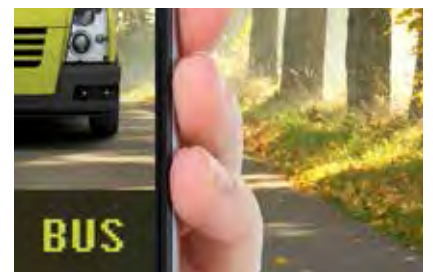


International Experiences on Public Transport Provision in Rural Areas



Case-Specific Policy Analysis

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Case-Specific Policy Analysis

INTERNATIONAL TRANSPORT FORUM

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The Finnish Ministry of Transport and Communications requested that the International Transport Forum at the OECD carry out a consultation to better understand international experiences on containing the rise in costs associated with public transport service provision in rural areas, to showcase examples of efficient solutions, and to illustrate new ways of organising public transport services.

The International Transport Forum at the OECD provides a platform for Member governments to exchange experience on the development of key policies with the aim of enhancing the performance and sustainability of transport systems and their contribution to economic growth and social welfare. Cooperation includes collaborative projects to review good practice, research on innovative policies, international benchmarking of performance and peer reviews of national policies in critical sector. The present report is part of the program strengthening the development of policy-making in key sectors of Member country governments under the current program of work. International Transport Forum at the OECD is well positioned to carry out this consultation for the Finnish Government.

The report summarises international experiences in providing public transport services in rural areas and is prepared by Jari Kauppila of the International Transport Forum. Professor Peter White, Dr Merethe Dotterud Leren, Dr Kare Skollerud and Dr Christophe Saroli authored individual reports on country experiences and supported the preparations of the final conclusions. Dr Masanori Kennai has provided the case studies presented in the Annex. Preliminary conclusions were presented for the Finnish Parliamentary Transport Committee on 2nd October 2014 and findings in the report benefitted from these discussions.

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Policy insights

We are currently seeing a major change in the perception of ‘public transport’. Development of open data and mobile information platforms are changing the way consumers conceive public transport services. Car-sharing and ride-sharing have gained ground in recent years and are being considered as real options for public transport service provision. Also new actors and innovative services are accessing the public transport market. Current legislation needs to be reconsidered in the light of these new services, enabling innovation while ensuring privacy and safety, among others.

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

Significant scope still exists for ‘conventional’ public transport. International experiences show that improving service quality, marketing and information provision can increase number of passengers and reinforce the commercial viability of the industry. Conventional public transport is not suited for all links and public transport provision in rural areas should be part of a broader transport strategy, integrated with local or regional transport plans. It is important to identify publicly funded minimum service levels regionally and locally. New forms of services should complement the conventional transport providing feeder traffic to strategically defined critical links.

Better coordination between different types of services is required. This includes pooling of passengers, opening up special transport services to public and common planning and purchasing of publicly funded transport services. Transport services are currently administered, purchased and financed by several different authorities. There is a significant potential for savings and economies of scale through better coordination of these transport services, enabling also a more efficient use of the existing vehicle capacity.

Relaxing quantitative taxi regulation can enable new innovative solutions. Taxis are an important complement to regular scheduled public transport services in many countries. International evidence suggests that restricting taxi numbers through quantitative regulation constitutes an unnecessary restriction on competition and reduces economic welfare. Removing supply restrictions have resulted in increased taxi numbers, reduced prices and reduced waiting times while also enabling a number of new innovative services to develop.

Executive summary

Challenges in public transport provision for rural areas are similar across countries

International experiences on providing public transport services for rural and sparsely populated areas are similar around the world. Countries are witnessing a falling share of public transport as a consequence of increasing role of private car in meeting accessibility needs. Low and dispersed population combined with strong competition from private cars make it difficult to operate profitable commercial public transport services, leading also to higher unit costs for providing these services. Ageing societies and increasing population concentration in cities are further contributing to an increase in the unit cost of providing public transport services. Rising operating costs for bus services and constraints of public funding have eroded the ability of local authorities to subsidise public transport at previous service levels. This has led to a vicious circle of increasing fares, increasing subsidies or cutting back the existing services levels.

In rural areas, it is difficult for conventional public transport to meet different accessibility needs of different user groups. Authorities responsible for transport typically cover a wide mix of population sizes and densities. Further, many different authorities are responsible for the administration, procurement and planning of various passenger transport services. This has led to concerns over increasing costs and attempts to increase coordination among different authorities in order to gain savings. This combined with lack of funding under the stringent economic conditions have led several countries to look at alternatives for public transport provision. Indeed, the application of global access to public transport services has proven difficult in rural areas.

Despite being one of the most sparsely populated countries, Finland is not an exception in terms of challenges with public transport provision. Several countries have extremely sparsely populated regions, including several states in the United States. Publicly funded transport services are also very similar across countries. The right to transport is generally included in the national legislation, with this right enabling users to travel in reasonable conditions in terms of access, quality, and price. Further, in the EU area, bus transport services are organized under the Public Service Obligation (PSO) regulation of the European Union which also sets common rules for the procurement of these services.

There is a need to find alternative transport supply solutions to address these changing mobility issues. One single approach is not sufficient but a broader range of solutions are needed, including innovative transport services. This accentuates the need for introducing changes to existing transport policies. This has also increased the need to introduce new, flexible, transport solutions such as demand-responsive transport (DRT).

New ways for information provision are changing the public transport market

New mobility concepts and smart solutions offer new transport services for passengers. The technological development in telecommunications and the development of mobile information platforms are changing the way consumers conceive public transport services. Consolidated mobile applications

provide access to information and mobility services which allow for the development of new collective and personalised services, better suited to the individual needs. New data and, more importantly, availability of these data are indeed changing the public transport market. New patterns of daytime travel and activity are increasingly developing within the community. These phenomena are radically changing mobility patterns, and pose new questions for transport, which must be properly addressed in order for the digital economy to bring real benefits to the citizens.

Mobile phone applications have changed consumer expectations and behaviour. These applications have been created out of user needs and are central as they give visibility to all the existing mobility services, allowing for consumers to choose the ones best fitting for their heterogeneous needs. This has also been an impetus for new actors and innovative services accessing the public transport and taxi markets (e.g. “KutsuPlus”, “Bridj”, “Uber”, “Olacab”, “Lyft”). However, current legislation for public transport provision has in many cases been created before smartphones were commonplace. This in turn has created a much needed discussion on the need of change in legislation and current practices.

There is a continuous need to assess the level of required transport service and trends in passenger needs. “Big data” holds much promise for improving the planning and management of transport activity by radically increasing the amount or near-real-time availability of mobility-related data. Transport authorities will need to ensure an adequate level of data literacy for handling new streams of data and novel data types. Traffic operations, transport planning and safety are areas where authorities must critically evaluate where and how new, or newly available data and data-related insights, can improve policy.

“Big data” can help governments, businesses and individuals to make more informed decisions. Better data can help transport authorities to understand commuters’ behaviour, provide targeted information and identify policy interventions. In fact, the biggest gains from using big data may come from changing user behaviour. From the government perspective, there is need for better data to support decision-making, at least for the following purposes:

1. Understanding better the demand (needs by different user groups);
2. Better planning of services to match user needs; and
3. To make the market case for privately operated services (profitability).

The concept of public transport needs to be revisited: Importance of car- and ride-sharing

Mobility choices, including car ownership and use, appear to be changing. The growth in passenger vehicle travel has stopped or turned negative in several high-income economies (ITF/OECD, 2015). Car use per capita, especially among young adults, has declined and there is established evidence of a decline in the average rate of driver’s license holding, again particularly among young people. However, people living in less populated areas are more likely to hold a driver’s licence than those who live in urban areas. For example, in Stockholm only 10% of 18 year-old persons have a driver’s licence, while this figure is closer to 50% in more rural areas (see for example Aretun & Nordbakke, 2014). Several explanations for this phenomenon have been put forward including attitudinal and lifestyle changes and unfavourable economic conditions.

However, a more relevant explanation is related to increased transport alternatives and options for delivering mobility needs. Overall, international experiences show that we are currently seeing a major change in the perception of the concept “public transport”. Users are moving from the ownership of the vehicle to consider the car as a service. A typical car lies unused for approximately 23 hours a day. This represents a tremendous investment in overcapacity – both for car owners and for the public authorities that provide and maintain public infrastructure.

Car-sharing and ride-sharing have gained ground in recent years, especially in urban areas, and have seen a tremendous influx of new, sometimes well-capitalised entrants. The rapid growth of new service providers, such as car-sharing services (e.g. "Car2go", "Zipcar", "AutoLib") and ride-sharing ("Blablacar", "Liftshare") signals the growing importance of these services. For instance, Autolib, an electric car sharing service in use in Paris, France, has today around 130 000 registered users with around 10 000 individual uses per day.

While ride-sharing is not a new concept, it has found renewed popularity in some countries, spurred by new information and communications technologies. It is considered a real alternative to provide accessibility and mobility to citizens in sparsely populated areas. For example, the French government is actively encouraging the use of ride-sharing and is looking at policies and actions for ride-sharing to reach a critical mass which would increase the chances of finding suitable itineraries for users. Indeed, carpooling has become increasingly popular. It has significant potential and many local carpooling schemes and public initiatives to support the practice have been implemented in France. Carpooling offers a real growth potential, as a form of mobility without significant cost to the public (Saroli, 2015).

It is important to note that rural transport provision is not necessarily only a task for the public sector. Volunteer-driven minibuses have also been emerging as a solution for rural areas but they are not necessarily comprehensive in their coverage. Voluntary approaches are often constrained by lack of sufficient number of volunteers to cover broader areas and services. However, voluntary approaches have been relatively successful in Japan, for example, where a tradition of volunteer work is strong.

An important prerequisite for the development of new ride-sharing services is the removal of constraints on permitting coverage of costs incurred by those providing the service through fees charged to the users of those services. Ride-sharing schemes may provide a fairly comprehensive service for different trip-purposes. Similarly to volunteer-driven services, the challenge is to maintain sufficient pool of volunteers/drivers to secure adequate service levels.

Demand-responsive transport is seen as one of the key options to meet future public transport challenges

The development and operation of demand-responsive transport (DRT) has raised renewed interest in the last few years and is identified as one of the options to meet future access requirements and associated public transport challenges. DRT systems have been stimulated particularly by improvements in route planning software and new ways of information provision, enabling more efficient planning of journeys in response to users' needs.

Demand-responsive transport is attracting a great deal of interest among local authorities as an alternative transport solution for providing cost-effective public transport. DRT is considered particularly suitable for rural areas because of its flexibility, and ability to adapt to local needs. There are in principle two ways of organising demand-responsive transport: door-to-door or predefined pick up and drop off points both with service provided only if there is demand. DRT systems provide flexible services which involve adapting collective transport to the actual need of the customers: the routes travelled by buses, the stops reached and the timing of the service is flexibly adapted based on passengers demand.

These forms of transport usually serve dispersed mobility needs, either during hours of low demand, in areas of low population, or where the target users are dispersed among the general population (e.g. disabled and elderly, students, tourists). As an important element of a larger intermodal service chain, DRT can provide both local mobility, as well as connections to other conventional forms of transportation (e.g. regular bus network, railway services).

Emphasis should be placed on preliminary research and studies. These are crucial for correctly assessing the potential demand and the type of service required. DRT must also be developed in consultation with users and the success is dependent on the involvement of local community.

Central government may initiate innovations through centrally-funded programs. Considerable innovations have been produced by this type of initiative. For example, the Norwegian government introduced grant to stimulate innovations to improve coordination of resources. Regions had the opportunity to introduce projects with state support as an addition to funds from regional authorities. However, it is also important to ensure that funding for innovative solutions are “one-off” not to distort markets or create “subsidised” services. Further, measures should be transferrable to other areas.

Evidence from Norway suggests that the characteristics of a typical user of DRT is that someone who does not own a car or have a driver’s license. Interestingly, DRT is also valued by parents owing a car as it relieves them from having to drive their children to activities. More generally, younger users of DRT use it for participating sports activities or visiting friends (often in the evenings). In Norway, sports teams have adapted their schedules to fit the transport offer. Elderly customers use DRT for accessing medical services, shopping and some social activities (mostly in the morning). Most of the users, according to the Norwegian follow-up study, were satisfied with the services offered. Furthermore, DRT services were considered as supplements to other public transport services and private transport (Dotterud Leren and Skollerud, 2015).

Experiences indicate a willingness for both car users and existing bus users to use DRT services at a higher fare than existing bus fares. There is a potential new market for DRT in railway station and airport access, workplaces outside the urban areas and an integrated DRT supply for the general public.

However, unit costs per trip (and public expenditure) may be high. DRT may enable a planning objective to be achieved more readily within a given budget but with a high per trip cost. Density of demand will affect unit costs. Demand-responsive and taxi-based modes may be more expensive than a supported bus service. The following table provides a useful comparison of costs per passenger trip as related to density of demand.

Table 0.1. **Indicative guidance for vehicle choice related to demand**

Trips per vehicle hour x trip length [i.e. passenger-km per vehicle-hour]	Suggested vehicle choice
Less than 10	Taxi
Between 10 and 20	Taxi(s) or flexible minibus – choice will depend on availability and relative costs locally
Between 20 and 50	Flexible minibus, with lower degree of route flexibility at the higher end of the range
Greater than 50	Largely fixed route bus, with limited deviations

Source: Adapted from Wright (2013).

Significant scope still exists for ‘conventional’ public transport

New forms of public transport provision do not diminish the importance of ‘conventional’ public transport. Demand-responsive transport alone will not fulfil all public transport needs in rural areas. DRT should be a part of a broader, multimodal package of solutions, supplementing regular public transport services. Demand-responsive transport services should be seen as complementary to the conventional, scheduled passenger transport, based on large buses, trams and regional trains. DRT, on the other hand, is normally provided by smaller buses, minibuses, vans, taxis and cars.

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

One solution is to improve service quality and supply. While the number of passengers has generally declined for ‘conventional’ public transport, international experiences show that new marketing concepts and innovative product developments can increase the number of passengers and reinforce the commercial viability of the industry. Types of improvements include higher service levels (for example through increasing comfort by reducing seating density) and using smaller vehicles or simply better marketing and information provision and focus on service reliability (for example through providing real-time travel information with mobile applications). Some of these experiences have been successful and resulted in improved frequencies and connections in rural areas (see for example White, 2015).

Some of the most successful experiences have been based on local solutions. Identifying service levels based on customer needs helps designing the supply to meet the actual demand. Customer based planning (at the level of municipalities or individuals) and involving the community has resulted in a revitalisation of several public transport services in Japan (ITPS, 2011) and has resulted in increased number of users. In Japan, the public transport revitalisation act of 2007 put municipalities in the forefront of tackling rural transport needs. Municipalities were encouraged to play a central role in the formulation of regional public transport plans. In some cases, also the private sector (local business) has been involved in designing the routes as well as financing initiatives in cooperation with local authorities. Indeed, putting customers at the heart of solutions is a key.

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

Better coordination between different types of services is required to increase efficiency

Transport services are administered, purchased and financed by different authorities. There is a significant potential for savings and economies of scale through coordination of special transport services by:

- Pooling of passengers.
- Opening up special transport services to public.
- Common planning and purchasing.

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

Experiences show there are significant benefits to gain. In Denmark, municipalities have achieved considerable savings by cooperating in service provision through an inter-municipal transport company.

Deloitte (2012) has estimated that there are substantial economies of scale and Danish municipalities could achieve savings of between 5-10% through coordinated and common planning and purchasing.

Better coordination could potentially also result in a more efficient use of the existing vehicle fleet as same vehicle is in use throughout the day for different types of services. Indeed, sufficient vehicle capacity is often available to provide public transport services but it is not necessarily utilised effectively. Smaller vehicles could be utilised better (for example taxi-buses) or the same vehicle could be in more effective use throughout the day.

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

Today freight, mail and passengers are moving separately. In areas of particularly low density population, combining transport services primarily provided for other purposes with passenger transport services can be an attractive option. In some countries the postal service operator is also a major bus operator. Combining postal services with passenger transport might be appropriate especially in cases where population is aligned on a linear corridor. In the United Kingdom, some experiments were made on postbus operation, where minibus replaced mail vans on routes connecting local sorting centres and collection points (White, 2011). While most of these services have now ceased in the UK, they might provide alternative options for demand-responsive transport.

New concepts will not remove the need for public funding for core services in many rural areas - but they can stop the increase in unit costs for providing those services. Sustainability of funding is still a key to support economic activity and promote social equity also in rural areas. Current legislation needs to be reconsidered in the light of the birth of new services, enabling innovation while also ensuring safety and security. Importance of aligning other legislation should be highlighted. Flexibility in school and work hours, including, teleworking, can help in aligning user needs and availability of transport services.

Quantitative taxi regulation constitutes an unnecessary restriction on competition and reduces economic welfare

Taxis are an important complement to regular scheduled public transport services in many countries. They also form a substantial part of total public transport market, especially in terms of turnover. Taxi services are particularly valuable to less mobile groups in the community, such as elderly and disabled people and citizens living in rural areas. Indeed, taxis are often used as means to travel for special (such as health care) purposes complementing other public transport services. It is important that such services are efficiently provided, meet users' needs and are priced correctly.

The question of taxi (de)regulation is therefore highly relevant for the discussion regarding public transport provision in rural areas. Politically, taxi regulation is often a difficult topic due to relatively high negotiation power of the industry compared with the taxi customers who often are not represented by one common entity.

Entry restrictions have been a key component of the regulatory regimes in several countries. However, international evidence suggests that restricting taxi numbers through quantitative regulation constitutes an unnecessary restriction on competition and reduces economic welfare (see for example OECD, 2007; ECMT, 2007). On the contrary, there is evidence that removing supply restrictions have resulted in increased taxi numbers, reduced prices and reduced waiting times. But particular attention must be given to transition arrangements when taxi licenses (“medallions”) were traded, often at quite high costs, as a necessary condition to have access to the market.

However, quantity and quality regulation should be clearly distinguished. There is a clear case for maintaining quality regulation in the taxi industry, including vehicle standards, requirements for driver training, safety and minimum service standards. These qualitative regulations should, however, be designed carefully to enable development of innovative services and market structures that benefit from reforms. In addition, evidence suggests there may be need for price regulation, for example in the form of maximum or minimum prices (see OECD, 2007). Moreover, if all taxi services are tracked by cloud-based applications, it could be easy for a regulator to regularly assess quality of service in a number of dimensions, as well as to have plenty of information to make an assessment of any specific complaint.

A particular aspect of the taxi market is the requirement to provide emergency preparedness on 24 hour basis, especially in rural areas. Overall, taxi service supply in rural areas is low, reflecting lack of commercially-viable operation. Especially in rural areas, taxi industry depends on reimbursement of public transport services in order to maintain sufficient income. Experience of deregulation in Sweden in 1990 suggested there was little effective competition in rural areas, suggesting a competitive bidding would be of benefit to public authorities. This is often presented as an argument for restricting competition. However, a counterargument can be put forward. The existence of only relatively few operators may have hindered further development of innovative new services. Furthermore, other ways of providing these services should be explored while other actors could access the market to stimulate new services (such as railways to improve feeder service to stations). Indeed, there is international evidence that the removal of quantitative restrictions has enabled a number of new, innovative, services to develop (such as shared taxis and taxibus operations in the United Kingdom after the reforms under the Transport Act 1985).

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Chapter 1

Publicly funded passenger transport services in Finland

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1. International Transport Forum, Paris.

Introduction

Mobility is one of the key elements that supports economic activity and promotes social equity. Yet, it is becoming increasingly difficult to provide transport services to citizens in rural areas without significant cost increases. With decreasing population in rural areas and structural changes in the societies, several countries face challenges in trying to keep costs of passenger transport services down while ensuring adequate service standards nationwide. This has led to lack of accessibility to key services in several regions.

Rural regions are often provided with much lower frequencies of service than elsewhere. They are also characterised by irregular service patterns. Transport services are either operated only on certain days of the week or on selected or alternating routes. Service capacity provision is often dominated by the needs of school travel or transport for health care purposes. These services are generally funded from central or local government budgets. Indeed, viability of commercially operating public transport services are limited and school transport, other special transport services and taxi services are the only public transport services in many rural areas.

Finland has a population of 5.4 million and average population density of 17 inhabitants per square kilometre. This makes it the third most sparsely populated country in Europe, after Iceland and Norway. Total government spending on publicly funded passenger transport services has dramatically increased during the past decade in Finland, reaching approximately EUR 1 billion in 2013. One of the main reasons for this increase is that an ageing and declining rural population has reduced the viability of commercial rural public transport, requiring government to step in. However, maintaining these services is becoming more and more expensive due to increasingly longer distances and fewer passengers.

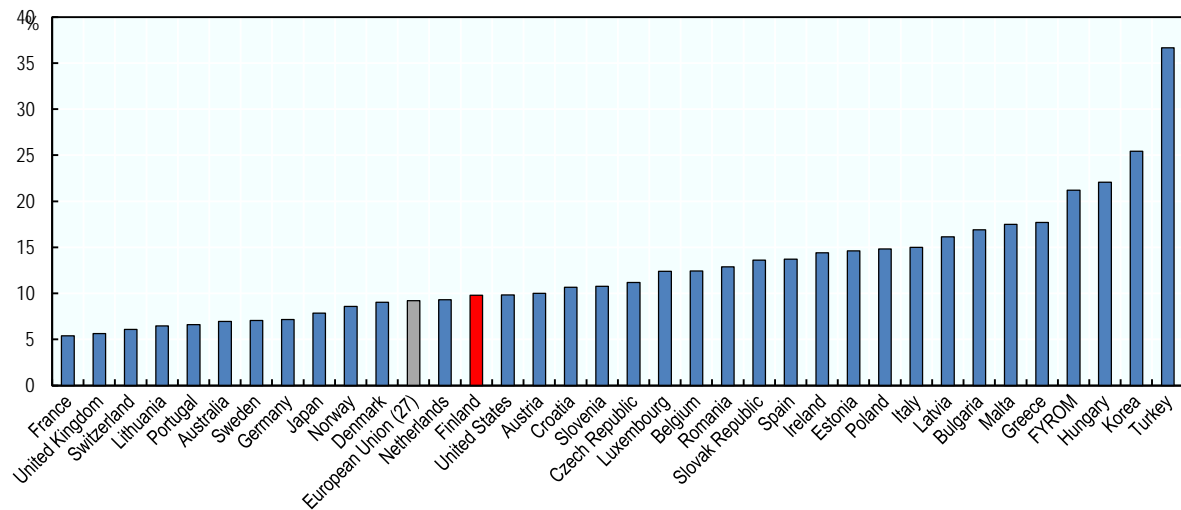
Like many other governments, the Finnish government is seeking to reduce its spending on publicly funded passenger transport services while ensuring service standards. An independent rapporteur concluded that there is a savings potential through more efficient procurement and planning of public transport services (MINTC, 2013a). By assignment of the Finnish government, the Ministry of Transport and Communications appointed a steering group in September 2013 to carry out the needed reforms. The members of the group represent several institutions responsible for, or affected by, the public transport provision, including ministries and associations, institutions and agencies. The work is scheduled to be finished in 2015.

This paper provides a short overview of the public transport market and the legislation for taxi and bus services in Finland. It provides a summary of publicly funded transport services by type of service and finally summarises some of the factors identified by previous research for the cost increases of these services.

Overview of public transport market in Finland

The share of bus transport of total passenger transport (as a percentage of total inland passenger-kilometres) is slightly above EU average in Finland. Buses account for around 10% of total passenger transport, compared with the EU average of 9% in 2011. The share of rail in total passenger transport, in turn, was 5% in 2011, below the EU average of 7%.

Figure 1.1. **Bus transport share of total inland passenger transport in selected countries, 2012**
Percentage of passenger-km

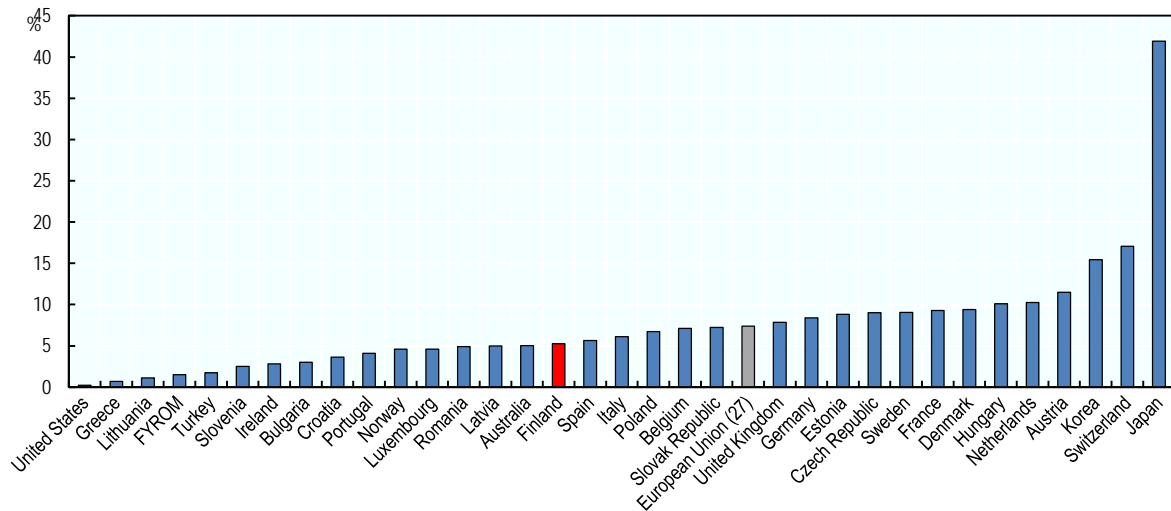


Source: ITF/OECD; Eurostat.

Over 600 million passengers used public transport services in Finland in 2013 with the total public transport supply around 1.5 billion vehicle-kilometres. Buses carried nearly 60% of total number of passengers. However, measured in passenger-kilometres buses accounted for 41% of the total 11 693 million passenger-km, while railways accounted for 34%. Taxis accounted for around 10% of both number of passengers and passenger-kilometres (Finnish Transport Agency, 2015). These differences in market shares are explained by the differences in the average trip length by mode (varying from over 500 kilometres for air to around 2 kilometres for tram).

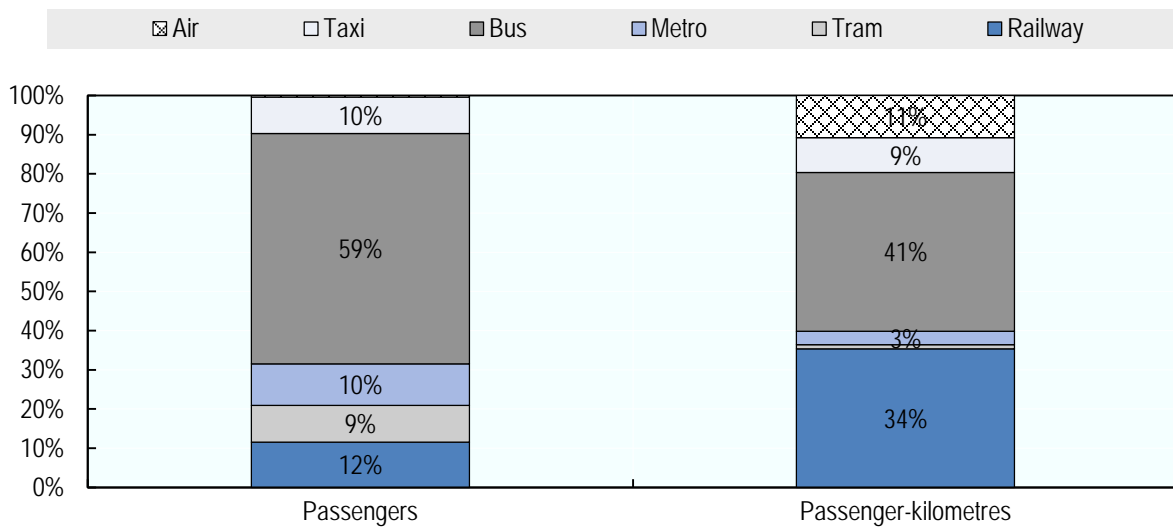
Data on public transport performance are compiled from several sources but generally they are considered reliable. The accuracy of passenger-kilometre figures for bus transport is dependent on the survey of average journey lengths. However, passenger surveys are carried out on a regular basis and any errors in the figures are small.

Figure 1.2. Rail transport share of total inland passenger transport in selected countries, 2012
Percentage of passenger-km



Source: ITF/OECD; Eurostat.

Figure 1.3. Market share of public transport in Finland in 2013



Source: Finnish Transport Agency, 2015.

Turnover of companies providing public transport services in Finland was 2 929 million Euros in 2013. Bus transport companies and taxis accounted for the largest share, 1 133 and 1061 million Euros, respectively. Of the total turnover, 587 million Euros (20%) came from public transport services in major cities (Finnish Transport Agency, 2015).

The following table presents the turnover of public transport industry by type of transport together with subsidies. Direct funding refers to purchases of transport by central and local government, state subsidies and the net amounts of deficit compensation for major cities. Reimbursement of transport expenses include compensation to and discounted tickets for special groups.

Total general government reimbursement and direct funding for purchases of public transport accounted for over one billion Euros in 2013, resulting in 36% share of the sector's turnover. Nearly 370 million Euros were allocated for the direct purchase of transport services, compensations of transport deficits or general funding of fare reductions, while over 670 million Euros were indirect reimbursements of travel expenses for special population groups.

General government spending share of turnover was highest for taxi transport (45%) followed by bus transport (44%) and rail (17%). Around 40% of the taxi reimbursements came from the central government and remaining 60% from local governments. For bus transport, 20% of the reimbursements came from the central government and 80% from local governments.

The subsidy rate, calculated as the share of direct funding per turnover, was 13% for the transport sector. The highest subsidy rate was for bus transport (27%), especially through local government direct funding of bus transport in major cities (50% of turnover). The subsidy rate for rail transport was 15% in 2013, consisting mainly of direct funding of railway transport in the Helsinki region.

Table 1.1. **Turnover and subsidies for public transport in 2013**
Million Euros

	<u>Turnover</u>			<u>Central government</u>			<u>Local government</u>			<u>Total general government</u>			Subsidy rate
	Direct funding	Reimbursement	Total	Direct funding	Reimbursement	Total	Direct funding	Reimbursement	Total	Share of turnover			
Railway total	458	44	6	50	25	3	28	69	9	78	17%	15%	
Long-distance	339	34	4	37				34	4	37	11%	10%	
Helsinki regional	56	1		1	25	1	26	26	1	27	48%	46%	
Other Helsinki	63	10	2	12		2	2	10	4	14	21%	15%	
Tram, metro	78	2		2	-18	4	-14	-16	4	-12			
Bus total	1133	51	44	96	260	143	403	311	187	498	44%	27%	
Major cities	390	6	0	6	189	7	196	195	7	202	52%	50%	
Charter	210	5	2	7		73	73	5	74	79	38%	2%	
Other bus	533	41	42	84	71	64	134	112	106	218	41%	21%	
Long-distance	83		6	6					6	6	7%		
Other route	450	41	36	78	71	64	134	112	100	212	47%	25%	
Taxi transport	1061	1	175	176		297	297	1	472	473	45%	0%	
Air transport	199	2	0	2	2		2	3	0	3	2%	2%	
TOTAL	2929	100	226	326	268	446	715	368	672	1040	36%	13%	

Source: Finnish Transport Agency, 2015.

Legislation for taxi and bus services

The Finnish Ministry of Transport and Communications prepares legislation regarding bus and coach transport as well as taxis. Bus transport in Finland is organised under the provisions of Public Transport Act (PTA), which is based on the Public Service Obligation (PSO) regulation of the European Union. The provision of professional passenger transport services in exchange for a payment is subject to a licence. The licence system is built on two licences: the basic licence is required in all kinds of public transport and entitles to operate general government purchased transport and private charter transport. For market-based transport and market-based demand-responsive transport there is also another licence required in addition to the basic licence.

Public bus transport can be organized either as a market-based system (no public financing) or procured according to the processes regulated by the PSO. The EU regulation on public service obligations establishes how public authorities may intervene in the market to guarantee the quantity and quality of public transport services. When authorities conclude contracts on the public procurement of public transport services, the provisions of the regulation and other legislation on public procurement must be observed.

Providing demand-responsive public transport services is also subject to a licence. The applicant must have a licence to operate public transport services and commit in providing services for a minimum of one year.

In case of market-based charter transport with minibuses (capacity with max 16 persons), the PTA requires minimum five passengers per ride (source, Ministry of Transport and Communications).

Provisions on taxi services are laid down in the Taxi Act. The purpose of the Act is to ensure high-quality taxi transport services throughout Finland. The maximum prices charged from customers for taxi services are established annually by government decree. Under the Taxi Act, the professional transport of people in passenger cars on public roads is subject to a licence granted by the local Centre for Economic Development, Transport and the Environment (so called ELY centre).

The owner of the taxi licence is obliged to provide taxi services primarily in the municipality for which the licence is granted. The ELY Centres confirm the maximum number of taxi licences per municipality on an annual basis (10 000 licences nationwide). The criteria for obtaining a licence are laid down in the Taxi Act. Examples of the criteria include that licence holders must have the professional skills necessary to provide taxi services and be able to meet their financial obligations.

In order to obtain a taxi driver's licence, applicants must complete compulsory training. The training requirements focus on traffic safety and the communication skills needed in customer service. The Act on the professional competence of taxi drivers entered into force at the beginning of 2010. New taxi drivers applying for a licence are required to have completed at least 30 hours of training. In addition, they must demonstrate their knowledge of the local environment to the organiser of the training. The taxi

driver's licence is valid for five years at a time. To renew his/her licence, a taxi driver must take part in further training lasting at least one day.

Publicly funded passenger transport services

There is no legal obligation to organise scheduled public transport services in Finland, except for school transport and certain travel for social welfare related purposes. Still, government as well as most regions and municipalities invest in providing these services as they are considered important part of the economic attractiveness and liveability of regions.

A number of different authorities manage the administration, procurement and planning of a range of passenger transport services. The Ministry of Transport and Communications, the Transport Agency, ELY centres and municipalities purchase scheduled public transport services and provide subsidies. Municipalities, the Finnish Social Insurance Institution (KELA), defence forces and the Ministry of Employment and the Economy reimburse several different travel expenses.

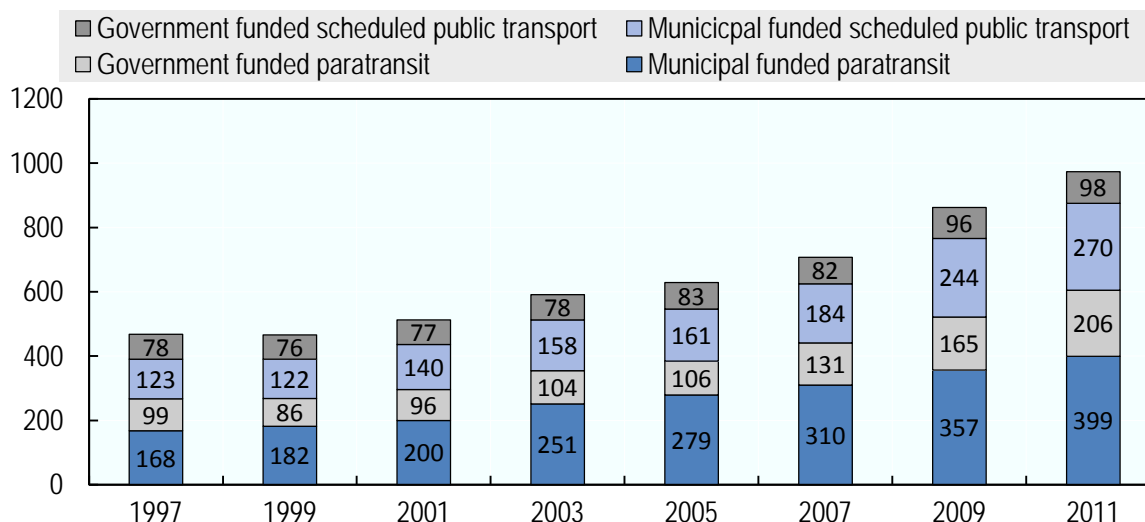
Publicly funded passenger transport services can be divided into two main categories:

1. Scheduled public transport (purchase of transport services and tariff subsidies).
2. Purchase or reimbursement of school transport and travel for health care (paratransit).

In 2011, for which more detailed data are available, the total cost of publicly funded transport services amounted to 973 million Euros in Finland. This accounted for 33% the total public transport industry turnover. Direct purchase of public transport services accounted for around 370 million Euros or 13% of total public transport turnover. In real terms, purchases have grown by around 70% from 1997 to 2011.

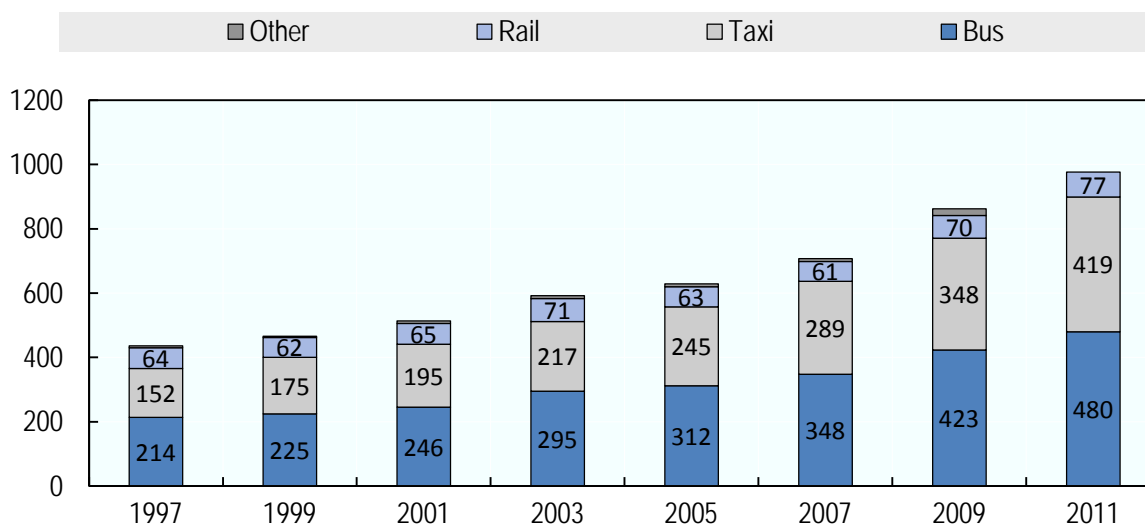
Figures 1.4 and 1.5 present total funding of public transport by source of funding and by mode. Over 60% of funding is directed to municipal or government direct purchase of transport services. Municipal purchases of transport services for school transport and health care purposes amount for the largest share, totalling nearly 400 million Euros (41% of total). By mode, buses account for half of public funding while taxes account for 43% (MINTC, 2013b).

Figure 1.4. **Total funding of public transport by source of funding**
Million Euros



Source: MINTC, 2013b.

Figure 1.5. **Total funding of public transport by mode**
Million Euros



Source: MINTC, 2013b.

A more detailed description of general government direct funding and reimbursement is presented in the following for each type of service.

Government funded scheduled public transport and fair subsidies

Government funded scheduled public transport amounted 111 million Euros in the 2013 Government budget. Majority of the costs are related to the purchase of long distance train services for areas where market based services are not available (33.6 ME) and purchase of bus and taxi transport in

rural areas, including subsidies for work travel (31.6 ME). In 2013, around 5.5 million passengers benefited from the bus transport in rural areas purchased by the government. The government subsidy is estimated at 4€ per bus passenger (Government Budget 2013).

Government also subsidises public transport provision in large and medium-size cities for 20 million Euros. This subsidy is aimed at increasing the service level and competitiveness of public transport in cities.

Government purchase or reimbursement of school transport and travel for health care

Government reimbursements of travel costs for health care related travel are largely paid by the Finnish Social Insurance Institution (KELA). The objective is to provide access to (the nearest) health care services regardless of place of residence. The subsidy is significant especially to people living in rural areas and for those over 60 years old. The customer is responsible for costs up to 14.25€ per trip (or for an annual total of 242.25€) after which all costs will be reimbursed. These reimbursements amounted 294 million Euros corresponding to 5.3 million trips in 2013. Of the total trips, 60% were taken by taxi and 20% by own car. The cost per trip is slightly higher for taxis (53€/trip) than for private cars (48€/trip).

Table 1.2. Government reimbursement of travel costs for health care in 2013

	Costs	Trips	Cost/trip
	Million Euros	Millions	Euros
Taxi	169	3.2	53
Ambulance	93	0.6	155
Own car	13	1.1	12
Other	19	0.4	48
Total	294	5.3	

Source: Giss (2014).

Most of the health care districts have created a direct reimbursement system which allows also for combining trips. In this model, each health care district has a booking system that forwards the request to the nearest available taxi. All passengers travelling at the same time to the same direction will be combined in the same order. The total travel time should not become longer than double the original travel time due to combination of trips (and should not exceed 2 hours). The waiting time is maximum one hour. KELA has estimated that combining trips has already provided annual savings of 8 million Euros.

The Finnish Social Insurance Institution reimburses also school transport for upper secondary schools. This subsidy is eligible for trips over 10 kilometres long for daily school travel (minimum 4 days a week). These subsidies amounted to 48 million Euros in 2012 of which most (69%) were reimbursements of travel by bus (€33 million) while most of the remaining subsidies were for students using their own car for school trips. According to current legislation, the student is responsible for costs up to 43 euros per month while the subsidy covers the remaining costs. Number of students receiving the subsidy has remained constant at around 50 000 since late 1990s. However, costs per passenger have increased significantly, from around 530 euros/student in 1998 to 865 euros /student in 2012.

Municipal funded scheduled public transport and fair subsidies

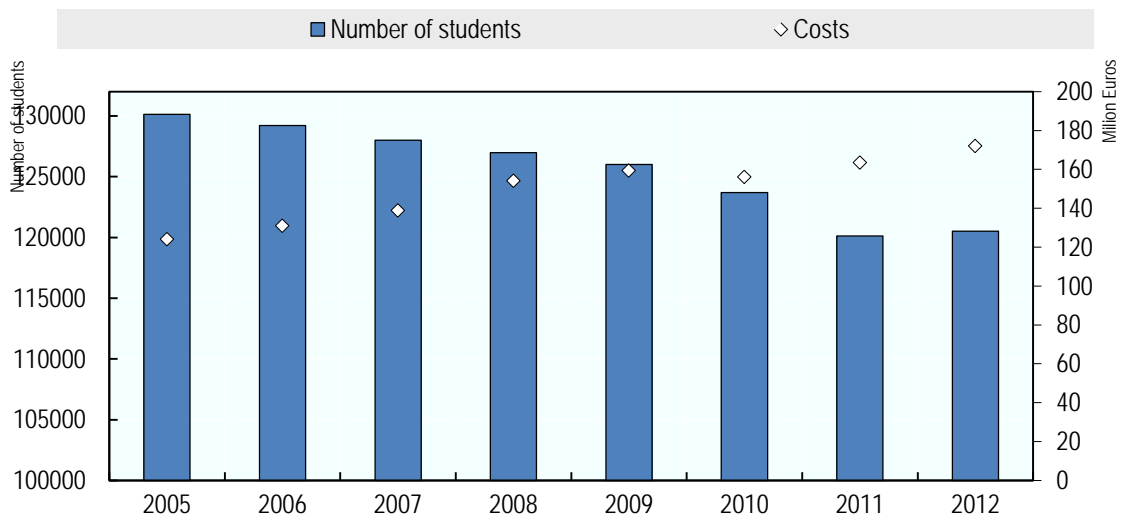
Municipalities subsidise local public transport with varying degree. Direct funding of scheduled public transport by municipalities amounted 270 million Euros in 2011. Of this, main part (155 million Euros) includes public transport provision in Helsinki metropolitan area. Purchase of scheduled public transport in small cities totalled 85 million Euros.

Municipal purchase or reimbursement of school transport

School transport for elementary and secondary school accounts for the largest share of municipal travel costs, amounting to 160 million Euros in 2011. These include tickets for scheduled bus services as well as bus and taxi services purchased separately by municipalities. The provision of school transport is laid down in a law according to which it is the obligation of the municipality to organise school transport for all students whose trip is more than five kilometres.

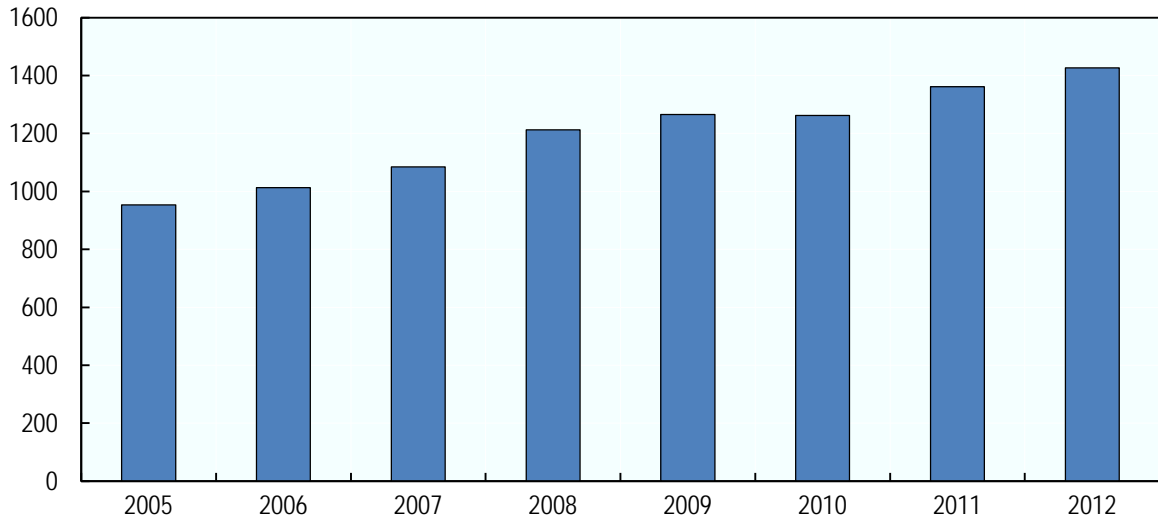
The number of students eligible for school transport has remained relatively constant at around 23% of total over the years. However, costs per students have increased from 953 euros per student in 2005 to 1426 euros in 2012. Other municipal obligations include the responsibility for organising transport services for those with limited access due to illness or handicap. These transport services amounted at 112 million Euros in 2011. In addition to those set by legislation, municipalities organised other discretionary transport services for other social welfare purpose amounting 28 million Euros (MINTC, 2013b).

Figure 1.6. Number of students and total costs



Source: Karvonen & Siltala, 2014.

Figure 1.7. **Cost per student**
Euros



Source: Karvonen & Siltala, 2014.

Summary of challenges

In Finland, passenger transport services funded from public resources are not the responsibility of a single authority. Instead, a number of different authorities manage the administration, procurement and planning of a range of passenger transport services. In 2012, the Ministry of Transport and Communications appointed a rapporteur to examine whether publicly funded passenger transport services could be combined. The report concluded that there is a considerable savings potential, especially with more efficient procurement and planning of transport services (MINTC, 2013a). Reimbursement are estimated to total EUR 900 million by 2030, instead of projected EUR 1.4 billion through concentration of the administration and financing of passenger services for one authority, taking more advantage of the combination of different kinds of trips and encouraging passengers and authorities to organise their trips in a more efficient way.

Despite efforts to maintain high level of services, accessibility is becoming an issue in rural areas and especially people with limited access have seen their service levels reduced in Finland. At the same time, the cost of publicly funded passenger transport services is estimated to be increasing at around 10% per year.

Several factors have been put forward in previous studies for the cost increase of providing public transport services in rural areas both in Finland and internationally (see for example MINTC, 2013a; MINTC, 2013b; Karvonen, 2014; Egeland et al 2009; White, 2014; Dotterud Leiren & Skollerud, 2014; Saroli, 2014):

- General cost increase in producing transport services.
- Increase in costs related to school transport and health care services as a result of closing down of schools in rural areas and reduction of services for elderly, resulting in longer distance for school and health care services related travel.
- Growth in purchase of statutory travel services (provided often by taxi) in rural areas and even in cities as a result of a decline in market based service levels, combined with reduced public funds for public transport.
- Lack of or suboptimal cooperation for procurement of transport services within and between municipalities and regional authorities.
- Transport services are not being planned comprehensively but each administration works on its own silo.
- Procurement of transport services, including taxi services, are not working very well as authorities lack know-how and information.
- There is no competition on taxi dispatching services while taxi licenses are based on quotas and prices are controlled, resulting with little or no competition.

The above challenges highlight the need for finding new and innovative solutions for keeping the cost of providing public transport services low while maintaining a high level of service in rural areas. Examples of international practices can provide useful information of efficient financial solutions and new ways of organising services.

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Chapter 2

Public transport provision in rural and depopulated areas in the United Kingdom

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Introduction

In drawing lessons from experience in the United Kingdom, it is useful to firstly examine some of the overall differences between the UK and Finland, both in respect of aggregate statistics and structure of the public transport system. The following statistics indicate the main comparisons.

Table 2.1. **Comparative statistics on Finland, United Kingdom and EU**

	UK	Finland	EU27 average
Population (2012) (million)	62.99	5.40	
Area (1,000 km ²)	243.80	338.40	
Population density (persons/km ²)	258.40	15.95	116.00
GDP per head (Purchasing PowerParity, PPP) (2011)	109	115	100
Percentage population change 2011-12	+0.8%	+0.5%	+0.3%
Person-km travelled ('000m) (2011)	767.50	77.40	
Person-km per head (2011)	12.185	14.331	
Modal split of motorised land transport (2011)			
Passenger cars	85.4%	84.6%	82.7%
Bus & Coach	5.9%	9.7%	11.2%
Rail	7.4%	5.0%	7.0%
Tram & Metro	1.4%	0.7%	1.6%
Car ownership per head	0.466	0.551	0.483

Source: EU Transport in Figures: Statistical Pocketbook 2013. European Commission, Luxembourg, 2013. Tables 1.1, 1.5, 2.3.3, 2.3.4, 2.3.5, 2.3.6, 2.3.7 and 2.6.1.

In many respects the main indicators are very similar (GDP in PPP terms, overall modal split, car ownership levels), with the very striking difference in population density, that for Finland being less than one tenth of the UK figure. In these circumstances it is not surprising that car ownership per head is somewhat higher (by 18.2%), and likewise total distance travelled per person (by 17.6%).

An implication of these contrasts is that even areas regarded as 'low density' within the UK might not be classified as 'low density' by Finnish standards, and this may affect transferability of results.

Structure of the Passenger Transport Industry in the UK

The term ‘United Kingdom’ (UK) refers to the whole of Great Britain and Northern Ireland, but for most purposes this text will deal with Great Britain (GB), comprising the island covered by England, Scotland and Wales. The population of Northern Ireland is approximately 1.5 million. There is also a substantial difference in the structure of the industries, in that Northern Ireland retains a largely state-owned structure through the holding company Translink, which operates the rail system, rural and interurban buses & coaches (Ulsterbus) and the Belfast city network (Metro). In these respects it has more in common with the adjoining Republic of Ireland than the rest of the UK.

Within Great Britain, the passenger transport industry has been largely privatised, and the bus and coach sector also subject to deregulation.

Rail industry

Network Rail (NR): a state-controlled body owning the infrastructure (track, signalling, stations, etc.). Funding is derived from access charges paid by train operating companies, but an increasing share comes direct in grants from the state. Hence, in order to estimate costs of different parts of the network it is necessary to apportion the state grant to them. It is effectively ‘nationalised’ in that the government guarantees borrowings, which are now made from the Treasury.

Train Operating Companies (TOCs): these operate passenger train services over specific parts of the network for which they have franchise contracts with the Department for Transport (DfT). The contracts specify a level of service to be operated, and a net grant to be paid to each company per annum based on its franchise bid (with adjustments to allow for other factors, notably variations in GDP). In a few cases a ‘premium’ is paid back to the state (i.e. total revenues exceed costs), although this is somewhat artificial due to the element of direct grant support for NR’s costs (above). However, companies operating in low-density regions generally receive a large net grant (for example, Scotrail, Northern Rail, and Arriva Trains Wales). In other cases, a mix of low-density routes and higher-density flows are handled by the same franchise (for example, East Midlands Trains, covering the London – Sheffield main line and adjoining regional services).

There are also some open-access operators, which do not have franchise agreement with DfT, but run commercially at their own risk on selected long-distance routes. Freight operators are important in terms of track capacity needs in some areas, but constitute only a small part of NR’s access charge income.

Rolling Stock Leasing Companies (ROSCOs). Almost all passenger rolling stock is owned by leasing companies, rather than the train operators themselves, who pay an annual lease charge for each vehicle. Hence, TOCs incur very few capital costs (rolling stock being leased, and infrastructure provided by Network Rail). A very small operating profit margin may thus suffice to give a high rate of return on capital.

The rail network has remained broadly stable since the early 1970s (following extensive closures of low-density routes in the 1950s and 1960s), and a number of improvements have been made to rural and regional services, notably in terms of frequency, rolling stock quality and opening of additional local stations. In some cases, additional assistance has been provided by local authorities for enhancements, and the ‘Community Rail Partnership’ (CRP) concept has enabled volunteers to assist with matters such as non-operational station staffing, and publicity. Some route reopening has also occurred, the most substantial example of which will be the Borders Railway, running south from Edinburgh to Tweedbank, due to open in 2015. From time to time, the concept of ‘micro franchises’ has been put forward, whereby low-density rural lines might be operated by a separate company from the main franchise holder for that part of the network, possibly with different staff working conditions & pay, and operating methods, but no such examples have emerged.

Bus and Coach Industry

In common with Finland, the British industry includes an extensive express coach network competing with rail, as well as local and regional services.

Express coach services were deregulated in 1980, with both price and quantity restrictions being removed. Subsequently, local bus services (except in London and Northern Ireland) were deregulated from October 1986 under the Transport Act 1985. Much of the industry has been subsequently privatised, but this process has not been universal. The two state-owned operating groups (National Bus Company in England and Wales, Scottish Bus Group in Scotland) were privatised in the late 1980s and early 1990s, and most of the urban operations owned by the local authorities have also been privatised, although about 11 remain. There is also a substantial sector of the industry which has remained in private ownership throughout, notably the smaller ‘independent’ operators often based in rural areas. These have always been particularly active in the ‘non-scheduled’ market (such as school contract work and private hire) but also operate scheduled local public services.

Prior to deregulation, substantial growth had occurred in the net financial support provided to bus operators via central government and local authorities, especially in some of the larger urban areas. As part of the deregulation process, operators were required to indicate what services they would run ‘commercially’, i.e. those on which all costs would be covered by passenger revenue, fuel duty rebate and concessionary fares compensation. The ‘fuel duty rebate’ was a rebate then paid of most of the duty (80%) normally paid on diesel fuel – for example if the usual duty were 50p per litre, then 40p would be rebated (paid back) to the operator. This applied only to scheduled local bus services, not long-distance coach services, or private hire, etc.

Concessionary fares compensation is the sum paid to operators where the local authority requires the operator to charge a lower fare (or no fare at all) to selected groups of passengers (mostly older people). This is based on the principle of ‘no better off, no worse off’, i.e. the financial position of the bus operator should be the same as if they had charged the normal fare to that category of passengers (most of the compensation is to allow for the net revenue loss, but allowance is also included for extra capacity costs where incurred: in most cases the concession applies only after the morning peak period, and capacity costs are assumed to be marginal, making use of empty seats). Hence, a ‘commercial’ service might receive about 80% of its income from passenger fares, the rest from the other two categories. Note that the fuel duty rebate has been replaced by Bus Service Operator Grant (BSOG), which serves a similar role, but also includes incentive payments for use of smartcard ticketing, low carbon vehicles, etc.

It takes different forms in Scotland and Wales, in the former now being based on bus-kilometres run, rather than fuel consumed (this is of benefit to rural services, which tend to be more fuel-

efficient: a criticism of BSOG is that it tends to favour urban services, which have poorer fuel efficiency).

It was accepted that not all services would be commercially registered, and that local authorities would wish to ensure provision of other ‘non-commercial’ services, especially to aid the mobility of those without access to cars. Prior to the deregulation effective from October 1986, operators were asked to give several months’ notice of services they intended to register commercially (specifying route and timetable, but not fares). Local authorities then had the opportunity to identify gaps in this network, and invite operators to bid for services to cover them. It was expected that most such operation would occur in rural areas, but in practice a more complex pattern emerged - for example, a rural service between two towns might be registered commercially for operation in the Monday to Saturday daytime period, but not during evenings or Sundays. Even in urban areas, some services were likewise registered on a part-day/part-week pattern. The effect, therefore, is that we do not find separate ‘commercial’ and ‘tendered’ services, but a complex mix.

The great majority of non-commercial services are secured by competitive tendering, in which the local authority specifies the service to be provided and invites bids. The lowest-cost bidder is (in most cases) then awarded the contract. This may mean, for example, that one operator runs a route during the Monday –Saturday daytime period, and another during evenings and Sundays. There is also provision for ‘de minimus’ grants, where (within a fixed upper limit) local authorities and operators can negotiate an agreed price, rather than a competitive tendering process occurring (for example, to divert an otherwise commercial route via an additional village, rather than contract a separate service for that purpose). About 20% of total local bus-km has been tendered in the period since deregulation, and 80% run commercially. The tendered percentage is generally higher in lower-density areas, as might be expected (in 2012-13, 14% in metropolitan areas, 23% in the rest of England).

The Transport Act 1985 also introduced some other changes with potential significance for rural areas:

Sections 12 to 16 reformed the regulation to taxi and private hire vehicle (PHV) services. These changes potentially introduced a mode intermediate between ‘bus’ and ‘taxi’ in terms of regulatory categories, which could be useful for low-density flows, especially in rural areas. However, developments to date appear to be very limited (see section 5 of this paper).

Sections 19 and 22 of the 1985 Act introduced wider scope for community transport operators to provide scheduled public services, and clarified the legal position. Services run under section 19 do not accept concessionary fare passes as they are not public transport services and do not have to register a route or area of service with the Traffic Commissioner. They can now be used by members of the public on the grounds of the remoteness of the area they live in, although people who use them are normally members of a scheme (e.g. a registered charity offering Dial-a-Ride services). They are typically used by people in really remote rural areas, or for intra-urban journeys by people with disabilities. Section 22 services have to register a route or area of service with the Traffic Commissioner (as for conventional bus services) and be subject to checks by the Vehicle and Operator Licensing Agency. They must accept concessionary fare passes, and are marketed and advertised like a public transport service. Anyone can use them (so long as their journey corresponds with the registered area of operation)

Prior to this, from the early 1970s, some services had developed in rural areas which were provided by community transport groups, typically running minibuses of up to 16 seats, driven by volunteers. These provide both private hire and local scheduled services open to the general public, often in low-density areas not served by conventional bus operators (for example, the ‘Cuckmere Community Bus’ in

East Sussex). The Minibus Act of 1977 clarified their legal status, and also that of minibuses owned purely for use by designated groups (for example, operated by charities to serve particular categories of user, or schools for their won pupils, etc.). These not-for-profit organisations are also able to employ paid staff, and bid for tendered services. However, this has raised concerns about fairness of competition with bus and coach operators who have to meet the fuller quality licensing requirements (for example, the EU requirement that each driver holds a Certificate of Professional Competence) who are also bidding for such services.

The term ‘demand responsive service’ is used to cover a wide range of services with flexible routing, which can be operated under the types described above, or as fully-registered bus services provided by a commercial operator (although very few of the services themselves are commercially viable and most rely on local authority support). Typically, smaller vehicles are used (8 to 16 seats) with all passengers pre-booking their trips in both directions. Some services are largely fixed routes with minor deviations on request (for example the ‘Call Connect’ service between Louth and Horncastle in east Lincolnshire). A more common pattern is that vehicles circulate within a defined area, usually centred on a market town, as applies to the great majority of the ‘Call Connect’ services in Lincolnshire (a concept sometimes referred to as ‘many to one/one to many’). These provides links into the town itself, and also interchange with trunk ‘Interconnect’ conventional bus services providing inter-urban links (for example, at Spilsby and Horncastle on the Skegness- Spilsby - Horncastle – Lincoln route). An element of many-to-many links (e.g. from one village to another) may also be provided. Almost all of rural Lincolnshire is now covered by Call Connect services where fixed routes do not operate; the main exceptions being around Lincoln (see www.lincolnshire.gov.uk).

Such services provide much greater flexibility than conventional fixed-route bus services, enabling, in effect, a higher level of service to be provided over an area within a given budget. However, there are some limitations, notably the pre-booking requirement which may be inconvenient for some users in contrast to simply turning up at a stop for fixed-route timetabled service. A distinction should also be drawn between demand-responsive services which provide door-to-door links (e.g. calling at the homes of users), which may clearly be of great benefit to those unable to walk to the nearest stop, and those which serve a convenient picking-up point in a rural settlement (akin to a traditional fixed-route bus stop).

Trends in the bus and coach industry

The overall effect of the deregulation was to encourage a radical reduction in operating costs (for all types of bus services), which eventually resulted in unit cost per bus-km in 1999/2000 being about 45% below those for 1985/86 (i.e. the year immediately before deregulation) in real terms. A number of factors contributed to this:

- Use of smaller vehicles, with lower capital, maintenance and fuel costs.
- Radical changes in operating practices by existing operators, associated with the threat of competition (both on commercial and tendered services). Sharp reductions were made in administrative and engineering staff, and driver schedules made more efficient.
- Greater variation in wage levels and working conditions. National negotiations with trade unions were replaced by local negotiations, resulting in wage rates reflecting local labour markets. This may have been particularly beneficial in some rural areas, in which a much lower wage rate was still sufficient to recruit staff.

However, the shift to smaller vehicles was somewhat artificial, and in many cases has been reversed, especially within urban areas. Nonetheless, many lower density and rural routes are now operated by relatively small vehicles (such as the Optare ‘Solo’ seating around 25-30 passengers).

From 2000, unit operating costs in the industry have increased, notably due to the need for better wages and working conditions to recruit staff (although large regional variations remain), but nonetheless remain approximately 25-30% below the 1985/86 levels in real terms.

The DfT publishes statistics at an aggregated level, rather than for individual operators. Data are also published at a more local level, indicating bus trips per head of population by local authority area (but a substantial time series is not available). A separate ‘rural’ series is not available, but statistics are provided for the ‘rest of England’, i.e. excluding London and the six metropolitan areas (the six largest conurbations within England outside London). Note, however, that much of the bus ridership in this category will be within urban areas rather than rural or lower-density areas. More recent data is for ‘England outside London’, i.e. including the metropolitan areas.

Table 2.2. **Bus Industry trends since 1985/86**

	From 1985/86 to 2007/08 inclusive	2007/08 to 2012/13 inclusive
	Rest of England	England outside London
Passenger trips	-16%	- 2% *
Bus-km run	+ 42%	- 2% *
Real fare index	+30%	+ 8.2% *
Real cost/bus-km	-34% (to 2006/07)	+17.7%
Real cost/pax trip	+ 6% (to 2006/07)	+19.1%

Notes: Real’ changes to 2007/08 are measured at 2007/08 prices.

*still corresponds to ‘rest of England’ area.

Changes to 2007/08 inclusive derived from DfT Public Transport Statistics Bulletins to 2008 incl. Changes between 2007/08 and 2012/13 derived from DfT tables BUS 0103 (pax trips), BUS0407a (cost per pax trip), BUS0405 (fares index) (real changes being measured at 2012/13 prices). Separate series are shown due to changes in definitions from 2008 in cost data.

The sharp decline in cost per bus-km is clear. The large increase in bus-km run was associated with use of smaller vehicles and improved frequencies. The passenger trips reduction is associated primarily with growth in car ownership over this period. Note, however, that the real fares index grew by about 30% to 2007/08, i.e. while competition (or threat thereof) may have affected costs, there has been little direct ‘on the road’ competition, especially in rural areas, and even where this has occurred has tended to focus on service levels rather than price.

The effect of the large rise in bus-km run and reduction in passenger trips was that the average load carried per bus-km fell dramatically, and cost per passenger trip rose by 6% to 2007/08. It rose further, by 19.1% between 2007/08 and 2012/13, but in this case mainly due to the rise in cost per bus-km.

It should be noted that ridership trends have been affected by the large extension of concessionary travel. From 2001 a compulsory national scheme was introduced in which the concession fare for older and disabled users could not be more than half the fare otherwise charged. This was extended, firstly in Wales and Scotland, to provide entirely free travel after the morning peak period, and likewise for the local area of residence within England from April 2006. From April 2008 concessionary pass holders in

England could travel throughout England free of charge during the eligible periods. There is strong evidence for a large increase in the take-up of passes, as well as for increased travel by those previously holding a half-fare pass. It is likely that the extension of free concessionary travel was the main factor, offsetting the effects of rising car ownership during this period. Concessionary passenger journeys as a percentage of the total bus passenger journeys in the non-metropolitan areas in England rose from 31% of all trips in 2007-08 to 36% in 2011/13 (DfT Table BUS0105). However, a large increase in public expenditure has occurred as a result.

From the bus operators' viewpoint, the composition of gross business income does not vary as much as might be expected. For example, in 2009/10, the main elements were as shown in Table 2.3.

Table 2.3. **Composition of Operator Income in 2009/10**
(percentages)

Category of region	Passenger revenue	Gross support*	Conc comp	BSOG
London	47	34	12	6
English Metropolitan areas	56	10	23	10
Rest of England (inc. rural)	52	20	20	9

Source: DfT Table BUS0501a (NB Discontinuity from previous series).

Note: * includes local authority associated expenditure (e.g. administration of service tendering process).

Evidence from the National Travel Survey (NTS)

The National Travel Survey (NTS) in Britain is exceptionally comprehensive, having been conducted continuously since 1988, enabling both annual changes and seasonality to be monitored. A large sample of households is interviewed each year. A very good response rate (approx. 60%) is obtained for a seven-day travel diary in which trips by all household members are recorded. All modes and trip purposes are covered (apart from international travel). Until the end of 2012 (the period for which data below have been extracted) the whole of England, Wales and Scotland was sampled, but since the start of 2013 England only.

Data are classified by type of area in which respondents live. For this purpose, 'rural' was defined as settlements of under 3,000 people (which could include some smaller towns as well as villages and smaller settlements). As one would expect, residents in such areas tend to have much higher car ownership than in larger urban areas, even among the lowest income groups, and the public transport market share is lower. Nonetheless, public transport continues to play a significant role.

Table 4 below shows an expanded version of NTS Table 9903, helpfully provided by DfT. This is based on a broader definition than shown in the NTS published tables, by including within the 'public transport' the category of 'private bus' (i.e. a bus or coach hired for use by a particular group of passengers, rather than carrying passengers at separate fares. Most of these are probably school services, the provision of contract 'works' services for particular employers having declined markedly in recent years). Trip rates are averaged over two successive years, due to sample size limitations. The overall trip rate in rural areas by public transport has remained broadly stable, at 53-59 per person per annum, the net reduction being mainly in 'private bus'. 'Local bus' has remained broadly stable (falling from 30 to 28). Growth in concessionary travel by bus will have affected trends during this period (see above). Taxi/PHV use has remained remarkably stable at 5 or 6 per person per annum.

Table 2.4. **Expanded data from NTS Table 9903 for rural areas** (trips per person per year)

Year	Private bus	Local bus	Rail	Taxi/PHV	Other pub	All public
	12	30	9	5	3	59
2003-04	11	30	9	5	2	57
2004-05	12	29	10	6	2	59
2005-06	11	28	10	5	3	57
2006-07	10	28	10	5	2	55
2007-08	10	29	9	5	1	54
2008-09	10	29	9	5	2	55
2009-10	11	27	9	5	2	54
2010-11	10	29	9	5	2	55
2011-12	9	28	9	5	2	53

Source: Special tabulations from DfT provided at author's request, May 2014. NB Trip rate for each mode rounded to nearest whole number.

In addition to recording trips made, the NTS also includes an interview with each household sampled, in which general background data (such as car ownership) is obtained. This includes a stated estimate of walking time to the nearest bus stop, and the frequency of service provided. Published NTS data then indicate percentages of the population living with given walking times of the nearest bus stop, and also an 'availability indicator', defined as the percentage living both within 13 minutes' walk of the nearest stop, and with at least an hourly daytime service. As might be expected, a much higher proportion of the urban population lives within a short walking time of the nearest stop, and also has a high level of service, but it is noteworthy that the rural levels have improved considerably in recent years. The national average value for the 'accessibility indicator' for buses is very high, largely influenced by levels in urban areas – the overall average rose from 90% in 2002 to 91% in 2012, but the large improvement in rural areas, from 46% in 2002 to 61% in 2012, is noteworthy, probably influenced by improved levels of rural services and especially demand-responsive provision (source: NTS Table 0801).

Under the 2011 census, revised definitions for rural areas have been adopted (NB data above are all based on the earlier NTS definition of settlements under 3,000 population), in which distinctions are drawn between 'rural towns and fringe', and 'all rural villages, hamlets and isolated dwellings'. These have been used in an assessment of travel indicators by the DfT, drawing on NTS data from 2008 to 2012 by area type¹.

Development of demand-responsive services

The development of demand-responsive services has been stimulated by improvements in route planning software which enables more effective and efficient planning of journeys in response to users' requests received at fairly short notice prior to trips being made. Replacement of low-frequency fixed-route services by demand-responsive services circulating in the same area may provide better service coverage within the same budget. The Lincolnshire example cited earlier is probably the most extensive

in Britain, both in the areas covered and periods of operation (typically about ten hours per day, Mondays to Saturdays). Elsewhere, such services tend to have more limited coverage, both spatial and temporal.

However, unit costs per passenger trip are often very high, even when netting out fare receipts, in the order of £4-£6 or even higher in some cases. They do not necessarily form a cheaper alternative to fixed route buses when usage (as distinct from area coverage) is taken into account – in other words, demand-responsive services may enable a planning objective to be achieved more readily within a given budget (e.g. that all residents of a rural area should be served at a given level of accessibility), but on a cost per trip basis (taking usage into account) may still be very costly. An admittedly extreme example is the case of the ‘Shropshire Link’ services, introduced in November 2008 to cover much of the rural areas within that county, in replacement of fixed-route services (the proportion of the population with a service at least two days per week rose from 57% to 95%)². However, costs were very high, in the last full year of operation (2011/12) totalling £571,000 versus income (including concessionary compensation and school contract work as well as passenger fares) of only £64,000. Average support per passenger trip was approximately £19 in 2013³, and all services have now ceased (although some limited replacements have been provided in certain cases).

It does not necessarily follow, therefore, that demand-responsive services or other innovative types are necessarily a cheaper option than conventional services (although this will depend on density of demand - see below) and when severe expenditure cuts are being made could easily be withdrawn.

A useful review of recent research on DRT services is provided by Loughborough University⁴, ‘DRT for DRT’. This summarises the results of a project undertaken in the period 2010-2013. An overall review indicated 369 DRT schemes which had been operated during the period 1997 to 2012 by 59 organisations in Britain. The number operating at any one time has risen sharply from under 50 in the late 1990s to a peak of over 250 in 2010, but subsequently had shown some decline, associated with funding cuts. The future could see either more cuts, or scope for a wider role as conventional transport declines, for example in response to mobility needs for an ageing population. Modelling of demand (trips per user per week) for the Call Connect services in Lincolnshire (as described above) indicated a negative relationship with population density, but positive for mobility impairment and travel for work. An enhanced demand model was calibrated from two areas, one of which was rural. This indicated a willingness for both car users and existing bus users to use a DRT service (providing door-to-door access), at a higher fare than existing bus fares. The research also indicated potential new markets and products for DRT in rail station and airport access, workplaces outside the urban core for employers, and an integrated DRT supply for the general public.

The appropriate role for smaller vehicles

As indicated later in this report dealing with taxis, there is extensive evidence of growth in supply and use of taxis Britain, but most of this appears to be of the traditional ‘single hirer’ form, rather than use of innovative service types such as shared taxis or taxibuses which could be of value in rural areas.

There is also extensive experience of demand-responsive services, although in many cases these incur much higher total operating costs (and public expenditure) per passenger trip than the average for conventional rural bus services.

Scope for wider use of taxi-based options was examined in a report published by the former Commission for Integrated Transport in in 2008⁵. This reviewed demand-responsive and shared taxi schemes in a sample of UK rural areas, and also elsewhere in Europe (especially the ‘Traintaxi’ and ‘Regiotaxi’ in the Netherlands). It proposed a county-wide experimental scheme in Britain, integrating taxi, community transport and demand-responsive services. It also noted some of the constraints on taxis, notably the small licensing areas in which they are permitted to operate, the application of Value Added Tax (VAT) to taxi fares (which does not apply to bus fares) and lack of eligibility for BSOG. Work undertaken in conjunction with this study is described by Mulley⁶, especially in respect of the scope for shared taxi services, indicating lower unit costs elsewhere in Europe than in the UK.

Clearly, one problem which arises in making comparisons between the different options available is that density of demand will affect unit costs. Demand-responsive and taxi-based modes may be much more expensive than a supported bus service due to lower densities of demand which they are serving - conversely it would be illogical to use them to substitute for a fixed-route bus service where that was cheaper - so some form of like-with-like comparison is needed. In this respect, a very useful synthesis has been provided by Wright⁷, drawing on experience of a number of experiments in the ‘FLIPPER’ pilot projects in Europe. He examined costs per passenger trip, as related to density of demand, deriving the broad guidance presented in Table 2.5.

Table 2.5. **Indicative guidance for vehicle choice related to density of demand**

Trips per vehicle hour x trip length [i.e. passenger-km per vehicle-hour]	Suggested vehicle choice
Less than 10	Taxi
Between 10 and 20	Taxi(s) or flexible minibus – choice will depend on availability and relative costs locally
Between 20 and 50	Flexible minibus, with lower degree of route flexibility at the higher end of the range
Greater than 50	Largely fixed route bus, with limited deviations

Source: derived from Wright 2013, Table 4.

Taxi regulation issues

Taxis in Britain form a substantial part of the total public transport market, especially when considered in terms of revenue rather than physical passenger trips. Their current role in rural areas appears to be limited, but potentially they could play a more substantial role as a mode intermediate between bus and private car.

Main features

Some basic definitions:

A taxi ('hackney cab') is a vehicle licensed to 'ply for hire' on street, with a metered fare scale. There are usually some quality controls on drivers & vehicles (in addition to the usual legal requirements for driving licences, vehicle insurance, etc.), and sometimes on the quantity of taxis licensed in a specific area. A 'taxi' is a vehicle of up to 8 seats.

Private Hire Vehicle (PHV) – or 'Minicab' in London. A vehicle offering pre-booked trips only, not metered. The price is agreed between the operator and the customer.

Outside London, these distinctions are less marked (as many taxis are pre-booked by phone call, for example). Some terms are used more generally e.g. 'cab', to cover both types of service, and users may not always distinguish between them (hence in the National Travel Survey they are combined in a single category). The growing use of mobile phone apps also makes the distinction between the two categories less meaningful than before.

In Britain, quantity licensing never applied to PHVs, but was applied extensively to taxis, and remains in a number of areas (discussed further below).

There is a wide range of quality controls, from very strict in London (covering driver licensing, taxicab design, and extensive understanding of the inner London road network, known as 'The Knowledge'), to very minor elsewhere.

Several market sub-sectors may be defined. 'Taxi ranks' are places set aside specifically for taxis to pick up customers, usually at points of concentrated demand (airports, railway stations, town centres, etc.). Vehicles queue in order of arrival. 'Street cruising' describes the case where empty taxis may run along streets, with a sign indicating that they are available for hire, and pick up passengers at the roadside on request. This is most common in central and inner London, and other large cities. The 'pre-booked' market is probably the largest both for taxis and (by definition) PHVs, with bookings made by calling at an office, by phone, etc. 'Radio circuits' provide a means by which calls from a wide range of potential users can be offered to individual taxi drivers, identifying the driver closest to the point from which the customer wishes to be picked up. Many taxis are run by owner-drivers or very small businesses, and these provide a means of efficiently combining calls from many customers.

It should be noted that efficient and profitable operation of taxis and PHVs rests on securing a succession of calls during the period of a driver shift, which may be aided by use of radio circuits, etc., and are most likely to arise in areas of high-density demand. Hence, while taxis and PHVs may appear attractive in rural areas by virtue of vehicle size, demand density makes this difficult to justify commercially.

Overall trends

Overall trends in Britain indicate a large increase in supply of licensed taxis over the last thirty years.

Table 2.6. Trends in taxi licenses in the United Kingdom

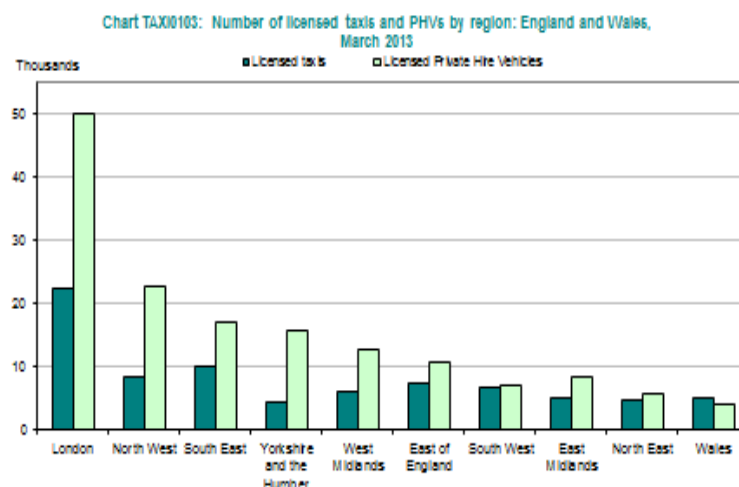
Year	1981	1992	2005	2011	2013
London	12,600	17,600	20,800	22,600	22,200
England & Wales (outside Lon.)	17,800	31,800*	47,200	50,400	55,700

Note: * 1991 figure: all districts licensed only from 1986.

More drivers than taxis are licensed in London. This a traditional feature, linked with double-shifting and part-time working: for example, an owner-driver might drive their own vehicle for one shift, then rent it to another driver for a second shift within the same day. In 1981 the ratio of drivers to vehicles was 1.41, but this fell to 1.15 in 2013. Outside London, more taxis than taxi-only driver licences (37,600 in 2013). However, there are also many cases of ‘dual’ taxi/PHV driver licensing outside London (78,300 dual licences in 2013).

As can be seen, usage peaked in 1998/2000, and has fallen slightly since but still remains well above the level of 1985/86. Hence growth can be seen in both in supply and use, higher in the former. A supplementary expanded tabulation of NTS Table 9903 has been helpfully supplied by the DfT, giving a breakdown of the trip rates per person by each mode, by type of area; from 2002/03 to 2011/12 (two years’ data are combined, given limited sample size from a single year). This indicates that taxi/PHV trip rates are typically highest in metropolitan built-up areas, followed by London and large urban areas, but substantially lower in small urban (3,000 to 25,000 population) and rural areas (under 3,000).

Figure 2.1. Number of licensed taxis and PHV’s by region in 2013



Sources: Transport Statistics Great Britain 1992 table 5.9 [data for 1981 and 1992] and Department for Transport Statistics table “Taxi0103” [2005 to 2013], from which the chart below is derived.

It should be borne in mind that the number of vehicles licensed in an area may not be best indicator of supply – for example, as taxi numbers grow from a low base, double-shift working may be reduced. Hours of service operated (e.g. vehicles x hours per vehicle per day in operation) is a more useful indicator, but not usually available.

Trends in PHVs are less clear than for taxis due to lack of comprehensive licensing in the past. The total in England & Wales (excluding London) was 84,500 in 2005 (versus 47,200 taxis) and 102,700 in 2013 (versus 55,700).

Operators are licensed separately for PHVs, as well as drivers (for taxis, licensing applies to individual drivers and vehicles only). In 2013 in England & Wales there were 16,100, including London. PHV-only drivers totalled 88,300.

In London, in 2005 there were 2,300 PHV operators, 40,000 vehicles, and 38,000 drivers licensed (Full licensing was only introduced in 2004). In 2013 there were 3,200 operators; 49,900 vehicles; and 67,000 drivers (This growth being an effect of the full roll-out of the licensing system, and real growth. There is also high driver turnover). [Source: DfT Table ‘Taxi 0103’].

In addition to the growth in the supply of taxis and PHVs, their total usage has also grown strongly. NTS data (for taxis and PHVs combined) indicates the following average rates per person per year.

Table 2.7. Average usage rate for taxis and PHV’s

Year	Trips	Miles
1975/6	n/a	13
1985/86	7	27
1998/2000	13	63
2008	11	54
2009	11	56
2011	10	55
2012	10	53

Sources: NTS 2008 tables 3.1, and 3.2, and earlier years; tables 0304 and 0305 in 2009, 2011 and 2012.

Note: Published data are rounded to the nearest whole number, which particularly affects the number of ‘trips’ shown. The National Travel Survey (NTS) is a very comprehensive household-based survey, covering all household members and all modes of travel, which has run continuously since 1988.

As can be seen, usage peaked in 1998/2000, and has fallen slightly since but still remains well above the level of 1985/86. Hence growth can be seen in both in supply and use, higher in the former.

A supplementary expanded tabulation of NTS Table 9903 has been helpfully supplied by the DfT, giving a breakdown of the trip rates per person by each mode, by type of area; from 2002/03 to 2011/12 (two years’ data are combined, given limited sample size from a single year). This indicates that taxi/PHV trip rates are typically highest in metropolitan built-up areas, followed by London and large urban areas, but substantially lower in small urban (3,000 to 25,000 population) and rural areas (under 3,000). For example, in 2011/12 these were:

London Boroughs 8*
 Metropolitan Built-up areas 18
 Large urban areas (over 250 000) 12
 Small urban (3 000 – 10 000) 5
 Rural 5

*This figure may be affected by lower response rates in London

The pattern in previous years from 2002-03 was similar (rural never exceeding 6). It would thus appear that rural taxi/PHV usage is lower than the national average, rather than this mode acting as a substitute for other public transport.

The national average trip rates indicate a substantial share vis a vis local buses, which had 75 trips and 408 miles per person per year in 2009 (including London) – taxi & PHV rates as a percentage of bus rates were thus 13% on both indicators (for rural areas, the trip rate share was marginally higher at 17%, but note effects on trip rates of rounding). In terms of user expenditure, due to much higher cost per passenger trips for taxis and PHVs, these modes are of similar importance. For example, in 2001 user expenditure per trip was approx. £3.30 (from NTS), giving a total taxi/PHV revenue approx. £2 320m (versus £2 900m for local buses). In 2002/03 about 18% of all weekly household non-motoring transport spending was on taxis/PHVs (versus 17% for bus & coach fares, excluding combined bus/rail tickets). The overall average trip length for taxis/PHVs was 4.7 miles (7.5 km) in 2009, similar to that for local bus.

Given the higher cost per trip for taxi/PHV than local bus, one might expect usage to be concentrated mainly in higher-income groups. However, this is not the case. Higher use is found in members of non-car-owning households: in the 2002-2003 NTS, 28 trips per person per year for these respondents (of which 7 were for shopping), versus 7 for members of car-owning households (of which less than 1 was for shopping). NTS data also indicates a concentration of taxi/PHV use among younger age groups and females. The peak demand occurs late night on Fridays and Saturdays, associated with leisure trips, especially those returning from urban entertainment centres.

Only a very small proportion of people use taxis/PHVs at high frequency. 2007 patterns from NTS data for the whole sample indicate:

3 or more times a week	2%
Once or twice a week	8%
< once a week, > once or twice a month	5%
Once or twice a month	13%
< once or twice a month, > once or twice a year	14%
Once or twice a year	15%
Less than once a year, or never	43%

Likely factors behind the growth

The interesting question that arises is why a labour-intensive mode in a high-income country should experience both increasing supply and increasing usage. One would normally expect such activities to be associated mainly with countries in which low real incomes are found (note the role of 'paratransit' in many developing countries), but as car ownership rises, a reduction in such labour-intensive activity might be expected. A number of factors may explain these trends:

Supply-side effects. Due to loss of employment in traditional industries, unemployed workers may have sought taxi/PHV driving as an alternative occupation. This may be found in areas such as those in which coal mining or steel-making employment declined in the early 1980s, for example. More recently, a general growth in 'self-employment' has been noted in the British economy (of which taxi/PHV driving can be seen as one example), following effects of the economic recession.

Changes in bus service provision, following the Transport Act 1985 (see discussion below). There was a period of unstable provision of bus services (even though total bus-km run increased), and cuts were made in evening and weekend services (when leisure demand is at its highest). Although greater stability has returned to the bus network, evening and Sunday services levels in many areas remain low.

A growth in the ‘night time economy’, following relaxation of rules on licensing of premises serving alcoholic drinks. There has been a rapid growth in total drinking activity (especially among young adults), and also later into the night (previous licensing rules typically imposed closure at about 2300, but this is now later in many areas, with a demand for return trips home around 0100-0200). Even when better evening bus services were operated, they did not run at these times (and very few areas outside London offer substantial all-night public transport services).

Increased awareness of the dangers of ‘drink driving’ and enforcement of regulations, resulting in those who have drunk alcohol being unlikely to attempt driving their own cars.

Some ‘trading up’ from bus to taxi travel as real incomes rose (prior to the recession) - for example, someone shopping by bus may find it convenient to travel to the shops by bus, but then return home by taxi with their load of shopping (hence high taxi/PHV use for shopping trips by those in non-car-owning households, above).

Concerns re personal security, especially for late night travel (this may apply, for example, to employees of restaurants and bars, as well as customers returning home).

The regulatory framework

The regulatory framework for taxis and PHVs stems from a number of laws, and there has been no comprehensive reform so far. However, the Law Commission has undertaken a review, results of which were published on 23 May 2014⁸, discussed further below.

The main law regulating taxis outside London is very old-established – the Town Police Clauses Act of 1847. PHVs were not formally regulated until Local Government (Miscellaneous Provisions) Act of 1976. Furthermore, these laws were permissive (i.e. enabling local authorities to exercise licensing powers, but not compelling them to do so). Generally speaking, licensing powers are applied at the lowest level of local authorities (districts within two-tier authorities, Metropolitan Boroughs in the larger cities outside London, and unitary authorities where there is no two-tier structure). This results in each authority covering a relatively small area. London is a marked exception, with a single licensing authority (Transport for London, TfL) covering the whole Greater London area (over 8 million people).

The Transport Act of 1985 was designed principally to reform the system of control for local bus services, introducing the concept of ‘deregulation’, but as part of this change it was desired to introduce powers to permit shared taxi and taxibus operations. This made it necessary to make taxi regulation compulsory for all districts (a small number, mainly in more remote areas, had not previously exercised their powers to do so). The main changes were as follows:

Section 10: Taxi sharing at separate fares, i.e. in which the driver would charge a separate fare to each passenger (as distinct from passengers sharing the costs among themselves). Previously only one person was deemed to be hiring the taxi (the ‘single hirer’). However, the impacts of the changes appear to have been very small.

Section 11: Permits advance hiring of Taxis and PHVs at separate fares (likewise, impacts appear very limited).

Section 12: Permits 'taxibuses' (in which vehicles licensed as taxis can run scheduled local bus services, charging separate fares for each passenger, without the need for the full licensing requirements that apply to bus and coach operators). Routes can be registered by the operator as a commercial venture, or as a tendered service for a local authority. The Local Transport Act of 2008 extended this to PHVs.

Section 15: Enabled extension of licensing areas to match those of current local authorities (previously a number of examples existed where smaller authorities had been merged to form a single authority, but the inherited licensing powers applied only within each of the areas of the former authority, rather than over the whole of the new authority's area). Once such areas have been merged, it is not possible to reverse this process.

Section 16: Enabled licensing authorities retained right to limit numbers where 'no significant unmet demand' was observed. This was in marked contrast to the general approach of the 1985 Act, which completely removed previous quantity licensing for local buses, and it might have been expected that similar limits would have been removed for taxis. While authorities wishing to retain such limits had to establish a case for doing so, unlike buses, no timescale was set for making changes, or to justify the status quo. It was not possible for authorities not already imposing quantity limits to introduce them, but where a quantity limit has been applied, an authority had the options of retaining it, raising the limit, or abolishing it altogether. In a few cases, authorities who had removed quantity limits later re-imposed them, as indicated in the Law Commission's report⁹. Note that London, while applying strict quality controls, has never imposed a quantity limit on the number of licensed taxis.

Note that PHV licensing was still not comprehensive.

These changes potentially introduced a mode intermediate between 'bus' and 'taxi' in terms of regulatory categories, which could be useful for low-density flows, especially in rural areas. However, developments to date appear to be very limited.

The effect of encouraging removal of quantity limits has been very gradual. Data for all taxi licensing authorities in England and Wales (excluding London) is regularly collected by the DfT. The latest data covers the situation at 31 March 2013. Excluding those not responding to the DfT survey, 220 authorities imposed no limit, but 86 did so (71.9% and 28.1% respectively). Higher proportions imposing a limit can be observed urban areas, and in the North West, Yorkshire & Humberside, and South East regions (inferences by the author from DfT table 'Taxi 0106'). Ideally, it should be possible to observe whether there is correlation between removal of such limits and greater-than-average growth in taxi usage. However, given the very complex pattern of small districts taking different approaches to licensing, it would be difficult to match NTS data to such areas (due to sample size limitations). It is therefore not practicable to identify growth in use due to removal of quantity limits from the broader factors discussed above.

Another means of looking at supply of taxis and PHVs is to examine the absolute number of licensed vehicles, expressed as an average rate per 1,000 population. At March 2013 these were (for England and Wales [E&W] as a whole):

Taxis as such – E&W average 1.4 (London 2.7, major urban 1.1, large urban 1.3, lowest in rural areas at 1.0 to 1.1)

PHVs as such 2.7 (London 6.0, major urban 3.8, large urban 2.3, rural 1.0-1.6)

Combined total of taxis & PHVs 4.1 (London 8.7, major urban 4.8, large urban 3.6, rural 2.3-2.7)

Definitions are based on district characteristics (i.e. the level at which taxis and PHVs are licensed): ‘Major Urban’ districts were defined as either 100,000 people, or 50% of their population in urban areas with a population of more than 750 000.

‘Large Urban’ are defined as districts with either 50 000 people, or 50% of their population in one of 17 urban areas with a population between 250 000 and 750 000.

‘Rural’ encompasses a range between ‘significantly rural’ (districts with more than 26% of their population in rural settlements and larger market town, to ‘rural-80’ – districts with at least 80% of their population in rural settlements and larger market towns. Differences between them are relatively small, except that ‘significant rural’ has a higher ratio for PHVs, at 1.6.

It can be seen that the rural levels are generally substantially lower. Rather than taxis/PHVs being, in aggregate, a substitute for conventional public transport, there is positive association between high levels of taxi/PHV provision and also of conventional public transport provision and use in the larger urban areas.

Given that taxi numbers have been limited in some areas, but no such limits apply to PHVs, examples can be found where compensating growth has taken place in PHV numbers to offset a lower limit for taxis as such.

Box 2.1. A case study: Maidstone

Arising from earlier work at the University of Westminster (and its predecessor, the Polytechnic of Central London), the district of Maidstone can be used as an example. Maidstone is district of 155,000 population (2011 census) in the county of Kent (south east of London). The district includes the town itself (the majority of the population), which is the administrative centre for the county, and also covers an adjoining rural fringe area, the overall district population density being relatively lower at 390 per sq km (2011 census). A taxi user survey was firstly undertaken in 1986 (coincident with a study of the effects of bus regulation under the 1985 Act), at a time when the taxi supply was very limited, only 24 vehicles (approx. 1 per 4,000 population within the urban area). Hence, under the ‘no significant unmet demand’ criterion, a survey was carried out to see whether this limit could be justified¹⁰. Observations were made at taxi ranks, operators were interviewed, and taxi users were invited to fill in a self-completion questionnaire. In addition, household surveys were carried out at six clusters within the district (including two within the rural fringe) to examine both bus and taxi use: none of the rural residents in the sample reported taxi use.

It was found that little on-street hiring took place except at ranks (railway station, shopping centre). There was large overlap in the roles of taxis and PHVs in meeting phone requests – both types of vehicle were often run by same firms. About 90% of the taxi trips were within the town and its suburbs.

There was little evidence of problems caused by the low supply (e.g. customer queuing time at ranks, or excessive time waiting for a vehicle after a phone request). However, it may be the case that users’ expectations adjusted to the low level of taxi supply.

In principle, the best way test whether demand is being suppressed may be to increase the number of licences and monitor use (but the latter is very rarely done). In practice, a small increase was granted by council, but even so taxi numbers had only reached 39 in 2005.

However, Maidstone also displayed a high ratio of PHV licences to population, such that the overall (taxi + PHV)/population ratio by 2005 was similar to the then national average of about 2.8 per 1,000 (on the same definition as the figure for 2013 for ‘other Urban’ of 3.5). It may thus be the case that high PHV provision offsets some of the problems created by low taxi numbers, although some problems may still persist due to inability of PHVs to ply for hire on the street.

Effects of limiting numbers

A consequence of limiting numbers, as found in many countries, is that not only are users affected by limited supply, but other factors also arise. The driver and/or vehicle licences (known as ‘plates’, ‘medallions’ etc.) are limited in number by the public authority. They thus acquire a scarcity value, and may be ‘traded’ (unless that practice is specifically prohibited). In effect, entry to the market becomes attainable by purchase of an existing plate from a currently licensed operator. This could be seen as *prima facie* evidence of suppressed demand, since a large operating surplus may be needed to finance the cost of such a purchase by a ‘new’ operator. Possibly the highest price at present is that for a New York ‘Medallion’ at around 640 000 USD¹¹.

This pattern may become self-perpetuating, in that new operators who have bought plates then have a vested interest in ensuring that scarcity value remains, so that they in turn sell on a plate in due course to another new entrant.

However, cases have arisen where such restrictions have been abolished overnight, notably Dublin, as described by Dr Sean Barrett¹². This occurred following a legal decision abolishing the previous strict limit applied since 1978. The total number of taxis went up from 2 722 in 2000 to 8 609 in 2002 (+216%), and with similar impacts in other Irish cities (i.e. to approx. 6/1 000 population, approaching the very high London taxis/PHV ratio of 8.7 quoted above).

Prior to this, the licence plate price had reached 90 000 Irish Pounds (approx. 80 000 GBP) in 2000. This could be seen as a loss of an ‘investment’ by those who had ‘purchased’ licences. A ‘hardship fund’ was set up to handle this problem, although in practice used to only a limited extent. Unfortunately, little data appears to have been collected on taxi usage (which probably grew less than the supply), but one indication is the cuts subsequently made in all-night bus services in Dublin (previously extensive queuing for taxis had been observed at such times).

Total taxis/hackney cabs in the Irish Republic from 11,239 in 1998 to 29,053 in 2008¹³: based on a population of about 4.5 million, this gives a ratio per 1,000 population of about 6.3.

There is also evidence from France, where strict price and quantity control applies in all cities, with little growth in numbers in recent years. Studies by Bacache-Beauvallet & Janin¹⁴ indicate an estimated average weighted value per licence 100 000 euros, equivalent to an economic profit of 7 000 euros per year to each driver. They estimate that if demand were wholly inelastic to volume of supply (number of taxis), an increase in licences of about 20% would eliminate this. In practice, demand will grow as licences increase. Estimates were derived from a large sample of cities with a secondary market for licences, indicating that a 1% increase in the number of licences depreciates their value by 0.3% , giving an estimated elasticity of demand of 0.78 (passenger trips with respect to the number of licences).

Work by Richard Darbera¹⁵ has examined Paris as an example of imposing continued strict quantity limits on the number of licensed taxi (and with no equivalent to PHVs). He estimates taxis +PHVs per 1 000 population in Paris 2.63 (compared with 8.47 in London at the time of his study). Equivalent ratios for taxi + PHV drivers were 2.76 and 8.60 respectively. These supply differences were correlated with average taxi + PHV trips per person per year at 6 and 14 respectively. A particularly marked relationship was found when examining use by income group quintiles. In London, approx. 12 trips/head/year in were observed in the four lowest quintiles, and about 18 in highest, but in Paris, about 4 in the four lowest and 12 in highest. A wider mix of trip purposes was also observed in London.

Effects of deregulation on demand

While correlations can be found between levels of supply and use (as in the London and Paris comparison above), establishing a cause-and-effect relationship when specific changes occur in licensing policy is more difficult. As indicated earlier, an increase in the supply of vehicles and/or drivers is not necessarily proportionate to service level offered (for example, there may be less double-shifting, shorter hours worked, etc.).

In the case of cruising and rank availability service level offered is a function of the number in circulation at any one time. Hence user benefits may be observed through shorter waiting times (and also, less directly, in response time to phone requests).

In many markets, one would expect deregulation to produce price competition, as well as an increase in supply. This would give direct financial benefits to existing users, and also stimulate additional demand from new users. However, even where taxi numbers are not limited, taxi fares still generally regulated, at least for the permitted maximum fare for a given distance, etc. (for example, in the London case). This may not be so much a form of direct economic regulation as desire to protect the user from exploitation.

Even where price controls are lifted, there is, to date, little evidence of spontaneous price competition. One problem is that of the user effort required to ‘search’ for price differences – for example to make comparisons between different vehicles in a rank. The perceived effort involved may offset the monetary saving to the user. A parallel may be drawn with the outcomes of local bus deregulation in Britain following the Transport Act of 1985. Most competition has taken the form of frequency and quality of service, rather than directly on price, partly because a bus user foregoing the use of an ‘expensive’ bus which arrives first at a stop will experience additional (and possibly uncertain) waiting time for the following ‘cheaper’ bus. Unless the price differential is very large, the tendency is to board the first bus to arrive.

Within the taxi/PHV sector, price competition may be more effective in pre-booked and phone markets, than on-street or at ranks. It is also noteworthy that mobile phone apps are now being placed on the market which enable users to make quicker price comparisons (and also between taxis and PHVs), which could result in substantially greater scope for price competition in future, although there is little evidence on impacts to date.

A possible outcome of deregulating both price and quantity could be that more taxis/PHVs are operated, but each secures a lower average utilisation (trips/vehicle/day) if demand does not grow *pro rata*. Operators might then have to increase fares to maintain total revenue. This outcome could produce a high service level at high fares, with benefits to customers with a high income and thus a high value of time, but losses to low income customers. Efficiency of vehicle use would decrease.

The ECMT Round Table (no 133) in Paris in 2005 (4) provided a number of observed outcomes:

Work by Bakker examined outcomes of deregulation in the Netherlands: a rise occurred in taxi numbers, but vehicle hours offered fell, and real fares increased. Usage remained approximately stable.

Deregulation in Sweden in 1990, as analysed by Bekken, produced an increase in fares, and more vehicles, but with fewer trips per vehicle (i.e. similar to the indicative outcome described above). There was little effective competition in rural areas (where taxis play an important role in contract services for school and social transport, and hence competitive bidding would be of benefit to public authorities).

Bekken also analysed the case of Norway, where fares had been deregulated in 2000, but quantity control retained. Competition was observed between despatching centres rather than driver-operators. Fares had generally increased, but with substantial differences between firms.

Other issues in the British case

Since many of the regulatory powers are permissive, inconsistent quality requirements are often seen between different local authority areas, and there may be a case for a more consistent minimum standard.

The position regarding quantity limits remains ambiguous. As mentioned above, about 28% of authorities in England and Wales still have them. Should there be a general encouragement to remove the remaining quantity controls, and if so, on what timescale?

Many local authority boundaries cover only a limited area, especially among the smaller unitaries. If taxis and PHVs are limited to picking up and setting down only within these limited areas, this reduces potential driver and vehicle utilisation.

Experience of the changes introduced under the 1985 Transport Act

The changes introduced under this Act (described above) enabled a number of service innovations to be made. The extent to which these have been adopted is highly variable, and while many press reports document the introduction of such services, their duration, and levels of use, are much less clear. Overall, it would be fair to say that the vast majority of taxi use is probably still of the ‘single hirer’ form in which one person is deemed to be the customer, and relatively little use is made of shared taxi and taxibus provision. However, a number of examples have developed:

‘Taxibus’ feeder services to Chiltern Rail in Bicester – running fixed routes at peak times, flexible routes off-peak (these were successful within the town, but not in the adjoining rural area). By late 2003 these were carrying 50 000 passengers a year¹⁶. Chiltern Rail is an operator running routes North West from London, on which rapid growth in usage has been observed in recent years, associated with enhanced service levels. Bicester is a town which has developed as a commuter settlement for London, but station parking capacity imposes constraints on use of car as a mode of access.

Stagecoach Fife ‘Yellow Taxi’ experiment. Stagecoach Group is one of the major public transport operators in Britain, owning many regional bus companies, including that covering the Fife region (north of the River Forth) in Scotland. This is connected to Edinburgh via the Forth Road Bridge, over which frequent bus & coach services are operated. The ‘Yellow Taxi’ was an 8-seater shared taxi, offering a service to Edinburgh at a premium fare to the same operator’s buses, aimed at a new market segment. It began in August 2003. However, profitability was poor, and the service was withdrawn in September 2005, despite carrying about 1,000 passengers per week¹⁷. A similar service was introduced at Petersfield in Southern England in November 2004, as a feeder service to the South West Trains rail service (also a Stagecoach subsidiary) linking that town to London. This was also unviable commercially, carrying only 20 passengers per day and was withdrawn in 2005¹⁸.

Taxibus feeder services to Oxford – London coach services at Lewknor on the M40 motorway. Very frequent express coach services are operated between Oxford and London by two operators (Stagecoach and Go Ahead), and a spontaneous form of ‘park and ride’ developed at Lewknor, a minor junction on the motorway in a rural area, at which coaches call on request. Development of car feeder traffic encouraged several flexibly-routed taxibus feeders, which commenced in 2005, but these largely reverted to a fixed route operation: the service from Stokenchurch ceased in January 2007, although a service

from Watlington continued until replaced by a fixed route in June 2007, as was a service from Little Milton and Garsington¹⁹

Taxibus feeder to Peterborough station, on the London – Newcastle main line, operated in conjunction with the GNER franchise from July 2006, but ceased at the end of that franchise about one year later²⁰.

Development of commercial airport – hotel minibus feeders on a fixed timetable but with flexible routing should be an appropriate role for taxibus or shared taxi operation, and can be found in many other countries, but impacts of services under the 1985 Act appear limited. A service was operated for some years between Edinburgh Airport and the city centre by the public sector local bus operator (as a premium fare direct alternative to its own airport express bus service), but was abandoned due to poor financial performance, and a private buyer could not be found. National Express coaches operated its ‘dot2dot’ demand-responsive service between Heathrow Airport and central London hotels, but this was also financially unviable. It was sold to another operator in 2009, but no longer runs as a scheduled service.

A Taxibus service between Liverpool city centre and its airport, launched in early 2014 by a local taxi firm, following a similar service to a major football ground (Anfield) in August 2011. An hourly off-peak service was offered (since reduce in frequency) at a fare lower than the airport bus service.

In addition, a number of public authorities and rail operators have developed websites and/or mobile phone applications which enable users to order a taxi or PHV to access a station, or to provide a feeder trip from a station. These provide the user with greater certainty of service availability, and personal security (through ensuring that only licensed operators are used). Examples include Transport for London, and Abellio Greater Anglia’s ‘Cab & Go’ service (which requires booking at least two hours in advance). However, they appear to be mainly or entirely for single-hirer bookings, rather than taxi sharing as such.

The Law Commission proposals

As mentioned earlier in this report, the Law Commission has recently completed a study reviewing taxi and PHV regulation in England and Wales, and has proposed a new Parliamentary Bill to introduce a harmonised and consistent approach. They propose retaining the taxi/PHV distinction based on method of booking the journey, with a requirement that bookings should be made through a ‘licensed dispatcher’. Cross-border working (crossing local authority area boundaries) would be made easier, and national minimum standards introduced, although local authorities would still remain responsible for licensing, and be able to set taxi fares. Taxi operators would be able to use vehicles of higher capacity (up to 16 seats) in certain cases. The Commission envisages that authorities should continue to be able to set quantity limits on taxi licences, and that in cases where such quantity limits already apply, that transferability of licence plates should be permitted to continue. It also proposes that areas not currently imposing quantity limits should be able to do so (but without enabling trading of plates in such areas).

Some broad conclusions on taxis

The British experience of taxis and PHV operations in last thirty years indicates that, despite rising car ownership, a substantial growth has occurred in both supply and use of this mode. This may have been encouraged by removal of quantity restrictions on taxis in some areas that previously applied but disaggregating this effect from wider factors is difficult.

Broad international evidence also suggests weak case in principle for maintaining quantity limits, which may restrict user choice and result in artificial profits being made by incumbent operators. However, the case for removing price regulation is much less clear (although growing use of mobile-phone apps may stimulate more price competition in any case, by reducing the distinction between taxis and PHVs).

The reforms in Britain under the Transport Act 1985 enabled a number of innovative service types to develop, including shared taxis and taxibus operations. Potentially, these could fill gaps in meeting low-density demand, especially in rural areas. However, the extent to which they have done so is variable. While there are many examples of such services being introduced, the extent to which they are sustained commercially (or found worthwhile as tendered services) appears highly uncertain, and very little data has been collected on their level of use. A further factor is that the overall supply of taxis/PHVs in rural areas (per 1 000 population) is much lower than in urban areas, reflecting the lower density of demand and hence scope for commercially-viable operation, but this in turn means that relatively few taxis/PHVs are based in such areas from which innovative service types could be developed. It may be the case that further initiatives, besides those initiated by individual operators, are needed to stimulate such activity. For example, it may be in the interests of a public transport operator such as a railway to improve feeder services to stations in low-density areas, or for public authorities to encourage alternative means for providing access to health facilities, etc.

Specific initiatives in rural public transport provision in Britain

A number of initiatives have been introduced in recent years, with varying degrees of success.

Postbuses

In some countries the postal service operator is also a major bus operator (for example, in Switzerland). In Britain, it has never played a major role, but from the 1970s a considerable number of services were operated. These were provided by using existing postal vehicle runs, normally those collecting post from local post offices, public mail collection boxes, etc. and taking them to the regional sorting office, typically in a market town. This might provide 2-3 runs per day (fewer on Saturdays), dependent on the frequency of postal collection. Initially, such services were provided largely at marginal cost, replacing a small van with a minibus. Availability of grants in the 1970s (fuel duty rebate, and also a 50% grant toward the cost of a new bus) largely covered the extra costs involved. However, a later shift to a more realistic costing approach by the Post Office, and withdrawal of the new bus grant, made these services less attractive financially, and local authority support was required for continuation. The routing of services was often indirect, resulting in unattractive journey times. In some cases, a demand-responsive service is now provided, giving users a much wider choice of journey times and potentially more direct journeys (for example, replacing the Post Office routes in Lincolnshire), and the few remaining examples are found in remote areas of Scotland. However, where settlement patterns in a low-density area effectively place most of the population on a linear corridor (for example, along a coast road, or a valley) this option might still be appropriate in some cases.

Volunteer-driven minibuses

As mentioned in the main text above, the legal position of such services was clarified under sections 19 and 22 of the Transport Act 1985. The first such schemes were introduced in the early 1979s, in some cases with the assistance of existing regional bus company in the area who found it impracticable to provide services for some settlements using conventional vehicles and paid drivers (For example, the Eastern Counties subsidiary of NBC in Norfolk). Typically, a mix of scheduled public services, excursions and private hire activity might be undertaken, with different service patterns according to the day of week.

A number of such schemes have been sustained in several areas, but they are not particularly comprehensive in their coverage in rural areas as a whole. One constraining factor may be the need to ensure that a sufficient ‘pool’ of volunteers can be recruited to cover the service requirements, and that volunteers can be replaced over time (for example, much volunteer work may be undertaken by ‘active retired’ people in their 60s. As they age, they may no longer be able to meet the requirements imposed, and fresh volunteers need to be recruited. This may also be affected by the shift to an increase in retirement age from regular work). In some cases, cultural factors might be important; dependent on whether there is a tradition of public benefit volunteer work in the society as a whole (this affected, for example, scope for extending this concept to rural areas in Japan).

Enhancement of commercial ‘conventional’ bus services

In many countries, the bus operating industry has been relatively slow to adopt new concepts in marketing and product development, and this may apply to rural services as well as those in urban areas. In addition to examining scope for different types of service, it is also worth considering a more positive approach to conventional bus provision.

Such scope does not necessarily enable very low density rural areas to be served, but may strengthen the role of existing services, enabling a higher level of commercially viable service to be retained than would otherwise be the case (and/or services with a level of public support per trip within an acceptable threshold).

Types of improvement may include:

Higher specification vehicles. The cost of improved seating, lighting, interior finish etc., is very small vis a vis the majority of costs, which are largely determined by driver wages, fuel consumption, mechanical specification, etc. In some cases, it may be worthwhile reducing seating density (given low average loads now found) to improve comfort – for example, Arriva group has introduced its higher-specification ‘Sapphire’ services on some routes with 3 seats across the width of a vehicle rather than the usual four. Wi-Fi facilities can also be added at low cost. Overall, a modest rise in ridership (around 5-7%) may be sufficient to cover the additional costs incurred.

Better marketing and information. Timetable publicity, provision of maps, etc. has often been poor. Improvements in information technology enable much more comprehensive information to be provided at low cost, notably through messaging to mobile phones, etc. Use of social media (such as Facebook or twitter) enable short-term changes (for example, due to weather conditions) to be disseminated to users prior to travel.

Greater attention to service reliability (which may be particularly important for low-frequency services), through realistic scheduling.

Where demand justifies it, offering regular-interval services (e.g. every hour), which are more easily memorised by users without the need to consult a timetable for each journey made.

These factors are not unique to rural operations, but may be particularly beneficial, in particular improved in-vehicle comfort and passenger information. The main potential may be in enabling improvements to interurban services, which attract usage from both town-to-town traffic and that to/from intermediate villages. This can be seen in the Lincolnshire 'Interconnect' network for example, but also in other areas. One consequence is that some villages, which happen to lie on interurban routes, now have very good levels of service (up to every half hour or even better), often the best they have ever enjoyed. However, a much greater disparity of service frequency may now be seen between these villages and those in more isolated areas, where such scope for upgrading does not readily exist.

A noteworthy example of upgrading a rural network in relatively low density is the 'Norfolk Green' company (now a subsidiary of Stagecoach) serving the west of Norfolk, which has developed improved frequencies and interurban links in a rural area characterised by a low density of population and in some cases very poor services previously.

Government funding of service experimentation

In addition to initiatives which arise from commercial activity, voluntary groups, or local authority actions, central government may initiate innovations through a centrally-funded programme. A number of such initiatives have taken place in Britain since the late 1960s, the most substantial of which were the 'Rural Bus Challenge' (RBC) and 'Rural Bus Subsidy Grant' (RBSG), introduced in 1998 (both of which have now ceased). The former applied to new types of services, usually for a three-year period. For example, these have included many of the earlier demand-responsive services, and some interurban improvements (such as Lincoln - Skegness service within Lincolnshire). Bids were invited by central government, which then made awards on merits of each case. The RBSG (allocated on a per capita basis to local authorities with population densities below a specified threshold) was generally used for more conventional types of service, enabling existing networks to be extended, and/or time periods in which services operated (for example, at evenings and weekends).

Considerable innovation was produced by these grants, some of which has been sustained. However, it is important that outcomes of such innovations are carefully monitored if lessons are to be learned from their introduction. It is also desirable that it is possible for such services to be sustained following the initial period of funding (subject to sufficient usage being generated to justify this). A problem arising from some RBC services, for example, was that the level of support per trip was very high, making it difficult for service support to be continued from local authority budgets following the initial funding period.

Car sharing schemes

The high levels of car ownership in rural areas potentially enable the needs of those without cars to be met by offering provision for specific journeys. This is not usually a simple matter of offering empty seats already available (average car occupancy rates are such that total empty seats would exceed the demands of those without car access), since the needs for those without cars would not necessarily match the times or locations when empty seats are available. It is therefore necessary to make direct arrangements to match up the needs of those without access to other transport, and willingness of car drivers to provide lifts. One should also distinguish between provision of car seats to those without access to cars and 'car sharing' in the sense of encouraging more efficient travel by those with cars to improve occupancy levels (for example, encouraging two people each travelling as drivers as sole occupants to a place to work to share a car for this purpose).

Since the Transport Act of 1980, constraints on permitting coverage of costs incurred by those providing the car service have been removed (provided that no profit is made). The contribution may come either directly from the person being given the lift, and/or a public body (such as a local authority) co-ordinating the provision of such a service.

In a number of low-density areas, car sharing schemes may provide a fairly comprehensive service, for a wide range of trip purposes. In others, it may be focused more specifically on particular requirements, such as access to health facilities. As in the case of volunteer minibus services, one issue in the provision of such services may be the presence of a 'pool' of volunteers, and the ability to replenish these as existing volunteers are unable to continue may be an important factor in securing continuity of service.

Integration of public school and social services transport

The major statutory responsibility for provision of school transport held by local authorities creates a substantial level of resources which can also be used for other types of service provision. Likewise, resources provided for social services transport, typically minibuses, in some cases with special facilities (such as wheelchair access) creates a further set of resources. Considerable scope may exist for integrating such services with the general public network, especially where the local authority is involved in providing substantial financial support. In many cases, institutional barriers may exist, for example the separate contracting of school and public services, even within the same authority, may result in the full scope for such integration not being attained.

The integration may take the form of complementary service patterns at different times of day (for example, resources required for the school peak may be used to provide shopping and other journey purposes at other times of day). In other cases, more direct integration may be possible - for example by placing school trips and other journey purposes on the same vehicle (e.g. a morning peak journey into a market town).

Economic evaluation of rural transport options

In contrast to the assessment of transport infrastructure projects, and major urban transport expenditure, there is relatively little systematic appraisal of rural transport options, much of it being based on fairly arbitrary criteria. For example, in the British case, much of the expenditure in rural areas is determined by statutory obligations, notably those with respect to free school travel and concessionary fares. The majority of a local authority's expenditure in this respect is typically determined by free travel for older school pupils (those aged between 8 and 16, living above 3 miles from their nearest appropriate school), and the obligation to provide free concessionary travel (apart from the Monday-Friday morning peak) to those who are disabled or above 60 (although the policy is a national one, compensation to operators is paid at the local level). This has resulted in the discretionary element of spending being much reduced. In some areas, it has even been proposed to abolish the funding for tendered rural services altogether (for example, in Cumbria). One can also see reductions being made in the discretionary element of education transport spending, for example to fund pupils above the statutory leaving age of 16 who are still in education, and/or services to religious denomination schools.

It is noteworthy that many rural areas proposing to make radical cuts are incurring relatively low cost per passenger trip on the services concerned (as an average) – for example £1.35 in North Yorkshire²¹, and about £1.33 in Herefordshire²².

A fairly crude approach has thus come to be adopted toward evaluation of tendered rural bus service support, typically using an average value for the net support per passenger trip (i.e. after taking account of fares revenue). Guidelines used by local authorities are typically in the range of £2 to £6. However, this does not take into account user benefits in any systematic form, except insofar as different degrees of importance may be attached to different trip purposes – authorities may, for example, give higher importance to journeys for work and medical purposes than leisure trips, although this is not necessarily reflected in an explicit differentiation in the net support per trip regarded as acceptable. An improvement has been made recently, following work by the Mott Macdonald consultancy and the Institute of Transport Studies at the University of Leeds, which sought to determine the economic benefits of retaining bus service provision, by identifying ‘social impact’ benefits per return trip for those bus journeys which would not otherwise be made. These were estimated at 2010 values and prices as £3.84 for a concessionary pass holder and £8.17 for a non-holder²³, values which are similar to some of the crude average thresholds used as cost-effectiveness measures by local authorities currently. This guidance has now been incorporated into ‘webtag’, the web-based guidance on forecasting and evaluation methods provided by the Department for Transport²⁴.

It should be noted that these values relate to trips that would not otherwise be made, and when a rural bus service is withdrawn it does not necessarily follow that all trips on it would cease - some might take place via alternative bus services, demand-responsive operations, etc. A default value of 21% is suggested in the guidance, although this appears to relate to evidence from additional trips being generated (as distinct from diverted) to an improved bus service. In the case of cuts in a rural service, with few alternatives available, it might be reasonable to assume more substantial effects would arise from elimination of a service: for example, only half of the trips would still be made. Taking the guidance figure of £8.17 for a return trip by a non-concessionary pass holder (above) then one could assume that a value of £4.08 for a one-way trip would be applicable. If it is assumed that half of the trips would no longer be made, then a value of £2.04 per one-way trip applied to all trips on the current tendered service to be withdrawn could be inferred. By the same logic, a value for a concessionary pass holder trip no longer made would be about 96p. Assuming a 50:50 split of concessionary/non-concessionary travellers, the overall average would be about £1.50 at 2010 prices. Factoring up to 2014 prices using a webtag guidance²⁵ GDP deflator of 8% between 2010 and 2014 would bring this value to about £1.62. It is too early to say whether this guidance is being applied in any systematic form - for the moment short-term budget constraints are likely to be more critical - but it could provide a more informed figure for a threshold net subsidy per trip.

The current financial pressures also raise the question of whether the free travel for older users is necessarily sensible, since it could result in some rural dwellers having a free pass, but no services on which to use it. Indeed, in some areas passholders have suggested that a reversion to a lower fare (e.g. half price) rather than free travel would be a preferable alternative to no service at all, but the DfT has been unwilling to permit any local flexibility. One must also question whether it is sensible to retain the rail network at its present size, given the very high funding for some rural routes which, if redeployed to bus services, could support an entire network in the area concerned.

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Chapter 3

Public transport provision in rural and depopulated areas in Norway

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Introduction

Norway and Finland share several commonalities, being Nordic democracies with a population of 5.1 and 5.5 million and large rural areas. With decreasing population in rural areas, given aging and structural changes in society, both countries face challenges in trying to keep the costs of passenger transport services down while ensuring an adequate standard of service nationwide. Grappling with similar issues, experiences and information about different policies in Norway may provide useful information to the Finnish Government. This contribution therefore provides some insights into public transport provision in rural and depopulated areas in Norway, how the public authorities have attempted to solve efficiency issues while maintaining good quality services and related experiences sparsely populated rural areas. It includes aspects concerning the market of transport providers, user needs and political barriers of reform.

In both Finland and Norway there are many different authorities that are responsible for the administration, procurement and planning of various passenger transport services. In both countries there are concerns with increasing costs and certain public authorities are interested in using coordination among different organisations in order to exploit potential savings, while retaining an adequate level of public services, also in rural areas. This working document includes references to Denmark, as certain Danish municipalities have coordinated their special transport services to a larger extent than in for example Norway.

The roadmap is as follows. First, we give an overall introduction to public transport in Norway. Second, we introduce the concept of demand responsive transport, giving different examples and addressing the popularity among travellers. Third, we describe the possibilities and barriers to coordination of special public transport services, including how different services are organised, utilisation of vehicles and potential savings as well as user needs and political considerations.

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Public transport in Norway

Public passenger transport services are important for the welfare of citizens and the environment. However, given large areas with dispersed population in Norway, ordinary local public transport services are lacking or even non-existing in many rural areas. In such areas the only existing public transport service is school transport, other special transport services and taxi services.

The regional level (i.e. counties) is responsible for the provision of local public transport in Norway, primarily bus, but also boat, tram and metro services. Taxis are private. The national government is responsible for the provision of railway services. Special transport services are in the hands of different political authorities (see part 3). There is also a commercial bus market for express coaches and flight buses. In certain rural areas such express coaches play an important role as a local transport service. Sometimes counties therefore subsidise such express coach companies to provide local fares for local travels (Leiren et al 2007; Aarhaug, Christiansen & Fearnley 2011).

Norway is a member of the European Economic Area and is therefore obliged to implement European Union law. The Norwegian government has transposed the EU procurement regulations and the Public Service Obligations for Public Passenger Transport Regulation into national law. Today a large majority of the regional authorities use competitive tendering when awarding contracts for local public transport services. There has been a shift from net cost contracts to gross cost contracts, meaning that the responsibilities for planning of services and income have been moved from the operating companies to the public authorities (Longva & Osland 2010). At the same time, there has been an increase in public transport agencies, which carry out planning and procuring on behalf of the regional public transport authorities. 10 out of 19 regional authorities have established such quasi-autonomous agencies (Leiren forthcoming).

The counties receive government transfers that they use to finance local public transport services. The amount of subsidies to finance public transport varies from county to county. In the capital urban area, which is the biggest urban area in Norway, public funding was about 44%, while fares represented about 56% of the public transport company's revenues in 2012 (Ruter 2012). In contrast to this, the county of Hedmark, a county characterised by rural areas and where school transport imposes the largest costs, public funding came to about 90% of the public transport companies' revenues in 2013, while the fares amounted to about 10% (Hedmark Trafikk 2013).

Public transport in rural areas is costly because of long distances and few passengers. In contrast to urban areas, where the aim is to create a shift from private car to public transport in order to reduce congestion, environmental pollution and climate gas emissions, public transport services in rural areas is primarily a service to people who do not have access to private car transport.

In order to strengthen the public transport services in rural areas, the national government introduced the grant 'Public transport in rural areas' in 2007. The aim is to contribute with solutions that may improve public transport services in rural areas through more effective coordination of resources and means. Counties implement projects with a 50% deductible, so that state support comes as an addition to and not a substitute for funds from the regional authorities. The aim is to implement measures at selected locations and routes to achieve a substantial strengthening of public transport services to passengers in

rural areas. The measures should be transferable to other areas. The Ministry of Transport and Communications put great emphasis on dissemination of experience and knowledge. A part of the allocated funds goes to mediation seminars and consultancy.

To make public transport services in rural areas more efficient and improved, possibilities to coordinate special transport services have been discussed (Ministry of Health and Care Services 2008). However, the different responsibilities and administrative boundaries create barriers for such coordination. Another challenge is to maintain taxi services in rural areas. Given unfavourable working hours and low demand of commercial taxi services, services are decreasing in certain rural areas (Longva et al 2010). This may create certain issues when designing procurements, if the aim is to ensure a certain level of taxi services in such areas.

Demand responsive transport

In 2007 the Norwegian government launched a political package containing financial means for developing new systems for public transport in rural districts in Norway. As a response to this, different models of demand-responsive services were developed for some sparsely populated areas in Norway. The services are different when it comes to target groups, frequency and flexibility, but all of them require that the travellers make a request for the service by phone at minimum two hours in advance.

One example of such demand-responsive service is situated in the south-eastern part of Norway (Østfold). In addition to the regular express bus from the municipality centre to some major cities more than 25 km away, the inhabitants of the more sparsely populated areas have access to a local demand-responsive service. Initially the services were restricted to people of old age and co-travellers exclusively, but after a certain time the transport authorities opened the services for all users.

The service offers two different routes: One serves the northern part of the area three days a week, while the other serves the southern part on the two other days. Even if the service has specified routes, it is possible for the passengers to be picked up at home up to two kilometres away from the specified route.

There are two departures on each of the service days. The services go in a circle and start and end in the centre of the municipality. The first departure is at about 10 o'clock, i.e. after the school transport is finished in the morning. The second service runs about 3 hours later. This schedule makes it possible to carry out errands in the municipality centre. If nobody demands the service at least two hours in advance of the scheduled departure, there will be no trip. Depending on the number of passengers and their special needs (for example, due to wheelchair) the lines will be serviced by minibuses or regular taxis, owned and administrated by the local taxi central. The service was meant to replace the traditional support for transport for people with special needs (i.e. a yearly amount from the county), subsidising the use of taxi.

Another model for demand-responsive services was developed for a sparsely populated and geographically large municipality in the eastern part of Norway (Hedmark). The public authorities introduced it as a new public transport concept with departures from the municipality centre every hour, if requested at least two hours in advance. The service has fixed 'us' stops and is supposed to pick up or deliver passengers only at these stops. However, from time to time informal solutions are made. Maps illustrate the bus stops, but there is no route schedule. The passengers have to be at the bus stop at the

time that planners tell them that the service will leave. The planners work in a planning centre that is common for all the municipalities in a greater area.

Regular taxis service the lines. As the stops are fixed, the service is not intended to replace services for people with special needs. The structure of the time schedule is based on the time of departure from and arrivals to the municipality centre: Every route starts from and arrives at the municipality centre half past every hour. The operating time is between seven o'clock in the morning and ten o'clock in the evening on workdays and between nine and 19 o'clock on weekends. From the centre, it is possible to change to railway and express bus services for trips that cross the border of the municipality. The fares are regular and equal to ordinary public transport tickets.

Initially the public transport authorities developed the two mentioned models partly as a response to the opportunity of getting extraordinary funding from the national government as part of the 'Public transport in rural areas' programme. These grants are no longer given and in the aftermath, the two models have taken different paths: While the first concept has been developed further and implemented also in other areas in the county, the future of the second concept is more uncertain. The public procurement agency considers the service as being too expensive. Therefore the company hesitates in continuing the level of services without achieving alternative sources of financing. Currently the county is collecting more information about the number of users and costs and is considering new innovative models as to how to organise public transport services in rural areas.

Popularity among travellers

Evidence from areas where the public transport authorities have removed ordinary bus services and replaced them by demand responsive transport services, shows that such new demand responsive transport solutions are popular among the users. Studies of such a pilot, the service "Half past" in the municipality of Tolga in the County of Hedmark, provides insights into how users experience such services (Skollerud 2012). Key user groups are young people and people of older age without a driver's license.

An important characteristic of the typical user is that he or she does not own a car or does not have a driving licence. Access to a car is a more important factor for using the service than the general activity level or age. It is interesting that in particular parents greatly value such transport services, as it relieves them from having to drive their children to activities. Citizens who live outside the municipality centre use the transport service to a greater extent, but also citizens in the municipality centre take advantage of the services. The youngest travellers (between 12 and 18 years old) are diligent users of the service, when going to sports or visiting friends and relatives who do not live in the neighbourhood. Sports teams have adapted their schedules to fit with the transport offer. In contrast to the younger users, people of older age use the service "Half past" in the morning, when going to meetings, treatments or shopping. This group also uses the service in the evenings, for example, when going to senior dances and other events. The association for elderly people arrange walks in the woods by making use of the services.

The first model described in "Popularity among Travellers" has been studied with regard to the use by elderly people. Major findings were that those who had travelled with this new model for public transport were satisfied with the services offered, especially the possibility to be transported all the way from and to their own front door. The impression from the qualitative study was that the purpose for travelling was to a high degree restricted to special errands in the municipality centre, like visiting the bank, doctors or public offices. If possible, shopping food and other things were mostly organised in other ways due to special needs like assistance in the shops and help with the carrying the goods from the grocery to the vehicle.

In contrast to this "special errands" situation found in the first model, the impression from the study of the "Half Past" (the second) model was that here the public transport services were an integrated part

in the organisation of family life, at least when it comes to families with children. One expression for this is the enthusiastic support to the model given from parents interviewed in the study, even if they did not use these services themselves. In general, people of older age living in rural areas are concerned with how to be able to maintain their level of activity when they no longer can drive a car (Hjorthol et al 2009). A study by Hjorthol et al (2009) suggests that there are particularly two services that they would like to have: a ‘trade route’ going to the city centre in the morning and an ‘evening’ route, which makes it possible to attend meetings and evening events (Hjorthol et al 2009: 54).

Moreover, a survey focusing on transport solutions for people of older age in rural areas suggest that the amount of subsidies that the people of older age get as part of the transport service for people with disabilities, is small compared to their actual transport needs (Hjorthol et al 2009). Almost every respondent answered that he or she supplements such public services with regular taxi services and other private transportation (for example, as provided by family or friends).

Coordination of special transport services

In addition to the mentioned ‘Public transport in rural areas’ scheme, there are suggestions of increased coordination of special transport services. The idea is, firstly, to coordinate different types of transport services that are in the hands of different public authorities. This may contribute to a more efficient use of the vehicle fleet as the same vehicle can be used for different types of transport throughout the day. It may also increase the pool of passengers that may be able to travel together in the same vehicle at the same time, thereby contributing to increased efficiency in terms of less numbers of travels.

Secondly, the concept is about opening up special transport services, which today are restricted to citizens with special rights (i.e. ‘closed’ transport services), to citizens without such travel rights. The aim is to improve the transport services for citizens in rural areas, where the ordinary public transport services are poor or non-existing. Experiences from demand responsive transport services such as in Hedmark shows that such open services are popular among both old and young users, who even reschedule their recreational activities to fit with the routes of such demand responsive transport services.

However, open solutions may also provide challenges and for some users, in particular existing users who are used to individual transport solutions, constitute worsened quality of their transport services as compared to the services that they currently enjoy.

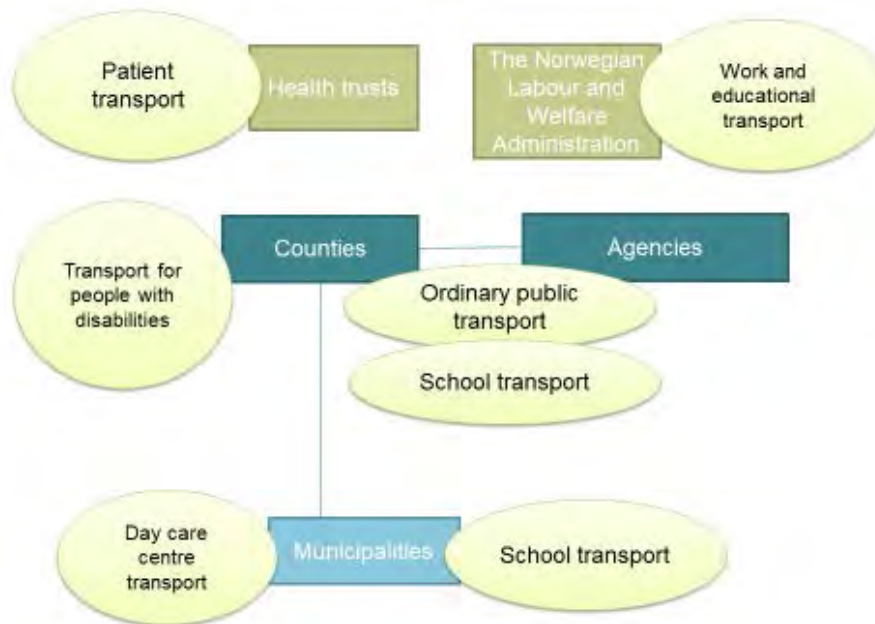
Moreover, there is hesitation among certain responsible public authorities. Issues include different management systems and concerns about the rights of certain user groups. Within certain transport areas there are also considerable coordination work going on, which means that the benefits of further coordination may be smaller than for example has been the case in Denmark, where municipalities have achieved considerable savings by cooperating about services using an inter-municipal public transport company for coordination (see “Utilisation of vehicles and potential savings”). For example, hospitals aim to coordinate patient travels with ambulance driving and some municipalities combine the day centre transport with caretaker services. There may also be political provisions that aim to ensure free user choice (i.e. the users can choose the transport company they prefer themselves). This may complicate coordination, as in procurement processes the public authorities ensures the winner of the competitive tenders a certain transport volume. If users freely choose between transport operators, there is uncertainty

about whether the public authorities can ensure the winning operator the transport volume as agreed upon in contracts between them. Some actors also consider each other as competitors, which is not a convenient starting point for coordination.

Organisation of special transport services

One objective of coordinating publicly funded passenger transport services is to take advantage of economies of scale. Today, the responsibility for ordinary public transport and the various special transport services are in the hands of several different authorities and organisations. In addition to the ordinary public transport services (see part 1), special transport services such as patient transport, work and educational transport, transport for people with disabilities, school transport and day care centre transport are national, regional or local responsibilities and traditionally associated with the sectors to which they belong (e.g. education and health and not the transportation sector). The responsibilities are fragmented and located at different political levels (see Figure 3.1). They have various funding sources, sector-specific considerations, passenger rights and legislative rules.

Figure 3.1. Responsibilities of special transport services



Source: Leiren et al., 2014.

School transport includes transport for pupils – both children and adults – to elementary and high school. It includes ordinary public transport, school routes (fixed routes which are open to all, but that is not running during the school holidays) and special transport solutions for students with special needs due to health issues, place of residence or dangerous school roads in terms of traffic safety. The counties are responsible for organising school transport to elementary and high school pupils, including services for school way distances of more than two or four kilometres (distance depends on the age of the pupils). The regional authorities manage the ordinary school routes in the municipalities. Municipalities have the financial responsibility for the school transportation when the roads are particularly dangerous or difficult, and the distance between home and school is less than two to four kilometres.

In addition, there are different types of transport services related to school activities such as transport of students to swimming lessons or excursions. The municipalities (or schools) organise such services

themselves. While some municipalities purchase such services from operators, other municipalities own their own buses for such transport.

Working and educational transport is a national scheme that ensures people with disabilities the ability to get to and from work or higher education, when lack of transport possibilities otherwise would prevent them from being able to take a job or training. The scheme covers people who are in need of support beyond the basic allowance for transportation for people with disabilities. People with lasting mobility difficulties can get a taxi to and from work or education at the price of a bus ticket in the area where they live. The authorities introduced this as an experiment in 2001. In 2013 it became a nationwide permanent scheme. With the new nationwide scheme everyone, who has been granted work and educational transport, get a travel card and can freely choose between taxi operators.

Social welfare centre transport is a service for people who live at home, but that have special needs and therefore have the right to visit day care centres. Such centres may offer services such as physiotherapist, hairdresser, dinner or other activities. Transportation to and from such centres are in the hands of the municipalities. While some municipalities have their own small buses that they use for such transport, others have outsourced such services for example to a local taxi company or they have established their own municipal transport company.

Patient transport includes travels to and from the consultation and treatment at hospitals or primary health care. Patient transport is a national responsibility, which the regional health authorities or health trusts implement. The delivery of patient transport sometimes includes a requisition, sometimes not. When a passenger travels without a requisition, the passenger pays for the journey and then applies to get a refund. The health trust covers the cheapest travel alternative. If the traveller does not have the opportunity to make use of scheduled public transport (because it does not exist or it is not possible due to health reasons), the passenger can get a requisition from the patient travel office, which organises transport for example a seat at a health bus that collects passengers.

Transport for people with disabilities is a taxi-based service that aims to contribute to increased mobility and participation in society for people with disabilities in their leisure time. It is a regional responsibility. In most counties, the users receive a subsidy in the form of an electronic card. They use this card as a kind of ‘credit card’.

Utilisation of vehicles and potential savings

Estimates by Kjørstad and Smith (2012) and lessons learnt from the coordination of different public paid transport services in Denmark, suggest that there may be potential savings and economies of scale through coordination of special transport services (Deloitte 2013). In this part, we discuss whether coordination can contribute to lower the cost per journey.

There are three important aspects related to possible savings through coordination of special transport services (see Leiren et al 2014):

- Pooling of passengers.
- Utilisation of the vehicle fleet.
- Common planning and purchasing.

First, coordination contributes to the possibility of viewing more travels together, thereby making it easier to find people who can travel together on the same trip. However, it could imply a ‘stiffer’ service, i.e. passengers who are used to a transport service that is adapted to them need to adapt to transport routes. In cases of door-to-door transport, it also implies increased journey time, having to pick up and wait for other passengers.

Second, coordination may contribute to a higher utilisation of the vehicle fleet. In contrast to the first point, which is about getting more passengers to drive together, higher utilisation of vehicles is also about using the vehicles during a greater part of the day, thereby contributing with cost savings. Travel patterns show that there is activity in the various sub-markets at different times of the day. In the morning and afternoon, there is a lot of school and work travels. Between the rush hours, there is extensive patient transport activity and municipal transport services. In the evening, there is more leisure transport for people with disabilities. In other words, a vehicle can be used for school transportation during rush hours, patient transport during the day and leisure trips for people with disabilities in the evening. This is largely how taxi companies operate. However, different public authorities have contracts with different transport companies, which limits the ability to coordinate across sub-sectors.

Another observation is that the vehicles, which for example the municipalities own themselves, have a low utility rate. In comparison to a taxi, a municipal vehicle is used only $\frac{1}{4}$ of the usage of a taxi. It means that there is a lot of free capacity in the municipal fleet. Theoretically, this means that each ‘municipal’ mile is expensive, given the investment cost of a vehicle that is not much in use. However, the municipality itself may not consider such transport as expensive. When the investment of purchasing a vehicle has already been made (or the municipality has inherited or been given a vehicle as a gift) and labour costs are already covered (for example, if the driver is hired for other work tasks than driving such as caretaking services, but also drives passengers during working hours), such costs are not visible in the budgets. As a result, the municipal-run service is perceived as less expensive than purchased services, where such other costs are included in the payment for each trip.

Third, there may be economies of scale related to common planning and purchasing. If public tenders are designed in such a way that they become more attractive to transport operators, more transport operators could be willing to compete for the services, thereby increasing competition and lowering the price that the public authorities have to pay. Coordination provides the opportunity to look at different transport needs together, and thus lead to different calls for tenders than under the current fragmented distribution of responsibility. However, the effect of such tenders is dependent on the market of transport providers.

Deloitte (2013), in a study of Denmark, argue that there are substantial economies of scale. Deloitte is of the opinion that the Danish municipalities can achieve lower contract prices by coordinating tenders across institutions and administrative boundaries, because they can achieve a greater volume in the bids, making it attractive for more operators to bid. According to Deloitte (2013: 164), the average price difference is about 20% higher for special transport in municipalities that provide transport services by themselves without coordinating special transport services internally than for municipalities that use an inter-municipal public transport company to coordinate the services for them. It means that if the municipalities would achieve the same prices as a public transport company, they would save 430 million DKK. By not making use of a common coordination company, but only coordinating the transport services internally in each municipality, the consultant assume that a Danish municipality, on average, can achieve savings of about 5-10% (see Deloitte 2012). In Norway special transport services such as school transport, which make up the largest transport volumes, is already coordinated internally in several areas. It means that the potential savings in Norway is probably smaller than in Denmark.

To sum up, coordination of transport services provides for efficiency gains: the opportunities for driving passengers together is greater, when the pool of passengers is greater. The utilisation of vehicles improves when the same fleet can be used in different sub-markets at different times of the day. For

example, patient transport and day centre transport occur at times when there is available capacity (i.e. not in rush hours).

The market of the transport providers

Coordination of services may have implications for the market foundation of the taxi industry, as other actors (for example, mini bus companies that operate under different conditions than taxi companies) may enter the traditional ‘taxi markets’. This has already largely happened, particular in the market of patient transport. A consequence is that the income foundation of the taxi industry decreases. This is an issue because the taxi industry has a 24 hour duty to ensure transport, thereby providing emergency preparedness. However, in rural areas the taxi industry to some extent depends on public transport services in order to maintain a sufficient income in areas, where the demand for commercial taxi services is small.

The issue related to the taxi market is complex. In competitive tendering rounds it has occurred that taxi providers have offered a price level, which is higher than the metered rates, such as for ‘residue transport’. There are several reasons as to why the public authorities do not always achieve ‘quantity discounts’ for such transport, for example because the public transport services coincide with transport peaks, where the demand is already high and the car park is already well exploited.

On the one hand, there is an aim to increase the number of transport bidders in competitive rounds. Otherwise, lack of competition may push the prices up and contribute to a cost increase. Therefore mini-bus companies are invited to competitive rounds.

On the other hand, because of the reasons already mentioned there is a concern with lack of taxi services in rural areas. When mini-bus companies win contracts that are crucial for the survival of taxi companies, the transport preparedness related to taxis may disappear.

User needs and political considerations

A difference between closed and open transport is that closed transport is fitted to individual needs to a greater extent than open transport. Individual needs among vulnerable users limits the potential for driving passengers together and thus the possibilities to open such services to others. While some travellers (e.g. school children and people of older age) seem to enjoy open transport, because of its social aspect (i.e. they like travelling with others), this is not perceived as positive among for example people with disabilities. Some passengers experience that they feel less safe when travelling with others or – in case of work and educational transport – a lack of certainty due to the possibility of delays.

Furthermore, pooling passengers when opening a service for all travellers may result in ‘stiffer’ services, e.g. the special transport services become more like the ordinary public transport system, where users need to adapt to the transport routes and not vice versa. Resistance to having to adapt to a such offers are expressed among users, who currently benefit from individual transport services and who, because of a disability, feel that they are in an unfortunate situation in the first place, given their disabilities. To introduce political reform that is perceived as a worsening of the offer for existing users is politically difficult, in particular when interest groups are powerful.

To change the principle of transport (e.g. by going from a solution with individual transport to an offer that is more similar to public transport) can be a difficult political decision. If wanted, it is important to draw up clear definitions of quality requirements in cooperation with user groups and drivers – and make the requirements and specifications for quality explicit. Such aspects include for example how long a user has to be prepared to wait for a transport service. A disadvantage of such a set of rules is that the specifications may become so rigid that there is a lack of room for flexible solutions in practice.

Summary

The responsibility for ordinary public transport and the various special transport services are in the hands of several different authorities and organisations in Norway. Grappling with questions about how to keep the costs down, while retaining a good quality service level in rural areas, there is increasing interest in innovative solutions of coordination among public authorities as well as demand-responsive transport services. Evidence suggests that demand responsive transport pilots are popular among the users; however, their popularity makes them expensive. In contrast, integration of special passenger transportation services include benefits such as increased economic savings. A more efficient use of vehicles and more passengers per vehicle contribute to such effects. However, such coordination of transportation services increases the travel time for existing passengers. It is likely to meet resistance from certain powerful user groups. In addition, there are certain organisational barriers, given the different responsibilities and experiences of the various public authorities – at different political levels and sectors – that are responsible for the services today. Another issue is that coordination may decrease the transportation preparedness in sparsely populated areas, where taxi companies may be dependent on public contracts to keep a minimum basis of income.

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Chapter 4

Passenger transport in rural and sparsely populated areas in France

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Introduction

Improving mobility is a major issue in sparsely populated areas. The low population density in these localities often means that longer journeys are required to access services, carry out everyday activities or maintain social links. Whole sections of the population – in particular older people, young people, stay-at-home parents in single-car households, and seasonal workers – are effectively handicapped in mobility terms by inadequate public transport provision and an overdependence on people who have cars.

The right to transport is enshrined in French legislation, in particular the law known as "LOTI" (domestic transport orientation law – Framework law on inland transport), passed in 1982:

"The progressive implementation of the right to transport allows users to travel in reasonable conditions in terms of access, quality and price, as well as in terms of the cost to public authorities, in particular by using a mode of public transport".

However, the application of this law is a delicate matter in sparsely populated areas, as conventional public transport services, highly dependent on high-volume transit, are not always suitable for a widely dispersed population.

Furthermore, it is becoming more and more difficult for these services to meet increasingly complex and individualised mobility needs. Nevertheless, there is a real demand for mobility in these areas (whether for leisure, shopping or work), together with growing concerns regarding sustainable development.

In the context of increasing private car use, rural areas, like medium-sized towns, are in a position where they need to find alternative transport solutions to address changing mobility issues. A broader range of approaches must be taken to find innovative transportation solutions for the local population, given the fact that such towns have to deal with increasingly diverse transportation needs, in terms of both time and space.

One solution is to make public transport services more attractive in terms of transport supply and quality of service. The density of population is a key factor, since it usually prohibits the development of "heavy" public transport systems (e.g. metro or tram network).

Indeed, faced with the challenges of sustainable development, noticeable changes are being made to transport policies. The objective is no longer to adapt supply to ever-fluctuating demand, but to try to concentrate and direct this demand towards economical, efficient and environmentally friendly forms of mobility.

From this point of view, different actions are developed in France. The range of actions includes planning tools, mobility management and different transport solutions.

Global transport planning tools, sustainable urban mobility plans (plans de déplacements urbains – PDU), were introduced in the LOTI in 1982 in order to tackle mobility challenges. While these plans were first introduced in urban areas, they are increasingly implemented in large and rural areas.

Mobility Management (MM) is another concept developed to promote sustainable transport and manage the demand for car use by changing travellers’ attitudes and behaviour. At the core of Mobility Management are “soft” measures like information and communication, organising services and coordinating the activities of different partners. “Soft” measures most often enhance the effectiveness of “hard” measures within urban transport (e.g. new tram lines, new roads and new bike lanes). Mobility management measures (in comparison to “hard” measures) do not necessarily require large financial investments and may have a high benefit-cost ratio.

Low density areas and medium-sized towns are at the ideal scale for developing flexible public transport solutions, whereby services can be more or less adapted to the user’s needs, such as demand-responsive transport (DRT) or carpooling.

Demand-responsive transport (DRT) can provide a solution that is particularly suited to sparsely populated areas, thanks to its flexibility, its ability to adapt to local contexts, and the fact that costs can, to some extent, be controlled. It satisfies people’s right to transport, within reasonable financial limits for the community, and it can be adapted to suit all categories of users – the elderly, teenagers, working people, pensioners and people with reduced mobility, etc.

Carpooling represents a credible and attractive mobility solution, in addition to public transport and other mobility services, to reduce the individual use of private cars, particularly in sparsely populated areas, where public transport can hardly be implemented at reasonable cost, and where carpooling can be an effective solution. Carpooling has become increasingly visible in recent years. Its development could help to solve many mobility issues in the current economic crisis, both for users and public bodies. Carpooling obviously has significant growth potential. Many local carpooling schemes and public initiatives to support the practice have been implemented in France. But there are still efforts to be made to promote this practice.

Overview of passenger transport in France

General

The last decade saw significant changes in mobility behaviour in France. Individual mobility – i.e. the number of daily trips made by each individual – which had risen significantly until the mid-2000s, remained stable and in some cases even fell, from 2005 onwards. At the same time, car use fell for the first time in large conurbations. At national level, motor vehicle traffic levels have stabilised. Public transport, boosted by the revival of the tram, has seen passenger numbers increase, particularly in those conurbations with highly effective public transport systems. Cycling, meanwhile, has increased. These new and mainly urban trends are expected to spread across sparsely populated areas in the coming years. Cars will play a different role in the coming decade.

Individuals have been increasingly affected by higher transport costs. It is generally accepted that this fragility is being felt increasingly at local level, with a growing impact on mobility, thereby reinforcing socio-spatial inequalities.

One can see a growing awareness of climate change due to human activity – and transport in particular – and the finite nature of oil resources. This growth in public awareness has not, however, led to genuine collective mobilisation as it remains mitigated by other concerns such as purchasing power and lifestyles.

Public initiatives have changed in response to the growing social demand for greater consideration of individual needs, while mobility behaviour has continued its trends towards greater diversity. The decentralisation process which began in the 1980s continues, giving local authorities even greater freedom to set their own transport policies. One of the key features of the last decade has been a trend for local authorities to adapt central government policies to suit their own contexts. The Grenelle de l'Environnement (the French government's environmental round table) at the end of the 2000s, however, marked the return of national (and even international) climate change-related issues to centre stage.

Individual mobility is no longer rising. Behaviour is changing; the general trend shows that individual mobility has stabilised in France, supported by transport policies introduced since the LOTI law (French framework law on domestic transport) of 30 December 1982. This law forms the basis of land-based public transport organisation in France.

The French law on air quality and the rational use of energy (LAURE), introduced in 1996, made urban transport plans (PDUs) mandatory for conurbations with a population greater than 100,000. These PDUs require local authorities to take a holistic approach to transport management, with the aim of reducing vehicle traffic.

As a result, local authorities introduced new transport projects, made substantial investment in public transport and redeveloped city centres, introducing road-sharing schemes that favour public transport and environmentally friendly modes of transport.

Although it is difficult to identify specific factors that have had the greatest influence, it is clear that the most significant changes have occurred in those places where deliberately long-term transport policies have been introduced.

These changes cannot, however, be attributed to public initiatives alone. The economic crisis at the end of the decade had a marked influence on mobility, and on car use in particular, along with a general trend towards greater concern for environmental issues.

Local politicians therefore tackled transport issues head on, placing public transport at the top of the policy agenda. The result was the first generation of PDUs, which appeared in the 2000s, focusing primarily on public transport systems using dedicated lanes. Policies in this area have remained somewhat limited due to specific local situations, with less densely populated cities and smaller conurbations not experiencing the same level of growth in public transport use.

Walking and cycling, which were once seen as old-fashioned and overlooked by transport policy-makers, are now viewed as modes of transport in their own right. Legislators have taken steps to encourage use of these modes of transport, providing local authorities and developers with new tools such as pedestrian priority zones and shared 30 km-ph zones. Public space planning initiatives have favoured these active modes of transport as part of efforts to improve the living environment for local residents and to limit excessive car use.

The use of active modes of transport remained generally stable in the last decade, although it increased in the centres of large conurbations, probably in connection with self-service bicycle schemes which have been introduced on a large scale since the mid-2000s, and which have greatly enhanced the profile of the bicycle. Despite this, there remains substantial room for manoeuvre in terms of short-distance trips, particularly in suburban areas and smaller cities. This is also a public health issue, as their regular use helps to reduce the risk of cardio-vascular diseases and obesity.

Car use in cities is on the decline for the first time. Furthermore, there appears to be a growing disconnect between car ownership and car use. While ownership is on the rise, people are using their cars less often. The emergence of a more rational relationship with the car is likely, in future, to lead to growth in car-sharing. One of the key challenges in the coming years will be to encourage a gradual shift from the car as a “possession” to the car as a “service”.

Outside the centres of large conurbations, car use remains stable at best (in smaller city centres) or continues to rise. Cars account for 80% to 85% of all trips in periurban fringes. At the same time, the use of public transport and active modes of transport is on the decline, including in the fringes of large conurbations.

These changes demand innovative solutions to improve transport service in these areas. The 2000s saw the development of public transport systems such as Bus with a High Level of Service (BHLS) and Demand-Responsive Transport (DRT), which is a less costly alternative for smaller cities and less densely populated areas.

There has been a substantial increase in the number of trips made in periurban fringe areas (up 44% between 1994 and 2008), primarily due to their increasing demographic size. Despite receiving less attention than periurban areas, suburbs account for more than a quarter of all trips made each day in France, with the total number increasing by 9% between 1994 and 2008. The increase in the number of trips between different types of area also poses a challenge: encouraging the movement of jobs away from urban centres and towards the suburbs while ensuring that these urban centres remain able to attract residents from the periurban fringes.

The residents of urban centres tend to make shorter trips and use modes of transport other than the car. They therefore emit less CO₂ per capita than their suburban counterparts as a result of their daily travel. These low emissions for local trips more than make up for the higher emissions they produce when making long-distance trips.

While periurban residents emit most CO₂ per capita, it is the residents of the suburbs that produce most CO₂ as a whole, due to their sheer number. It is here – especially in large conurbations – that the battle against greenhouse gas emissions must therefore be fought.

The change in mobility practices reflects a change in lifestyles, with people spending less time at work and more time visiting family and friends, spending more time at the computer, etc. Households' daily routines and travel practices are governed by the activities of their members.

In order to better understand the challenges that this poses, local authorities have created new “time offices” (Bureaux des Temps). The purpose of these new structures is to place citizens at the heart of transport policies.

However, they remain isolated for the time being. Despite the fact that people are now spending less time at work, the challenges that this activity poses remain significant. Work-related trips account for 20% to 25% of all trips. They also tend to be longer than other trips, are usually made by car and are

concentrated during rush hour. These types of trip therefore remain a key priority in transport service policy.

Elderly people are travelling more than before, making more trips by car and walking less. Furthermore, the size of the elderly population is rising. As well as the environmental impacts of these changes, it is important to consider the specific mobility needs of this population and to ensure that they continue to have access to local shops and services. This will enable elderly people to continue living at home and encourage walking – particularly important from a health perspective.

This issue raises the more general question of travel for people with reduced mobility. It is important to remember, in this respect, that the French “Handicap” law of 2005 requires that public transport networks be made accessible to people with reduced mobility by 2015.

Experts agree that rising fuel prices are linked to economic fluctuations that are gathering pace and are difficult to predict. In this situation, access to urban functions, and to jobs in particular, can become increasingly difficult. Periurban areas, where residents are highly dependent on cars, are particularly severely affected by this phenomenon. It affects not only poor households, but also the middle classes who have moved out to the suburban fringes to benefit from cheaper housing. These groups are now especially vulnerable to fuel price rises.

Legislative context

Transport authorities are public bodies with responsibility for organising public transport services and setting transport policy in the area that they cover.

The concept of transport authority, and the roles and rights of these bodies, are set out in the so-called “LOTI” law (French framework law on domestic transport) of 30 December 1982. This law forms the basis of land-based public transport organisation in France.

Since this law was introduced, a series of additional legislative texts have come into force, further strengthening the role of urban transport authorities:

- French law of 30 December 1996 on air quality and the use of energy (LAURE).
- French law of 13 December 2000 on solidarity and urban renewal (SRU). This law strengthened powers in the field of transport policy, making such policies more prescriptive in terms of road-sharing and parking, and requiring consistency between transport policy and urban planning.
- French law of 11 February 2005 on equal rights and opportunities, involvement and citizenship of people with disabilities, which sets out the requirements incumbent on urban transport authorities in terms of accessibility.

More recent laws affecting transport organisation include the French laws of 3 August 2009 on the *Grenelle de l’Environnement* (the French government’s environmental round table) implementation schedule and the French law of 12 July 2010 formalising a “national commitment to the environment”.

Finally, the French law of 16 December 2010 on the reform of local government – although not specifically about transport – should have a substantial impact on the number and type of transport authorities in existence, broadening their remits and, eventually, strengthening the powers of some of these authorities.

The three laws outlined above are designed to improve transport governance, by strengthening cooperation arrangements or introducing new institutional tools and systems. There are also provisions that improve coordination between urban transport authorities and other authorities and bodies (roads, urban planning, parking, etc.).

It is important to note that, as of 1 December 2010, all laws covering transport organisation were unified under a single Transport Code.

Transport authorities' responsibilities

Urban transport authorities (296 as of 1 January 2011) may exist in a variety of legal forms. In most cases, they are intercommunal authorities.

Urban transport authorities are closely linked with a clearly defined urban transport area (PTU). Local authorities have the power to create an urban transport area at their own initiative. The local government representative (prefect) submits the proposal to the departmental authority (Conseil Général), then formally approves the creation of the urban transport area. Whenever an urban transport area is created, a new urban area authority is automatically created. Similarly, whenever the boundary of one of these structures is extended, the associated urban transport area is automatically extended.

Under French law, urban transport authorities are "*authorities with the power to organise general urban public transport services. They also have the power to organise demand-responsive transport services.*"

In this sense, urban transport authorities are not responsible for road transport outside their urban transport area or rail transport on the national rail network.

The division of powers between the different echelons of local government (regions, departments, municipalities, and groups of municipalities) is specified under the LOTI law.

In terms of organisation, the responsibilities of urban transport authorities are as follows:

- Selecting the form of management (direct or through delegation) and drawing up contracts with operators.
- Determining coverage objectives.
- Setting a fares policy designed to promote "the most effective use of the transport system, in both financial and social terms" and which does not exclude the poorest members of the local population from transport services.
- Contributing to transport service financing. In order to achieve this aim, urban transport authorities may decide to introduce a transport tax (*versement transport* – VT). This is a tax on both public- and private-sector employers, with the amount collected going directly to urban transport; the level of this tax is limited by law.
- Creating transport system infrastructures.

Urban transport authorities are also responsible for drawing up an "accessibility master plan" to ensure that people with disabilities and people with reduced mobility can access transport services (pursuant to the French law of 11 February 2005).

The urban mobility authority prepares the urban mobility plan. Central government departments and regional and departmental councils (like transport authorities and road network managers) are involved in the preparation process.

As of 1 January 2011, there were 296 urban transport authorities in France, with a variety of legal forms. The simplest type of urban transport authority is the municipality (*commune*). In practice, however, this structure is only used to set up transport networks in small urban areas.

Beyond a certain population size, municipalities tend to join forces under a single, intercommunal structure which also acts as the transport authority.

This type of intercommunal structure normally fulfils other functions in addition to urban transport organisation (urban policy, economic development, spatial development, etc.)

In some rare cases, the urban transport authority may also be a joint management board (*syndicat mixte*), comprising different types of local authority (municipality, intercommunal co-operation authority, department).

In 2011, the breakdown of urban transport authorities was as follows:

- 26% were municipalities.
- 58% were communities (groups of municipalities with their own tax levying powers and with responsibilities covering multiple sectors). This figure includes intercommunal authorities, urban area authorities (the most common type of urban transport authority, accounting for 41% of the total), and greater urban authorities.
- 6% were intercommunal syndicates with sole responsibility for urban transport.
- The remaining 10% were joint management boards comprising different types of local authority.

Public transport financing outside Paris

The LOTI law states that urban public transport may be funded by a number of different parties: *“users, public local authorities where applicable and (...) other public and private beneficiaries who, while not users of the service, gain a direct or indirect advantage from the service”*.

Urban public transport users fund the service through the purchase of transport tickets. The French urban public transport system is also funded by a specific Transport Tax. This tax is levied on employers with more than nine employees working within a given public transport area. The transport authority has the power to introduce this tax. The revenue collected from the tax can be used to fund both investment expenditure and network operating expenditure.

Both local authorities and central government contribute to urban public transport network development expenditure. Local authorities provide the majority of the investment funding, with central government making a smaller contribution. Operating expenses are covered entirely by the local authority, however.

In 2010, urban transport networks (operation and investment) outside the Paris region were funded as follows:

- employers, via the Transport Tax (44%)

- local authorities, via their own taxation (28%) and loans (8%)
- passengers, via fare revenues (16%)
- central government (1%)
- other sources (3%).

Therefore, outside Paris, urban transport authorities play a key role in funding their networks, setting the Transport Tax rate and deciding on passenger fare levels and rises which, in turn, affect fare revenues. They also often guarantee the financial balance of the urban public transport services by making their own contributions. The level of urban transport authority participation in transport funding has risen sharply in recent decades.

Passenger financing in networks outside Paris

The fares policy reflects the urban transport authority's political, social, technical and financial aspirations. It must comply with the general principles that govern public service delivery and public accounting: equal access to transport, equal treatment of public service users and budgetary balance.

The urban transport authority therefore decides the transport tickets that will be available on its public transport network and sets the price at which these are sold to users. This enables the authority to calculate its fare revenue which, in turn, will be used to fund public transport operation.

The operator may offer technical expertise in terms of fares and ticketing and submit proposals to the urban transport authority. However, the urban transport authority has the final say on the fares policy that will be implemented within its network (e.g. fares reductions for people whose income is below a certain threshold, or the introduction of multimodal pricing arrangements).

The urban transport authority compensates the operator for the loss of revenue caused by these reduced or zero-rate fares.

Fare revenues collected from the sale of transport passes to users only cover part of total urban transport network operating expenditure.

In 2010, fare revenues amounted to €1 028 million, while network operating expenditure stood at €4 926 million, meaning that fare revenues covered 21% of total urban network operating costs. There are significant local differences: The more highly developed the network, the greater the difference between fare revenues and operating expenditure.

In 2010, total expenditure (including all operating and investment costs) on urban transport networks outside Paris stood at €6 516 million. Fare revenues therefore accounted for a little over 16% of total annual expenditure.

This situation is the result of a deliberate decision by local authorities to encourage public transport use. In 2010, observations showed that networks outside the Paris region:

- Had competitive fares: the average ticket price per unit was €1.13, with a book of 10 tickets costing an average of €8.70 and a monthly subscription €27.66.
- Offered an attractive range of fare options, with significant savings for subscriptions and discounts for certain types of user (young people, the elderly, etc.), as well as special social fare

rates for other types of user (unemployed, people with reduced mobility, etc.) in line with the “right of transport” principle and pursuant to legal obligations.

Employer financing

The Transport Tax

A public transport financing system, known as the Transport Tax, was introduced in the Île-de-France (Paris) region in 1971, and in France's other cities in 1973. This is a special tax levied on public and private employees with more than nine employees in an urban transport area with a population of more than 10 000, or lower if the urban transport area includes at least one “tourist commune”. The revenue from this tax is allocated to urban public transport. It is used to fund operating and investment expenditure, as well as projects to improve intermodal travel actions between bicycles and public transport.

The Transport Tax is optional outside the Paris region. The decision to levy this tax, and the rate at which it is set, is taken by the urban transport authority, **within the legally defined limits**. In 2010, the Transport Tax had been introduced by 226 urban transport authorities outside the Paris region. These included:

- 20 metropolitan areas with dedicated-lane transport systems, which received 56% of total Transport Tax revenues.
- 57 metropolitan areas with more than 100,000 inhabitants, which received 34% of total Transport Tax revenues.
- 149 metropolitan areas with fewer than 100,000 inhabitants, which received 9% of total Transport Tax revenues.

Transport Tax revenues have increased by almost 51% in 10 years, for the following three reasons:

- Some existing urban transport areas have expanded and new ones have been created, increasing the number of employers liable to pay the tax.
- The corresponding wage bill has increased due to economic growth.
- Rates have increased (due or not to dedicated-lane transport systems).

Throughout this period, the percentage of total urban public transport financing (excluding loans) coming from the Transport Tax remained at between 43% and 48%.

Transport reimbursement (Prime transport)

A law created aid measures for employees, financed by the employer with State assistance, to fund their travel expenses between their usual place of residence and their workplace.

This system is twofold:

- The mandatory payment by the employer of half of the subscription to a public transport service or rental of bicycles purchased by its employees for their home-work commute.
- The transport reimbursement (prime transport) that is optional for the employer and covers all or part of the costs to use a personal vehicle incurred by its employees for their home-work commute. This payment benefits from a social charge and tax exemption in favour of both the employer and employee up to a limit of €200 per year. This optional payment is in addition to the mandatory payment of subscription costs for public transport or the rental of bicycles.

Public funding

Local authority contribution

In 2010, local authorities contributed 28% of total urban transport network funding (investment and operation) directly from their own budgets. When the Transport Tax and loans are included, this figure rises to 80%.

Outside the Paris region, the portion of network operating costs not covered by traffic revenues, Transport Tax revenues or operating subsidies from partner local authorities is funded directly by the urban transport authority, within the limits of the contractual agreement between the authority and its operator.

Investment financing, on the other hand, comes from several different sources:

- Urban transport authorities (own budget + Transport Tax + loans).
- Central government (via infrastructure subsidies).
- Other partners (local authorities, Europe).

Outside the Paris region, investment expenditure amounted to €1.59 billion in 2010, with 91% of this investment occurring in urban transport authorities with more than 200 000 inhabitants, with or without dedicated-lane transport systems.

Central government contribution

The Grenelle de l'Environnement (the French government's environmental round table) reignited interest in developing dedicated-lane public transport networks. This renewed interest was based not only on the fact that such systems would help to reduce greenhouse gases by limiting private car use, but also on their ability to mitigate urban congestion and provide high-quality transport options to a large number of people.

In order to meet its target, the French government decided to contribute to the funding of urban public transport projects introduced by urban transport authorities by providing dedicated-lane transport system investment subsidies under a national urban transport "call for projects". The government also provides public funding for multi-year joint government/region project contracts (*contrats de projets État-Région* – CPER). A total of €103 million was allocated to this scheme for the 2007-2013 period.

Mobility planning: sustainable urban mobility plans

Introduction

Global transport planning tools, the sustainable urban mobility plans (*plans de déplacements urbains* – PDU), were introduced under the LOTI in 1982 in order to tackle mobility challenges.

Sustainable urban mobility plans started out as global transport planning tools in urban areas for the development of public transport and active modes (walking and cycling) in the 1980s and 1990s, and have gradually taken on more importance around more recent issues or issues that received insufficient attention in the early decades: environment and climate change, accessibility for people with reduced mobility, transport and urban planning, parking management and the transportation of goods.

Thirty years after their creation, PDUs have demonstrated their effectiveness in influencing inhabitants' mobility: decreased car use in major urban centres, increased use of public transport and development of active modes. Their success has encouraged many medium-sized towns to engage in voluntary approaches and the PDU is now one of the "sustainable urban mobility plan" models promoted by Europe in its Action Plan on Urban Mobility.

However, implementation problems remain, particularly due to the complexity of integrating the PDU into the hierarchy of planning documents, the multiplicity of stakeholders involved in governance and the need for cooperation between transport authorities beyond the scope of application of the PDU.

So the PDU today faces many challenges which it must take up if it is to strengthen its contribution to the integration of urban and transport policies.

After forty or so PDUs in the 1980s, they became compulsory in 1996 for urban areas of more than 100,000 inhabitants. The first wave of compulsory PDUs was approved in the early 2000s. Most of these first PDUs were revised or are being revised in the early 2010s. Since 2005, PDUs have gradually conquered medium-sized towns, a movement that has picked up speed in recent years. Today, nearly 80 PDUs are being implemented, and about as many simplified procedures in towns of less than 100,000 inhabitants.

The PDU is a comprehensive transport planning tool that determines the principles governing the organisation of passenger and freight transport, traffic and parking within the scope of urban transport. The development process is led by the French urban transport authority (*autorité organisatrice des transports urbains* – AOTU) and involves many institutional stakeholders, both from civil society and economic ones. Its content has changed several times and its objectives have gradually turned towards the promotion of sustainable mobility in relation to urban policy.

Then the SRU law, in 2000, aimed to strengthen social and urban cohesion. It introduced regional integrated development plans (*Schéma de cohérence territoriale* – SCoT) and local urban development plans (*Plan local d’urbanisme* – PLU) and placed the PDU within this hierarchy of planning documents.

Since the SRU law, mobility policies have been better integrated into urban planning, and the 2010 Grenelle II law 2010 now gives “reduce the need to travel” as one of the objectives of urban plans (SCoT and PLU).

Several recent PDUs have been drawn up to link transport and urban planning better, like the 2011 Nantes PDU whose first topic is to build a town in which trips are short, or that of Montpellier in 2012 which clearly shows its consistency with the SCoT.

Since the SRU law, mobility policies have been better integrated into urban planning, and the 2010 Grenelle II law 2010 now gives “reduce the need to travel” as one of the objectives of urban plans (SCoT and PLU). Several recent PDUs have been drawn up to link transport and urban planning better, like the 2011 Nantes PDU whose first topic is to build a town in which trips are short, or that of Montpellier in 2012 which clearly shows its consistency with the SCoT.

The link that the PDU has with urban planning and the town also comes into effect more locally in issues of space design. The SRU law makes improved safety for all trips one of the eight goals of the PDU. By giving the PDU a more important role in road sharing, to the advantage of active modes, and in the management of public parking, this law promotes an improved living environment.

The PDU, successfully adopted by cities, is now increasingly popular in medium-sized towns, to the extent that, of the 150 planning steps for urban mobility in France, three out of five were initiated on a voluntary basis, in towns with fewer than 100,000 inhabitants. In addition, since 2007 Europe has been promoting sustainable urban mobility plans in its Green Paper on urban mobility, the PDU being one of the models alongside the English “local transport plan” (LTP).

However, it is difficult to attribute recent travel developments to the PDU alone: the economic environment and rising fuel prices play an important role in the choice of mobility. And while changes are broadly moving in the direction indicated by policies, several results need to be consolidated. For example, all regions do not follow the same trends. While car use is declining in large cities, it continues to increase in the outskirts as a result of continued urban sprawl in the second and even third ring around urban centres, as well as in medium-sized towns. Links between transport and urban planning remain to be consolidated, and PDUs must look further than the centre of urban areas to offer alternative mobility solutions adapted to all types of regions.

The growth in living areas and the increasing distance between home and workplace have not been systematically followed by an extension of administrative boundaries.

Mobility planning in these areas can be organised within the framework of thinking on the SCoTs (area coherency schemes) whose boundaries correspond more closely to living areas. Municipalities outside the PTU may make more fine-tuned use of SCoT principles in municipal transport plans, or as part of the PLU (local urban development plan) that may contain many actions related to mobility.

In addition, transport thinking at departmental and regional level also provides an opportunity to grasp mobility issues in sparsely populated areas in the outskirts of urban areas. As such, the “regional intermodality scheme” that could be introduced by decentralisation Act III should deal carefully with transport planning in areas not covered by the PDU.

There is a real need for discussion and cooperation between transport authorities to jointly develop mobility solutions that transcend administrative boundaries.

Regional and departmental transport

The division of powers between the different echelons of local government (regions, departments, municipalities, and groups) is specified under the LOTI law, which sets out the organisation of local public transport in France.

Regions

As the authority responsible for the organisation of regional passenger transport, the region ensures scheduled non-urban regional-level services, including:

- Passenger rail services on the TER regional express network, which run on the national rail network (except national-level and international services).
- Non-urban regional-level road passenger services, such as rail replacement coach services.
- The drafting of regional transport plans—scheduled non-urban regional-level services.

The network carries 700 000 passengers a day, on 5 700 trains. It has its own staff and equipment. Most regions also have subcontracted TER coach services which include road-only services.

Table 4.1 TER regional express network

Region	Population	2009 TER budget	Share of regional budget	Budget per capita	Train-km per year	Journeys Per year
TER Alsace	1,843,053	€172.19m	20.55%	€93.43		
TER Aquitaine	3,206,137	€167.2m	12.31%	€90.72		14,782,500
TER Auvergne	1,343,964	€97m	14.52%	€52.63		
TER Burgundy	1,642,440	€181.7m	22.64%	€98.59	9,800,000	15,953,055
TER Brittany	3,175,064	€95.1m	7.89%	€51.60		9,500,000
TER Centre	2,538,590	€123m	9.87%	€66.74		18,888,750
TER Champagne-Ardenne	1,337,953	€94.4m	14.19%	€51.22		3,650,000
TER Franche-Comté	1,168,208	€71.26m	13.89%	€38.66		7,300,000
TER Languedoc-Roussillon	2,610,890	€117m	9.47%	€63.48	7,100,000	7,300,000
TER Limousin	741,785	€57.41m	12.31%	€31.15		2,190,000
TER Lorraine	2,350,112	€169m	16.16%	€91.70	10,600,000	23,360,000
TER Lower Normandy	1,470,880	€85.5m	11.23%	€46.55	3,700,000	4,100,000
TER Midi-Pyrénées	2,862,707	€156.57m	12.71%	€84.95	9,500,000	11,000,000
TER Nord-Pas-de-Calais	4,033,197	€294.36m	13.4%	€159.71		40,880,000
TER Pays de la Loire	3,539,048	€163.1m	12.51%	€88.94	8,942,500	
TER Picardy	1,911,157	€220.3m	20.43%	€119.53		20,659,000
TER Poitou-Charentes	1,760,575	€57m	8.32%	€30.93		3,577,000
TER Provence-Alps-Côte d'Azur	4,889,053	€273.7m	13.87%	€148.50	10,500,000	23,400,000
TER Rhone-Alps	6,174,040	€465m	19%	€252.30		49,275,000

Sources: INSEE, SNCF, and Ville, Rail & Transports.

Departments

Non-urban and inter-urban transport is managed by departments. Inter-urban departmental transport includes regular and on-demand road services (see Chapter 4) that may be delegated by the department to secondary transport authorities, i.e. municipalities or groups.

The departments' public transport responsibilities include:

- Drafting the departmental plan for the management of public transport (scheduled and demand-responsive services).
- Organising non-urban road passenger transport.
- Operating rail or non-urban guided transport infrastructure.
- At the request of the municipalities, ensuring all or part of the organisation and implementation of transport services.
- Pursuing policies to connect rural areas to the public transport network.

In 2009, total departmental public road services were estimated at 680 to 800 million kilometres:

- 59% of this figure is accounted for by school services, i.e. an average 19 kilometres per capita outside the PTU.
- 39% represents scheduled services, i.e. an average of 13 km per capita outside the PTU.
- Transport on demand (ToD) represents 2% of total network kilometres.

In 2009, the total number of journeys, excluding school services, was estimated at between 270 and 330 million:

- School attendance on scheduled services accounted for 79% of journeys.
- 20% of journeys were made by non-school passengers on scheduled services.
- ToD customers accounted for 1% of journeys.

General Councils want to densify departmental networks and turn them into key instruments of public mobility in inter-urban areas. They have two means of achieving this goal: increasing the level of service and increasing coverage of the territory.

Under today's tough economic conditions car travel is becoming more expensive. This, combined with growing public awareness of the environmental challenges posed by transport, will prompt departmental public transport to play an increasing role in people's everyday mobility in sparsely populated areas, if sufficient resources are found to establish a credible, financially viable offer.

School transport

School transport is organised by the department, but also comes under the responsibility of the French transport authority (*autorité organisatrice des transports* – AOT) if it is also covered by a PTU, unless this responsibility has been delegated to the department.

The division of responsibilities for school transport between the different regional authorities is as follows.

The General Councils are responsible for organising school transport outside PTUs. Traditionally, they have focused services on primary and secondary schoolchildren, but have extended their mission to the point of becoming a key player in everyday mobility for peri-urban and rural areas.

Since 2006, there has been an increase in both the number of journeys made by schoolchildren, and the number made by other users, especially commuters, on scheduled services.

This trend has also seen an extension of the network, despite the contraction of the service area, owing to the extension of urban perimeters, and greater cooperation with the other transport authorities with the aim of offering a service that is unrestricted by jurisdictional boundaries. In this respect, attractive pricing policies have an important role to play.

The estimated number of school journeys on scheduled services and on special school lines in 20069 is estimated at between 615 and 755 million.

Departmental AOTs have long been seen as specialised in transport services for schoolchildren and students but now, calling on the expertise linked to this decentralisation, they are moving into a new role by extending their services. A recent survey identified the trend towards departmental lines open to all users, structured in a hierarchical network, like the urban model. They are now working towards converging scheduled services with school services in order to encourage a network-based approach.

Demand-responsive transport: A high level of flexibility for transport services

Improving mobility is a major issue in sparsely populated areas. The low population density in these localities often means that longer journeys are required to access services, carry out everyday activities or maintain social links.

Demand-responsive transport (DRT) or Transport-on-Demand (ToD) is a public transport service that is attracting a great deal of interest among local authorities as an alternative transport solution to the private car and regular public transport services in cases where the latter are no longer appropriate. Transport-on-demand runs only at the express request of the people that need to use it and is distinguished from regular transport services that follow set routes and run according to timetables that are defined on an annual basis. Given the way in which it functions, transport-on-demand is a transport service that is halfway between regular public transport and taxi services.

The right to transport is enshrined in French legislation, in particular the LOTI law and its article 2 which institutes a right to transport allowing users to travel in reasonable conditions in terms of access, quality and price, in particular by using a mode of public transport.

The application of this law in sparsely populated areas is difficult, as conventional public transport services are not always suitable: high-volume transit, the fundamental principle behind these services, is not applicable here, as the population is too widely dispersed.

Furthermore, it is becoming more and more difficult for conventional public transport services to meet increasingly complex and individualised mobility needs. Nevertheless, there is a real demand for mobility in these areas (whether for leisure, shopping or work purposes), together with growing concerns regarding sustainable development.

Indeed, faced with the challenges of sustainable development, noticeable changes are being made to transport policies. The objective is no longer to adapt supply to fluctuating demand, but to try to concentrate and direct this demand towards economical, efficient and environmentally friendly forms of mobility.

From this point of view, demand-responsive transport can be considered as a way of optimising transport in order to meet the needs of rural or semi-rural areas and ensure that the transport services on offer are suited to the areas and populations in question.

Different forms of demand-responsive transport

Demand-responsive transport (DRT) can provide a solution that is particularly suited to sparsely populated areas, thanks to its flexibility, its ability to adapt to local contexts, to many users' requirements, and the fact that costs can, to some extent, be controlled. Local authorities have several options to choose from:

- A “virtual” line. A virtual line is a service that is similar to normal scheduled services since it stops at fixed stopping points, follows regular routes and runs according to timetables set in advance. The basic difference compared with normal scheduled services is that it only runs if requested by one or more users.
- A “Door-to-Door” service. A Door-to-Door service, although less common, is a service transporting users from their homes to specified destinations. It is reserved for the elderly or for people with reduced mobility. There is no set route in this case and the service may be provided by taxis or minibuses belonging to the main network operator.
- Stop-to-stop or “point-to-point” services. Stop-to-stop or point-to-point refers to a system that serves an area with stops defined in advance. Routes may vary depending on stops and user demand. It may also make use of taxis or minibuses.

In addition to these main categories, there are many intermediate forms that may be a combination of the main variants. For example, transport-on-demand services sometimes run on market days without any need to book but stopping at stops that are specified in advance.

The responsible authority

The transport authority defines the main characteristics of transport services within its area, including pricing policy. Unlike scheduled services, timetables and routes for demand-responsive transport services may change in order to meet demand more effectively. One of the objectives for transport authorities is to ensure the economic viability of DRT services, even though passenger numbers are often limited. The fixed costs remain the same regardless of whether the service is operational. These costs include the purchase of vehicles, and the fact that these vehicles cannot be used for other purposes, as well as the

cost of keeping drivers and vehicles on standby. However, the transport authority can control costs associated with the operation of the service, in particular by encouraging passengers to share the same vehicle or even by recommending the use of DRT services on certain days or at certain times.

In the context of non-urban road-based passenger transport, demand-responsive transport services are public services, the organisation of which is usually the responsibility of departmental councils. However, if municipalities or groups of municipalities so wish, the department may entrust them with all or part of the organisation and implementation of these services. In this case, the terms of such a partnership are laid down in an agreement between the two structures, and the organising body is then known as a second-tier transport authority (*autorité organisatrice de second rang*).

Relevance of demand-responsive transport

One of the major problems encountered when setting up a transport-on-demand scheme is the difficulty in correctly gauging demand for the service. To ensure success, emphasis should be placed on preliminary research and studies, which are crucial for correctly assessing potential demand and the nature of transport services required.

Demand-responsive transport services must be developed in consultation with users – much more so than for conventional services. Indeed, the creation and long-term success of a DRT service is entirely dependent on the involvement of everyone in the local community.

Transport-on-Demand is usually developed to serve periurban areas, where providing an adequate scheduled service cannot be justified as demand is not high enough. ToD is a cheaper and more suitable way of connecting certain periurban districts to the town centre. This arrangement is of particular interest for medium-sized towns, which typically have a densely populated centre and a population scattered more widely across the surrounding area, compared with the built-up centre.

Whole sections of the population – older people, young people, stay-at-home parents in single-car households, and seasonal workers – are effectively handicapped in mobility terms by inadequate public transport provision and overdependence on people with cars.

Developing transport-on-demand may also be a solution for dealing with limited financial resources and a need to rationalise services, by finding alternative ways to supplement regular public transport services.

From transport-on-demand on a large scale, covering an entire agglomeration, to end-of-line transport-on-demand continuing from the end of the transport network, the area covered may vary depending on the objectives targeted by the authorities.

Organisation

Transport-on-demand schemes come in various forms, all of which afford varying levels of flexibility. They may be run by different types of operator, mainly transport companies and taxi firms. In most cases, the local authority entrusts the running of transport-on-demand schemes to the major public transport network operator, which either runs the services itself or subcontracts them to a third-party operator. There are some cases where the third-party operator contracts directly from the organising authority. Such rationalisation may also involve the use of taxis, which implies the availability of a fleet of vehicles that usually costs less than that of the urban transport operator. There are also some

agglomerations that decide to manage a transport-on-demand service themselves, using their own personnel and vehicles.

Timetables and routes are usually decided by the relevant passenger transport authority after discussions with residents of the towns and villages concerned.

In terms of organisation, pricing and publicity, it is essential for the transport-on-demand scheme to be linked up to any scheduled services that exist with a view to developing an integrated public transport system.

It is also essential for the local authority to monitor the running of the service with a view to adjusting the offer as closely as possible to users' needs. Transport-on-demand schemes are not intended as a replacement for scheduled urban services. They have to be adapted to the social and economic context in a given area. The appropriate service (type of line, vehicles and operators) to be developed will depend on demand for mobility in the area.

Promoting the service is also essential to inform the public of transport-on-demand services, thereby attracting sufficient numbers of users to be able to provide an optimal service. Encouraging new customers to use the service should, however, be done within certain limits, to maintain the financial viability of the service.

In spite of this diversity of service and the variety of management contracts involved, the cost for the user is usually the same as that paid for regular urban transport services.

Box 4.1. Choosing a fare system

- Flat-rate fares: this is the system usually adopted. The fare is the same regardless of the distance travelled.
- Distance-based fares: this system seems more appropriate from an economic point of view, as it reflects the operator's actual cost structure, but it can become quite complex, depending on the routes involved. In order to rationalise costs, one vehicle may pick up several passengers at different locations, and each would then pay a different fare based on the real cost of their journey.
- Zone-based fares: this system allows a distinction to be made between a number of sectors in a large area.
- Degressive fares: this system is generally used to encourage passengers to group together and to avoid competition with taxi firms.
- Integrated fares: using the same fare system for DRT services and interurban (or urban) transport lines, facilitating connections with these services.

Other solutions

Demand-responsive transport services provide a mobility solution for sparsely populated areas, offering users connections to rail services, departmental coach services and urban bus routes.

However, they should not be considered a cure for all transport-related ills, for several reasons:

- In practice, these services, though used by all, are used mainly by older people.
- The cost is still considered too high by many transport authorities, which have limited resources.
- Demand-responsive transport is not yet flexible enough to trigger a modal shift among motorists in what are heavily car-dependent areas. While the positive image of demand-responsive transport among users encourages operators to expand the services they offer (e.g. new routes, extended timetables and coverage), the key to providing comprehensive mobility services in low-density areas (where car use is high) lies in the diversification of services by means of other innovative procedures (e.g. bicycle or moped rental, mobility switchboards, carpooling, car-sharing).

Carpooling

Carpooling helps relieve congestion and pollution by reducing the number of vehicles on the road. A national survey of all travel in France in 2008 – *Enquête Nationale Transports et Déplacements* – found an average of just 1.4 people per vehicle, a figure that falls to 1.1 for commuters.

Carpooling offers real growth potential, as a form of mobility that can be harnessed at no cost to the public purse, and the last decade has seen a proliferation of initiatives, both public and private.

Alongside public transport, carpooling represents another form of transport that reconciles the need for mobility with environmental and economic imperatives, and is widely seen as a good solution for sparsely populated areas with poor access to affordable public transport, and for times when public transport is not available. For these reasons, the French government has taken steps to encourage the practice.

Carpooling is not new. It was started by people without access to a vehicle, and those looking to save money. But it seems to have found renewed popularity, spurred by today's new information and communication technologies.

Valuable support can be offered by the local authorities responsible for urban planning, road planning, and the organisation of local public transport. Other players, including the government, can make a decisive contribution; the adoption of this mode of transport will require the various parties involved to make regulatory, organisational and technical changes.

The development of carpooling would benefit from several actions:

- Actions helping carpooling services to reach a critical size, in order to increase the chances of finding suitable itineraries:
 - promoting interoperability among carpooling services, to share data between operators
 - counteracting the proliferation of services by developing interoperability between operators and using compatible databases
 - promoting carpooling and communicating about local opportunities to encourage people to adopt the practice.
- The development of dedicated infrastructure: carpooling park networks, connected with public transport as often as possible, dedicated lanes (HOV lanes).

Active modes

For a long time, walking occupied a marginal place in the PDUs, whereas it is the second transport mode after the car. It is now making a very noticeable appearance in mobility policies, in conjunction with a more balanced sharing of public space, the problem of road accessibility for people with reduced mobility and the promotion of so-called active modes with a view to improving public health.

Cycling has found its way into more PDUs since the 1996 air quality law. Although its share of travel rarely exceeds 2%, it is identified as high potential, as many European towns have implemented proactive and successful policies in this field, especially in Northern Europe.

Measures to encourage these modes are designed to support a more general urban planning policy to promote local travel, a prerequisite for walking and cycling as standalone modes of transport or as feeders to public transport networks.

Walking and cycling are good modes of transport for short journeys, e.g. between municipalities or from a hamlet to the neighbouring village. They are also suitable for accessing stations.

One of the main ways to encourage walking and cycling is to offer safer, more attractive walkways and cycle paths. A particularly illustrative example of a shifting trend concerns the journey to school taken by primary schoolchildren.

Primary schoolchildren, aged between five and nine, make almost all trips to school either on foot or by car, and over the last thirty years, these modes have shown inverse trends, as walking has declined. Car use has grown strongly—more than doubling over this period.

The last survey, however, identified the end of this marked trend, reflecting a decline in car use also seen elsewhere. This may be partly due to policies implemented in the last ten years, such as Pédibus. Pédibus is a walking bus is a form of student transport for schoolchildren who, chaperoned by two adults walk to school, in much the same way a school bus would drive them to school. Like a traditional bus, walking buses have a fixed route with designated "bus stops" and "pick up times" in which they pick up children.

Mobility Management

Mobility management consists of “promoting sustainable transport and managing the demand for car transport by changing the attitudes and behaviours of people and businesses. It is based on ‘soft’ measures, such as information and communication, service organisation, and the coordination of the various parties involved.”

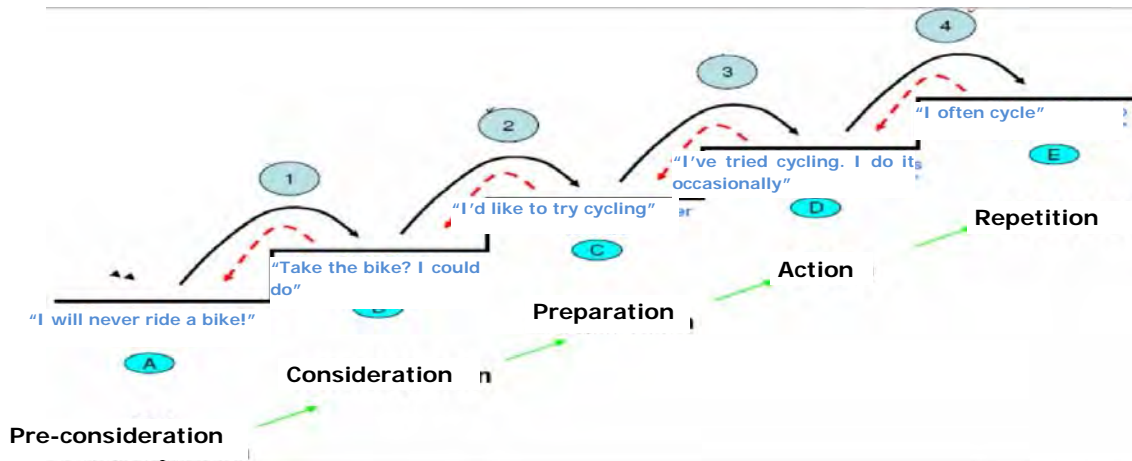
Based on this definition, a certain number of characteristics can be established. Mobility management:

- Aims to influence the demand for transport instead of increasing the supply ad infinitum.
- Consists essentially of communication, awareness-raising, education, and the adaptation and organisation of transport services and pricing, with dedicated staff and facilities.
- Occasionally requires targeted investments and measures to stimulate the modal shift to alternative forms of transport to solo car journeys (e.g. creation of cycle parks, reduction of number of parking spaces, creation or displacement of public transport stops).

- Generally concerns passenger transport, but may also concern freight, especially when rationalising the logistics of a given business location.

It is not possible to change mobility practices overnight; lasting change will only happen after a process of successive, intermediary steps.

Figure 4.1 The “stairway” to new mobility practice



Source: RR&A Roland Ribl & Associés pour la Communauté Urbaine de Strasbourg.

Mobility management can make use of various tools:

1. Tools for organisational intervention

- Mobility advice for users and businesses

Mobility advice covers the full range of mobility options. It includes the promotion of travel plans to the managers of business locations. It offers guidance for mobility management. It helps generate solutions by rallying the different parties.

- Teleworking to relax constrained mobility

Teleworking and remote working tools such as videoconferencing, conference calls, etc. provide an opportunity to reduce passenger mobility. They also offer alternatives to relax the mobility constraints experienced by workers (long commutes, etc.).

The links between mobility policies and teleworking have been highlighted by exceptional events such as extreme weather, strikes, and sporting events that affect the normal operation of public transport services.

The gradual emergence of a network of “third places” and telecentres, moreover, may reduce the distance between people’s home and their place of work.

2. Tools for communication, education, and awareness-raising

Communication lies at the heart of mobility management. This set of tools can offer quick, tangible results for a low investment.

- Targeted awareness-raising campaigns and communication

The aim is to encourage the public to use existing alternatives to the private car, by means of effective awareness-raising and information campaigns.

- Personalised marketing for tailor-made travel solutions

Personalised marketing is aimed at individual, targeted people or populations. It is usually very effective, but requires strong political support and dedicated resources.

This kind of campaign involves the distribution of flyers and/or free public transport tickets either door-to-door or on strategic sites such as universities, or telephone campaigns targeting certain people.

3. Tools for scheduling: mobility plans for places of business

These tools are variously known in France as *plans de déplacements d'établissements, d'entreprises (PDE), d'administration (PDA) and d'établissement scolaire (PDES)*, and they can be used by any public or private employer to promote the use of sustainable travel solutions among their employees. They are implemented as projects at the level of the establishment, of one or more sites, or a business park.

Inter-establishment and inter-enterprise travel plans (*plans de déplacements inter-établissements/inter-entreprises – PDIE*) have some advantages over single-site plans, since they offer the critical mass necessary to set up certain sustainable mobility services, such as carpooling and a pool of service vehicles.

The content of the plan varies according to the type of business or administration and its environment. The PDE may involve any of the following (non-exhaustive list):

- employee awareness-raising: e.g. communication about the transport available, challenges and contests, appointment or recruitment of a travel officer
- arrangement with the appropriate authorities for the creation or displacement of public transport stops close to the site, and for the requisite works to be carried out
- refunding a greater share of employees' travel costs than required by law
- creating pedestrian- or cycle-friendly facilities (cycle parks, showers, etc.)
- implementation of measures to limit the negative effects of logistics, such as pollution and congestion, e.g. rescheduling deliveries and redesigning access to the site
- promotion of technological solutions to reduce business travel, e.g. teleworking and videoconferencing.

PDESs are mobility plans for educational establishments and address issues specific to this sector, teaching young people and their families to adopt active modes and public transport instead of the car.

Securing the lasting success of these mobility plans will require support for the process from management and HR, and regular assessments of the action taken.

Mobility management may make use of information and communication technologies to help underprivileged sections of the population access transport networks.

Applications and services designed to assist travellers, such as information terminals and interactive maps, which offer reliable and accessible travel information and help users understand the operation of the public transport network, can help to promote social integration.

Lower-income sectors of the population are now adopting smartphones, moreover, as this technology sweeps the market. Mobility management should help these users optimise their mobility by means of these devices, with free journey planning apps, electronic ticketing, etc.

Mobility management first took off in major conurbations with sufficient transport density and infrastructure. It has proved effective in peri-urban and rural areas, however, where some underprivileged households are being driven into poverty by rising fuel prices. This is also a risk for deprived parts of the suburbs, where efficient transport links are often scarce.

These areas happen to be particularly relevant to the expansion of certain mobility services – regional trains, carpooling, telecentres. Mobility management needs to take these factors into account to define the right solutions and create a multi-modal network.

Intermodality

In rural areas, promoting public transport means promoting intermodality, which is defined as the use of several complementary mechanised modes of transport. It does not include walking.

By definition, public transport only serves only points, so coverage of an area requires the additional use of personal travel: driving, cycling or walking. Walking can be adequate in built-up areas, but not in the interurban environment, which requires intermodality. Intermodality is therefore far more widespread in periurban areas, especially for trips to or from the city. In Lyon, for example, only 2% of trips within the urban area are intermodal, but this figure rises to 21% for people living in the suburbs travelling to the central business district.

Intermodality can mean a wide range of different combinations, however. Intermodality between several public transport networks requires the creation of effective interchanges and timetable coordination. Intermodality between public transport and cars requires the provision of convenient parking, but this is difficult to achieve, given the many different demands for property around interchanges, and may even have negative consequences, such as encouraging urban sprawl and a modal shift away from departmental coach lines. Much can be done to encourage intermodality with cycling, starting with special routes to interchanges, secure cycle parks, and allowing cyclists to travel with their bicycles.

In any event, intermodal travel is more complicated than a simple ride on the bus or train. Users have to make a decision in three parts: knowing (about available transport options and their interchanges), understanding (how each mode of transport works and connects to others), choosing (according to the global performance of the trip in the light of the user's preferences). Multimodal information services are therefore vital to encourage people to practice intermodality.

One of the functions of demand-responsive transport is to improve intermodality. DRT has an important role to play in modal shift, specifically in the context of its integration with conventional public transport services. In order to ensure that a substantial volume of journeys are made via DRT across a wide area, as a complement to the fixed networks, priority must be given to serving key transport hubs.

For successful intermodal integration, it is advisable not only to apply the same fare scheme (and even the same ticketing arrangements) as the conventional network, but also to make DRT timetable and fare information available from the same sources (e.g. all in a single network guide) and use shared bus stops. In addition, to ensure the success of intermodality with regard to passenger information, urban transport authorities are setting up mobility switchboards, which typically provide information on the public transport services on offer, as well as other transport modes. These switchboards can also play an essential role for demand-responsive transport services, by enabling users to plan intermodal journeys (e.g. DRT service and conventional service).

Conclusion

Mainly devoted to the densest areas of urban transport zones, PDU actions are often hard to implement in the peripheral areas of cities: the density is less favourable to public transport, the areas are less built up and are divided into sectors, encouraging the use of private cars and long-distance trips, etc. However, there are solutions, in terms of urban planning, public transport, and green mobility. Each mode has its own area in which it provides a relevant solution.

For public transport, a network hierarchy makes it possible to use rail services, and identify key urban lines running in dedicated spaces, to which transport lines can be connected, either as a scheduled service or on demand.

Intermodality has also a role to play in expanding the public transport user base. The shared use of cars is also relevant: facilitating carpooling by creating dedicated car parks and effective internet platforms for linking motorists, offering carpooling services and making parking easier for these new modes than solo car users.

Green mobility already represents a high proportion of travel in town centres in rural areas, because local services are often available within walking or cycling distance. It can be further aided by working on the development of traffic-calming areas and cycle parking, but also on awareness and education, especially as far as cycling is concerned.

France is beginning to see a separation of the ideas of car use and car ownership. People's attitudes to the environment and global warming are (slowly) changing, with positive results. Public awareness of environmental problems may not have led to many changes in behaviour, but it is encouraging people to take "virtuous" action, generally in response to new restrictions.

Reduced car use may eventually encourage carpooling and car sharing or, in other words, the "collective" car, as society transitions between exclusive car use and a more rational, "detached" approach to this mode of transport.

Annex. Taxis in France

Taxis are specially equipped motor vehicles with seating for no more than eight people, in addition to the driver, whose owner or operator is licensed to wait at taxi ranks on the public highway for customers, on whose request the operator will provide private transport of people and their luggage in return for payment, as provided for by Article L.3121 of the French Code des Transports.

When waiting for customers, taxis may only use taxi ranks in their home district, i.e. the municipality (commune) in which they are registered, or in a municipality covered by a shared provision of taxi services that also includes their home district. They may also use taxi ranks in municipalities in which they have received a pre-booking, proof of which must be presented at the request of an authorised official, as provided for by Article L.3121-11 of the Code des Transports. Taxis can be hailed in the street.

Taxis are an essential adjunct to public transport. The mass transport solutions offered by scheduled public passenger services cannot provide round-the-clock coverage of the entire territory; because of their flexibility and adaptability to user demand, taxis are an effective means of filling the gaps left by the regular public transport system.

Taxi services in France

French taxi drivers are highly regulated. France has a total of 51 232 licensed taxis, and Paris has 16 623. In Paris, taxis are regulated by the Police Commissioner (Préfet de Police) of the City of Paris.

French taxis may be any colour. Their main distinctive characteristic is a roof light marked “TAXI”. A green light indicates that the taxi is available and a red light that it has been hired. Taxis must also have an approved time-distance meter, or taximeter, a plaque welded to the vehicle and, since 31 December 2011, a printer for the automatic issue of a receipt.

There are different legal statuses for taxi drivers:

- Sole trader (around 80%).
- Self-employed (using a leased vehicle) (around 11%).
- Self-employed (member of a co-operative) (around 6%).
- Employees (around 3%).

Taxi drivers have to pass an exam to receive a certificate of fitness to drive a taxi from the police, and they must have a licence to wait for custom at taxi ranks (see Article L.3121-1 of the *Code des Transports*), acquired from a sole trader or company that is winding up its business.

In order to be able to ply for hire, taxi drivers must be in possession of an *autorisation de stationnement* (AdS), also known as a licence, which is initially issued free of charge by the local mayor or prefect. Before obtaining the licence, applicants must add their name to a waiting list at the town hall

or the prefecture, and the Commission for taxis and private hire vehicles delivers its opinion. After they have been issued, licences can be sold freely between sole traders after fifteen years of business, or five if the licence has been sold previously. The estimated cost of a Parisian licence was estimated at around €240 000 in 2013.

Under certain conditions, a taxi driver can pay to present a successor to the administrative authority that issues the licences (see Article L.3121-2 of the *Code de Transports*).

Legal framework

Taxi drivers provide transport for hire or reward, which constitutes public transport as defined by Article 5 of the LOTI law (*loi d'orientation des transports intérieurs* – French framework law on domestic transport) but for commercial gain and not as a public service. They are governed by specific legislation laid down by the interior ministry.

Taxis have the option of operating in both capacities, however, in that there is no law which precludes them from responding to calls for tender issued by a transport authority for demand-responsive transport (DRT).

Should they choose to do so, they must adhere to the rules applicable to public transport activities and the principles of the LOTI:

- Taxi drivers who want to offer DRT must have signed the register of public road transport operators.
- Demand-responsive transport authorities can sign contracts with taxi drivers after a competitive process.

Taxi drivers come under the authority of the local mayor, who sets, if necessary, the number of taxis that may operate in the municipality, issues licences and makes rules subjecting the licences to conditions concerning the time drivers may start work or the pattern of shifts throughout the day, and specifies pick-up zones.

Fares

Fares are calculated per journey, regardless of the number of passengers. They include:

- A maximum pick-up cost.
- A maximum price per kilometre.

The minister of the economy determines the annual fare increase for a daytime journey of seven kilometres, including pick-up cost and six minutes' waiting time or low speed driving, taking account of price fluctuations in fuel, repairs and maintenance, insurance and vehicle costs.

As part of this process, fares are set every year by a prefectural order, which does not stipulate a legal rate, but a cap. Flat rates are not permitted; fares must be calculated according to distance and, at low speeds, time.

The current caps are:

- €3.79 (compared to €3.65 in 2013) for the pick-up cost.

- €1.04 (compared to €1 in 2013) per kilometre.
- €34.91 (compared to €33.60 in 2013) for an hour's waiting time or low speed driving.

Fares are calculated differently between Paris – where rates are higher during rush hour, at night, on Sundays and on bank holidays – the Paris suburbs, and the rest of France.

Parisian taxi drivers may only apply prefectural rates, which take account of both time and distance. The total fare is calculated automatically by the meter inside the vehicle.

Fares are calculated per journey, regardless of the number of passengers.

Private hire vehicles and chauffeur-driven passenger vehicles

Private hire vehicles are motor vehicles with seating for no more than eight people in addition to the driver, that are made available to people on their request and in return for payment, with a driver, for the private transportation of themselves and their luggage, as provided for by Article L.3122-1 of the Code des Transports.

Chauffeur-driven passenger vehicles must have at least four seats and no more than nine, including that of the chauffeur, according to the provisions of Article D.231-1 of the French *Code du Tourisme*. These vehicles, as distinct from private hire vehicles, must meet specific conditions of comfort and interior furnishings and fittings.

Unlike taxis, private hire vehicles and chauffeur-driven passenger vehicles may not be hailed or wait for custom in taxi ranks on the public highway unless they have been booked in advance. Taxis also have their own specific furnishings and fittings, and only taxi fares are regulated. For private hire vehicles and chauffeur-driven passenger vehicles, the price is freely agreed between the operator and the customer.

Annex
National regional traffic activation case studies: Japan

Institution for Transport Policy Studies, JAPAN

Introduction

This collection of case studies is a summary of detailed cases (micro data) obtained from interviews in municipalities as part of the “Information Gathering and the Provision of Web Information for the Activation of Regional Transportation” project with the support of the Nippon Foundation over the three years of FY2008-2010.

As the state of regional public transport becomes more and more difficult each year, and given the pressing need for local governments to revitalize and rehabilitate their regional public transportation systems, the “Revitalization and Rehabilitation of Local Public Transportation Systems Act” was implemented in October 2007 in Japan. This law seeks that municipalities at the forefront of this issue take on the role of “regional public transport producers”, examining the transportation needs of their regions, reviewing public transport from the perspective of its users, and playing a central role in the formulation of regional public transport plans.

Also, in the municipality survey conducted over the last three years by the Public Transport Support Centre (“Questionnaire on the Provision of Information by the Public Transport Support Centre”), it was clear that local government personnel in each region had a high need for information on “trends in other local governments” and “case studies of implemented measures”.

This collection of cases studies is a collection of various measures related to public transport from Japan, to provide information on the revitalisation and rehabilitation of regional public transport systems, for municipalities and other related stakeholders such as public transport users, residents, commercial facilities and businesses, hospitals and schools etc., in response to the roles and information needs of local government officials.

There are an innumerable variety of situations in the various regions, which cannot be resolved in a uniform manner, but it is important that consideration is given to those cases which are most similar to local conditions, and that a lot of ingenuity, expertise and lessons, as well as investigative processes are learned from these cases. This collection of case studies was prepared with these points in mind. It is important that local transportation is developed to suit the conditions of each region. Rather than directly applying the cases herein as they are, please use these as a reference for considering services and operations that match the specific characteristics of your region.

It is our hope that this collection of case studies of the reactivation and reform of local public transportation will provide tips for developing various initiatives, and that these examples will be useful in the formulation of measures that are fit for each region.

Public Transport Support Centre, Institution for Transport Policy Studies, Japan

FUREAI-Shuttle		Hokkaido>Niseko-cho	
Mode: Community Bus		Population: 4,669 people	
Status: Operational		Area: 197.13 km ²	
Implemented: 2002		Population Density: 23.68 people/km ²	
		Operating Entity: Niseko-cho	

Profile

In Niseko-cho, private bus routes doubled up with municipal welfare buses and school buses, but due to limited users and inefficiencies involved in doubling up on routes, these three buses were reorganized and integrated, to be restructured as the “Fureai Shuttle”, a community bus which anyone can use.

Results

- Previously, school buses and welfare buses had a limited set of users, but community busses can be used without worry by anyone, greatly improving the convenience to users. Also, given that this consolidates a number of different bus systems, operational efficiencies can be achieved, reducing administrative costs.
- The number of bus users in Niseko-cho has increased significantly from around 26 100 people (total of bus routes, welfare buses, school buses) in the first half of FY2001 (April to September) before the introduction of the community bus, to about 28 200 people since its introduction in the first half of 2002.
- There was also an upward trend in the number of general public users (excluding children and students using for school commuting) in the three years since the introduction of the community buses, from 20 400 people in FY2002, to 24 200 people in FY2003, and 24 800 people in FY2004.
- From FY2007, in addition to introducing buses with carriers for bicycles (the first such trial in the nation), mini tours using community buses have been implemented in cooperation with the Tourism Association, and other measures have been taken to actively promote bus use for tourism. As a result of these measures, bus use in tourism has increased, and after sluggish use in FY 2005-2007, the number of annual users began to increase in 2008 (10.3% over 2007).

Note

- In the re-purposing of the buses, the buses were allowed to stop anywhere at the passenger’s request, as a limited service for the elderly and persons with disabilities, so that their convenience would not be reduced in comparison with the previous welfare buses (in some areas the regions where buses can stop anywhere at the passenger’s request are limited).
- Also, so that convenience would not be reduced in comparison with the previous school bus service, the “Early Morning Fureai Shuttle” began operation. Unlike the route that this line takes in the daytime (loop line), this takes into consideration the needs of school commuters. This can also be used by people other than children and students.
- From 2007, transportation operators, local businesses and local residents came together to form the “Niseko-cho Route Operation Committee”, to consider measures to increase users of the Fureai Shuttle. As a result, given that there would be a plateau of users given the demographic trends among townspeople only, various measures were taken with the aim of expanding the use of buses by tourists (as many as 1.5 million per year), integrating the community buses with tourism.

More Info

Niseko-cho Website (<http://www.town.nosako.hokkaido.jp/jbus/#3>)

Migon		Aichi>Komaki	
Mode: Shared Taxi		Population: 147 182 people	
Status: Operational		Area: 62.82 km ²	
Implemented: 2003		Population Density: 2 342.92 people/km ²	
		Operating Entity: Aoi Traffic Corp.	

Profile

A 7-seater taxi transportation service operating around Tohkadai Newtown in Komaki. “Migon” is taken from the Japanese words “Minna de Wagon”, meaning a wagon for everyone.

Its main feature is that it has the advantages of both passenger buses and taxis

Results

- Migon began operations in the night time, when buses from JR Kasugai station to Tohkadai Newtown had stopped, and from the “Peach Liner” Tohkadai Centre Station (new transport system connecting Komaki Station with Tohkadai Newtown, abolished in September 2006) to people’s homes.
- While taxi fare from JR Kasugai station to Tohkadai Newtown cost 3 000-4 000 yen, using the Migon means that wherever you get off the bus you only pay 900 yen, and there is no need to be picked up by family etc.
- From Tohkadai Centre, service in the evening is limited to Newtown and surrounding areas, for a fare of 300 yen. This is an important form of transportation for the elderly etc. who do their shopping in the Centre district.
- Also, following the abolishment of the “Peach Liner”, operation commenced between Komaki Station and Tohkadai Newtown, for a fare of 900 yen, regardless of where you get off on the bus route.
- From the roughly 7 700 users on all routes at the commencement of operations in 2003, this grew 1.7 times to about 12 800 users two years later in 2005. Convenience was further enhanced in March 2008, with the bus stop at JR Kasugai station moved to in front of the station, leading to an increase of 15% over the previous year of users from this station (April to October).

Note

- Migon is a transit service which arose out of an awareness by Komaki City taxi operator “Aoi Traffic” on the issue of “what kinds of transit services are required by citizens”, and they have implemented this business on their own, without any subsidies from government.
- “Aoi Traffic Corp.” have the management philosophy of “creating a new passenger transport system from the view of the needs of local residents”, and the Migon is an embodiment of a transport service which fits this philosophy.
- The features of the Migon service include 1) flat-rate fares, 2) shared ride, 3) limited regions and 4) door to door service, with the aim of providing a new community-based transport service with the benefits of both taxis and buses.
- “Aoi Traffic Corp.” also operates bus routes connecting Tohkadai Newtown, JR Kasugai and Komaki stations, and in relation to the movement needs for the company’s buses, by making use of the most appropriate modes of transport for their users they have also been able to cater for demand late at night.

Toyoyama Town Bus		Aichi>Toyoyama-cho	
Mode: Community Bus		Population: 13 565 people	
Status: Operational		Area: 6.19 km ²	
Implemented: 2002		Population Density: 2 191.44 people/km ²	
		Operating Entity: Aoi Traffic and Toyoyama-cho	

Profile

Planned by Toyoyama-cho, and operated by private businesses, routes outside of the town, such as to nearby central Nagoya and the Komaki Municipal Hospital are longer than routes that run throughout the town.

Results

- Upward trend in users, with 47 000 users in 2005, 53 000 in 2006, and 57 000 in 2007.
- Toyoyama-cho is located in the suburbs of Nagoya, and the nearest railway station is Nishiharu station on the Nagoya Railroad Inuyama Line, about 4km away. Also, the Meitetsu bus route was discontinued in 2002. This means that the use of public transport for the mobility needs of citizens to the city centre of Nagoya, and for the Komaki City Hospital in adjacent Komaki has been extremely inconvenient, but this has been improved with the introduction of the Toyoyama Town Bus.

Note

- In order to understand the needs of residents, group interviews were conducted, along with surveys. Town officials went to public facilities such as community centres and health centres, and interviewed citizens in groups of 10. Through group interviews with housewives and the elderly at these locations, their needs were investigated as they spoke freely with each other. The adoption of the opinions of residents in this way led to the changing of routes in September 2006, and large scale timetable revisions in April 2008.
- In April 2008, in conjunction with a revision of timetables, the “Toyoyama-cho Public Transport Map” (see following page) was created to facilitate transit between the Toyoyama Town Bus and existing bus routes (Meitetsu Bus Nishiharu and Airport routes and Aoi Traffic Nagoya Airport Direct Bus).
- In September 2002, Aoi Traffic began the shared bus service, in accordance with Article 4 of the Road Transport Act. The planning and bearing of deficits for the operation are carried out by Toyoyama-cho as an Independent Town Business. Fare revenues are about 12 million yen per year, in relation to 42 million yen per year in expenses. The difference of 30 million yen per year is borne by the town.

Seikatsu-Bus Yokkaichi (S-BUS)		Mie>Yokkaichi	
Mode: Community Bus		Population: 303 845 people	
Status: Operational		Area: 205.16 km ²	
Implemented: 2003		Population Density: 1 481.01 people/km ²	
		Operating Entity: NPO Seikatsu-Bus Yokkaich	

Profile

With the reduction in users due to the increase of car ownership, conventional bus route operators became unprofitable, and discontinued service in May 2002.

A Regional NPO leveraged auxiliary resources in the city to begin operation of a new community bus to operate in public transport blank spots.

Results

- There has been an increasing trend in passengers since the start of operations of the new Community Bus. At its introduction in FY2003, there were an average of 70-80 users per day, but as of 2008, there were more than 100 users per day. This was a significant increase over the 20-30 people per day average of the discontinued bus routes.
- The convenience for the elderly in daily life activities such as going shopping or to the hospital has improved significantly.

Note

- The Mie Kotsu Tarusaka Route, which had been active since the 1940s, was abolished in May 2002 due to the unprofitability of its routes due to reduced users. This meant that the Hazu Ikaruga District (540 households, population of about 1,700 people) was about 2-3km from the nearest train station and bus route, resulting in a public transport blank spot. With the desire for the government to keep this route running not realized, the “NPO Seikatsu-Bus Yokkaichi” was established, with the goal of operating a community-based bus service. Operations were outsourced to Mie Kotsu.
- A route was set out which took in places necessary for everyday life, such as shops, hospitals, post offices, railway stations and civic centres. Also, to reduce the distance that the elderly need to walk to bus stops, bus stops were spaced at short distances of 200-300m, with the route zig-zagging through the region. The timetable is set so that it is convenient for shopping, stopping at the supermarket every 40-50 minutes.
- Operating expenditure is 900 000 yen, and this is financed by 100 000 yen in fare revenue, a 300 000 yen subsidy from the city, and 500 000 yen in sponsorship money from companies along the bus route. Personnel and office expenses are kept small thanks to the volunteer spirit of the NPO members.
- With the managing entity being an NPO, the enthusiasm of the people at the centre of the organization that plan and implement those plans are another important element.

Daigo Community Bus		Kyoto>Kyoto	
Mode: Community Bus		Population: 1 474 811 people	
Status: Operational		Area: 827.9 km ²	
Implemented: 2004		Population Density: 1 781.39 people/km ²	
		Operating Entity: Daigo Community Bus Citizens Committee	

Profile

A community bus led by residents, from planning to operation. With local volunteers and outside experts playing a central role, a community bus was introduced in public transport blank areas in the suburbs of Kyoto.

Results

- In 2004, 4 new community bus routes were established, centred around public transportation blank spots where access to bus stops on arterial routes is difficult. (an additional route was added in March 2008 for a total of 5 routes)
- All routes were set so as to complete round trips within one hour, and by patterning their timetables in this way it enhances the convenience for the users.
- The number of passengers has increased from the expected 500 people per day when the operation commenced to 1,400-1,500 people per day as of November 2008, and at one point there were cases of passengers having to be left behind at bus stops. (this has now been resolved with the establishment of the fifth route.)

Note

- With the withdrawal of city buses, momentum increased among local residents for the operation of a community bus, and it was local residents that played a central role in planning, gaining approval and implementing the operation. The deregulation of bus industry in February 2001 was also a major factor in the successful implementation.
- Routes were set freely based on the opinions of citizens, and following the principles drafted by a committee of experts including “4 route service” (currently expanded to 5 routes), “no changes to end points and service intervals” and “areas that take 30 minutes or more are outside of the scope”, and the locations of bus stops were as desired by residents. Coordination with residents near bus stops was also carried out by the residents themselves, allowing them to be smoothly established. This kind of community-based initiative created a sense of unity within the region, and also led to the promotion of bus use.
- Instead of a public transport system which operated on meeting costs with fare revenue alone, a “Partner Support” system was implemented to obtain funds from private companies along the bus route and the public, and a financial base was established with major companies on the route becoming main partners.

Hidakagawa-cho Public Transportation Restructuring		Wakayama>Hidakagawa-cho
Mode: Bus/Taxi	Population: 11 123 people	
Status: Operational	Area: 331.61 km ²	
Implemented: 2008	Population Density: 109.7 people/km ²	
	Operating Entity: Hidakagawa-cho	

Profile

In order to respond to the reduction of major routes by private bus operators and to improve the convenience and efficiency of existing routes, Hidakagawa-cho effectively integrated bus routes with community buses and shared taxis, in a stage-by-stage approach to fulfilling the needs of residents and restructuring the public transportation system.

Results

- Through the restructuring efforts, it was possible to increase the frequency of bus routes on major lines used by high school students to go to school, extend the times of buses for going home from school, and enhance feeder services connecting main routes with community buses/shared taxis, to ensure greater consideration of residents that are unable to drive automobiles.
- Through measures to secure means of transportation, use for tourism and the social participation of the elderly and disabled can be expected.

Note

- With the request from operators to discontinue services, and the growing need to review the limited current services, public transport was restructured by integrating arterial line buses with community buses and shared taxis.
- Improved convenience through the improvement of bus route services and the establishment of new shared taxis in response to demand from citizens.
- Improved efficiency by switching to shared taxis instead of buses with low demand.
- Bus stops were set in transit hubs in each area, and waiting environments are well maintained.

Background

- Hidakagawa-cho is located virtually in the centre of Wakayama Prefecture, and is adjacent to Gobo City to the east, which is the central city in the region.
- This town was born out of the 2005 merger of Kawabe-cho, Nakatsu Village and Miyama Village, and has an elongated shape running from east to west, encompassing a vast region with long distances between residential areas and the city area.
- In such a geographical situation, private vehicles are the major form of transportation for residents, and the number of bus users had been on a downward trend year by year.
- As a result, the Gobo Nankai Bus, which operates many routes in the town, is advancing a review of existing routes, and in Hidakagawa-cho the town is switching to operating an alternative bus service.
- At the end of September 2008, the request was made by Gobo Nankai Bus, who operated a number of bus routes within the town, to reduce the main routes to Ryujin Tanabe city and connecting Kawabe, Nakatsu and Miyama with Gobo City, and to keep these routes to operating up to Kawaharago in the Miyama district.
- In order to respond to the reduction of main routes and to improve the convenience of existing routes, Hidakagawa-cho considered the problem of public transportation as an issue of the entire town, and took a sustainable approach to the restructuring of their transportation system.

Details

- ① Restructuring of Town Bus Routes (Implementing Entities: Hidakagawa-cho/Gobo Nankai Bus)
 - As part of the restructuring, routes were secured for the concentrated use of school students in the mornings which had become an issue, and to secure buses to take students home from school.
- ② Community Bus/Shared Taxi Demonstration Project (Implementing Entity: Hidakagawa-cho)
 - From October 2008, community buses were introduced in 4 routes to enable movement through the area, and to provide connections to the restructured routes. (of these, one of the routes has been reduced during the restructuring, and thus the operation is shared with adjoining Tanabe City.)
 - In October 2008, two alternative routes operated by the town in place of abolished private bus routes, where the number of users had been low, were switched to shared taxi services.
 - With the results of the residents survey, new shared taxis were established in June 2009 to connect with the above shared taxi service, to improve convenience for areas that were far away from bus stops.
- ③ Bus Stop and Bus Related Facility Improvement (Implementing Entities: Hidakagawa-cho/Gobo Nankai Bus)
 - The transit hubs for bus routes, community buses and shared taxis are also the hubs of the community, and the Hongo Bus Stop in the Nakatsu district and the Kawaharago Bus Stop in the Miyama district were improved to provide more protection from wind and rain.
 - The Kawarago Bus Stop, which had been in two separate locations for the two former routes was consolidated into a single location through these improvement measures.
 - In addition, there was verification and improvement of confusing bus stops on the shoulders of the road etc.
- ④ Measures to Promote the Use of Public Transport (Implementing Entities: Hidakagawa-cho/Gobo Nankai Bus/Operating Committee)
 - Promote use through the creation and distribution of timetables, public transport route maps, transfer information and posters etc., and posting to the town website etc.
- ⑤ Promotion of Regional/User Participation (Implementing Entities: Hidakagawa-cho/Gobo Nankai Bus/Operating Committee)
 - A system was developed to actively listen to the needs and suggestions of bus regions and users, and to encourage their participation in the operation of the bus service.

History of Study

- In August 2006, the Hidakagawa-cho Regional Transportation Study Committee was established to commence a study of regional traffic.
- In March 2008, the “Hidakagawa-cho Regional Public Transportation Activation Council” was established to investigate the operating routes and forms, understand usage status and needs, and to promote use and sustainable operation.
- In May 2008, a “Survey on Resident Bus Operation” for the entire town and a “School Commuting Survey” for Nakatsu/Miyama District Junior High School students were conducted.
- As a result, it became clear that because of the inconvenience of buses, parents were taking their children to and from school, and additional buses were added in the mornings when students commuting to school was at its most intensive, and last buses were extended to deal with club activities etc.
- In October 2009, with the cooperation of the Wakayama College of Technology, a questionnaire and interview survey of bus users were conducted, to understand the impact of restructuring and the degree of satisfaction of users.

Toyama Light Rail	
Mode: Railway	Population: 421 239 people
Status: Operational	Area: 1 241.85 km ²
Implemented: 2006	Population Density: 339.20 people/km ²
	Operating Entity: Toyama Light Rail Co., Ltd.

Profile

Under the comprehensive Toyama City public transport plan, the former JR West Toyama Port Line was developed into a light rail system (LRT) with the aim of establishing “Compact Urban Development Centred Around Public Transportation”. This LRT is said to be the first such full scale introduction in Japan.

Results

- Along with the introduction of five new stations (including Toyama North Station), as well as barrier-free support for carriages and station facilities, the timetable was improved from previous 30 minute intervals to 10 minute intervals at peak hours.
- Compared to before opening, the number of daily users increased significantly after opening (October 2006) from 2 266 to 4 988 people, and on holidays (weekends and holidays) from 1 045 to 5 576 people.
- In a citizens survey after opening, about 90% of citizens evaluated the Toyama Light Rail well.
- In order to prepare for the future declining and ultra-aging population, Toyama City aims to realize “an active public transport system, beginning with the railway system, which integrates the various residential, commercial, business and social functions of the city along the rail lines, so as to develop a compact urban environment centred around public transportation”.

Note

- With the JR Hokuriku Line consecutive grade crossing construction project associated with the Hokuriku Shinkansen construction, the LRT proposal emerged after considering a variety of alternatives, including the raising of the Toyama Port Line and replacing it altogether with a bus system. As a result of review by Toyama City, it was decided to continue with the LRT and to transfer its management from JR West to the semi-public sector Toyama Light Rail, and for the public to bear the cost of facility development and carriage introduction etc.
- LRT development leverages the existing rail infrastructure, and is the first step in creating a city-wide public transportation network.

More Info

Toyama City Website (Public Transport Policy)
<http://www.city.toyama.toyama.jp/division/toshiseibi/koutsuseisaku/>

Toyama City Website (Public Transport Railway Residents)
<http://www.city.toyama.toyama.jp/division/toshiseibi/jutakusuisin.htm>

Toyama Light Rail Website <http://www.t-lr.co.jp/>

Toyama Traffic Policy Research Group Website <http://www1.tcnet.ne.jp/kusunoki/koutuken/t200.pdf>

Toyama Light Rail Record Editorial Committee, “The Birth of the Toyama Light Rail”, Kajima Publishing, 2007, Takeshi Fukayama, Analysis”, Transport Policy Studies, Vol.10, NO.1, pp.22 -37, 2007

Wakayama Electric Railway Kishigawa Line Wakayama>Wakayama City

Mode: Railway	Population: Wakayama 375 591 people Kinokawa 67 862 people
Status: Operational	Area: Wakayama 209.23 km ² Kinokawa 228.54 km ²
Implemented: 2006	Population Density: Wakayama 1 795.11 people/km ² Kinokawa 296.94km ² people/km ²
	Operating Entity: Wakayama Electric Railway Co., Ltd.

Profile

Following the withdrawal of existing operators due to a decrease in users, the prefecture and municipalities determined to provide financial support, and made a public offering for operators to take over operations anew. As a result, operators from outside of the prefecture participated, and the routes were able to be maintained.

Results

- Okayama Electric Railway, which was selected in public offering, established the Wakayama Electric Railway to operate the Kishigawa Line. Also, after taking over operations, discussions were held to promote use under the “Kishigawa Line Steering Committee”, made up of members from Wakayama Electric, Prefectural and local governments along the route, schools, residents organizations and the Chamber of Commerce. This line, which was near to being abolished, was able to be kept thanks to the efforts of various stakeholders, and many efforts have been made to establish it.
- In the first year after takeover, FY2006, the annual number of users was about 2.114 million people, exceeding the year prior to takeover, 2005, by about 190 000 people.
- As a result of cost effectiveness analysis by academics, the social benefit per year from the survival of the Kishigawa Line was estimated to be about 1.48 billion yen greater than if there had been a conversion to buses after the abolishment of the line (conversion rate was set at about 46%).

Note

- This line was previously operated as the Kishigawa Line of the Nankai Electric Railway (Nankai Electric), but with decreasing users, operations in 2002 registered a loss of about 470 million yen, and in October 2003 Nankai Electric began examining their withdrawal as the operator of the Kishigawa Line, issuing a report to this effect to Wakayama Prefecture, Wakayama City and Kishigawa-cho (currently Kinokawa City). In response, the prefecture, city and town took measures to ensure the continuity of the Kishigawa Line, and the prefecture paid all costs for the railway land for the two municipalities as initial investment required for continuity, and also bore the cost of large scale substation repairs necessary for future operation, providing the two municipalities with sufficient funding to operate for 10 years.
- Assuming these burdens, the operator was published, and the Okayama Electric Railway was selected. After this, Okayama Electric Railway established the wholly owned Wakayama Electric Railway, which was granted free land for the railway from the two cities, and a voluntary conveyance of other rail assets from Nankai Electric, and the business was taken over from April 2006.
- After the start of operation, the “Kishigawa Line Steering Committee” was established to promote use. A variety of measures have been implemented to promote use, such as the operation of the “Ichigo (Strawberry)

Train”, designed after the strawberries that are the specialty of the area along the railway, and the operation of a “Toy Train”, and the appointment of a cat as stationmaster, etc.

- Following the announcement of the abolition of the Kishigawa Line by Nankai in August 2004, activities to keep the railway were carried out by citizens organizations. These activities were broadcast on television, and led by residents of Nagayama Estate in the former Kishigawa-cho who appeared on television, the “Group for the Future of the Kishigawa Line” was officially launched. Thanks to being on television, members increased, and the group became even more active.

More Info

Wakayama Electric Railway Website: <http://www.wakayama-dentetsu.co.jp>

International Experiences on Public Transport Provision in Rural Areas

Mobility is one of the key elements that supports economic activity and promotes social equity. With decreasing population in rural areas and ageing society it is becoming increasingly difficult, however, to provide access to adequate transport services for citizens in rural areas without significant cost increases.

This report summarises experiences with public transport service provision in rural areas for the United Kingdom, Norway, France, Japan and Finland. It provides key policy insights for efficient solutions and new ways of organising services.

This report is part of the International Transport Forum's Case-Specific Policy Analysis (CSPA) series. These are topical studies on specific transport policy issues of concern to a country carried out by ITF on request.

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