LAST MILE
Interreg Europe

European Union
European Regional
Development Fund

State-of-the-Art of regional public transport systems and particularly flexible systems

Synopsis

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Generalitat de Catalunya
Departament de Territori i Sostenibilitat
Direcció General
de Transports i Mobilitat

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Summary

Flexible Transport System (FTS) services are a flexible approach to solve the issues regarding the provision of public transport services, especially in rural areas with low population density. Given their flexibility, FTS services are suitable to serve tourists in those rural areas, where is not easy the accessibility with conventional public transport services. In this sense, FTS is considered a solution to cover the “last mile” of tourists’ travel, but also to provide an alternative mode of transport for residents.

The LAST MILE project (INTERREG EUROPE, 2016 – 2020) pretends to find innovative and flexible solutions for sustainable regional mobility systems through the analyses of current state of flexible transport system of six rural and touristic regions of Europe: Varna District in Bulgaria, Upper Sûre + Our Nature Parks in Luxemburg, East Tyrol in Austria, Košice Region in Slovakia, Westpomeranian Voivodeship (with main focus on Szczecin Metropolitan Area) in Poland and Catalonia.

The purpose of this report is to analyse the current state of flexible transport in case study areas in order to identify existing best practices about FTS in tourism. Previously, regional reports have been elaborated in order to find out the geographical and economic features, sustainable transport situation and political framework conditions of each area. This report provides a summary of each regional report analysis.

Based on the regional analysis and information collected about FTS in case study regions, the Synopsis of the State-of-the-Art draws to the next conclusions:

- Public transport networks around cities and central settlements provides good accessibility conditions. However, touristic hotspots located in rural areas, in the majority of cases, have inadequate connections to the public transport system.

- Rural geographical context makes difficult the implementation of efficient sustainable transport systems due to the low population density.

- Regions are characterised by the seasonality of tourism, which means difficulties to make a profitable public transport during whole year, resulting from low demands. In addition, some existing initiatives related to flexible transport system do not offer services to tourists.

- Local governments present positive willingness to develop sustainable mobility measures to cover the “last mile” in rural areas. But they have to face a poor legal framework for developing flexible transport systems. The lack of experience in implementation of such services by transport operators makes the process of FTS development slower.

- There is poor cooperation and communication between relevant regional stakeholders, especially among tourist private operators.

An essential part of this report is the identification and description of existing FTS. There have been identified approaches to FTS in all regions, but not all regions have the same level of development and application. Among different types of existing flexible services predominates call/dial systems and shuttle services, highlighting the Austrian and Luxemburgish services like Defmobil and Flexibus. There are also many seasonal services focused in providing transport solutions for tourists.

The identification of best practices will help to improve policies and plans for the development of flexible mobility solutions in the regions. In this sense, all regions agree that it is fundamental the adoption of technical and organizational measures and the co-operation of relevant stakeholders.

FTS are an opportunity for the improvement of sustainable transport by strengthening the coordination and integration within the overall transport service chain.

As a conclusion of their analysis, each region has developed a SWOT analysis to identify success factors in the practice of flexible transport systems as well as difficulties. Here we present the result of the integration of the 6 regional SWOT analyses.

1. Introduction

When searching door-to-door accessibility between origin (usually urban areas) and destination (often remote areas), tourists are often facing missing links on the “last mile” of their journey between the nearest railway or bus station to their final destination. This last stretch could be settled by public transport services, serving not only local citizens, but also tourists whom could benefit from a sustainable alternative mode of travelling.

However, providing public transport is a challenging task in many hinterlands due to different factors that make the operation of regular lines difficult. Beyond that, locations with tourist frequentation are facing a variation in demand depending on seasons. In this sense, flexible transport systems can be considered a solution for widespread and sustainable transport in rural areas.

Flexible transport systems become a thankful enhancement to cover the “last mile” in the travel chain of tourists and to provide an alternative for the inhabitants to the use of car for their daily ways. Benefits lie in the positive environmental effect (both in destinations and origin from urban areas); in the improved accessibility for residents, and in the regional economy (tourism is an important activity in rural areas selected).

The “Synopsis of State-of-the-Art of Transport Systems” summarises the individual analyses of 6 case studies dealing with sustainable transport networks and existing flexible transport systems (sharing/pooling/shuttle/call systems) in rural areas in different European countries.

The 6 regions analysed are: Varna District in Bulgaria, Upper Sûre + Our Nature Parks in Luxemburg, East Tyrol in Austria, Košice Region in Slovakia, Westpomeranian Voivodeship (with main focus on Szczecin Metropolitan Area) in Poland and Catalonia. All of them have rural and touristic areas which could take benefit from the implementation of flexible transport systems.

This report is the synthesis of the 6 regional reports that are also available for in-depth analyses. The information is structured by as follows:

1. *Chapter 1* offers a general vision of the LAST MILE approach and the methodology followed for analysing the State-of-the-Art of each region. It focuses on the problematic accessibility to the last link of the travel chain from origin to touristic destinations.
2. Various operational models of flexible transport services have been identified, which are being developed and tested across Europe, focusing on the solutions that are appropriated to cover the “last mile” in touristic regions. They are explained in *Chapter 2*.
3. Regional analyses are provided in *Chapter 3*. This chapter contains an individual analysis of each region considered in the LAST MILE project. The regions are briefly portrayed in terms of socioeconomic profile, tourism intensity and basic transport networks and services.
4. *Chapter 4* focuses on the identification of best practices of flexible transport solutions in these regions. The main elements identified are the innovative practices and projects with exemplifying potential and public initiatives in relation to flexible and sustainable transport in current or future mobility.
5. For implementing these solutions it is necessary a legal and institutional background framework, which supports and being involved in the implementation and improving transport network and in this case, flexible transport. In *Chapter 5* there are identified

the main plans and projects of each region that are related on flexible transport systems.

6. The last chapter, *Chapter 6,* is an integrated SWOT to derive a more holistic vision of Flexible Transport in Europe, based on individual SWOT produced by each of the individual regional report.

2 Approach

2.1 LAST MILE Objectives

The LAST MILE project (INTERREG EUROPE, 2016 – 2020) aims to find innovative, flexible solutions for sustainable regional mobility systems. It wants to offer visitors the possibility to travel the 'last mile' of their travel chain sustainably and, at the same time, provide alternatives to car use for residents on their daily trips.

The project sets a concrete focus on the problematic accessibility of the last link of the travel chain from origin to destination (the so called "last mile") and collects and analyses solutions to cover this bottleneck with sustainable modes of transport. The environmental benefit and resource- and cost-efficiency in the long run are considered.

LAST MILE aims, among others, at pointing out how sound institutional framework facilitate the implementation of especially demand-responsive transport (public, sharing, pooling). The project will take on-board lessons learnt here, to further encourage at a later stage of the project partners and regional stakeholders to implement new successful approaches from other regions in Europe when preparing their regional action plans.

Transfer of best practices and innovative approaches to regional policies is also an aim of LAST MILE project. The 6 regional project partners have elaborated a set of regional reports analysing their territories in relation to the status-quo of sustainable mobility, flexible transport and tourist activity. This exercise is the first step towards building a backbone of the interregional exchange.

Regional reports have been consolidated and summarized in this Synopsis Report. This report deals with analyses of the institutional frameworks and barriers of each region and the evaluation of good practices, and it identifies common opportunities and challenges shared among all regions.

Action plans for each territory will be developed later on based on project findings and cross-fertilization among partners, which in a second phase will be implemented in each of the regions and monitored later on. Conclusions drawn will contribute to policy learning.

2.2 Objectives of this Report and Methodology

This report is the synthesis of findings in 6 regional areas considered in the LAST MILE project. The aim of these analyses is to develop the technical state-of-the-art of regional public transportation systems, and particularly flexible systems in rural tourist regions.

This synthesis report is not intended as a full description of each case, but as a document to retain key interest elements for the development of future LAST MILE activities. In particular, this report focusses on the

1. Sustainable transport technical situation
2. Innovative practices and projects identified on each regional area in relation to flexible systems. Innovative practices in one region might help develop new concepts in other areas, or refine existing initiatives.
3. Public initiatives in current or future plans, along with the assessment (whenever possible) of keys to their success or failure.

4. Integration of SWOT analysed in all regional areas to identify key challenges and threats common across regions for the development of flexible systems aiming at increasing public transport endowment in low density rural tourist areas.

Individual full reports are available as well. Individual regional reports are based on a common structure fit to describe the key challenges faced and designed so to allow for cross comparison whenever needed.

Regions considered are as follows, accompanied by lead authors:

- Varna District in Bulgaria, *elaborated by CSDCS*
- Upper Sûre + Our Nature Parks in Luxemburg*, elaborated by PACT*
- East Tyrol in Austria, *elaborated by Regional Management East Tyrol*
- Košice Region in Slovakia, *elaborated by CEDS (Central European Development Solutions)*
- Westpomeranian Voivodeship in Poland, *elaborated by Regional Office for Spatial Planning of Westpomeranian Voivodeship*
- Catalonia*, elaborated by the Ministry of Territory & Sustainability of the Catalan Government*

3 State of the art of flexible transport systems (FTS)

3.1 Challenges for demand responsive transport

Most of the times, public mobility services focus on collective transport based on models such as metro, trains or buses, being a fixed network of both infrastructure and services, presenting a high lack of flexibility, especially regarding geographical issues. Traditional and innovative on-demand transport services, such as taxi and carsharing respectively, can provide the level of flexibility to the public transport needed to provide both a better service while reducing the exploitation costs.

The concept of flexible transport can be summarized as a flexible, integrated and customer centric adaptive transport option that sits somewhere between private car ownership and fixed route traditional transit (Waters, 2003). The degree of flexibility is dependent on vehicle operations and vehicle types, scheduling and advanced notice requirements.

Demand responsive transport and flexible transport has generally emerged where the opportunity for large-scale collective transport services is limited by a lack of demand and/or a lack of available public funds to support these. Until recently, operations have typically emerged with very limited use of technologies, and may operate in some instances without any additional processing beyond that possible manually. The result of this has been a limitation to the extent to which FTS services are delivered, coordinated or optimised.

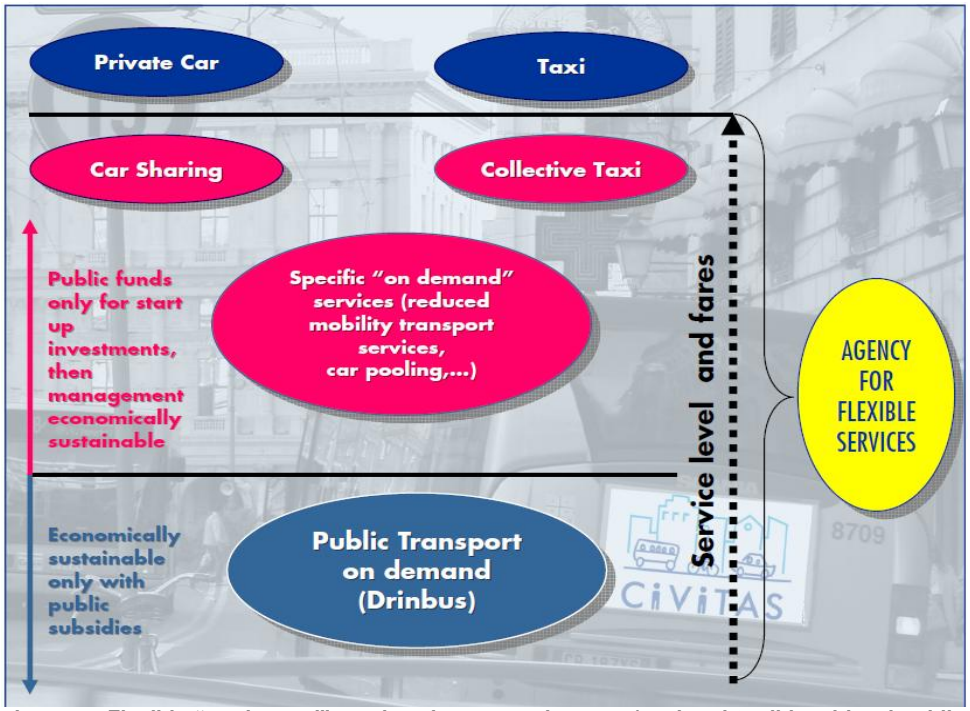


Figure 1 - Flexible "on demand" services between private car/ taxi and traditional local public transport. Source: AMI, Civitas Thematic Leadership, 2012

Local governments often have low budgets to offer public passenger transport, eventually leading to the closure of services or the reduction of service levels in some areas. The move to route optimisation systems will allow for the continued provision of services, and potentially the delivery of more cost-efficient transport service levels with a reduced support budget. Coordination of system planning with public support budgetary constraint may also

result in the development of a more passenger focused demand responsive transport system.

There is now an increasing choice of planning technologies that can optimise the use of flexible transport services, which in turn can increase its availability and affordability. Flexible transport planning and optimisation systems follow from the development of route planning algorithms. The systems takes advantage of improved computational power allied to in-vehicle systems and communication technologies. Route planning allows for a reduction in wasted mileage, referred to as dead mileage, and optimises total route distance to achieve a greater passenger number per vehicle.

Benefits arising from flexible transport can be identified in terms of savings and overall transport efficiency compared to the alternative provision of fixed route transport. Analysis of the efficiency and benefits in the transport to employment scheme are set out in Wright et al (2009), indicating social returns in the order of £ 15,000 - £ 30,000 per traveller. These benefits arise from the impact of transport provision as compared to non-provision, provision being made possible by the application of the FTS planning system; and may not be consistent across all locations. Transport benefits may also arise from the more efficient use of vehicles, and this typically relates to fuel savings and time cost savings.

3.2 Specificities in rural areas

A growing sensitivity and awareness of environmental impacts means that more tourists are choosing eco-friendly solutions in transport as elsewhere (Kelly, Haider, Williams & Englund, 2007). Planning and offering sustainable mobility services add value to the travel and tourism experience and become an opportunity to differentiate a destination from others.

In general, rural areas have to deal with lack of opportunities related to access of services and amenities located in distant urban centres (Nutley 2003; Kamruzzaman and Hine 2011). When dealing with door-to-door accessibility between the origins of tourists, usually urban areas and large transport hubs, and the destination in rural areas, tourists often face missing links on the last stretch of the journey.

Flexible and sustainable mobility services implemented in tourism destinations can be significant not only as an impact for tourism but also as an increasing share of sustainable means of transport in the area if it can be used by local residents.

Traditionally, for most trips in urban areas, users seeking an alternative to private car generally have a choice of several alternative transport modes ranging from a (relatively) low-cost fixed route and fixed schedule public transport service to a high-cost and comfortable private taxi providing door-to-door service.

However, alternative transport modes to private car may not be available for remote and sparsely populated rural areas. Often, these remote areas are provided with inadequate public transport options or if they are well provided with public transport, it is a loss-making service.

The characteristics of rural areas present barriers to developing and improving public transportation, which in rural areas generally suffer from lack of service availability and infrastructure; services are infrequent, not easily accessible, and not connected to other modes of transport since the provision of frequent and widespread commercial public transport services is financially unjustifiable for the passenger numbers attainable.

Flexible and demand-responsive transport systems have been identified as one of the promising solutions for widespread and sustainable transport in rural areas (Mulley and Nelson, 2009). Well-designed flexible transport systems can integrate different modes of transport to provide more user-centric, comfortable, and cost effective transport options by offering desired flexibility in choosing route, time, mode of transport, service provider, payment system, etc.

Still, demand-led approaches in rural areas have also associated problems or limitations such as with technology, integration, and costs (Shergold and Parkhurst 2010). Paradigmatic cases implemented in the 2000 like the UK and Dutch train-taxi services faced severe challenges and eventually ceased activities. New mobile technologies open, however, new horizons for possible cost-efficient solutions.

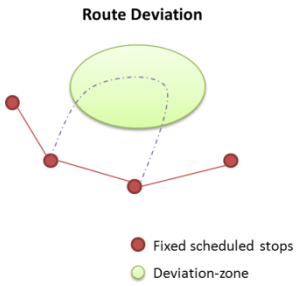
Operating costs for rural flexible services can be seen as an issue, in particular, the high costs of route planning software compared to the potential incomes of a demand-responsive service. The costs of new systems can vary significantly and are generally tailored to the physical size, number of vehicles and numbers of linked trips. E.g., the DDS MobiRouter system suggests that a cost around 2400 €/vehicle in 2012 for set up and 20% operational overhead per annum can be used. In a fleet of 30 vehicles this would equate 72,000€ set up costs in a mid sized fleet, with an annual operating costs of 14,400€.

3.3 Operating flexible transport systems

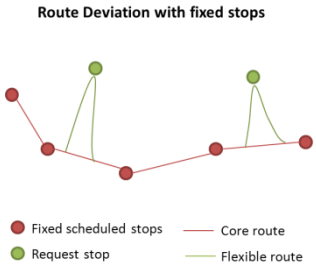
There are different approaches to flexible transportation services, ranging in nature from nearly fixed-route to nearly demand-responsive.

Call / Dial Systems Services operate only after calling in contrast to regular scheduled bus lines. Fixed tariffs have to be determined. Routes can be fixed or flexible. Flexible routes can be defined by any of the next approaches (Potts, F. et al 2010):

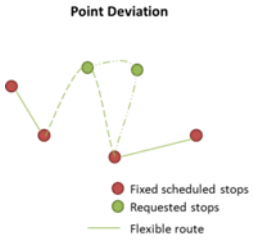
- **Route Deviation**: a defined path and schedule is used to define a service area, but the vehicle(s) may serve requests for pick-up or drop-off within a specified zone around the path. The deviation-zone may or may not be strictly bounded. This service type is most effective in areas with enough density to support a predictable route and schedule but could benefit from the flexibility of serving origins and destinations that are otherwise off-route.



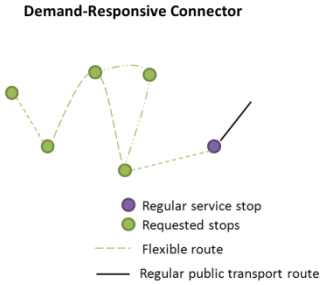
- **Route Deviation with fixed request stops**: a scheduled, fixed-route service in which certain stops are served only in response to passenger requests. Generally the vehicle must deviate off the fixed path to serve request stops. This is similar to route deviation, but limited only to specific stops instead of a range of unspecified locations within a zone.



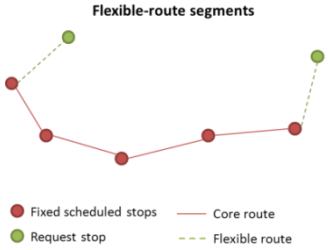
- **Point Deviation**: service is provided within a defined zone with a set of specific stops, but the path between the stops is unspecified and the vehicle will serve locations within the zone on request. Point Deviation can be most effective in an area with specific trip destinations but dispersed origins, or vice-versa.



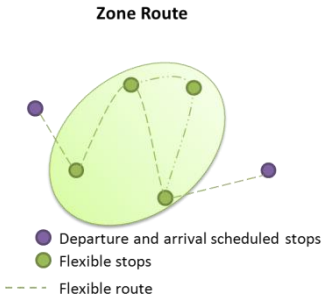
- **Demand-Responsive Connector**: service operates entirely by demand-response, but includes scheduled transfer points connecting with a fixed route. The Connector is an effective option when there are scattered origins but a common destination once connected with the fixed-route system.



- **Flexible-Route Segments**: a portion of an otherwise scheduled fixed-route is operated as demand-response. Assigning a segment of a fixed-route to flexible service can be beneficial in very low-density areas.



- **Zone Route**: a primarily demand-response service that has set departure and arrival times at its end points. The Zone Route is effective when there is not a defined corridor to travel, but a specific origin or destination exists within an area.



Shuttle services. Transport service intended primarily to shuttle passengers between two fixed points. It can be bus or coach operated, but are usually short or medium distance journeys taking less than an hour. Shuttle buses usually link with transport hubs (i.e. airport, train station) to different destinations (i.e. hotel, a specific touristic destination etc.). Seasonally it is also often used as supplementary transport offer like as skiing bus or hiking bus.

Sharing solutions. Organized collective use of one or more vehicles for timely limited periods (mostly hours). Most usual types are carsharing and bikesharing.

- Carsharing is particularly attractive to users who occasionally need a car. The organization of the renting of the cars may be a commercial business or the users may be organized as a company, public agency or cooperative.
- Bikesharing or bikerental is especially useful at public transport stations, relevant in the arrival/departure for day tourists who travel without luggage, but also very relevant as an on-site mobility option for overnight tourists.

Ride Pooling. Sharing of car journeys so that more than one person travels in a car. A popular carpooling variant is the common commuting to the work place. Another possibility of carpooling is the use of open platforms where registered members can book car journeys.

Other flexible transport service. There are many solutions and concepts on mobility services and particularly flexible transport services available.

3.4 Existing Practices in Europe

The challenge of providing a cost effective integrated public transport system is seen as an essential prerequisite to reducing pollution and congestion whilst encouraging sustainable economic growth. The traditional fixed route services is ideal for clustered travel demand areas but the nature of work activities and production modalities in today's society have created different mobility needs, and the dynamic change of origin/destination patterns, to which the conventional transport has become neither suited nor cost-effective. In recent years, flexible transport services have meant such advantageous solution for the provision of public transport services under different area constraints and demand conditions.

Within Europe, good practices and profitable experiences on flexible transport in relation to mobility in cities, rural areas and small towns were developed in last years. One example is train-taxi in Netherlands, which improved connectivity between train stations and surrounding suburban and rural areas (Scott, 2010). Flexible transport system is widely seen as very effective in extending and augmenting public transport services and can become an accepted form of public transport. However, there are some issues (e.g., technological, financial, integration, shortage of vehicles, safety, and reliability) in developing and enhancing FTS that need to be solved. Not all experiences still being active across Europe.

In the following lines, some of the most innovative experiences across Europe related to flexible transport services are briefly descripted according to demand-responsive approach.

3.4.1 Call/Dial System

Publicar, Switzerland

PubliCar is a fully flexible demand-responsive door-to-door minibus service in Switzerland, which can be booked via call centres.

It was developed by the public transport operator PostAuto and aims especially at low density areas. The scheme is seen as complementary or as an alternative to traditional public transport. It does not only offer a flexible public transport for low density areas, but

also for small towns or during times of weak demand, for example night services. PubliCar provides in many cases connections to the main public transport network.

Users pay an extra of 4 SFr (approx. 2,53€) when using the service. The operation of PubliCar is usually not more expensive than fixed bus lines, in many cases even slightly cheaper. The cost effectiveness could be improved by 5% where PubliCar replaced conventional services. The cost recovery rate is at approximately 25%.

Users call a free number to order the services at the PubliCar call centre, which bundles demand where possible. The drivers of the minibuses are informed via GSM/SMS about the trips requested. Depending on the situation and complexity of the specific PubliCar service different disposition systems are in use. In the simplest case, the driver decides how to arrange a tour. In other cases the optimal route is calculated with special software in the call centre. PubliCar is seen as one of the elements to optimize the whole public transport system. In many cases the flexible scheme provides a basic service which covers larger areas. During peak hours this service is reinforced by traditional bus lines.

PubliCar developed a franchising system that makes it possible to assign the service to regional or local private transport companies or private vehicle owners.

3.4.2 Shuttle services

“Mobilfalt”, Hessen

The “Mobilfalt” initiative replaced and complemented public buses by private cars. With an unconventional idea, the transport authority of North Hessian (NVV) wants to change public transport in rural areas. Starting in autumn 2012 in five smaller towns in North Hessian the citizens themselves shall organize public transport. Private cars then will serve the bus stops to collect passengers for carrying passengers within the town and its districts for one € per trip. Drivers receive a compensation of 30 Cent per kilometre. The test will be running for two years, to find out, if such a system is accepted by the citizens. Services shall be offered on an hourly base and are to be booked via internet or by phone. If no holder of a private car can be found for a specific transport, a taxi service will help out.

A decreasing number of inhabitants in the area make it difficult to provide public transport at reasonable costs per trip besides serving main axis. Complementing the remaining bus lines with this new service could bring forward public transport in rural areas at reasonable costs (co-modality).

3.4.3 Carsharing

ÖBB VORTEIL Scard, Austria

Combined rail and car sharing service with ÖBB VORTEILScard offers an up to 50 % reduction on all trains of ÖBB as well as the private railways, with the exception of the rack and pinion railways and special services. The VORTEILScard is the electronic key to car sharing vehicles. There are currently 200 locations throughout Austria. 20 of which are directly located at railway stations. The VORTEILScard is valid for one year and costs 99.90 € by year

CARUSO car-sharing, Austria

Grass-root cooperative car-sharing CARUSO developed in rural areas of Austria is an application aiming at facilitating private car-sharing for a closed group through offering an easily accessible online platform. It enables bookings for people who need a car and for people who want to share their own car with others. The platform CARUSO is currently available as a combination of web-based user interface and a smart phone or CARUSO-Box installed in the shared car for logging. The system only provides the platform and it does not provide the car. The system can be easily implemented even in remote rural areas where no other car-sharing offers exist. The platform can be used by companies, communities and private individuals for free.

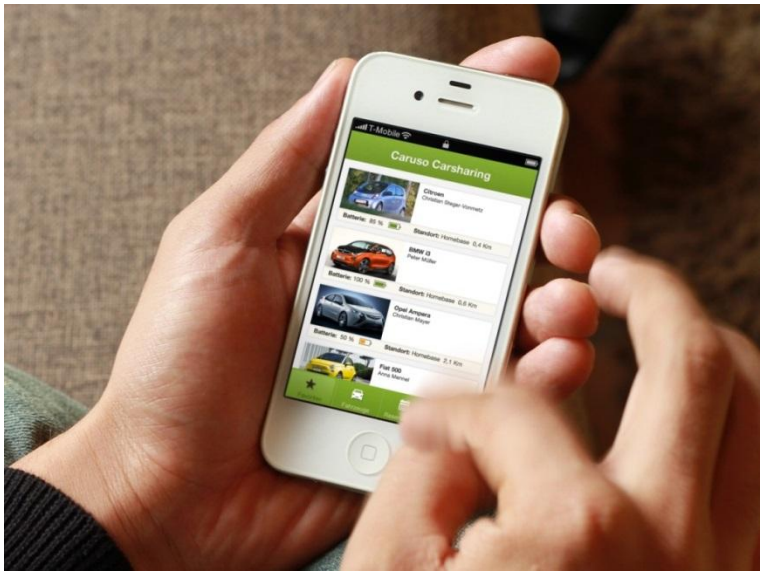


Figure 2 – CARUSO car-sharing app. Source: T-Mobile

3.4.4 Hail-shared taxis

Hail-shared taxis, Austria

Austria has introduced, in various cities and towns, hail-shared taxis to complement public transport. The use of taxis makes public transport more efficient (co-modality). In Vienna, such taxis operate on a couple of bus lines. The taxis serve the bus stations, which are marked by a special sticker. The on-demand taxis mostly operate in the evening and during the night, and on some lines also during the day.

The public transport ticket in Vienna can be used and the taxi operators are paid an agreed tariff on a kilometre basis by the Vienna operator “Wiener Linien”. The number of passengers using hail-shared taxis ranges from approximately 800 to 13,000 passengers annually per line, depending on the bus route. This new system allows Vienna’s citizens to have direct access to collective means of transport, whilst improving cost-efficiency for operators.

In other Austrian regions there are special tariffs, lower than the standard taxi fare, for the collective taxis (Anrufsammeltaxi or Bustaxi), which then in some cases also do not only run along fixed bus routes. In Innsbruck collective taxis are available for women from 20:00 to 2:00 or in the winter from 19:00 to 2:00, and in Bludenz (Vorarlberg) for young people from 22:00 to deter them from drink driving.

Taxis for public transport, Limburg

Taxis for public transport in Limburg with the multimodal contract (Veolia Transport Nederland) included urban services in Maastricht and Heerlen, trains, buses and taxis, fixed routes and on-demand services. 240 buses, 24 operator owned trains and 300 taxis, owned or chartered by the operator, carry some 53 million passengers per year. The taxi option is important and divided into three specific types: taxis on fixed routes or "VKB" (maximum of 8 passengers), "Regiotaxi" with door-to-door services for people who don't have access to regular public transport (all types of customers) and "Bellbus" which offers on-demand lines from bus stop to bus stop along virtual lines and pre-planned routes.

The use of taxis for routes and times of low demand makes public transport more efficient. It also allows operating services that would otherwise be loss-making, and increases modal choice for travellers. (co-modality).

TaxiBus service, Bicester

Chiltern Railways (in partnership with a local taxi operator, Union cars) provide a weekday 'TaxiBus' service in Bicester, which operates on three routes around the town and links with peak hour commuter trains to and from London Marylebone.

Figure 3 – TaxiBus, Bicester. Source: ShowBus

3.4.5 Pooling

UBERpool, London

Shared Taxis or Jitneys are an example of flexible transport for urban or rural areas. For instance, UBER is exploiting in London, San Francisco, New York and many other world locations the service called UBERpool, where users share a common car or uber taxi for the commute to work. Passengers request the UBER cars as they usually would but can have their fares reduced by being connected with other people, who share the journey and help subsidise the trip. The riders are still picked up from where they request the Uber and dropped off at their individual destinations, but the driver will make slight detours to pick up and drop off other passengers.

Figure 4 – Uber has expanded its car-sharing service in London. Source: Carl Court/GETTY IMAGES, 2016

3.4.6 Transport coordination and user information examples

Taxi and bus services coordinated along with rail services in the UK and the Netherlands.

The UK Train-Taxi (T-T) concept provided detailed information about taxi services serving UK train and underground stations. The T-T concept focused upon a concept developed within the UK in response to the government's 1998 Transport White Paper that focused upon integrated public transport. One of the themes developed within this paper was helping both business and leisure travellers to take the train (for long and especially inter-regional journeys) instead of the car by providing information that would help these travellers to overcome a key barrier – 'those final few miles", i.e. access and egress to and from the train station from their homes and to their destinations.

The Dutch T-T provided specific Demand Responsive Transport (DRT) services, rather than a purely information as the UK T-T which provides travellers' with information on taxi services serving UK rail, tram and underground stations. The Dutch T-T concept was much more of a 'hands on' solution than the UK T-T concept, providing a demand responsive taxi service for a fixed tariff to and from train stations. The concept enjoyed an initial period of successful that saw 111 train stations being served in 1994; however the service suffered from budgetary pressures following the withdrawal of support from the national rail operator (NS) which meant reliance on funding shifted to local authorities. The latter were unable to maintain funding in all regions meaning that by 2007 T-T services were reduced to only 38 train stations – a victim of the high cost of the service. The decline of the Dutch T-T concept has been mirrored by the growth experienced by the PlusBus concept in the UK. The concept has been rolled out into 276 towns in Britain with a substantial growth in tickets experienced. The concept exists without state subsidy and is a purely commercial concept. The UK development called PlusBus offered an optional ticketing add-on when purchasing a train ticket, which allowed a train traveller for unlimited travel on the buses serving the urban area around both the travellers' origin & destination train station area, on the day of travel.

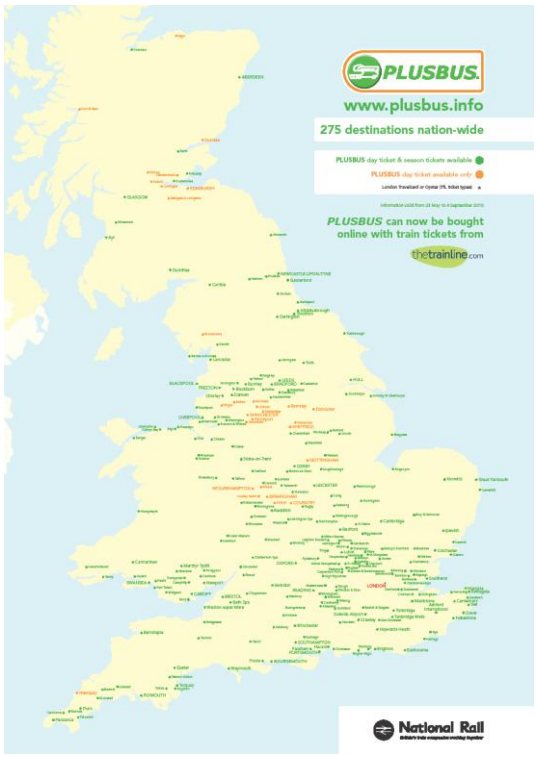


Figure 5 – PlusBus Network in Great Britain. Source: INTERCONNECT FP7, 2011

3.4.7 Intermodal Offers for Tourists

Intermodal services, Pomeranian Region

An intermodal offer for tourists in Pomerania Region was open at the summer season 2010. It was a connection of two cities (Malbork and Krynica Morska) attractive for tourists coming there by road or rail. Partners in the cooperation were four operators representing three transport modes: Pomeranian Railway Society in cooperation with the rail operator ARRIVA (railways), Bus operator Tolko (buses) and Shipowner (maritime).

Tourists coming to visit Malbork (the biggest Teutonic castle) are encouraged to visit some additional interesting tourist destinations and use a nice scenic narrow-gauge railway link and a ship to Krynica Morska at the lagoon. This offer is interesting for tourists individuals and tourist groups. Also for tourists coming to Krynica for the seaside it's interesting experience to have a one-day trip by ship, bus and nice railway to the castle. Timetable is integrated and integrated ticket is available for the whole trip.

Intermodal solution connecting Malbork with Krynica Morska, both attractive tourist destinations connected by road or railway network with the national and international network (intermodality).

4 Regional Analyses

This report is the synthesis of findings in 6 regional areas considered in the LAST MILE project. The main elements identified in these regional areas are:

1. Sustainable transport technical situation
2. Innovative practices and projects with exemplifying potential
3. Public initiatives in relation to flexible and sustainable transport in current or future mobility, urban or transport master plans
4. Identification of Strengths, Weaknesses, Opportunities and Threats in each region

In this chapter, the main regions integrating LAST MILE are briefly portrayed in terms of socioeconomic profile, tourism intensity and basic transport networks and services. The six regions are,

- Varna District in Bulgaria
- Upper Sûre + Our Nature Parks in Luxembourg
- East Tyrol in Austria
- Košice Region in Slovakia
- Westpomeranian Voivodeship in Poland
- Catalonia

4.1 Varna, Bulgaria

The Varna District occupies an area of 3.820 km², 3,44% of the territory of Bulgaria, and covers 12 municipalities: Avren, Aksakovo, Beloslav, Byala, Varna, Vetrino, Valchi Dol, Devnya, Dolni Chiflik, Dalgopol, Provadia, Suvorovo. The population of the District is 472.926 people (according to NSI at the end 2016); 17% of which lives in rural areas. In the classification of EU the Varna District is defined as intermediate region.

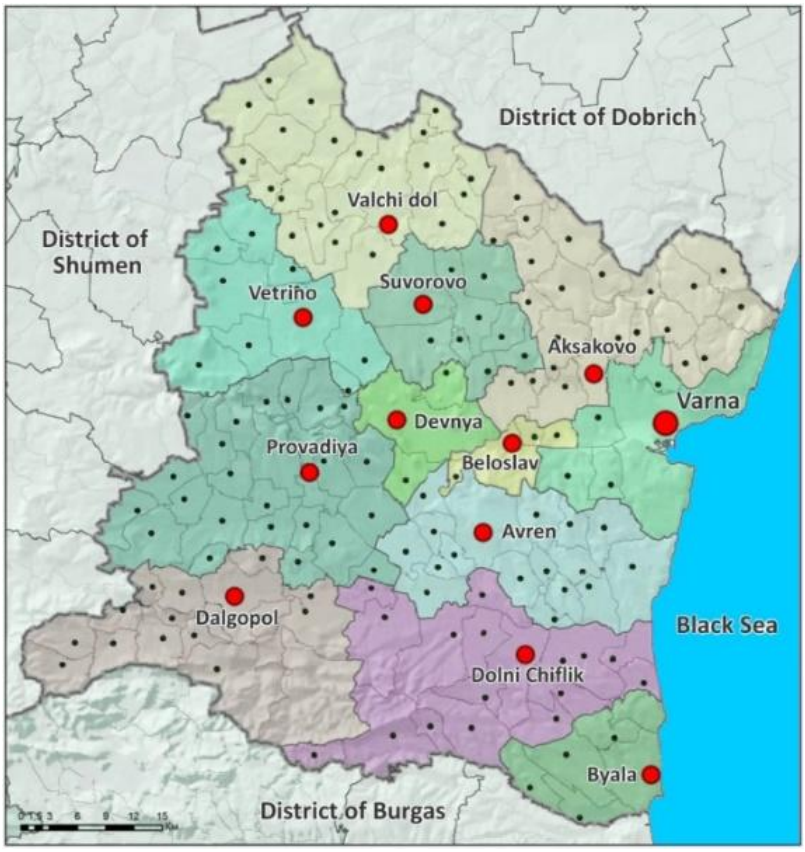


Figure 6 – Varna District

The majority of the land is used for agriculture and the coastline of the Black Sea in Varna District is used mainly for tourism. Four tourist hotspots are identified in the Varna District: Municipality of Avren, Municipality of Byala, Municipality of Valchi Dol and Municipality of Dolni Chiflik. Varna municipality has the largest share in the tourist development of the regions, where are concentrated 90% of the accommodation and 85% of the overnights. Valchi Dol municipality is a rural area that makes efforts to develop winter tourism.

Table 1 – Tourism data of Varna District

Municipality	Number of arrivals (2016)	Overnight stays (2016)	Number of beds (2016)
Avren	117.073	117.073	3.507
Byala	57.186	283.390	3.917
Valchi Dol	-	-	-
Dolni Chiflik	16.643	75.866	2.802
Total	**190.902**	**476.329**	**10.226**

Source: Municipality of Avren, Byala, Valchi Dol and Dolni Chiflik

In relation to regional transport networks:

- The region is affected by three Trans-European Transport Network corridors: corridor Nº 7 (Danube waterway); corridor Nº 8 (Durres-Skopje-Sofia-Burgas - Varna) and corridor Nº 9 (Helsinki-Kiev-Rousse Alexandroupolis).
- The national road network in the area covers 84 km motorways, 483 km roads first class, 467 km roads 2nd class and 1633 km roads 3rd class.
- The total length of the constructed and functional railways in the region is 478 km.
- Varna port complex is the largest multi-purpose Bulgarian seaport with routes into the Black Sea region, to Europe, Central Asia, Middle and the Far East.
- The Varna International Airport serves air transport in the region. The majority of international tourists visiting the region come through Varna airport.

In relation to sustainable local transport systems:

- Besides the railway links and the number of trains between Varna and some municipalities such as (Avren, Beloslav, Dalgopol, Devnya, Dolni Chiflik, Provadia, Suvorovo and Valchi dol) there are bus services to all cities, which are performed by a large number of private bus operators.
- Four companies manage internal bus lines: "Public Transport" JSC, "DeltaKar", "Autotrade" Ltd and "Mako" Ltd - the rout lines. In Varna has 60 bus, 4 trolley and 3 shuttle taxi lines. The city implemented an integrated project urban transport, which were recently delivered 70 new buses and 30 new trolley. There is projected a "BRT corridor" (Bus rapid transit, rapid transit bus) and a new electronic billing system and information panels at bus stops.
- Five bicycle lanes will connect the western and northern part of the Varna city with the centre.
- In Varna city has several major taxi companies "Omega trans", "Triumph," "Lassie," "Varna", "Alpha" and "OK trance."

The territory of protected areas holds 1,87% of the Varna District with 37 protected area with a total area of 4.320 ha. Seven protected areas are defined under the Protection Act of wild birds (Directive 79/409 / EEC), as well as 14 areas defined under the Protection Act of habitats of wild flora and fauna. 5 municipalities host objects from the National Ecological Network occupying over 60% of their territory: Provadia, Dolni Chiflik, Byala, Dalgopol and Aksakovo. Byala Municipality has 100% of its territory under nature conservation.

4.2 East Tyrol, Austria

East Tyrol is embedded in the middle of the Alps and thus has an alpine and rural landscape. It is extended at 2.020 km² and has a settlement area of 176 km². This is because of the alpine landscape and a quite high rate of nature protected areas (30,5%).

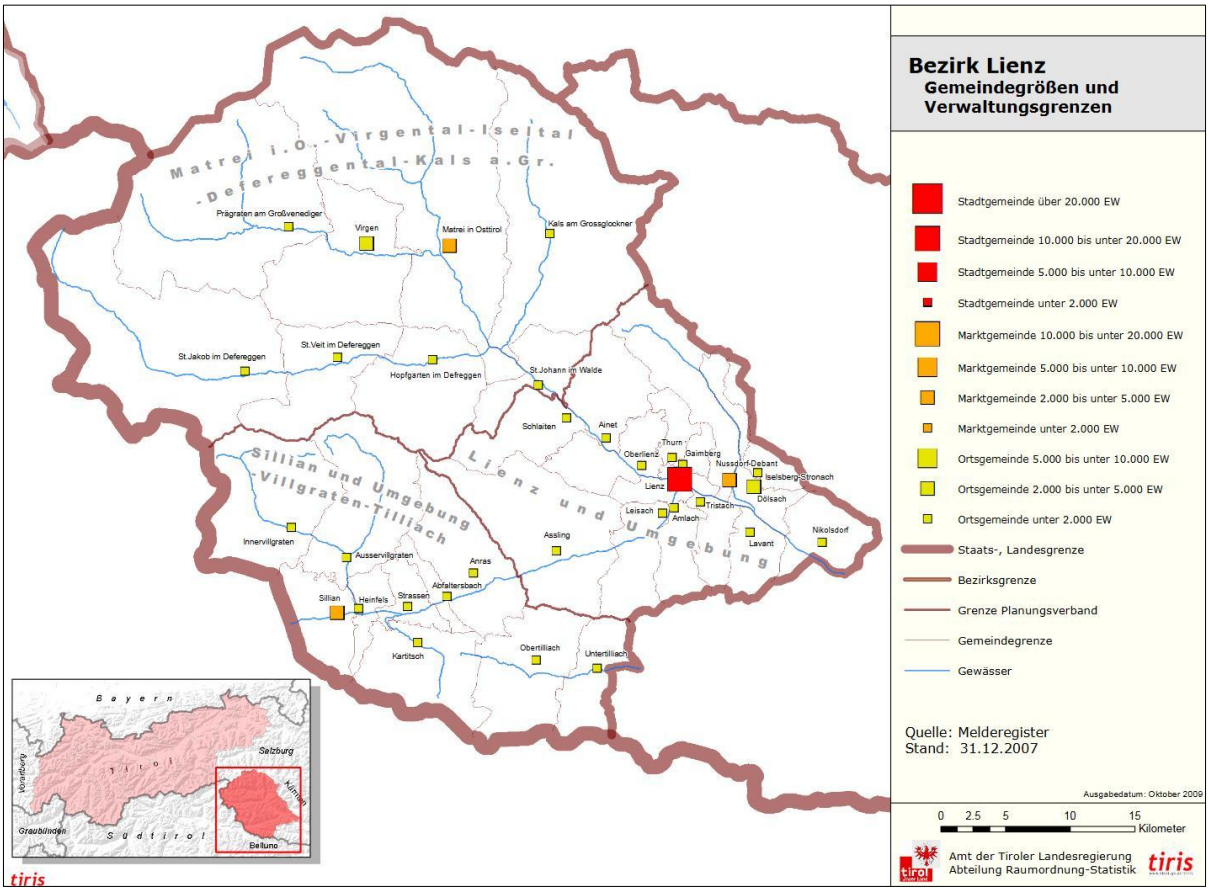


Figure 7– East Tyrol and its municipalities Source: Amt der Tiroler Landesregierung 2007 (www.tirol.gv.at)

East Tyrol counts 49.026 inhabitants (according to population census 2015). The population density is approx. 25 inhabitants per km², which vary greatly between bottom around the region's capital Lienz and the peripheral municipalities in the valleys. The region's capital Lienz has the highest population in the region with 12.044 inhabitants, what is more extensive with all the surrounding municipalities in the valley bottom. Matrei has the highest population in the Isel Valley with 4.682 inhabitants and Sillian has the highest population in the East Tyrolian Puster Valley with 2.022 inhabitants.

The main economy sectors are industry, trade and tourism. Industry and trade provides each 28% of all jobs in the commercial economy and thus account for more than half of all services. Further 21% is contributing to tourism, which regional tourist centre is located in the capital Lienz. The main tourist hot spots in the region are Jagdhausalm – Region Defereggentel, Zedlacher Paradies, Burgruine Rabenstein, Koednitztal– Region National Park Hohe Tauern; Oberstaller Alm – Region Hochpustertal; Knappenloecher – Defereggen Valley.

Table 2 – Tourism data of East Tyrol

Summer (2015)	Number of arrivals	Overnight stays	Number of beds
East Tyrol	284.580	1.066.010	19.841
Winter 2015/2016	Number of arrivals	Overnight stays	Number of beds
East Tyrol	176.578	879.213	18.528

Source: www.tirol.gv.at/ statistik-budget/statistik/tourismus

In relation to regional transport network:

- East Tyrol is composed by 296 km state road, 1.074 km local road network, 2.819 km other local roadways.

In relation to the sustainable transport system:

- Daily regional (express) trains and express busses ensure public transport connection from Lienz to the state capital Innsbruck over the South Tyrolean region and the Brenner Pass.
- The regional public transport into all valleys is operated through public bus services provided from regional transport association Verkehrsverbund Tirol (VVT). The quality of transport is not enough sufficient to cover all transportation needs, especially to the lateral valleys and peripheral located municipalities and settlements.
- For the capital city Lienz as well as the surrounding areas is a city bus network available.
- In the region there is available a quite wide branched bike infrastructure, primarily for touristic purpose.
- E-carsharing system (Flugs) is implemented in the inner city of Lienz since 2015. Additional e-cars as well as further locations in the surrounding area of Lienz are planned.

4.3 Upper Sûre + Our Nature Parks, Luxembourg

The region of northern Luxembourg has two nature parks: Upper Sûre and Our, with area of 621 km². This correlates to 28% of the territory of the Grand Duchy of Luxembourg. The territory has a rural characterization. The two Nature Parks are mainly covered by forests and agriculture. The landscape of Upper Sûre Nature Park is about 50% forest and 40% agriculture; and Our Nature Park is about 50% agriculture and 40% forest. In both Nature Parks, only 10% of the area are sealed surface. Approximately 25% of the territories of both parks are covered by environmental protection zones (European Natura 2000 Zones or national environmental protection zones).

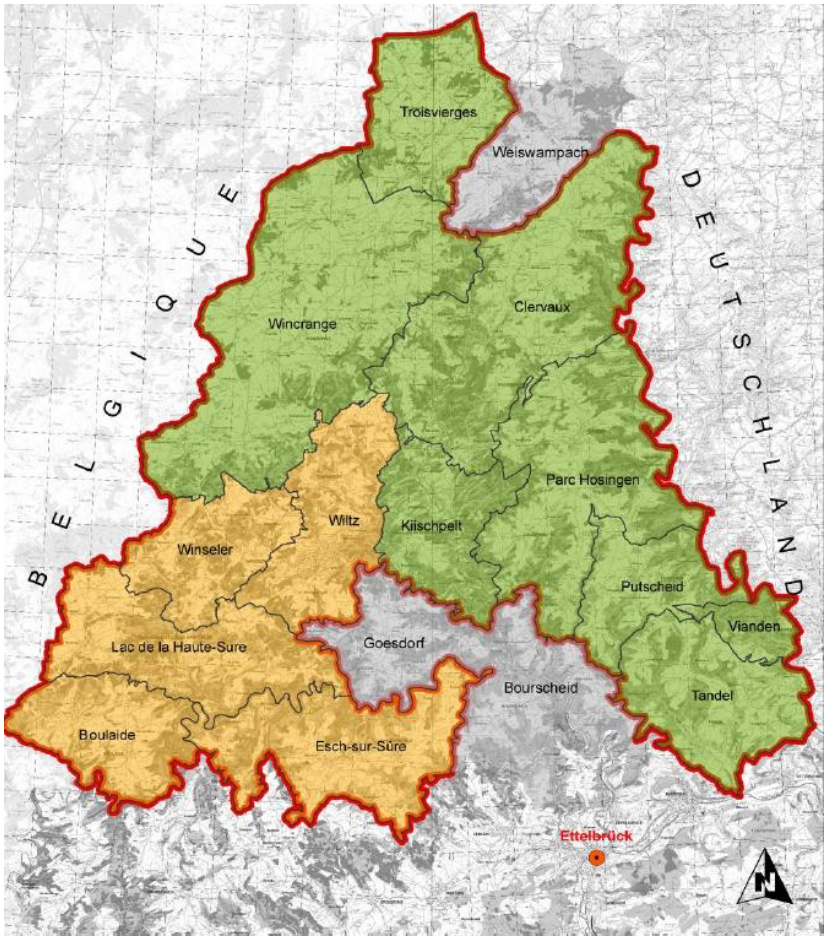


Figure 8 – Upper Sûre & Our Nature Parks area. Source: Representation pact s.à r.l. – based on carte topographique 1:50.000 © ACT Luxembourg

The region has 39.508 inhabitants that represents 7% of the country's population: 13.100 inhabitants in Upper Sûre Nature Park, 21.515 inhabitants in Our Nature Park, and 4.893 in the three municipalities in between the Parks (Weiswampach, Goesdorf and Bourscheid). The region represents a low population density: 55 inhabitants/km². A railway line from Ettelbruck to Troisvierges, with a junction from Kautenbach to Wiltz and two national routes (*route nationale*) are the important traffic axes.

There are several "Hotspots" where tourist destinations and attractions are concentrated, especially in the region of the barrier lake (Sûre) with the town of Esch-sur-Sûre, as well as the towns of Wiltz, Vianden, Clervaux and Troisvierges. Both Nature Parks increased their number of arrivals and overnight stays since 2014, with considerably more arrivals and stays in Our Nature Park.

Table 3 – Tourism data of Upper Sûre + Our Nature Parks

	Number of arrivals (2015)	Overnight stays (2015)	Number of beds
Upper Sûre	**15.182**	**62.521**	**1.803**
Our	**84.451**	**295.223**	**3.143**
Total	**99.633**	**357.744**	**4.946**

Source: Representation pact s.à r.l. - information gathered and prepared by MDDI DATer

The “hotspots” Clervaux, Wiltz, Vianden and to some degree Troisvierges, as well as the area around the Sûre barrier lake have good connections to the public transport network. The main hotspots of Clervaux, Wiltz and Troisvierges have direct access to the railway. In Clervaux and Troisvierges, the railway station is located about 1km (on foot) from the town centre. In Wiltz it is located within the centre.

In relation to regional transport network:

- The roads systems in Luxembourg knows 3 categories for roads owned and managed by the national state (motorways (*autoroute*), main state roads (*route nationale*) and state roads (*chemins repris*). All the other roads are municipal roads. The main state roads in the north with the most traffic volume are route nationale 7 Diekirch – Wemperhaardt; route nationale 15 Ettelbruck – Bastogne; route nationale 12 Wiltz – Wemperhaardt.
- There are a total of 8 railway stations in the area of the two Nature Parks. The railway line that connects the northern region to the south of the country is line 10, which runs between 6.00 and 24.00, every 1/2h during rush hours and every 1h for the rest of the day.
- Luxemburg airport is located on the eastern border of Luxemburg city. For the moment, airport is connected by bus lines to the central railway station in Luxembourg City.

In relation to the sustainable transport system:

- The cycling network in Luxembourg is mainly composed by a network for national bikeways of 600 km. There are 10 bike rental points in the area of the two Nature Parks Upper Sûre and Our. The offer is clearly addressed to tourists and visitors to the region (and not commuters).
- The public transport system will be renewed in 2018, with changes in the current bus network and new frequencies of individual lines.

4.4 Westpomeranian voivodeship, Poland

Westpomeranian voivodeship is located in northern-west part of Poland on the southern shore of the Baltic Sea, where Szczecin Metropolitan Area concentrates whole weight of population and economy of the region. The functional and spatial structure of Szczecin Metropolitan Area (also described as SOM or MOFOW-SOM) is a polycentric system with a central core - the city Szczecin, five medium-sized cities (Police, Goleniów, Gryfino, Stargard, Świnoujście) and two small towns: Nowe Warpno and Stepnica. Rural centres complementing to the spatial system.

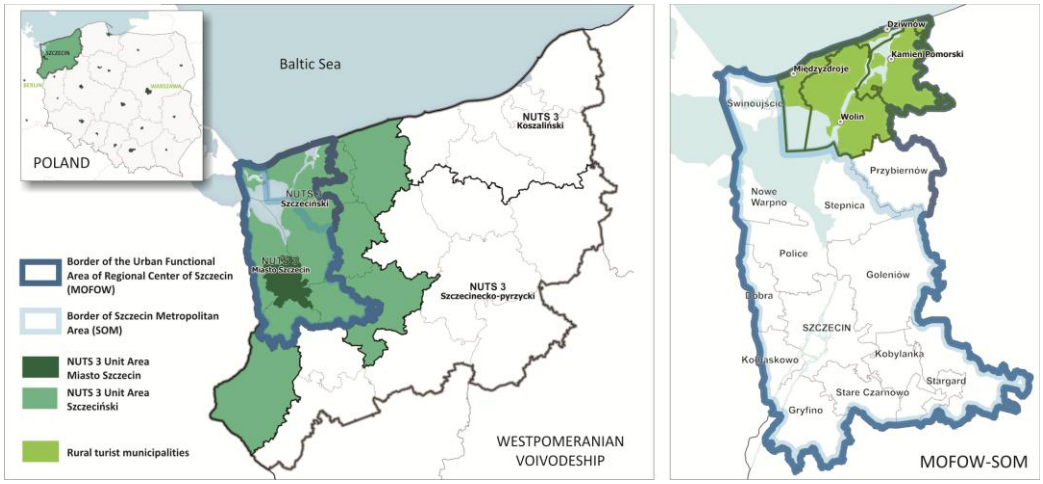


Figure 9 – Westpomeranian voivodeship location. Source: materials of Last Mile team of RBGPWZ

Westpomeranian voivodeship is extended at 22.892 km² and counts 1.710.482 (data for 2015). The population density is approx. 75 inhabitants per km². Szczecin with 405.657 inhabitants is the urban centre unit of the region; Stargard with 68.670 and Świnoujście 40.522 are urban centres of subregional importance.

Szczecin Metropolitan Area is the largest economic area in the westpomeranian voivodeship, where is generated 61% of GDP of voivodeship. From the point of view of spatial conditions (estuary of the Odra River and the Baltic coast), this area is predisposed to develop enterprises and ventures associated with the proximity of the sea and use of its potential with significant role of tourism as a main sector of the economy, although it is still subordinated to the seasonality.

In this area, the main touristic centres are the city of Szczecin, Szczecin Lagoon, Dąbie Lake, Miedwie Lake and the area Międzyodrze.

Table 4 – Tourism data of Westpomeranian voivodeship

Municipality	Number of arrivals (2014)	Overnight stays	Number of beds (2014)
Seaside coastal belt	156.900	-	-
Szczecin Lagoon & Odra estuary	491.000	-	9.100
City of Szczecin	389.000 *(2015)*	-	-
Total	**1.036.900**	**-**	**9.100**

Source: materials of Last Mile team of RBGPWZ based on data obtained from the Local Data Bank, 2015

In relation to regional transport network:

- Szczecin Metropolitan Area has the role of multi-modal transport hub on intersecting routes of north-south and east-west corridors.
- The main road connections are the international roads E65 and E28, and national roads; No. 10 (in the direction to Warsaw), No. 13 (in the direction of the border with Germany), No. 20 (in the direction of the Tri-City) and No. 31 (in the direction of Słubice and Kostrzyn nad Odrą).
- Ports of Szczecin and Świnoujście are key points of the Central European Transport Corridor - European Grouping of Territorial Cooperation connecting Sweden, Poland, Czech Republic, Slovakia, Hungary and Slovenia.
- In the area are two airports, in Goleniów (domestic and European flights and charters) and in Dąbie (airport for recreation and sport activities).
- The main railway lines are CE59 (Wrocław-Szczecin) and E59 (Poznań-Szczecin).

In relation to the sustainable transport system:

- The main components of collective rail transport network in the metropolitan area are rail (train) connections.
- In the area of MOFOW-SOM the tram infrastructure exists only in the City of Szczecin. The tram network in Szczecin has a total length of 110 kilometres (about 64 km of tracks) and is used by 12 tram lines connecting approximately 90 stops.
- Public bus transportation only operates in Szczecin, Świnoujście, Stargard, Police and Goleniów.
- Public water transport only exists in Świnoujście as part of a regular connection to the Uznam Island, through the crossing of Świnoujście Centrum – Warszów (“Bielk” ferries) and through the ferry crossing of Świnoujście – Karsibór (“Karsibór” ferries).
- Sharing transport systems (e.g. carpooling) have an increasing share and role in the region. Due to the competitive price and rapid development (especially in the area of Szczecin agglomeration and on the route Szczecin-Świnoujście), they are becoming an alternative to public transport systems and to offer of private operators.

Szczecin Metropolitan Area has a special place in the system of international networks of protected areas, especially due to the large surface of areas of the European Ecological Network Natura 2000. System of protected areas in MOFOW-SOM cover an area of 199.000 ha (53.2% of whole area). It consists of various forms of conservation with different protective requirements: Wolin National Park, 26 nature reserves, 2 landscape protected parks, Natura 2000 sites, 63 sites of ecological usage and 14 nature-landscape complexes.

4.5 Košice Region, Slovakia

The Košice Region is situated in the South-eastern part of Slovakia. It is the fourth largest region within Slovakia as for its area (6.754 km^2) and the second by the density of the inhabitants (117 inhabitants/km^2). The Košice Region has 440 municipalities from which 17 have the status of cities. The number of inhabitants in the Košice Region is 797.759 from which almost one third (239.393 citizens; 30%) lived in the City of Košice (according to the census of 2016).

Figure 10 – Districts of the Košice Region. Source: Office of the Košice self-governing region

The economy of the region is influenced by strong industrial basis of the Košice agglomeration based on metallurgy, machine-engineering, chemicals, ICT and electro technical industry. A characteristic feature of the South of the Košice Region is characterized by dominance of agricultural sector. The share of the Košice region in the GDP of the Slovak Republic is 11,5%.

The concerned area is characterised by seasonal visits of the tourists. At the target territory, there is the National Park Slovenský raj/Slovak Paradise, which is one of the nine national parks in Slovakia and the second most visited tourist destination in Slovakia.

Table 5 – Tourism data of Košice Region.

Municipality	Number of arrivals (2015)	Overnight stays (2015)	Number of beds (2015)
Spišská Nová Ves	14.598	29.966	602
Smižany	3.930	8.434	434
Dedinky	2.519	6.791	257
Total	**21.047**	**45.191**	**1.293**

Source: Statistical Office of SR, 2016

In relation to regional transport network:

- In the field of road traffic there are European routes E50 (Žilina - Prešov - Košice - Michalovce - state border with Ukraine), E71 (Košice - state border with Hungary - Miskolc) and E58 (Zvolen - Rožňava - Košice -state border with Ukraine). The length of

the road network across regions is 2.382,46 km (13,3% of the total length of roads in Slovakia).

- Košice is the second largest railway node in Slovakia. The Košice Region has a very dense network of railway tracks connecting it with the surrounding EU member states. The railway transport serves to 83 municipalities from the total number of 440.
- The transport potential of the region has been raised by the Airport Košice a.s., which is the second largest airport in Slovakia as for the number of passengers and regular airlines.

In relation to regional sustainable transport situation:

- The company Eurobus, a.s. and ARRIVA Michalovce, a.s. provides bus public service within regular bus services. Through these transport companies the transport services of the entire region is ensured by suburban regular shuttle bus services.
- The crucial railway track is the double-track electrified line Košice – Bratislava. Prešov is connected onto this line by single-track electrified line Kysak – Prešov which goes on after Prešov to Plaveč in direction to the state boundaries with Poland.
- There is a network of marked cyclotouristic tracks in total length of 1555,4 km. The existing cycling trails, however, do not fulfil the requirements of the efficient and safe traffic in the territory.

Nearly 40% of the territory of the Košice Region is covered by forests. There are two conservation areas with total area of 33.105 ha and two national parks with area of 54.374 ha, within which there are small conservation areas (national natural parks, nature reserves, protected natural sites); there are 10 bird nature reserves (NATURA 2000) with total area of 394.537 ha and 50 territories of European significance.

4.6 Catalonia

Catalonia covers an area of 32.108 km², and composed by four provinces: Barcelona, Girona, Lleida and Tarragona. Catalonia has 7.508.106 inhabitants (according to the population census of 2015), which metropolitan area of Barcelona has a population of nearly five million people, over 67% of the population of Catalonia. The population density is 234 hab/km² (2015). Catalonia has 947 municipal districts. The majority of citizens (close to 95%) are concentred in 300 municipal districts of over 2.000 inhabitants (considered urban).

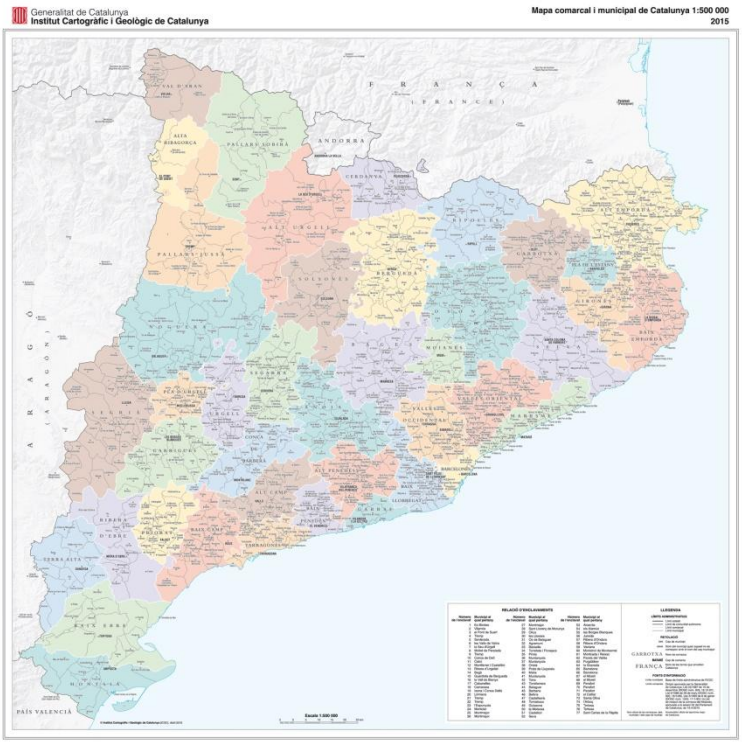


Figure 11 – Catalonia. Source: Institut Cartogràfic i Geològic de Catalunya

Tourism has become one of the most notable economic activities, which generates 12% of Catalonia GDP.

Tourism destination in Catalonia are classified in 9 touristic brands. Costa Brava, Costa Barcelona, Costa Daurada have high affluence of tourists in summer season. Paisatges Barcelona, Terres de Lleida, Terres de l'Ebre are characterized by national tourism arrivals. Pirineus and Vall d'Aran, where there are several ski resorts, have high rates of tourism in winter. City of Barcelona is sixth place among European cities for the number of overnight stays.

Catalonia is very rich in natural scenery, with 14 sites declared to be natural parks and areas as remarkable as the Aigüestortes i Estany de Sant Maurici National Park and Monserrat Mountain. In the south, Ebre Delta is one of the most important wetland areas of the Mediterranean. It is home to up to 330 bird species, half of those in the whole of Europe.

Table 6 – Tourism data of Catalonia

Tourist destinations	Number of arrivals (2016)	Overnight stays (2016)	Number of beds (2016)
Barcelona	7.876.000	20.457.000	79.455
Costa Brava	4.599.000	18.971.000	202.301
Costa Barcelona	4.229.000	12.480.000	93.276
Costa Daurada	3.371.000	14.267.000	123.877
Paisatges Barcelona	323.000	634.000	10.286
Terres de Lleida	301.000	511.000	7.740
Terres de l'Ebre	403.000	1.363.000	13.286
Pirineus	1.183.000	2.910.000	59.101
Vall d'Aran	233.000	718.000	9.687
Total	**22.518.000**	**72.311.000**	**599.009**

Source: IDESCAT

In relation to regional transport networks:

- The region is affected by one TEN-T corridors: Corridor Nº 3 (Mediterranean Corridor).
- There are 12.000 kilometres of roads throughout Catalonia. The principal highways are AP-7 (toll) and A-7. The main roads generally radiate from Barcelona. The AP-2 (toll) and A-2 connect inland on onward to Madrid.
- There are more than 300 lines of urban public transport across Catalonia.
- There are 1.386,9 Kms of railway lines, commuter and regional
- Barcelona Port is the biggest European port in terms of cruise traffic (fourth biggest cruise base port in the world). Over 3.900.000 tourists arrive to Barcelona by cruise (2016). Other important ports are Tarragona, Palamós and Vilanova i la Geltrú.
- Located in Barcelona, El Prat Airport is the main airport in Catalonia. In 2016, approximately 44 million people went through its terminals. To get to the airport in Barcelona by public transport there are some options including train, metro, bus or the aerobus service. The Girona airport is the second major airport. It is a useful hub for those travelling to touristic destination Costa Brava. Reus Airport is located close to Costa Daurada. Both are characterized by having charter and low cost flights. Lleida Airport is a regional airport to travel to the Pyrenees.

In relation to sustainable local transport systems:

- Integrated Transport Systems are implemented in Barcelona Metropolitan Region, Girona Area, Tarragona Area and Lleida Area. The integrated fare system allows using different modes of transport (metro, bus, tram, FGC and RENFE trains) with only a ticket.
- There are two railway companies operating in Catalonia: FGC that operates commuter and regional services, and RENFE that operates also commuter and regional services as well as long-distance and high-speed rail services (AVE and Avant).
- There are more than 300 bus lines across Catalonia.
- *Bicing* is a bicycle sharing system in Barcelona. The system consists of a network of stations and bicycles, intended for use on regular short journeys, and not for leisure use or use by tourists. Girona also offers bike-sharing service.
- The Avancar, is a car-sharing company that has a float of multiple use cars in different cities in Catalonia.

4.7 Comparison over case studies

The areas of the study present different characteristics in terms of land, population and tourism rates. However, the relevant difference is about the implementation of flexible transport system, addressed especially to cover the last mile in these areas. Some of them, as Austria or Luxemburg, have a consolidated flexible transport network whereas some others have not the same level of development and application. By and large, current public transport offer is not adequate to meet tourist's requirements. On one hand, the lack of efficient public transport forces people to use private means of transport for their trips, thus causing traffic, high emissions and pollution. On the other hand, not all the people who live inside the area and not having a private means of transport at their disposal, have the chance to move freely inside and outside the site if there is not a consolidate public transport network capable to take you to your destination.

The table below summarizes the main factors characterizing every area studied.

Table 7 – Summarize of case studies

	Varna District, Bulgaria	**East Tyrol, Austria**	**Upper Sûre + Our Natura Park, Luxembourg**	**Szczecin Metropolitan Area in Westpomeranian voivodeship, Poland**	**Košice region, Slovakia**	**Catalonia**
Area (km²)	3.820	2.020	621	742	6.754	32.108
Inhabitants	472.926	49.026	35.508	728.080 (data for Szczecn Metropolitan Area)	797.759	7.508.106
Regional transport network	- Three TEN-T corridors: nº 7 (Danube waterway); nº 8 (Durres-Skopje-Sofia-Burgas - Varna) and nº 9 (Helsinki-Kiev-Rousse Alexandroupolis. - The total length of functional railways is 478 km. - Varna port is the largest multi-purpose Bulgarian seaport. - Varna International Airport serves air transport in the region.	- 296 km state road, 1.074 km local road network, 2.819 km other local roadways. - Lienz- Spittal-Millstättersee railway allows connections to Salzburg and Vienna.	- Main state roads in the north with the most traffic volume are *route nationale 7 Diekirch – Wemperhaardt*; *route nationale 15 Ettelbruck – Bastogne*; *route nationale 12 Wiltz – Wemperhaardt*.	- The main road connections are the international roads E65 and E28, and national roads; No.10, No.13, No.20 and No.31. -The main railway lines are CE59 (Wroclaw-Szczecin) and E59 (Poznań-Szczecin). - Ports of Szczecin and Świnoujście are key points of the Central European Transport Corridor - European Grouping of Territorial	- European road routes: E50, E71 and E58. The length of the road network across regions is 2.382 km. - Košice is the second largest railway node in Slovakia. - Airport Košice a.s is the second largest airport in Slovakia.	-TEN-T Corridor Nº 3: Mediterranean Corridor. - 12.000 km of roads throughout Catalonia. - 1.386,9 kms of functional railways - More than 300 bus lines of public transport across Catalonia. - Barcelona Port is the biggest European port in terms of cruise traffic. - Catalonia has four airports: El Prat, Girona Airport, Reus Airport and

				Cooperation. - In the area are two airports, in Goleniów (domestic and European flights and charters) and in Dąbie (airport for recreation and sport activities).		Lleida-Alguaire Airport.
Sustainable transport network	- There are bus services to all cities, which are performed by a large number of private bus operators (Public Transport" JSC, "DeltaKar", "Autotrade" Ltd and "Mako" Ltd). - In Varna has 60 bus, 4 trolley and 3 shuttle taxi lines. - Five bicycle lanes will connect the western and northern part of the Varna city with the centre. - In Varna city has several major taxi companies "Omega trans", "Triumph," "Lassie," "Varna", "Alpha" and "OK trance."	- Daily regional (express) trains and express busses ensure public transport connection from Lienz to the state capital Innsbruck over the South Tyrolean region and the Brenner Pass. - The regional public transport into all valleys is operated through public bus services provided from regional transport association Verkehrsverbund Tirol (VVT). - In the region there is available a quite wide branched bike infrastructure. - E-carsharing system (flugs) is implemented in the inner city of Lienz since 2015.	- The cycling network in Luxembourg is mainly composed by a network for national bikeways of 600 km. There are 10 bike rental points in the area of the two Nature Parks. The offer is clearly addressed to tourists and visitors to the region (and not commuters).	- A tram infrastructure exists only in the City of Szczecin with a total length of 110 km. - Public bus transportation only operates in Szczecin, Świnoujście, Stargard, Police and Goleniów. - Public water transport only exists in Świnoujście as part of a regular connection to the Uznam Island. - Sharing transport systems (e.g. carpooling) have an increasing share and role in the region.	- Entire region is ensured by suburban regular bus services. - The crucial railway track is the double-track electrified line Košice – Bratislava. -There is a network of marked cyclotouristic tracks in total length of 1.555.	- Integrated Transport Systems are implemented in Barcelona Metropolitan Region, Tarragona Area, Girona Area and Lleida Area. This system lets using different modes of transport with the same ticket. - There are two railway companies operating in Catalonia: FGC that operates commuter and regional services, and RENFE that operates also commuter and regional services as well as long-distance and high-speed rail services. - Bikesharing systems in Barcelona and Girona.. - Avancar car-sharing company offers service in different cities in Catalonia.
FTS	- E-minibus in Byala used for open air during the high season. - Traveling by phaeton until the seaside zone in Byala municipality. - Seasonal bus line 209 Varna-Golden Sands	- DefMobil is a hailed shared taxi-bus, which fills gabs of existing public transport services and provide residents and tourists an improved rang of mobility. - Virger Mobil, Assling Mobil offer citizens a	- Night Rider is a private night bus with no fixed timetable or route available to anyone. - Flexibus is a flexible transport services for anyone who wants to travel spontaneously and flexibility within the	- BalticBike.pl system. Private entrepreneurs from Świnoujście founded bicycle rental BalticBike.pl. -Seasonal rail connections between touristic regions in Westpomeranian	- Shuttle seasonal services, with the aim to strength the offer of the public transport among touristic centres during summer months and during winter ski season. The tourist destinations are also accessible by	- Lleida – La Pobla de Segur train is railway line, which offers two types of services; regular trains (with some stations where stop if passengers call for it) and tourist trains. - Bus to Aigüestortes i

		complementary municipality owned transport service, designed as hailed shared taxis. It operates only on demand during the day. - Seasonal bus offer service during the winter season. It is integrated into regular public transport services or it is provided from municipalities, tourist association and ski area operators. - Night liner. A night liner is provided at the weekend, which operates between City of Lienz and Matrei. - Flugs e-carsharing in Lienz and urban hinterland.	district. - Project Kussbuss is a private commuter's door-to-door shuttle service, which is in search for financing. - Bummelbus is a flexible bus service.	voivodeship.	the event train that runs only for specified events. - Bike rental. Tourists can rent a bike in some touristic centres selected with the possibility to return it in any other touristic centres.	Estany de Sant Maurici National Park is a public transport service, which works during the summer, connecting twice every day, the two main entries of the National Park. - Taxi associations Vall de Boí and Espot cover the access to the Aigüestortes i estany de Sant Maurici National Park.

5 Innovative practices on Flexible Transport

The concept of flexible transport system (FTS) means flexible, integrated and customer centric adaptive transport options that sits somewhere between private car ownership and fixed route traditional transit. There are different approaches to flexible transportation services, ranging in nature from nearly fixed-route to nearly demand-responsive. The structure of flexible public transportation needs to be defined depending on the characteristics of the area served, varying between rural, small urban and large urban regions. Flexible transports are car-sharing systems, carpooling schemes, call systems or shuttle services.

One of the most important questions when designing a new flexible transport system is the selection of the business model, which needs to consider the local framework conditions. There is the possibility to implement stand alone operator; cooperation framework where various operators or authorities work together sharing resources, travel dispatch centre, staff and systems; or tendered services operated under subsidy from authority.

Some flexible transport services are carried out in the regions selected. They are identified and classified according the type of operating flexible transport system above.

Operating System	Means of transport / name of the service						Practice Example
	train	**bus**	**car**	**bike**	**boat**	**others**	
Call/Dial Systems (operates only after calling)							
- following a regular route/schedule (only after calling)			hailed-shared-taxi				- DefMobil, East Tyrol - Virgen Mobil, East Tyro - Taxi association, Vall de Boí
- fixed start and end stop, deviation from the regular route to serve additional request stops within a defined corridor		dial-a-bus					
- fixed stops, flexible routing to individual destination		hailed-shared-taxi					
- flexible routing to individual destinations		hailed-shared-bus	hailed-shared-taxi				- Flexibus, Luxembourg - Night Rider, Luxembourg - Bummelbus, Luxembourg
Shuttle seasonal/temporary (operates only seasonally or at specific occasions)							
- fixed route and stops, mostly small distances							- Night Liner in Lienz, East Tyrol
- seasonal	seasonal train	hiking/skiing bus			boat ferry in summer		- Bus to Aigüestores National Park, Catalonia - Bus service to ski resort, East Tyrol - Shuttle bus with fixed route and stops, Košice Region - Rail connections between touristic regions, Westpomeranian voivodeship - Services between Byala and resorts area, Varna district
- events		festival shuttle					
Sharing			Carsharing	Bikesharing/ -rental			- Flugs e-carsharing in Lienz, East Tyrol - BalticBike.pl system,
Pooling			Carpooling				- Project Kussbuss, Luxembourg
Others	Train with stops on demand						- Train Lleida-La Pobla de Segur with stops on demand, Catalonia

Regular public transport with request stops

- Lleida – La Pobla de Segur train, Catalonia. It is 90 km-long railway line linking Lleida-Pyrenees and La Pobla de Segur. This line has two types of services: regular trains and touristic trains. Regular trains circulate every day and in 7 from its 17 stations the train only stops if passengers call for it. Touristic services circulate on Saturdays from April to October, booking is required and only stops at the stations: Lleida-Pyrenees, Balaguer and La Pobla de Segur, with optional stops at Cellers-Llimiana and Tremp.

The timetable of trains has been drawn up to make maximum advantage of rail demand, with no service at times of least demand, when routes are covered by buses. The bus timetables have been revised based on the new rail service in order to achieve the best possible coordination between trains and buses and to alternate the two options to avoid having both train and bus service at the same time. Attention has also been paid to ensuring connections between trains and buses, so that the arrivals and departures of trains to/from La Pobla de Segur coincide with the arrivals and departures of buses from/to Esterri d'Àneu (or Llavorsí).

The new timetables strengthen the connections between train and bus. Trains in the period with highest demand, and bus in those with less demand. In addition, as a complementary service that does not overlap with the train. A notable increase in trains, a decrease in buses and a net increase in transport along the route.

One single ticket integrates the different types of transport options: train and bus services.

The new fare model, which will apply when the new timetables are introduced, homogenises the prices on all journeys for the two modes of transport (train and bus), so that no particular form of transport is prioritised based on price, but on timetables and capacity.

Call / dial system

- DefMobil in East Tyrol, Austria. The three municipalities of the Defereggen Valley operate a hailed shared taxi (called defMobil) since 2010. This service fills gabs of existing public transport service and provides residents as well as tourists in the valley an improved rang of mobility. The defMobil operates with a fixed timetable and certain bus stops. The service can be used after pre-ordering for a rather cheap ticket price. Online application for booking and different ticket options (single ticket, weekly, monthly, yearly ticket –for single person and for family) is not available. Operator is a local association of the three municipalities (St. Jakob, St. Veit and Hopfgarten).

The service ensures the connectivity to important transportation nodes. The defMobil has transported almost 37.500 passengers after the last 7 years. This service is seen as best practice for flexible transport services in the region.

Main success factors are the good cooperation of the stakeholder-municipalities and the support by the regional government (State of Tyrol) and by the "Klimaaktiv mobil" program of the Austrian ministry for environment. An additional success factor are attractive tickets, a pass for one week costs 10€ and is therefore suitable for tourists and for families. A possible improvements could be door-to-door services.

- Virgen Mobil, Assling Mobil in East Tyrol, Austria. The municipalities Assling and Virgen offer their citizens a complementary municipality owned transport service. These services are designed as hailed shared taxis, which operate only on demand during the day (from 8 – 12 am and 13 – 17 pm). Operation area is limited within the municipality border. Depending on

the municipality, the driving service costs between one and two euros per run. Bus drivers are volunteers and municipality does not need to honour private operators or drivers. Virgen also offers the service to tourists for the same ticket price. The municipalities got financial support from federal state level or state level for implementation.

- NightRider in Luxemburg. The Night Rider is a private night bus with no fixed timetable or route available to anyone who wishes to travel within Luxembourg car-free on weekend evenings or nights. It picks clients up at the desired time and takes them door-to-door to their destination. The Night Rider runs only at weekends from 6pm to 5am throughout Luxembourg and must be booked in advance. As it is group service, other passenger may get on and off during your journey. For that reason, the Night Rider does not usually take direct routes and may take detours. The cost of a journey is based on the travel distance, regardless of the number of the people that are booked on the same journey. The price is always calculated on the shortest distance, even if the bus picks up and drops off other people en route. The minimum price of a journey is 12€. It is not specific operated for tourism.

- Bummelbus ("stroll / ramble bus") in Luxembourg. The *Bummelbus* is a flexible bus service, operated in the majority of the municipalities in the northern part of Luxemburg for the use of the inhabitants of the region (for the moment 255 towns and villages in 39 municipalities with 80.000 inhabitants participating). It functions as a complement to the general public transport offer from Monday to Saturday.

It is available to every person living in the participating municipality, who wants to travel on demand on short distances. The system offers door-to-door transport. The general operating times are between 06.30h and 21.15h from Monday to Friday and between 06.30h and 17.15h on Saturday. From 2001 to 2014, the Bummelbus has carried 1 million passengers.

The *Bummelbus* is co-financed by the municipalities and the government (*Ministère du Travail*) and organised by *Forum pour l'emploi,* a regional employment initiative that evolved from ERDF (European Regional Development Fund) projects in 1998.

- Flexibus in Luxemburg. Flexibus is a flexible transport service implemented in Luxemburg and surrounding area for anyone who wants to travel spontaneously and flexibility within the district. Flexibus picks up clients from home, takes them to the place of their choice and if they want, takes them back home. It works from Monday to Friday from 5:45am until 8pm and on Saturday from 7:45am until 6pm. It is necessary to book the service in advance. The management system of the Flexibus determines its journey. It may happen that the Flexibus makes a detour to pick up or set down other passengers. Transportation of pushchairs and wheelchairs is possible. It is not specifically operated for tourism.

Shuttle service

- Seasonal bus services in East Tyrol, Austria. In winter, there are ski busses available. They are integrated into regular public transport services or provided from municipalities, tourist associations and ski area operators. In most cases, the access is limited to passengers who do winter sports and so they don´t need to pay for this service. The service goes according to fixed timetables and stops.

In summer there is a hiking bus provided from the Nationalpark Hohe Tauern to well-frequented touristic hot spots within the national park area. This service is integrated into the regular public transport service and is financed by the Nationalpark association. It is designed as an extended public bus with fixed timetables and stops. Ticket price is equal to

prices of regular public transport services.

- Night liner Lienz – Matrei in East Tyrol, Austria. Night liner is a night bus operating between the city of Lienz and Matrei (Isel Valley) and from Nikolsdorf to Lienz and further to Sillian (Puster Valley). The bus ensures that young people get home well after going out in the city of Lienz, festivals or other events. Night liner services are provided from Saturday to Sunday.

The Night liner Lienz – Matrei starts from Lienz at 9pm to the direction of Matrei and returns at 11pm from Matrei to Lienz. The last ride of the Night liner starts at 3.30am and runs 4 times at two hourly intervals.

The Night liner Lienz – Sillian runs twice per night at 9.25pm and 1.55am from the city of Lienz to Sillian and returns back to Lienz. The same Night liner also approaches from Lienz to the municipality Nikolsdorf in two hourly intervals (4 times per night).

The night busses operate according to regular bus stops like during the day. The line is regularly operated as any other service from the regional transport association. Tickets for night passengers, including all discounts are the same like during the day.

- **Bus to Aigüestortes i Estany de Sant Maurici National Park in Pyrenees, Catalonia.** The bus of the park is a public transport service, which works during the summer from June to September. This service connects, twice every day, the two main entries of the National Park: Boí and Espot. The bus links to the taxi service that provides access into the park. The bus runs outside the park, passing through many of the villages that surround it.

The price of the tickets varies depending on the starting and stop points. There are discounts for roundtrips tickets. The service is addressed to tourists and local citizens as well.

- Taxi association Vall de Boí, Catalonia. The taxi association from La Vall de Boí covers the access to the Aigüestortes i estany de Sant Maurici National Park by the entry of Boí (one of the three entries of the park). Due to the entrance by car to Natural Park is forbidden, the service has a relevance role getting tourists into the park.

The 4x4 taxis run a shuttle public service all year round up to Aiguestortes and Lake Sant Maurici. In winter, season schedules are only cut if weather conditions force it and may have days when access by taxi is closed.

- Shuttle temporary with fixed route and stops in Košice Region, Slovakia. Flexible transport service for tourists in the territory of Slovenský raj are *summer buses* and *winter buses* (ski buses). The initiator for introduction of these buses was the Regional Organization of Tourism Slovenský raj & Spiš (OOCR) and the offer was prepared in close cooperation with the bus operator Eurobus, a.s. Košice and the Transport Department of the Office of the Košice Self-governing Region.

The summer bus is designed for tourists and visitors of the region Spiš and the adjacent destination Slovenský raj. It aims at strengthening the offer of the public transport among the touristic centres during the summer months July - August. The timetable of the summer buses are summarised into compendious travel guide and are published in the bus stops, web-sites of the Regional Organization of Tourism and at the web-sites of the hotel service providers.

The SKI bus is designed for the skiers and tourists during the winter ski season. It was also initiated by the Regional Organization of Tourism Slovenský raj & Spiš (OOCR) in the winter time 2013-2014. In 2016 the SKI bus was substituted by connection

riding within the regular public bus service. Its aim is to improve the accessibility of the ski resorts and attractive touristic sites.

Tourist destinations are also accessible by *the event train* that runs only for specified events. For example the Košice Region Tourism organisation dedicated the 2017 year to UNESCO sites and prepared together with the OZ Detská železnica organisation (Childrens´ railway, non-profit organisation) nostalgic rides by trains to 6 UNESCO sites within the Košice region.

Sharing

- Flugs e-carsharing in Lienz and surrounded are, Austria. In 2015 there was an e-carsharing service (Flugs) implemented in the inner city of Lienz with one location and one car. Additional e-cars as well as further locations in the surrounding area of Lienz are planned. The main objectives of the project are: introducing sharing instead of owning, replacing the second car in the households of rural areas; reducing cars; establishing electric mobility, promoting the trial of E-mobility and E-Cars and introducing green mobility instead of combustion engine propulsion technology. The stakeholders at project implementation were: Regional Management East Tyrol, private persons interested in E-Cars/E-carsharing and the City of Lienz (Mayor).

Users have to register for membership. The e-carsharing Flugs has high accessibility (spatially – car station placed in neuralgic zone and from the booking side – easy online reservations via webpage or mobile phone). After registration, users get a user card. Billing and booking works online. For users who live near the city of Lienz it is a comfortable service but for users who live in the valleys the access is quite complicated. A disadvantage is that the membership makes it not useful for tourists (membership per year costs 120€).

- BalticBike.pl system (Świnoujście and Międzyzdroje), Poland. Bicycle rental BalticBike.pl system was founded in June 2008, by private entrepreneurs from Świnoujście. In spring of 2013, thanks to the financial support supplied by the European Union with the financial resources of the European Fisheries Fund (EFF), BalticBike.pl purchased new fleet of bikes and accessories in order to allow family trips with children, and made vast investments in infrastructure and development of service as well, increasing the number of bicycle distribution points and number of service cars. At present, the system has nearly 1.000 bicycles.

BalticBike.pl operates almost throughout the whole year and provides services for individual users or groups. Thanks to well-developed technical support, the company can deliver bikes and necessary equipment to an indicated address. In addition, the company provides technical support on the route for those using its services - in case of bicycle failure on certain routes - the company can repair or replace equipment, so that user can continue the tour.

Pooling

- Project Kussbuss in Luxembourg. It is a private commuter's door-to-door shuttle service, which is in search for financing. Kussbus is a mode of transportation for everyone who wants to commute more comfortably and eco-friendlier between their home and workplace. Kussbuss may be launched in 2017. However, Kussbus will only be available if enough

people sign up, as it is a demand-based service.

Others

- Seasonal rail connections between touristic regions in Westpomeranian voivodeship, Poland. Seasonal rail connection, activated mainly by the Przewozy Regionalne (regional railway operator) attempt to adapt the transport offer to visitors of the area especially during the summer.

From Warsaw (through Szczecin) to costal area of the Baltic Sea in MOFOW-SOM (Szczecin Metropolitan Area) started to run a long-distance train and from Poznan to Świnoujście and Kołobrzeg ran extra seasonal trains REGIO. Train was available from 27 June to 31 August (one course there and back daily) and offered 416 seats. On Sunday, at the end of the weekend return train was supplemented by an additional carriage (total 624 seats in result) in order to support a larger number of passengers returning from the sea coast area. Train "Błękitny" is also activated during long weekends or cultural events.

- **Services provided in Byala (Varna District) (E-minibus and phaetons with horses)** During the high season (May-September) there are a lot of tourists coming to the municipality of Byala for holidays. Some of the guests have their own summer flats in hotels in the resort area of the municipality. The distance from the centre of Byala to the resort area is 2-5km and in the past it was covered only by taxis or private cars.The same means of transport were used for visiting since 2014 the restored and opened for visitors Late Antique Fortress at Cape S. Atanas representing the biggest tourist attraction in Byala. In 2014 the Byala municipality allowed private citizens to offer transportation with phaetons with horses and next year under a project funded by OPRD an e-minibus for site-seeing was purchased and launched during the summer season. Nowadays, there are 4 phaetons operating in summer time.

- **Seasonal bus line 209 from Varna to Golden sands resort area (Varna District).** Seasonal bus connection that allows tourists from Golden Sands resort area, located on the north of Varna, getting by sustainable transport to the city centre in summer.

6 Regional Master Plans and Strategies Dealing with Flexible and Sustainable Transport

Existing development, plans or strategies elaborated by the regions or national authorities should be the first step to consider in the implementation of flexible transport systems.

The analysis of these strategies and plans could feed with valuable information that should be taken into account when designing new action plans. Focus should be placed on plans including strategies or initiatives for the development of sustainable mobility.

On the following chapter main plans and projects, which refer to sustainable transport and FTS are identified and described. The information provided by the regional partners about sustainable transport planning on their regions corroborates the main findings obtained in the "Synopsis of national/regional framework conditions and barriers of flexible transport".

As the analysis of "Regional framework conditions and barriers of flexible transport", worked by *Regional Management East Tyrol*, concludes, one of the main issues and challenges that hinder the implementation of FTS is the insufficient or partly missing national or regional legislation about different types of FTS. Most of the existing regulations only concern to public transport.

The above-mentioned analysis, pointed out that flexible transport services are not yet anchored in the national and regional legislation. Regional players need to find individual regulations to implement FTS to bridge those gaps in legislation. Responsibilities and powers for the implementation of sustainable mobility (within planning level) are often not assigned to municipalities by law and it is a big challenge to coordinate the implementation of FTS between different planning levels.

6.1 Varna, Bulgaria

Public transport in Varna, suffers from all kind of problems prevailing in similar big cities: depreciated bus and trolleybus fleet, low operational speed, expensive fare system, especially for trips involving transfer/s, poor service quality, lack of adequate information for passengers, high operational cost and minimal length of dedicated public urban transport (PUT) lanes

In compliance with EU policy adopted in the OP RD for development of sustainable urban transport systems, Varna Municipality has adopted a vision oriented to effective, attractive, accessible and sustainable urban transport and development of programmes for construction of cycling facilities.

It is important that Varna's public transport network serves these key attractors to enhance accessibility for residents to support growth of the tourist economy and to enhance the attractiveness of public transport system over use of the private car.

Varna Integrated Urban Transport Plan incorporates implementation of 10 components complying with the specific objectives of OP RD for development of sustainable urban transport system. The components presented are: automated ticketing system, PUT priority at intersections, real time passenger information system, PUT Control centre, BRT corredor, Rolling stock, cycling facilities, upgrade three bus terminals, depot uprading, accessibility measures for all PUT passengers, accessibility measures for disabled passengers, and improvement of passenger static information at the bus stops.

6.2 East Tyrol, Austria

Mobility program of Tyrol (2013 – 2020) objective is to increase the rate of public transport to 3%. Additionally the establishment of a funding scheme plan for flexible transport systems in rural areas is planned. The Tyrol's mobility program consists of several subprojects: "Municipalities mobile", "Schools mobile", "Business mobile", bicycle transport concept, promotion of public transport in rural areas.

However, a development program of the federal state Tyrol gives general principles about on-demand-based public transport (establishment of solutions for sustainable mobility, development of public transport). On the other hand, the '**Tyrolean Sustainable Strategy**' gives general measures for of sustainable mobility in rural areas (developing and improvement of sustainable mobility and public transport, avoidance of individual transport. But, all those concepts have no binding character and no concrete influence of regional mobility projects.

An **action plan for e-mobility** was given by federal state level in January 2017. An e-mobility strategy for East Tyrol is also planned for the region, to ensure a coordinate change to e-mobility in East Tyrol. Concrete objectives and measures give recommendations how to enlarge e-mobility in public, semi-public and private sector. The horizon of implementation is defined until 2030.

There are planned developments and upcoming projects to implement in East Tyrol: expansion of local public transport services due to denser timetables into the main valleys will be implemented up to December 2017; e-Mobility (Flugs e-carsharing) will be enlarged within the region, further locations for Flugs into municipalities, also in remote locations. It is also planned, that the train station of Lienz should be build up as a regional mobility centre for public transport. The project will be start into 2018.

6.3 Upper Sûre + Our Nature Parks, Luxembourg

The main planning document is **MODU** (stratégie globale pour une mobilité durable – strategic plan for sustainable mobility) for the targeted region. It integrates an approach with focus on complementary between the different transport modes, a reference for spatial and environmental planning and focuses on commuting, but not for leisure or tourism traffic.

6.4 Westpomeranian voivodeship, Poland

With respect to the applicable laws and documents at national level, only within the **Transport Development Strategy until 2020** has been defined definition of terms relating to the flexible transport systems (bike-sharing, car-sharing, car-pooling) and indicated overall objective of ensuring the possibility of flexible implementation of personalized transport needs. However, there are no references to the flexible transport systems in documents at the voivodeship (provincial) level.

In documents at the level of metropolitan area (MOFOW-SOM) provisions relating directly to the flexible transport systems were also not identified. Specific goals are related to the development of sustainable transport (eg. through development of the metropolitan railway) and indicate the measures addressed in the first instance to the residents of the SOM. The documents do not refer to the issue of transport systems for tourism.

At the level of counties can be seen emerging references to the flexible transport systems as solutions that support the development of mobility. For example, ***Plan for sustainable development of public transport for the Goleniów county*** indicates transport systems "on demand" as one of the possible solutions to service the needs of disabled persons and persons with reduced mobility.

Also in the documents at the municipal level, although still individually, can be seen emerging signals associated with the search for new transport solutions. ***Plan for sustainable development of public transport for the city of Szczecin in the years 2014-2025*** indicates the activities of more flexible public transport system through the implementation of systems "on demand" that are complementary to the system of regular communication.

6.5 Košice Region, Slovakia

The **plan of transport services** shall be the basis for awarding transport licenses, concluding contracts on services and for drafting the timetables in regular transport services.

Regional integrated territorial strategy of the Kosice region (RITS) is a starting and implementation document for implementing the program IROP (Integrated Regional Operation Program). At the same time, RITS presents an obligatory action plan of specific planned activities of IROP in the Košice region, defining specifically planned measures emphasizing the integrated approach to development of the territory. The document deals with the development of local and regional plans of the sustainable mobility as preconditions for the interventions into the transport system and with ensuring the modern tariff, information and dispatching systems and implementing the ITS (Integrated transport system).

Methodical guidelines to creation of plans of sustainable mobility (Ministry of Transport, Construction and Regional Development of the Slovak Republic – 2015) deals with the content and structure of the Plan of sustainable mobility and it presents a certain handbook for preparation of the plan at the level of cities or regions. This document is linked to the GUIDELINES – Developing and implementing a Sustainable urban mobility plan (2014), The Poly-SUMP Methodology - How to develop a Sustainable Urban Mobility Plan for a polycentric region (2014). Based on the above document it is being prepared the elaboration of the Plan of sustainable mobility of the Košice Region.

6.6 Catalonia

The **Passenger Transport Plan of Catalonia 2020** is a sectorial territorial plan, approved in early 2017, that defines guidelines in relation to the supply of public transport services in Catalonia and management of the whole system. It affects all collective transportation services for intercity passengers within Catalonia: regional and suburban railway services, intercity regular bus services and occasional services as services on demand. The scope is set up on a network of public passenger transport based on an intermodal transport system.

The plan refers to implement demand responsive transport services for those municipalities with low density of population. The implementation of this services are planned to be run as part of the network of regular public passenger transport, allowing users to be favored by existing tariff subsidies if regular services are part of an integrated fare system.

The **Master Plan for Mobility of Barcelona Metropolitan Area** aims to plan the mobility of the region taking into consideration all modes of transport and introduces some strategies about transport flexible initiatives like bus shuttle services for

companies or the creation of websites for sharing cars and van sharing for companies.

7 SWOT Analysis

The SWOT-analysis identifies overall success factors in the current practice of the development and implementation of sustainable mobility offers, strategies as well as the respective framework conditions (legal, financial, etc.), which are detailed analysed in "Synopsis of national/regional framework conditions and barriers of flexible transport".

The analyses takes into account the general situation about sustainable transport networks.

Transport system

Strengths	**Weakness**
- In general, relatively good accessibility conditions to the local public transport system in cities and central settlements. - Positive perception and willingness of the most local governments to develop sustainable mobility measures to cover the last mile. - Good experiences with Flexible Transport in regional context, in East Tyrol, Westpomeranian voivodeship, Luxembourg.	- Geographical context making it difficult to implement public transportation systems (low population, dispersion of settlements, services concentrated in main cities). - Poor cooperation and communication between relevant regional stakeholders for achieving sustainable tourism mobility. - Poor legal framework for Flexible Transport System. - Lack of experience in implementation and operation of such services by the transport organizer and by the passengers. - Different expectations and needs of individual municipalities can affect willingness to cooperate. - Dominating car-based mobility of the tourists.
Opportunities	**Threats**
- Technological advances and increasingly higher proportion of people using mobile devices makes easier to implement modern and easy-to-use systems and dispatch systems. - Some promising concepts being implemented successfully (e.g. E-mobility and e-carsharing in East Tyrol). - Implementation of flexible transport services for tourists could improve the image of the offer and increase tourist attraction of regions. - There are EU programs aims at promoting sustainable transport solutions. - Increased considerations about sustainable mobility guidelines. - The complementarity between the peak hours when commuters need transport services and the transport needs of tourists	- Lack of competitiveness of public transport in relation to car rentals. - The seasonal nature of tourism makes unprofitable the transport system during some months. - Spatially differentiated population development within regions. Shrinking rural regions.

The regional profiles analyses show relatively good accessibility condition to the local public transport system around the cities and central settlements within areas studied, but some hotspots in rural areas present inadequate connections to the public transport network, thus preventing direct and easy accessibilityas for example in Kosice Region or Catalonia. Geographical context makes it difficult to implement efficient public transportation systems due to dispersion of settlements, population are concentrated in cities or low density of public transport networks. It means economic difficulties to maintain an unprofitable public transport. In addition, these regions are characterized by seasonality of tourism. Regions, like Westpomeranian voivodeship or East Tyrol, offer services addressed to cover the transport needs of tourists in summer or winter season. In the first case, the service increases the timetable and frequencies of public transport (train), and in the second case, the region offers a bus service to connect tourists to ski resorts. On the opposite site, some initiatives related to flexible transport system implemented in Luxembourg do not offer services to tourists.

In general, local governments present positive willingness to develop sustainable mobility measures to cover the last mile in rural areas. Although expectations and needs of individual municipalities influence the degree of cooperation between them. In addition, poor cooperation and communications between relevant regional stakeholders difficult to achieve sustainable mobility, especially addressed to tourism.

In all cases, there is poor legal framework for Flexible Transport System. It means huge difficulties to implement FTS for the municipalities, which do not have enough administrative and economic capacity to develop it. However, implementation of flexible transport services for tourists could increase the tourist potentialities of the regions.

East Tyrol and Westpomeranian voivodeship are implementing flexible transport services in regional context. The experience has been positive in all cases. The services are addressed to both, tourists and residents. In the other regions, the lack of experience in implementation and operation of such services by transport operator and by the local passengers could make the flexible transport implementation process more slowly. Nevertheless, technological advances and increasingly higher proportion of people using mobile devices makes easier to implement modern and easy-to-use system for improving public transport, and especially to develop flexible transport services.

7.1 SWOT – individual analysis of case studies

Varna District, Bulgaria

	Strength	Weakness
Transport System	- Existing PT to the main settlements in the municipality. - Willingness of the most local governments to develop sustainable mobility measures and to cover the last mile.	- There is a lack of highways along the seaside. There is no railway connection along the seaside too. - The first category road Varna-Burgas is old and depreciated. Poor road connections to the small towns and villages in the region. Lack of good PT-connections to towns and villages. - Very intensive car traffic especially in the high season. - No any projects nor concepts for automation of the traffic management in the region. No any system for analysis, forecasting and adaption to the demand of the PT system. - Lack of cycling infrastructure. - Water transport is not well developed for connecting the touristic spots. - Lack of educational initiatives and training programs at all levels for sustainable mobility and lack of public awareness about sustainable mobility options in transport and tourism. - Lack of cooperation between tourism and transport sectors for achieving sustainable tourism transportation. - Never mobility was studied in the region and never any mobility measures were introduced in transport scheme. - Lack of ITS application for regional transport. - Total ignorance of the “last mile” concept.
	Opportunities	**Threats**
	- Improvement of road infrastructure due to national infrastructure projects funded by SF (OP “Regions in growth”). - Improvement of PT-offers and implementation of some mobility measures in the frames of future SUMP-project to be developed for Varna city. - Further integration of tourism and transport	- Lack of understanding from the part of the decision makers about modern mobility measures in transport. - Lack of integration between tourism and transport policies. - Lack of cooperation between tourism and transport stakeholders.

	sectors for achieving sustainable access to tourism sites. - Business investments in the region. - Raised awareness of local decision makers and stakeholders about sustainable mobility and “last mile” thanks to participation in EU – projects. - Introduction of ITS and mobile applications. - Transforming the existing touristic information centres into tourism and mobility info-points. - Establishing a national body responsible for mobility and changes in legal frame concerning sustainable transportation. - Strengthening the cooperation between tourism and transport sectors.	- Lack of support from the large public for developing sustainable transportation. - Lack of own financing resources for projects’ development and implementation.

East Tyrol, Austria

Transport System

Strenghts	Weaknesses
- Functioning pilot projects of FTS (Virger Mobil, Assling Mobil, Defmobil). - Main axes within the region are accessible every hour by public transport - Awareness of policy makers for FTS - High willingness of volunteers (Virger Mobil, Assling Mobil) - The National Park is an additional financial partner - The Regional Management East Tyrol links the stakeholders and bring them together - Very good interexchange with the regional authority - Awareness raising for public transport and the fact that using the private car is getting more expensive and is no longer affordable for people - Few figureheads /testimonials for this issue although most municipalities support public/flexible transport systems	- Frequency of public transport in the side valleys is insufficient - Many hot spots are only inadequately developed by the connection to the public transport network - Poor offers of public transport for cummuters (especially for women) - Information dissemination concerning public transport to locals is inadequate; information according all mobility services hardly available. There is no central mobility centre giving information - Missing public relations for public/flexible transport - Frequency of public transport at the weekend is insufficient - No integrated clearing system for different types of sustainable transport - Due to the circumfluent regional and national borders the operating panel is too small (different ticket tariffs) - Missing courage to increase parking fees to reduce individual car use - Tourism: missing CO^2- friendly vacation offers for tourism - Missing bike infrastructure for everyday mobility (especially in the city of Lienz and surrounding area) - Shortage of public fiancé/debt-distressed situation of municipalities (municipalities are partly financially dependent on the tourism association, regional government; municipalities need additional higher level's authorization)

	- Few figureheads /testimonials for this issue although most municipalities support public/flexible transport systems - Few professional service providers for public transport services in the side valleys, regarding to the long distances it's not affordable for entrepreneurs - Different costs for locals and tourists (local frequently are disadvantaged regarding pricing) - No sponsorship regarding funding from entrepreneurs - Motorized individual transport is very high - Poor cooperation and communication between relevant regional stakeholders
Opportunities	**Threats**
- Mobility has become affordable through new pricing, rethinking regarding mobility behaviour - Linking e-carsharing and public transport - Flexible routing by VVT / improvement of service-oriented offers - Declaration on preferring public transport. Trend towards economization (e-mobility) - Topics for sustainable mobility are settled in East Tyrol, the Regional Management East Tyrol is very well networked with stakeholders (government, car dealer, transport association, citizens, tourist association, National Park) - The National Park Hohe Tauern as additional financial partner - Increasing digitisation for technical applications - Cross border cooperation for flexible transport services could raise image in tourism (East Tyrol and South Tyrol) - Improvement of current framework conditions through higher dense of public timetables - Improved regional development could prevent brain drain	- "What is the value of the rural areas to governments?" → missing political commitment - Lack of financial security in the sense of a basic financing (no basic funding from governments) - No long-term funding for FTS - Low population density - Missing awareness for sustainable transport

Upper Sûre + Our Nature Parks, Luxembourg

Transport system

Strengths	Weaknesses
- Railway line 10, covering the main towns (Wiltz, Clervaux and Troisvierges) in the central area, with bus connections to the other parts of region. - Public bus network is leading over the main routes and covering the main tourist sites and attractions. - Good connections between the tourist offer on www.visitluxemburg.com with specific into for the region Ardennes and even the Nature Parks and the public transport offer on www.mobiliteit.lu. - Easy and comprehensive pricing for public transport (bus and railroad) with short (2h) and long term ticket (whole day). The price is 4€ for whole day train and bus network. - Luxemburg Card with free access to over 60 attractions in Luxemburg and free use of the public transport. - All public buses are currently being switched to low floor buses.	- Northern territory of Luxemburg characterised by varied topography with elevation differences between 150 and 550 m above sea level – restrictions for the use of soft mobility. - Low density of population and long distances between towns and villages, points of interests away from the bus routes are not served, as – with the exception of the Bummelbus for inhabitants of the municipalities, but not the visitors - there is no (public) flexible transport system (for the moment).
Opportunities	**Threats**
- Bus network will be renewed in 2018 towards high performance fix bus lines on the main routes (as complement do railway line) and flexible, demand oriented bus lines on the secondary lines (especially important for the rural areas). - Bummelbus as flexible door to door transport offer for inhabitants of the region, Potential, that offer can be extended to other target groups like tourists and visitors of the region - capacities especially during holiday periods, potential for more user friendly access (e.g. mobile app)	- The accessibility to this new flexible transport offer has to be available for tourists and visitors to the region.

Westpomeranian voivodeship, Poland

The daily public transport system (residents)

Transport system

Strengths	Weaknesses
- Increase the transport accessibility of the area. - Better adjustment of service to actual transport needs of residents. - More efficient modification of service (adding or removal stops of public transport). - Easier coordination with other transport systems operating in the area. - Support for the solution of the last mile problem. - Possibility of operating in different modes (e.g. an additional service related to the mass event). - Changing the existing regular transport system to call/dial on demand system can bring significant financial savings (no empty runs issue).	- Requires additional funding both for the start-up of service as well as its long-term financing. - Operating on the unprofitable routes can increase the level of debt service. - Operating on the profitable routes can lead to compete with private carriers, and the honouring of discount tickets (existing subsidies for reduced-fare tickets for public transport) can lead to accusations of unfair competition and monopolization of the market. - Lack of experience in implementation and operation of such services by the transport organizer. - Lack of experience in use of this type of service by the passenger.
Opportunities	**Threats**
- Technological advances and increasingly higher proportion of people using mobile devices makes easier to implement modern and easy-to-use systems and dispatch systems. - The existing financing instruments give the possibility e.g. buying a modern transport fleet. - The existing EU programs aimed at promoting sustainable transport solutions (easier acquisition of experience and know-how).	- Legal framework does not fully take into account the specifics of transport on demand (e.g. emerging doubts about whether it is regular or occasional transport service). - Changing policies and legislation of transport (which may arise new restrictions on the way for operating of service, e.g. the elimination of subsidies for discount tickets). - The continuing growth trend of individual transport and decrease in the number of public transport users.

The transport system on the needs of service the tourist traffic (in season)

Strengths	Weaknesses

- Develop on the area new alternatives to individual transport, especially in the context of increased seasonal traffic. - Possibility to create unified system (common standard), which integrates the tourist potentials of municipalities. - Regulated cooperation with the private sector (incentive to create e.g. associations of private operators). - Regulated way of operating may allow access to tourist facilities in protected areas and areas where service has not been profitable so far. - Operating in the low-carbon policy, particularly important in protected areas and health resorts.	- Lack of proper functioning form of cooperation between local governments and the private operators (lack of experience in the organization of public-private partnerships). - Lack of integration of private operators (no common representation of the interests of private sector). - Due to the fact that tourist transport is not a public transport (not entitled to a system of subsidies) service must be profitable. - In the absence of sufficient transport solutions in the area targeted to the residents, they can oppose to the involvement of municipalities (particularly financial) in development of systems directed for tourists. - Different expectations and needs of individual municipalities, which can affect willingness to cooperate. - Lack of a coherent system of information on this type of service.
Opportunities	**Threats**
- The expected increase of tourist traffic on the project area (increasing base of potential users of the system). - Ability to build and promote new tourism products based on the transport system. - Coastal municipalities are seeking solutions for the problem of increased individual traffic in the area during the tourist season.	- The continuing growth trend of individual transport and decrease in the number of public transport users. - The seasonal nature of tourism makes that in the winter months the service will be unprofitable.

Košice Region, Slovakia

Transport system

Strengths	Weaknesses
- Partnership of Regional Tourism Organisation /OOCR/ + KSR + EUROBUS + villages. - Existence of taxi-services in Spišská Nová Ves and Dobšiná. - Introducing shuttle buses as part of public shuttle services (ski bus and summer bus); 4 year experience in operating buses. - Close location of international airports in Poprad and Košice. - Wide network of local communications. - Significant railway line Žilina - Košice (see corridor). - Favourable distance from bigger Slovak cities (Košice cca 240 thous. citizens, Prešov 89 thous., Poprad 51 thous., Spišská Nová Ves cca 38 thous. citizens). - Near highway connections from North. - Villages - centres of entrance are relatively well-proportioned and connected with roads around and from inside, there is a transport connection of several transport modes. - Built up network of park and ride parking places. - Dense network of cycloturistic/cycling tracks in the destination with connection to cycling routes leading to wide vicinity.	- Bad road infrastructure, insufficient marketing communication and information transport system (absent infos at the highway D1). - Insufficient communication and cooperation of the entities responsible for development of transport and mobility. - Absence of possiblities of transport of bicycles in coaches. - Absence of railway connections SNV – Levoča, and connection of North – South in the territory of Slovenský raj. - Absence of connection of the local buses onto the trains. - Need of strengthening the cooperation and communication with the public transport operators (KSR, PSR, BSR). - Lack of shuttle bus connection in weekends and holidays. - Weak infrastructure of cycling traffic. - Long duration of transport connections to Southern parts of Slovenský raj. - Excessive load of parking places in days of high number of vistors.
Opportunities	**Threats**

- Creation of unified tickets within ITS. - Implementation of regional cards (applying also in transport). - Founding a central dispatching ITS. - Synchronized Train - Bus transport. - Starting the operation of steam locomotives on route Telgárt - Červená skala. - Development of integrated transport on the territory of KSR. - Renewal of railway traffic Spišská Nová Ves - Levoča (as alternative form of transport). - Using the Kopanecká road for transport connection North and South of Slov. raj (as alternative form of transport). - Extending the Ski bus and Summer bus traffic as a part of public traffic, or as a combination of public and private transport. - Change in behaviour of transport companies in relation to the passengers (willingness to help, advice).	- Unsuccessful iniciative of legislative changes concerning mobility. - Railway transport directively limited from the state (Slovak Railway Company/ŽSSK). - Complicated conditions of mountainous terrain during the reconstructions of roads. - Insufficient financial means for renewal and development of transport infrastructure. - Complicated property settlement of the lands needed for the development of the transport infrastructure.

Catalonia

	Strength	Weakness
Transport System	- Integrated Transport System implemented. The coordination and optimising of timetables between operators or building and operation of transfer terminals decrease time of journey from the origin to the destination of passengers. - Experiences of demand responsive transport already implemented in some areas of Catalonia (bus across Alt Urgell; shuttle service between Cervera – Solsona). - Technological improvements in infrastructures and vehicles. - Existing agreements with the presidents of county councils (named in catalan: Consells Comarcals) to promote public and flexible transport on demand in these counties. - In the latest years the Government of Catalonia has developed actions in mountain areas such as meetings, exchange of views, preparation of studies and authorization of services on demand, with the aim to improving public transport passengers in these areas - In general, existing public transport to the main settlements in the area - The local authorities show a willingness to work in sustainable mobility measures and develop solutions to cover the last mile - Educational initiatives and training programs for sustainable mobility - Often, mobility has been studied in the region and the last mile concept has been known, previously to this project. - Existing good user information systems through the Catalonia Journey Planner named Mou-te (which offers: public transport, private car in the case of lack a public transport solution, by foot, cycling or combining public and private modes) - Experience in implementation and operation of FTS services by the transport operators in High Pyrenees and Aran - Important role of GENCAT environment public policies	- Lack of collaboration between local stakeholders. - Lack of financial incentives to set up flexible transport systems. Local councils do not have the enough economic capacity to develop this kind of services by own selves. The highways network along the regional functional area of High Pyrenees and Aran should be improved due to large zones of mountains, irregular topography and very high slopes. There are not many railway connections along the mountain counties (although, it should be highlight 2 current corridors: R3 Puicerdà-Vic-Barcelona, operated by Renfe and Lleida-La Pobla de Segur operated by FGC) Poor road connections to the small towns and villages in the area and lack of good public transport connections in some small towns and villages Lack of cycling infrastructure Lack of own Gencat financing resources for development and implementation of FTS and achieving a high quality flexible transport system.

Opportunities	Threats
- Growing importance of effective public transport in the quality of life of citizens. - Implementation of T-Mobilitat. Users will pay according to their travel habits and prices, which will be adjusted according to the number of km covered and the frequency with they travel on public transport.	- Variation of needs related to mobility due to lifestyle changes, changes in demographic census, new economic situation... - Wide range of types of passengers that use public transport. - Dominating car-based mobility of the tourists.
- Improving road infrastructure through Infrastructure Transport Plan 2026. New strategies and projects can be developed evolving from emerging technologies in the ITS sector such as: automation of the traffic management in the area, new smartphone applications to manage the flexible transport on demand, systems by satellite to improve the management of transport fleet. Increasing public awareness about sustainable mobility options in transport and tourism can generate innovative FTS projects Improvement of public transport offers and implementation of some mobility measures in the frames of PTVC (road passengers transport plan for the period 2017-2020) Opportunity to collaboratively work with associations promoting sustainable transport modes Opportunity of improving economic efficiency due to, in global terms, FTS should be cheaper than regular transport modes. Preparation of new studies based in analysis, forecasting and adaption to the demand of the public transport system can achieve a smart FTS in the analysed area.	In the last few years, the High Pyrenees and Aran have experienced a clear transformation from agricultural sector to the service sector (hotel, rural tourism, ski resorts, National Park). This fact could mean disadvantages for the environment and residents (seasonal overcrowding, intensive car traffic in high season or pressure in prices) which must be taken into account to improve the quality of life for residents. Need of cooperation and communication with among the different public transport operators in this area Difficulties for local or regional stakeholders to achieve funding for implementing flexible transport services. Low population density and geographical dispersion could hamper public investment based in users demand.

LIST OF FIGURES AND TABLES

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