service is commonly perceived as a public service. Regulatory bodies see taxis as actors contributing to congestion, air and noise pollution either when they are vacant or occupied (Cetin and Deakin 2017). Restricting the number of taxis and controlling prices has been an argument that most governments have brought forth to combat these negative effects. Moreover, since taxis are commonly seen as a public service replacing the private use of cars, regulators believe that the service should be made available to people in an equitable manner, with a special focus on those with reduced mobility and in areas of the city where demand is low (Cetin and Deakin 2017).

Taxi drivers have to possess a clean criminal record to prove that they are capable of conducting the service transparently while vehicles have to meet specific requirements related to safety and emissions. Furthermore, the driver has to undergo thorough examinations to certify that he/she possesses a good knowledge of the local area and languages. On the other hand, training requirements and examinations can serve as barriers to entry to the profession (Darbéra 2017).

Even though the taxi sector is commonly known to be strict on regulations, it has also experienced **deregulation in several countries and cities**. Deregulation usually translates into removing or relaxing barriers to entry and setting own prices (Cetin and Deakin 2017). The main argument for deregulation is that too much government intervention could cause inefficiency and lead to consumers being denied an optimal service and price of the service (Aarhaug 2014). The taxi sector, in general terms, is perceived to be too expensive and low in efficiency, thus deregulation is expected to provide a balance between supply and demand, resulting in a higher quality of the service at a lower price (Slavnic 2015).

In the following box, **typical market situations across Member States** and the approaches these take in regulating, or deregulating the taxi service are presented. In particular, the relationship between regulated and deregulated taxi services with vulnerable user groups is explored.

Taxis: a national level overview

France has a significantly fragmented while at the same time highly regulated taxi sector. A concrete example of this fragmentation is the number of taxi companies that operate outside the Paris region. Approximately 30.000 taxi companies exist outside the Paris region that operate around 40.000 vehicles. Transport operators that are not taxi drivers abide to specific regulation that allows them to operate only in their respective market segment. Despite taxi licenses being transferable so that they can be used to provide different services, taxi drivers are usually reluctant to leave city centres. As a result, a lower number of available drivers in rural areas penalizes vulnerable user groups since different services and vehicles are needed to meet their mobility needs.

In **Denmark**, like in France, the taxi market is regulated. There are around 3.000 taxi companies that operate 5.000 vehicles. Most taxi services are concentrated in Copenhagen with 2.300 of the 5.000 vehicles operating there. Taxi licences can be obtained by municipalities for free, however, they are not transferable. The Danish government is attempting to block hire cars with driver from operating in order to protect taxis from competition. Hire cars with driver however do succeed in providing services in particular market segments especially with vehicles specially adapted for disabled people.

In **The Netherlands** the taxi sector was deregulated in 2000 after having been under the supervision of the twelve Dutch provinces who were responsible for issuing taxi licences and setting prices for fares. As a result, deregulation caused the distinction between taxis and hire cars with driver to fade - the term taxi applies to hire cars with drivers as well. The reason for deregulating the taxi market derived from concerns that local authorities were solely safeguarding the interests of taxi companies while not providing citizens with affordable mobility.

At present, in **Sweden** there are 9.000 taxi companies that operate 15.000 vehicles. In 1990, there was a complete deregulation of the taxi sector and one of the main reasons behind the deregulation of the taxi market in Sweden was to allow free competition in order to reduce government spending on subsidised medical travel (Pelli and Puu 2001). This comes into sharp contrast to what takes place in France where subsidised medical travel is a key component of French society. An existing public transport scheme for people with reduced mobility, the elderly and complementary transport in rural areas is under the responsibility of municipalities. Municipalities have the authority to grant permits to use special public transport, decide the level of the service and set prices for these services. Only around 4% of the Swedish population is eligible for this scheme, indicating a clear lack of efficiency and application.

As of 1 July 2018, **Finland** decided to deregulate and liberalise its taxi market (Teivainen 2018). Compulsory courses are no longer required to receive a taxi license and drivers will be examined only the in form of a driving test. According to Finnish authorities, 90% of future taxi orders in Finland will take place via mobile phone apps making taximeters obsolete. Drivers will determine their fares freely by basing them on factors such as the time of day and booking method. This will undoubtedly create some confusion to the customer and fares and pricing criteria should be clearly explained to them. With the uptake of apps and deregulation, the government expects that package services including other modes of transport, e.g. city bikes, public transport and car rental together with the taxi service will be offered in the future. This scheme, labelled as 'Mobility as a Service' (MaaS), has the ambition to revolutionise mobility. In addition, the government believes that as a result of the measures, liberalisation should lower the prices that are now perceived as too high.

Source: (Darbéra et al. 2012; Cazemier et al. 2012)

4.2 Private hire vehicle companies

The main difference between the traditional taxi service and hire-car/van with driver is that the latter operates on the basis of **pre-negotiated fares and pre-arranged**

reservations. These can be in some cases limited to the type of service offer, for example minimum distance or duration. Also, a taxi license allows taxis to wait at pre-determined locations and display a visual taxi sign, whereas this is not allowed for the hire-car with driver service (Frazzani et al. 2016).

The service is in general not as strongly regulated as the taxi service, nevertheless, in order to avoid competition with taxis, the service needs to be based on a prior reservation, and hire-car with driver companies often have the obligation to return to their base between the trips.

In some cases, for example in The Netherlands, Luxembourg, Portugal and Slovenia, there is little regulatory distinction between the two, whereas others, as stated, arguably over-specify this category of service in order to prevent competition with taxis. As a consequence, the level of competition can vary a lot.

With the advent of **digital platforms acting as intermediaries** the provision of hire-car with driver has expanded, especially in France and UK (Frazzani et al. 2016). For example, in France, the number of 'hire-car with driver' licences went from a mere 120 in 2011, up to more than 10,000 in 2015 due to growth of platforms.

This kind of transport typically covers only **temporary or occasional transport needs** and not daily needs. However, since in several Member States drivers use a hire-car with driver license to operate in affiliation with digital intermediaries as described in the following section, there are benefits present that stem from the characteristics of these: transparent cost based on predefined destination, arrival time estimation and provided information on the driver.

Case study: GoOpti

There are also examples of private hire vehicle companies developing their own platform: the Slovenian GoOpti (www.goopti.com) offers low-cost shuttle services to nearby airports and cities in Slovenia, Italy, Austria, Croatia and Southern Germany. The GoOpti 9 seats minibus-based business model is made of a "yield management" booking system (dynamic pricing) combined with a multiplicity of contracted car-hire with driver local companies to run the service. Applied on a time-flexible network of demand-attractive airports, it can also offer intermediate transfers between two cities or towns.

4.3 Transportation network companies

Transportation network companies (TNC) are **intermediaries managing IT platforms and smartphone applications to bundle and combine transport requests** with affiliated taxis, private hire vehicle or bus companies but also private users that materially execute the transport service.

These are also categorised as either a) intermediation with remuneration or b) intermediation without remuneration. The former is a brokerage service that deals with matching supply and demand of professional and non-professional hire transport with an economical interest, whereas the latter aims at sharing a vehicle to reduce costs and environmental impact (Frazzani et al. 2016).

In the following we provide more details on how TNCs with their commercial transport apps (CTAs) operate and what are their characteristics in order to better understand the potential implications for vulnerable groups of users.

CTAs make use of several technological developments in order to better match passengers with available for-hire vehicles. Key among these technologies are global navigation system services (i.e. GPS), internet connectivity (cellular and Wi-Fi), navigation services based on commercial or open-source digital maps, credit card processing and payment systems, pricing and dispatching algorithms and finally data logging and big data analytics.

All of these enable clients and drivers who have downloaded the app and who are registered with the centralised platform to be put into touch with each other when the former requests a trip and the latter accepts the request. Prospective passengers can specify their destination and can evaluate the exact or estimated fare, including any potential surcharges for peak period travel.

The development of **ride-hailing apps** such as *Uber*, *Lyft*, *myTaxi*, *Taxi Magic*, affects the pre-book taxi market because they are in essence new dispatchers. In response, the traditional, phone-based taxi dispatching centres have developed their own apps. The drawback of these is their local (city/region) nature whereas ride-hailing apps can operate globally.

The main benefit for the consumer is connected to densities and increased information. In particular in the US, but also in Europe app-based companies have created a lot of turmoil, as the legal framework surrounding such companies is unclear in many cases. TNCs and their apps typically do not fall under established regulatory structures, and are thus not subject to any specific regulations apart for some pioneering countries. In Ireland, for example, the electronic platforms fall within the definition of dispatch operators and are subject to the same requirements and licence of transport ones. The same applies in Hungary.

An additional role or activity of TNC is typically to collect data from clients, drivers, transport demand, and also generate data on traffic conditions. This can pose both a threat and an opportunity: a threat to privacy but opportunity related to the data being used by governments and local authorities to map out areas in the city and outside cities. Notwithstanding, regulation can force CTAs to share their data with specific public agencies.

Affiliation contracts between TNCs and transport companies are non-exclusive, and several drivers have multiple affiliations in order to have access to more working sources. This fact again calls for additional regulation, since some workers exceed by far the recommended or imposed maximum working hours, and some regulators have already put in place measures and tools for monitoring and enforcement.

Since these services rely on smartphone apps, adequate ICT skills are required to use them, together with having a credit card available and having a good command of the language. As already observed, this can pose a substantial barrier for certain groups of users, and additional barriers are present for e.g. visually impaired persons and elderly persons.

4.4 Vehicle sharing

Vehicle sharing refers to **temporary use of vehicles that are also used by other people**. These services have the objective to replace vehicle ownership by providing mobility for customers. Vehicles involved in such schemes range from traditional and electric bicycles, to scooters, passenger cars and vans. A vehicle sharing service is commonly provided by a private entity and does not receive any subsidies, although some services do enjoy some form of incentives or beneficial conditions provided by the city (e.g. free parking spaces, access to limited traffic zones).

Such services enable users to book or have instant access to a currently available vehicle and use it for a desired period of time. Payment is usually done based on duration of use and in some cases also on distance, and in case of bicycles the service is often offered free of charge for a limited time of use, and paid afterwards.

In addition, these vehicles can have predefined, fixed parking stations, to which in some cases the user needs to return the vehicle after use, and others are based on a so-called 'free-floating' system where the user locates the vehicle using an app and can leave the vehicle anywhere in the designated area.

The service is usually provided by smaller cars and bicycles, but other forms of vehicles are emerging, such as electric cars and bicycles, tricycles, one or two seater cars and scooters, such as *Scooty* in Brussels, *emmy* and *COUP* in Berlin, *Motit* in Barcelona. Cities are already taking measures or at least looking into how to regulate such services that are becoming a bigger part of the city environment and can substantially contribute to reduce car ownership because of lower costs for the final user.

These services do not offer discounted fares for vulnerable groups of users, mainly due to their commercial orientation (but can on the contrary offer such benefit for frequent users). In addition, they might be not specifically designed for certain user groups like people with reduced mobility, and they are absent or not extended to certain areas (e.g. rural) when economically less attractive.

4.4.1 Bicycle sharing

First established in Amsterdam in 1965, public bike sharing schemes have recently gained prominence due to their expansion into new locations and the increased scale of operation. Modern bike sharing programs, such as that launched in France in 2005, use communications technology to hire out bikes to members who pay membership and usage fees. Bikes are often fitted with "location aware" technology. These additions help to prevent theft and facilitate system management.

Today, there are nearly 1,000 bike sharing systems worldwide, which fall into the following categories:

- **Dock-based systems** allow users to pick up and return bikes from IT-enabled docks or stations located throughout a service area. This is the most widespread form of public bike sharing.
- **Dockless or GPS-based systems** put GPS technology directly into the bikes themselves as opposed to docks. Bikes often have their own locks, allowing users to secure them to any public bike rack within a predetermined service area.

- **Low-cost, tech-light systems** do not place technology in the bike or the dock. Instead, users often sign up online and then receive a text or email with a code to open the bike's lock or access a lock box with a key.
- **Peer-to-peer** bike sharing allows users to rent or borrow bikes hourly or daily from individuals or bike rental shops. Despite growing in popularity, nowadays peer-to-peer bike sharing does not seem to have potential to become one of the most common modes of shared transportation.

Big metropolitan areas and cities with a long established bike-sharing presence are now facing the problem of oversaturation of shared bicycles: with four or even more bike sharing schemes active, bicycles are rapidly piling up (Dobush 2018). The situation is very heterogeneous in EU cities and specific policy measures or restrictions are also in the early stage.

Although the service (arguably) can provide benefits in the form of healthier lifestyle and less traffic congestion, as it is designed, it is certainly limited to the ones that are physically fit and able to ride a bicycle. Apart for some experiences in Austria and Germany, the sharing of cargo bikes and trikes that would allow the carriage of children and heavy loads is not common in EU.

Some services also require the use of a credit card in order to start using the service, thus posing a limitation to those users who do not carry one. Furthermore, the service cannot be used to cover larger distances and is difficult to use in unfavourable weather conditions.

4.4.2 Car sharing

The concept of car sharing is similar to the one of bicycle sharing, and again, the service can be provided in different forms, with fixed stations or as free-floating.

Car sharing removes the desire and need, and thus the cost of private car ownership, which entails substantial fixed costs. These are offset with variable costs of car sharing membership and use fees (Duncan 2011).

In order to gain access to the service the user is usually required to register and provide:

- identity card,
- a valid driving license,
- credit card details to be used for eventual deposit, service payments and the collision damage waiver.

In some cases, the users are required to take a short course on how to access and use the vehicle. In terms of pricing, the majority of systems rely on a pay-per-use concept, where the use is charged based on duration, distance or both. Car sharing is often part of EU cities' integrated mobility landscape, and most of the schemes are based on a partnership between a municipality and private companies providing the service. The selection of the company/companies providing the service is done through a competitive process, resulting also in an agreement with the public authority concerning parking of vehicles on the street and eventual charging infrastructure for electric ones (Frazzani et al. 2016).

Car-sharing is still considered as an **exclusive service to middle-income and young populations** (Kim 2015). People aware of or already using shared-use vehicle systems share

the same profile, including higher than average educational and net-income levels; people with low income, for whom car sharing is especially interesting, are often not aware of this service (Nobis and Giesel 2016).

Nevertheless, the need for a credit card and the usually substantial amount that is requested as a collision damage waiver can represent a serious barrier for adoption for low-income user groups. In addition, these vehicles are not adapted to be used by persons with special needs.

Further limitations are posed by the need of ICT skills, since almost all car sharing programmes rely on smartphone apps to discover and access the service. Here, language can be also a barrier.

Also, the service is usually limited to densely populated areas, since it is not economically feasible, or at least not economically very attractive to operate in areas with lower population density (Hampshire and Gaites 2011), where the service could really alleviate the problem of lack of availability of transport. In order to deploy the service, the operator must bear substantial fixed costs of purchasing or leasing the vehicles (and optionally other infrastructure elements).

As an alternative approach, **peer-to-peer (P2P) car sharing** models are appearing as described in section 5.5. These allow private car owners, whose cars are idle more than 90% of the time, to make their personal vehicles available to other users for a certain fee. Vehicles are being offered through a platform that also manages the transactions, provides insurance etc.

Such a model can more easily scale geographically also to neighbourhoods with lower population density and has proven to be economically viable, however, uncertain and fragmented policies and vehicle insurance rules still pose a barrier for wider adoption of P2P car sharing. Relevant initiatives are for instance *Getaround* (www.getaround.com) and *Whipcar* (www.whipcar.com), which both offer peer-to-peer solutions through websites and smartphone applications.

5 Community-based mobility options and services

This chapter describes informal, peer-to-peer and community-based mobility options, aiming at completing the overall picture of how mobility options are offered to vulnerable user groups in Europe.

These solutions include informal ride-sharing (carpooling), shared “village cars” and Community Transport Services (CTS) provided by not-for-profit entities receiving minimum subsidies.

5.1 Community Transport Services

In several EU Member States charities and associations with a social objective are organising **Community Transport Services** (CTS).

Community Transport Services (CTS) is a general term that envelops several forms of transport services. They are run in rural, peri-urban, yet also urban areas and are often organised to cover mobility needs of specific groups, e.g. elderly people, children from poor families, job seekers or disabled citizens that are not able for various reasons to use the conventional forms of transport (private or public). Similarly to CTS, other community-based mobility options and services can be provided by groups of citizens organised in local organisations or informally among individuals.

The following table provides a **classification of passenger transport** according to the form of ownership and the owners involved.

Table 5-1: Types of transport ownership

FORM OF OWNERSHIP	OWNERS
Private	Individuals Firms Franchisees with state contracts
Public	Government (national, regional, local, city)
Informal	Individuals without legal status Firms without legal status
Charity	Charitable trust and enterprises Not-for-profit businesses Social enterprises
Community-owned	Community organisations (many forms)

Source: Glover 2017

Whereas the presence of charities and social businesses operating community transport services is quite common in EU, with different Member States applying their own specific legislation to overcome possible barriers and conflicts with other forms of transport, community-owned and informal mobility options are less present and taken into consideration from policy makers and regulators.

As there is no specific European guidance **each EU Member State has its own legislation and regulation** regarding:

- the form of the association that organizes the CTS;
- the services provided / differentiated per type of CTS service provided;
- the distinction of CTS from the regular public transport services and DRT organised by the public authorities;
- the vehicles' characteristics and related insurance needed for the specific CTS beyond the standard vehicle insurances;
- the necessary skills, training and juridical record of the volunteers;
- subsidies that can be provided nationally, regionally and locally.

The main objective of CTS is in general not transport driven. CTS is in general organised out of reasons of **countering social exclusion or strengthening social cohesion**. That also provides them the legislative and regulatory framework in which they operate. Whenever the respective Member State regulates these services, it is in general done through a **legislation for non-profit associations**.

An example in this case is the French law, called "Loi 1901" that regulates how an association in general, including associations such as the Red Cross that provide on a voluntary basis or cost basis transport services, should be organised. Other legislation and regulation to which CTS have to conform relate to the specific service they provide, the vehicles used, and the volunteers engaged.

CTS is organised along timetables, fare structures and vehicle types adapted to the users of a service. It can be characterised as transport services that in general operate only on-demand and door-to-door.

As all European Member States have specific legislation in place for the organisation of public transport services, and to avoid that CTS services are set up in competition with regular PSO or commercial service provision, limitations are set to the dimension of the transport services offered for example in the number of persons that can be transported (e.g. not more than 8 persons).

In several **rural areas** where regular public transport services are suppressed, a community transport service with the support of the public authority or even the local bus operator (e.g. by making available a vehicle) proves to be viable replacement of the former non-profitable commercial bus services. Any fare structure is in general adapted to the incurred costs of the service, as well as to any subsidy scheme it benefits from.

If the CTS is organised with volunteers and own vehicles there are several regulations in place with regard to the "good conduct" of the persons (e.g. no criminal record, licence to do voluntary work with children) and, if the volunteers are also jobseeker or receive social welfare, that this does not conflict with the related obligations. The state of the vehicles has to be in line with the national legislation in place and assured accordingly.

There are several forms of CTS which range from social ride sharing schemes, minibus travel for elderly and disabled citizens, wheel to work services, social van hire schemes, organised group transport to remote areas or specific destinations. The minibus services are often operated by volunteers, yet in some subsidised cases a professional driver is engaged.

A few of these transport services are discussed below:

- Community bus services;
- Peer-to-peer ride sharing (carpooling);
- Community cars;
- Peer-to-peer car sharing.

5.2 Community bus services

Community-owned bus services often referred to as “**Citizen Bus**” differ from mainstream transport through their specific focus on the transport and socio-economic needs of a dedicated citizen group. It allows the passengers to participate in local community activities (e.g. attend events, visit a doctor or routine tasks - e.g. shopping) without relying on friends and family.

It prevents them from social exclusion by allowing them to meet friends, relatives and through the interaction with drivers and other passengers. Even if they are in general non-for-profit services, such transport services might be tendered.

Case study: Bürgerbus in Germany

In Germany, the first citizens' bus experience started in North Rhine-Westphalia in the 1980s, after more and more bus lines were abandoned in rural areas for cost reasons. From the mid-1990s, the idea was a success. The offers made it possible to fill gaps in the public transport timetables, both in terms of space and time. A citizen bus is a bus line that is usually based on a local citizen initiative to make up for short-distance public transport. The vehicle used in such cases is referred to as Bürgerbus.

The German Bürgerbus is a very simple community transport scheme existing since 1985 with public subsidies covering the purchase of a 9-seats minibus and some operating costs like fuel and insurance. The service is operated in small cities and rural areas not served by regular bus stops with drivers being volunteering citizens. The original idea emerged in the UK where the first 'people's buses' were launched by former users of the public transport systems in reaction to the price rises and service cuts following the privatization of local bus services in the 1980s.

The timetable is set in such a way that all lines can be operated by one single minibus with a frequency of 6 to 20 trips per week. The Citizen Bus concept is widely implemented in Germany, the Netherlands and UK. In Britain, the provision of dedicated community transport services is often provided by social enterprises: the HTC Group grew from a handful of volunteers and a couple of minibuses to a large scale social enterprise with 800 employees, ten depots and a fleet of 500 vehicles.

5.3 Peer-to-peer ride sharing (carpooling)

Ride sharing or carpooling is viewed as a valuable and realistic option for lower socio-economic classes or for those who, due to personal circumstances, beliefs or resources do not own a private vehicle. The interest for this alternative form of transport is mainly due to its innovative aspects and social responsibility toward environment sustainability.

We define carpooling as the **sharing of a car trip between two or more persons of which one of the persons is the owner of the vehicle.**

There are dozens of carpool apps and services on the market. These can basically be divided in two types of carpooling services: open carpool services and community-based carpool.

The best known open carpool system in Europe is *Blablacar*. This French company recently bought the originally German *carpooling.com* therewith creating the largest carpool platform in Europe.

These types of market-based carpool services are boosted by the latest trend in the carpool market, which is the so-called “dynamic carpooling” in which a person with the help of new ICT, often facilitated by an App, can call for an offered carpool trip of another person for a certain destination at a certain time of the day.

At community level there are several **informal rideshare service schemes** organised by local volunteers, associations or municipalities. They often focus on the provision of car pool services to vulnerable groups. These types of carpool services can be classified as carpool clubs or community-based carpool services.

They focus on a specific group which also defines directly the limits of their potential success. Firstly, there is the psychological barrier of riding with strangers, which can be of particular importance for certain vulnerable groups. This limits the expansion of the scale of such systems and imposes the second limitation which is the poor level of ride and route choice. One final important barrier to ridesharing might be the absence of guarantee of finding a drive back.

More and more dedicated carpool app developers offer their services to those smaller communities, e.g. *Flinc* (www.flinc.org), *Comovee* (www.comovee.com) aimed at community carpooling, or *Cmabulle* (www.cmabulle.fr) aimed at the school commute. They might offer the necessary “bridge” between the open dynamic carpool platforms and the more protective community-based carpool services.

5.4 Community cars

Village, community or neighbourhood cars are cars that are jointly bought or leased. In rural and peri-urban areas they mainly address the transport needs that are not well covered by the existing public transport services.

Community car initiatives are organised bottom-up, as a group of local citizens, as part of an association or not, decide together to procure a vehicle. Based on the agreements and “rules of the game”, the participants can reserve and make use of the vehicle. Top-down, community car initiatives are stimulated by the local public authorities that subsidize and/or assist with the organisation such as in the German *Dorpsmobil* project (www.doerps-mobil.de).

More targeted forms of community cars are the social services that have vehicles available for example for families or job seekers for specific purposes and trips.

There are several organisations that offer their services to both groups of citizens and local public authorities that would like to procure a community car, such as *Buurauto* (www.buurauto.nl).

5.5 Peer-to-peer car sharing

In the case of peer-to-peer car sharing, the **shared car is owned by a private individual that participates in the car sharing scheme**. This is different from the community car where the car is bought together. It is not about people who occasionally borrow a car from someone, but a fixed system that offers an alternative to individual car ownership. Individual citizens or a group of citizens take the initiative to start up a car-sharing group and conclude contracts with each other.

Peer-to-peer car sharing is growing faster through applications like *MyWheels* (www.mywheels.nl) that offer, next to the traditional car sharing, peer-to-peer solutions for private persons or groups that would like to share their car. Especially in more remote areas these types of service can be considered as an addition to the traditional transport services.

Presently in the development of peer-to-peer car sharing, demand for this type of services tends to be higher than supply. The main motivation for those who rent out their cars is often economic. However, this type of car sharing up to now seems to attract specifically the young urban and less the vulnerable groups.

On the other side, a specific example is the peer-to-peer car sharing in the community of Edegem in Belgium. A local organisation *Pegode* that is housing 16 handicapped citizens bought two minivans equipped with a wheelchair elevator. They organised peer-to-peer minivan sharing with these vehicles for the local village and surroundings. There are presently 32 disabled citizens (including the 16 living together) that now make use of this service.

6 Summary and conclusions

This chapter summarises the limits and drawbacks of the available passenger transport options for vulnerable user groups and provides some initial indications on how to overcome identified normative and organisational barriers for the three analysed segments of subsidized, market-based and community-run options.

6.1 Overview of the available mobility options to tackle transport poverty




The analysis presented in Chapter 2, as further documented in the deeper desk research included in the HiReach Deliverable 2.1, provides some indications on certain characteristics and basic preconditions a transport system has to fulfil in order to favour inclusive mobility and reduce the risk of transport poverty.




Distinctive mobility attitudes from each analysed vulnerable group converge to fundamental requirements of availability of suitable, reliable and affordable transport options, possibility to reach nearby or distant destinations and opportunities in reasonable travel time by using vehicles, infrastructures and services that are fully accessible, safe and easy to use.






Also, an inclusive mobility system should offer a range of options, used in combination or in alternative to one another, other than profiling and offering only different services for different users (e.g. special or school transport).




The following table provides a **final summary of the transport services and mobility options** presented in the previous chapters, highlighting their main characteristics, their limits and drawbacks and the vulnerable user groups potentially satisfied by each solution.




Table 6-1: Overview of the available mobility options to tackle transport poverty

CATEGORY	MOBILITY SERVICE OR OPTION	KEY ELEMENTS AND ADVANTAGES	MAJOR LIMITS AND DRAWBACKS	POTENTIALLY SATISFIED VULNERABLE USER GROUPS
Publicly contracted mobility services	Conventional public transport	<p>Service of general interest (SGEI)</p> <p>Already present in many areas although not always adequate</p> <p>Universal form of transport (access to PT services is a form of social inclusion)</p> <p>Fare reductions and free pass for vulnerable users widely implemented</p>	<p>Under increasing pressure due to cuts in subsidies</p> <p>Service not available, limited hours of operation or low frequencies in certain priority areas (e.g. rural/peripheral)</p> <p>Infrastructures and vehicles not accessible to people with reduced mobility especially on inter-urban links and rural areas</p> <p>Inclusive elements not adequately embedded in PSO contracts (apart for universal design)</p>	
	Demand-responsive public transport	<p>Allows adaptability of the PT system and integration with small operators (i.e. contracted taxis/PHVs)</p> <p>Demand-based and flexible transport option</p> <p>Particularly suited for rural areas</p> <p>Can be combined with other dedicated services (e.g. school or special needs transport)</p>	<p>Need to estimate in advance the level of service in km driven (to fit into current PSO contracts)</p> <p>Insufficient and episodic public funding</p> <p>Higher operative cost (but higher willingness to pay from the users)</p> <p>Booking, planning and dispatching system can be very expensive</p>	
	Transport for people with reduced mobility	<p>Organised as DRT</p> <p>Often operated by CTS</p>	<p>Often designed only for medical or educational purposes (and not also for maintaining social</p>	

CATEGORY	MOBILITY SERVICE OR OPTION	KEY ELEMENTS AND ADVANTAGES	MAJOR LIMITS AND DRAWBACKS	POTENTIALLY SATISFIED VULNERABLE USER GROUPS
		<p>organisations</p> <p>Fundamental for people not able to use conventional public transport</p> <p>Public funding from different bodies already available (especially from national health or social services)</p>	<p>contacts)</p> <p>Segregated service not integrated with the PT system</p> <p>Lack of image and visibility</p>	
	School transport	<p>Mix of schemes and solutions: from conventional PT usage to door-to-door "yellow" school buses</p> <p>Free for compulsory school aged children</p> <p>Funded from educational public budgets</p> <p>Often under direct responsibility of municipalities</p>	<p>Purpose built "yellow" vehicles not suited for other services</p> <p>Higher operative costs when on-board assistance is requested</p> <p>Hybrid services (school + other purposes transport) not sufficiently tested and implemented</p>	
	Incentives and subsidies for unemployed and low-income people	<p>Promote job access and sustain the family income</p> <p>Provided as reduced PT/taxi fares or free public transport pass but also through direct monetary incentives</p>	Mainly focused on public transport	
Market-based mobility services	Taxis	<p>Door-to-door transport public service</p> <p>Users can hail a taxi on the</p>	<p>Higher price for the final user (compared to PT)</p> <p>Operate under detailed and strict</p>	

CATEGORY	MOBILITY SERVICE OR OPTION	KEY ELEMENTS AND ADVANTAGES	MAJOR LIMITS AND DRAWBACKS	POTENTIALLY SATISFIED VULNERABLE USER GROUPS
		<p>street, find at ranks/stands or pre-book via a dispatching centre (by telephone or smartphones)</p> <p>Can be contracted from public authorities for demand-responsive PT or dedicated transport (e.g. schools)</p>	<p>regulations</p> <p>Present only in sufficiently dense urban areas</p> <p>Often not accessible to people with reduced mobility</p>	
	Private hire vehicles (car/van)	<p>Door-to-door transport private service</p> <p>Operates on the basis of pre-negotiated fares and pre-arranged reservations</p> <p>Obligation to start from and return to their base</p> <p>Operate under less strict regulations (compared to taxis)</p>	<p>Typically covers only temporary or occasional transport needs</p> <p>Small companies not able to manage large fleets nor complex IT systems</p> <p>Often not accessible to people with reduced mobility</p>	 
	Services from Transportation Network Companies (i.e. ride hailing)	<p>Managed by intermediaries owning digital platforms and smartphone applications to bundle and combine transport requests</p> <p>Operated by affiliated professional companies or non-professional drivers</p> <p>Work on a global scale</p> <p>New business model contributing to expand the taxi/PHV markets</p> <p>Ride hailing services can cover</p>	<p>Do not fall under established regulatory structures</p> <p>Unfair competition from non-licensed private drivers</p> <p>Needs large initial private investments</p> <p>Not present in priority areas</p>	  

CATEGORY	MOBILITY SERVICE OR OPTION	KEY ELEMENTS AND ADVANTAGES	MAJOR LIMITS AND DRAWBACKS	POTENTIALLY SATISFIED VULNERABLE USER GROUPS
		also daily mobility needs		
	Vehicle sharing (car/bike)	<p>Temporary use of vehicles that are also used by other people</p> <p>Operates as station-based or free floating</p>	<p>Need to book in advance</p> <p>Do not offer discounted fares for vulnerable groups of users</p> <p>Often not accessible to people with reduced mobility</p> <p>Absent or not extended to priority areas</p> <p>Require a credit card</p>	
Community-based mobility options	Community Transport Services (CTS)	<p>General term that envelops several forms of transport services (rural, medical, school, special)</p> <p>Run by established charities and social businesses</p> <p>Drivers can be jobseekers or people receiving social welfare</p>	<p>Possible overlaps with conventional/DRT public transport and market-based services</p>	
	Citizen Bus	<p>Community-owned bus services with</p> <p>The public authority provides the vehicle for free and pay for certain running costs (fuel, insurance)</p> <p>Drivers are volunteers citizens</p>	<p>Typically limited to the transport of elderly people</p> <p>Operated rural areas not served by regular bus stops</p> <p>Concept limited to some countries (Germany, the Netherlands, UK)</p>	

CATEGORY	MOBILITY SERVICE OR OPTION	KEY ELEMENTS AND ADVANTAGES	MAJOR LIMITS AND DRAWBACKS	POTENTIALLY SATISFIED VULNERABLE USER GROUPS
	Peer-to-peer ride sharing (carpooling)	<p>Sharing of a car trip between two or more persons of which one of the persons is the owner of the vehicle</p> <p>Can be implemented informally among individuals, via open/community-based apps or carpool clubs</p> <p>Need a prior schedule or reservation</p>	<p>Informal carpool often implemented by closed groups (friends, colleagues)</p> <p>Limited to regular commuting trips</p> <p>Psychological barrier of riding with strangers</p>	
	Community car initiatives	<p>Cars that are jointly bought or leased by a group of local citizens, as part of an association or not</p> <p>Can be also implemented by local authorities allowing the use of their own vehicles (when not used for public service purposes) to residents and vulnerable users</p>	<p>Need a prior reservation and clear "rules of the game" including ownership and responsibility issues</p> <p>Often limited to avoid "second car" ownership</p>	
	Peer-to-peer car sharing	<p>The shared car is owned by a private individual that participates in the P2P car sharing scheme.</p> <p>Main motivation for those who rent out their cars is often economic</p>	<p>Need a prior reservation and clear "rules of the game" including ownership and responsibility issues</p>	

Deliverable D3.1 - Analysis of the limits of the current transport offer and frameworks



Children and youth



Elderly



Women



People with
reduced mobility



Migrants and
ethnic minorities



People living in rural
and deprived areas



Low income
and unemployed

Source: Own elaboration

6.2 Limits and drawbacks of the current transport offer

Overall, this preliminary analysis led to the following main clusters of limits and drawbacks of the current transport offer and frameworks:

Flexible and inclusive mobility options still not a key component of the transport system

As indicated in Chapter 3, **public transport plays a crucial role** and is the key pillar of an inclusive transport system because many vulnerable groups are more likely to use it instead of private transportation. This applies also for the increasing number of healthy older Europeans, despite their high car-ownership and especially for people with reduced mobility and young people because of the importance of independent mobility in their daily life. *Motility* i.e. the potential to move or the perception of being able to reach places, opportunities and therefore to play a role in society is another key element.

An inclusive notion of public transport should therefore properly consider also **more flexible and integrated schemes**, combining all forms of collective passenger transport, that are quite often operated by local companies (including taxis or car-hire with driver) or community transport organisations, with the complementary or additional services these can offer to the people, on the market or informally.

The national legal frameworks defining the boundaries of public service obligations as well as practice in guaranteeing sufficient quality standards of PT services, both in case of a tendering procedure or a direct award, can influence a lot the organisation of an inclusive public transport system. Since **the overall structure of the market (i.e. competent authorities, level of competition and available funding) varies widely across the EU Member States**, it's not easy to identify one or more clusters of frameworks that can favour inclusivity.

In the future, automated mobility could provide a solution to this problem together with the **combination of flexible passenger transport with goods and postal delivery** (e.g. of library books, prescriptions and post/parcels) as an additional source of income (Franckx and Mayeres 2015). This system is widely implemented in Switzerland by *PostBus* and characterized certain bus services also in other countries (e.g. Italy) in the past.

The range of community-based options ranging from carpooling to “village cars” and peer-to-peer car-sharing is still not integrated in a wider inclusive mobility transport system despite the advantages and flexibility these services can offer to vulnerable user groups.

Limits of different regulations

Existing regulation is also mode-specific, i.e. different rules apply to taxi services, education transport, community transport, bus transport, seated patient transport, etc. This has implications on many levels e.g. driver licensing, operator licensing, route licensing, tax, VAT, insurance, eligibility for public subsidy, whether a fare can be charged, etc.

Flexible public transport making use of DRT schemes might be heavily limited by the absence of proper legislation clarifying what is allowed and what not, and which rules apply (Enoch et al. 2006; Daniels and Mulley 2010). Possible issues with regard to legislation and contracts include (non-exhaustive list):

- the prescription for PT services to have a timetable and fixed stops (which DRT services do not necessarily have);
- taxis and private hire vehicles (PHVs) not being allowed to operate 'out of area';
- PT funding only being possible for bus operators and not for taxis or PHVs;
- different VAT rules apply for different types of vehicles, which affects fares;
- difficulty of predicting the amount of vehicle-km as a basis to draw up (PSO) contracts and reimburse operators (Haffenden 2008; Daniels and Mulley 2010).

Many of these issues could be overcome by **adapting the existing regulation**. For example, in the Netherlands the deregulation of the taxi industry (since 2000) and integration of taxis/PHVs in public transport has paved the way for the (quite successful) development of the *RegioTaxi* network.

Absence of a well-balanced and fair competition

Price elasticity for rural services appears to be higher than in urban areas (International Transport Forum 2011) and it could be argued that **taxi-like door-to-door services would justify a higher fare thus creating a potential for market-based mobility services**. On the other hand, it should be considered that **people who need transport most are often the ones who struggle to afford it**, that is why some groups (e.g. elderly, children, low income or unemployed people) are allowed in many cases to travel for free or at a discounted rate.

In this respect, offering free travel may distort the market because private operators may not be keen to attract more customers who don't pay anything – unless their services are part of the same inclusive transport system as in the case of the *Valys* system in the Netherlands.

Barriers exist in the way subsidized transport contracts are procured by the authorities: quite often bids are not adapted to allow the **participation of small local companies** with larger operators typically acting as monopolist as a result (Cazemier et al. 2012).

App-based ride-hailing services, mainly managed by Transportation Network Companies (TNC) have successfully tested new business models innovating the traditional taxi market segments and mobilising numerous taxi and car-hire with driver companies. The advantages and benefits of these new options are not properly analysed in conjunction with **competitive issues and working conditions**.

Lack of adequacy of available mobility options

Collective vehicles, particularly smaller ones including taxis, should be **properly equipped** to accommodate different needs (e.g. transport of children and people with reduced mobility).

Accessibility rights, specifications and technical requirements to allow transport infrastructures and services to be used by disabled persons are linked to specific EU Regulations that fall under the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD). Efforts at national level, especially for front-runners countries, produced a quite extensive and complete framework of norms, guidelines and practice that is progressively limiting the number of "exceptions" applicable by law to some

specific sectors like local passenger transport. Despite the existing differences among the Member States, this commitment and the resulting legislations and prescriptions are more integrated and relevant for favouring wider inclusive transport options.

Some services sometimes suffers from an **image problem**, in the sense that they are associated with special transport for disadvantaged groups such as poor, elderly, or mobility impaired people (who, as 'captives', actually indeed make more use of these services and are also more aware of their existence) (Enoch et al. 2006; Daniels and Mulley 2010). Also, a lack of understanding of how flexible and inclusive transport services work leads to a reluctance to actually use them. Simplifying as much as possible the fare structure as well as the route patterns and timetables is important to make the system easier to understand.

Creating **awareness by means of information and education** (how does the system work, who is eligible to use it, what does it cost etc.) is the first step, which should go hand in hand with a good marketing strategy: flexible transport services are not very visible or present 'on the street', which means additional efforts are needed (and word of mouth is, as often, one of the most effective ways) (Daniels and Mulley 2010).

6.3 Available resources for inclusive mobility options

The **attribution of competences to different public entities**, in absence of a proper organising authority optimising and integrating all forms of passenger transport (scheduled and demand-responsive public transport, special needs and educational, etc.) can negatively impact on a proper inclusive transport offer.

This applies especially in peri-urban and rural areas where the responsibility for transport related activities is often not so well defined and divided among a number of different agencies or departments operating in 'silos', for example public transport unit (regular bus services), education department (school transport), social services (transport for elderly and disabled people), health department (transport to health facilities), etc.

As a consequence, in addition to a lack of coordination there's also a fragmentation of **available public funding for supporting more inclusive and integrated passenger transport schemes**.

The following table summarises the sources of funding (public and private) for each transport option that has been considered in the analysis thus providing also preliminary overview of **how different public sources could be pooled together in order to be more cost-effective**.

Table 6-2: Sources of funding and available resources per mobility option

CATEGORY	MOBILITY SERVICE OR OPTION	FUNDING SOURCE
Publicly contracted mobility options	<i>Conventional public transport</i>	National and regional transport authorities. Additional/complementary PT services also funded by local councils with their own budget.
	<i>Demand-responsive public transport</i>	National and regional transport authorities if DRTs are allowed according to legislation. DRT PT services also funded by local councils with their own budget.
	<i>Transport for people with reduced mobility</i>	National and regional health or social services/authorities.
	<i>School transport</i>	National and regional education authorities.
	<i>Incentives and subsidies for unemployed and low-income people</i>	Regional or local social services.
Market-based mobility services	<i>Taxis</i>	Private for profit investments. Some regional or local councils provides incentives for fleet renewal (e.g. electric or hybrid taxis)
	<i>Private hire vehicles (car/van)</i>	Private for profit investments.
	<i>Services from Transportation Network Companies (i.e. ride hailing)</i>	Private for profit investments (including venture capitals).
	<i>Vehicle sharing (car/scooters/bike)</i>	Private for profit investments (including venture capitals).
Community-based mobility options	<i>Community Transport Services (CTS)</i>	National and local transport, health, education or social services/authorities. Private charities and foundations.
	<i>Citizen Bus</i>	Regional and local transport authorities.
	<i>Peer-to-peer ride sharing (carpooling)</i>	Private not-for profit investments.
	<i>Community car initiatives</i>	Private not-for profit investments and partly from local public authorities.
	<i>Peer-to-peer car sharing</i>	Private not-for profit investments.

Source: Own elaboration

Focusing on publicly subsidized or supported mobility options it can be highlighted that whereas some **DRT services** are commercially viable (e.g. airport feeders or innovative ride-hailing services running in densely populated urban areas), more traditional “substitution DRT” requires in most cases sufficient public subsidies⁸. Past experiences showed that in absence of proper funds (i.e. when limited in time or not linked to the real demand), many demand-responsive public transport services cease to exist after the initial trial period.

Low and dispersed population combined with strong competition from private cars **make it difficult to operate profitable conventional public transport services in rural and remote areas**, leading also to higher unit costs for providing these services. Rising operating costs for bus services and constraints of public funding have eroded the ability of local authorities to subsidise public transport at previous service levels. This has led to a vicious circle of increasing fares or cutting back the existing services levels.

A proper balance is not easy to be reached because bigger scale systems like the *RegioTaxi* or *FlexDanmark* need proper investments in technologies and complex management systems, whereas on the contrary small schemes like the German *Bürgerbus* or Community Transport Services can profitably run with lower subsidy needs.

As said, instead of planning standalone services covering only one specific target group (e.g. rural communities or students) efforts should be oriented in pursuing combined (and therefore inclusive) transport solutions.

This needs a more coordinated approach across different policy areas and could help to maximise the use of resources (including available staff and rolling stock), reduce duplication of services and increase overall efficiency. For example, pooling passengers and opening up special transport services to the general public could lead to significant savings (Haffenden 2008; SRM and UNIABDN 2012; Cazemier et al. 2012; Franckx and Mayeres 2015).

⁸ The Intermode Study distinguishes between commercially viable DRT, acceptable subsidy DRT, justifiable higher subsidy DRT and financially unsustainable DRT (Enoch 2004).

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Document History

Version	Date	Author/Editor	Description
0.1	11/06/2018	Cosimo Chiffi (TRT)	Table of Content
0.2	31/07/2018	Cosimo Chiffi (TRT), Delphine Grandsart (EPF), Gorazd Marinic and Carlo Giro (IRU), Patrick van Egmond (LUXM)	Draft Chapter 3
0.3	28/08/2018	Cosimo Chiffi (TRT)	Revised Chapter 3
0.4	07/08/2018	Cosimo Chiffi, Simone Bosetti (TRT), Delphine Grandsart (EPF), Gorazd Marinic, Carlo Giro (IRU), Patrick van Egmond (LUXM)	Second revision of Chapter 3
0.5	13/09/2018	Cosimo Chiffi, Simone Bosetti (TRT)	Final draft
0.6	18/09/2018	Vasco Reis, André Freitas (TIS)	First review
0.7	05/10/2018	Cosimo Chiffi, Simone Bosetti (TRT)	Updated version after first review
0.8	06/10/2018	Silvia Maffii (TRT)	Second review - QA
1.0	08/10/2018	Simone Bosetti (TRT)	Final version
2.0	24/05/2019	Simone Bosetti (TRT)	Revised version for final submission, with disclaimer and new abstract