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# Cluster Report 1: Alternative Car Use

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# 1 Introduction

Alternative car use is essential to an all-embracing strategy for transport in and around European cities. It was and remains a critical focus of the CIVITAS programme. The aim of CIVITAS was to demonstrate integrated urban transport strategies: no such strategy could be complete without the car, and this cluster illustrates some important developments in sustainable car use.

The 16 measures within this cluster form into 2 main sub-groups:

- a) Car pooling (8 measures).
- b) Car sharing (8 measures).

The definitions of car pooling and car sharing applied here, as generally in Europe, are:

- **Car pooling** is the practice whereby individuals combine to share private vehicles for specific journeys.
- **Car sharing** is the practice whereby individuals hire vehicles, often for a range of purposes and usually on a time-limited basis e.g. car rental schemes and car clubs.

**Table 1.1: Alternative car use measures**

City	No.	Measure Title	Outline Description	Success of implementation <sup>1</sup>	Success of outcome <sup>1</sup>
<b>(a) Car pooling</b>					
Burgos	9.01	Car pooling	Car pooling system for the university, industrial area and selected neighbourhoods	1	1
Debrecen	9.03	Car-pooling service for students	Car pooling system for students	3	2
Krakow	9.02	Car pooling system	Car pooling system for university employees and students	2	-
Norwich	11.04	Carpooling	Car pooling system for commuters and events	3	2
Potenza	9.03	Development of car pooling	Car pooling system for commuters	0	0
Preston	9.03	Promotion of car pooling	Car pooling system for region	2	1
Stuttgart	9.03	Carpooling and mobility marketing	Car pooling system for commuters and event traffic	2	1
Toulouse	9.01	Promotion of car-pooling and integration with PT services	Develop communication and reservation system and integration to enlarge car pooling	2	3
<b>(b) Car sharing</b>					
Genoa	9.04	Car sharing service	To extend the car sharing service and develop a range of services across city	-	3
Krakow	9.05	Policy options for car sharing	Feasibility study for car sharing service	1	-
La Rochelle	9.01	Deployment of new car sharing fleet	To update the city car sharing service	1	2
Malmö	9.01	Car sharing for business & private travel	Car sharing service for city	2	2
Norwich	9.02	Development of a car sharing club	Car sharing services for university and city centre	2	1

City	No.	Measure Title	Outline Description	Success of implementation <sup>1</sup>	Success of outcome <sup>1</sup>
Preston	9.03	Promotion of Car clubs	Car sharing club for city	0	0
Toulouse	9.02	Implementation of a new car-sharing service linked to PT services	Car sharing service for conurbation	1	1
Venice	9.04	Expansion and diversification of the car-sharing scheme	Range of car sharing services across city	3	3

Note 1: Rating of success: 0=not successful, 1=moderately successful, 2=successful, 3=very successful

Table 1.1 also shows the ratings of success of the measures in relation to the implementation process and the outcome. The estimated ratings were made by the CIVITAS projects themselves and collected at the end of the project. In relation to other clusters, cluster 1 Alternative car use related measures, is characterised by a moderately successful implementation process and an average success of the outcome.

## 2 Implementation

### 2.1 Car-pooling

Within CIVITAS II there were two main approaches to promote alternative car use by car-pooling:

- development of software for setting up a new car-pooling system and
- upgrading existing car-pooling services.

The following implementation steps were identified:

- Analysis of demand areas and current needs

As a first step it is advised to assess the target users' needs and identify their car-pooling awareness and readiness to use a car-pooling system. To detect demand, area inquiries about traffic behaviour and preferences can be conducted (Krakow). If there is already a mobility information service facility, interviews with local staff and feed-back letters from users could help in finding out existing problems and user needs.

- Coordination with stakeholders

Stakeholders (such as the local administrations) should be brought together in regular meetings to define and validate the information offered, to coordinating dissemination and review all aspects of system design and operation. Key issues will be the information which should be available in the future car-pooling service system, the requirements for managing data confidentiality, criteria of operation of the service, user requirements and so on.

- Development of a new car-pooling system

From the analysis of basic traffic behaviour and needs, new software can be developed with the goal of setting up a new webpage. This software should define the car-pooling information tools to provide connection among car-poolers (Burgos). The goal is to facilitate contact between car owners and potential passengers.

- Upgrading of existing car-pooling services

For existing car-pooling services, improvements included (Stuttgart) extending the service area of the car-pooling service, and by further information and a download area. Users can enter their travel data, whereupon the system calculates suitable trips considering personal preferences as well as time and cost requirements in a defined route corridor. Users receive the entire route on a map including passenger collection and drop-off points. A notification can be done via email and SMS. The service can be extended for event tourists by offering a special car-pooling internet platform (Stuttgart).

- Promotion and marketing

A communication and marketing concept should be set up to promote car-pooling services. Promotion activities combine educational campaigns and marketing to promote the measure via posters, brochures and the internet. Marketing tools promoting the advantages of the system can be used (Stuttgart). Information campaigns could be carried out throughout the project to first of all inform the users about the project and the contents of the car-pooling platform and then periodically to assist the awareness of the project (Burgos). The support by public media through articles and TV reports can gain additional awareness of the measure.

### 2.2 Car-sharing

Within CIVITAS II there were two different approaches to promote car-sharing systems:

- establishment of a car-sharing system for the first time and
- upgrading of existing car-sharing services.

The following implementation steps can be identified:

- Investigation of similar ideas in other European cities

Car-sharing as a contribution to protect the environment, reduce private car dependence and promote public transport service is a current topic in several European cities. International cooperation leads to the identification of best practice solutions which can be used locally to take advantage of synergies.

- Analysis of basic conditions and target groups' needs

Data regarding socio-economic and political conditions need to be collected and analysed first. Target groups are people who are partly dependent on a car of their own as well as those who cannot afford or do not own a car, for example tourists and young people. Working people are another target group for their professional travel within the city area. To establish a car-sharing system it is vital to define the technical and economic possibilities of the service. This stage also includes meetings with stakeholders and questionnaire surveys to point out the needs and priorities of the stakeholders and potential users.

- Political and legal approval and support

The implementation of a car-sharing system needs political, legal and public sanction. Due to the amount of financial investment for car-sharing systems official support is essential from the very start of the project.

- Establishment of a car-sharing system for the first time

From the results of the basic analysis, the specifications for car-sharing, including parking places and signs, have to be foreseen. Potential technical options for vehicles suitable for installation of a car-sharing onboard computer system also have to be investigated. Co-operation with local providers and/or Car Clubs (Norwich) is advisable to best determine the project specification (Car Clubs are still relatively new in some cities, sometimes they have to be established first). After defining specifications, the call for tender procedure has to be launched. Basic criteria considered are the financial offer, the respect of deadlines and the environmental standards.

- Upgrading of an existing car-sharing service

The upgrading of existing services concerns on the one hand environmental protection measures and enlargement of the service adaptation to the technical state of the art. Changing fuel mix used from petrol to more environmentally clean fuel (Malmö) and electrically powered cars (La Rochelle) should make a contribution to reduce air pollution caused by traffic. Close collaboration with technical companies, the car industry and universities enables synergy of climate protection and commerce.



- Development of specific software for project handling and for users

Design and development of software for supervision of the system: 24/7 access to the service, reservation, monitoring of movements, customised accounting, confidence in personal data security, etc. For users, internet booking facilities should be developed in addition to phone call and booking directly from the car. Since CIVITAS has seen a good deal of software development, the reports will support other cities wishing to follow these demonstration projects.

- Complementary measures

The service can be extended, as in Genoa, for goods distribution and for wheelchair users, using vehicles adapted to the needs of disabled people. The picture (right) shows the usefulness of car sharing to mobility impaired people and the value of promotional activities.

- **Communication, information campaigns and promotion**

Press-releases, maps, flyers and brochures, letters and/or awareness campaigns have to be prepared and published. Articles including the link to internet services for local magazines and newspapers as well as the distribution of information on the city's website(s) about new services were reported as positive ways of promoting the measure, as well as civic events such as shown here. The promotion of the car-sharing system helps to raise awareness among the public about the benefit of the new services.

- **Training for staff members and users**

The preparation of instructions on how to use car-sharing services as well as training and manuals for drivers can avoid problems at the beginning of the scheme. It is also advised to design a user-manual for internet services. Beyond that, training is valuable for members of staff as well as call centre personnel regarding the new or upgraded system.

- **Monitoring and Evaluation**

The monitoring of the service can lead to a permanent technical development by updating the service in time. Feedback on preferences and experience of car-sharing users can help to identify potential areas for improvement. In CIVITAS, the monitoring also helps to show the return on investment, so that other cities can see the benefits of these measures.

## 3 Drivers and strategies to overcome barriers

The tables below show, by sub-cluster, the drivers (Table 3.1) and barriers (Table 3.2) encountered, as reported by the individual project teams.

### 3.1 Drivers

Drivers were asked about in an open question format. They were asked to be reported only if they were recognized as being more than what would normally be expected. To give a better overview and to compare the different measures with each other, categories have been created. A tick mark indicates that the specific driver was indicated at least once in the evaluation for the measure.

Special driving forces for alternative car use were the awareness of existing interests and needs as well as the commitment of certain stakeholders (see Table 3.1). In detail, the drivers were described as follows:

- Overall interests and current needs

Limited car parking facilities within the central urban areas, increase in traffic, increasing fuel costs and rising awareness of the public regarding air quality are among the overall interests which promote the acceptance of car-pooling and car-sharing. For those people who need to use a car – even if infrequently – car-pooling and car-sharing systems provide an effective alternative to owning a car. In some areas, car ownership costs have increased while fiscal benefits for commuters have been reduced to make alternatives to owning a car more attractive.

- Public demand and political support

Strong political interest can support implementation. Often, there is also a strong political commitment to improve the quality of life for mobility impaired people.

- Innovative solutions

Within CIVITAS II it was reported that innovation was a big driver for staff motivation. Project partners (Car Clubs, companies, project partners for marketing) are generally interested in successful implementation and therefore ownership and responsibility for the measure was above average.

**Table 3.1: Drivers**

City	Measure	Driver related to above expected...				
		engagement / commitment of organisation or persons involved	experience and know-how of persons involved	support from outside the project team to implement measure	good structures / cooperation / management within project team	unsatisfying situation before and/or need to improve the situation
<b>(a) Car pooling</b>						
Burgos	Car pooling (09.01)	✓		✓	✓	✓
Debrecen	Car-pooling service for students (09.03)	✓				
Krakow	Car pooling system (09.02)	✓		✓		
Norwich	Carpooling (11.04)			✓		
Potenza	Development of a car pooling (09.03)	✓	✓		✓	✓
Preston	Promotion of car sharing (09.03)			✓	✓	
Stuttgart	Carpooling and mobility marketing (09.03 & 11.04)	✓		✓		✓
Toulouse	Promotion of car-pooling and integration with PT services (09.01)	✓				
<b>(b) Car sharing</b>						
Genova	Car sharing service (09.04)	✓		✓		
Krakow	Policy options for car sharing (09.05)	✓		✓	✓	
La Rochelle	Deployment of new car sharing fleet (09.01)	✓		✓	✓	
Malmö	Car sharing for business & private persons (09.01)	✓		✓		
Norwich	Development of a car sharing club (09.02)	✓		✓		✓
Preston	Promotion of car clubs (09.03)			✓	✓	
Toulouse	Implementation of a new car-sharing service linked to PT services (09.02)	✓		✓		✓
Venice	Expansion and diversification of the car-sharing scheme (09.04)			✓	✓	

## 3.2 Strategies to overcome barriers

Tables 3.2. shows that measures dealing with alternative car use faced technical as well as organisational barriers. In detail, strategies to overcome barriers were described as follows:

- Hot topic

Environmental questions and particularly emissions from traffic which contribute to climate change are one of the biggest topics at the moment. However, there was less public acceptance of car-sharing as a contribution to protecting the environment by reducing private car dependence, since it is perceived that car sharers come from public transport and non motorised modes. Increasing awareness and changing attitudes and behaviour of car drivers in particular should be long-term strategies.

- Round table discussions and stakeholder meetings

It was reported that the car lobby had a negative opinion of this measure type. Beyond that there was a degree of resistance and lack of acceptance from some users, politicians and/or other stakeholders. Existing stakeholders' resistance to measures can be resolved in meetings, as different views and opinions can be discussed and can lead to an agreement. There can also be conflicting responsibilities amongst authorities that need to be sorted out by consultations and/or round-table discussions.

- Flexibility of the time schedule

Delays in the implementation of car-pooling are caused mainly by the need for a sufficient number of registered users. When implementing car-sharing, technical aspects, such as changing to more environmentally clean fuel or electrically powered cars, were a main reason for delay. The organisation of users for car-pooling and the development of technical solutions for car-sharing might take longer than expected. It is necessary to be flexible, making adjustments to the time schedule without risking the project's success as a whole.

- Financial restrictions

Careful planning assures keeping within the given financial resources. If substantial costs for major components increase, the budget has to be modified in cooperation with local authorities. Otherwise the missing budget will result in political controversy. Timescales and modifications of timescales have to be agreed on by all participants in order to get political and stakeholder support.

- Widespread promotion and marketing

The project's goals as well as the stakeholders' opinions can be supported by local media such as newspapers and TV as facts can be stated clearly and support and awareness can be gained. Car Clubs could provide constant communication on the service offered by using their own websites.

**Table 3.2: Barriers**

City	Measure	acceptance barrier	delays during the project	financial barrier	institutional barrier	lack of labour resources	legal barrier	management barrier	market barrier	organisational barrier	political barrier	spatial barrier	technical barrier
<b>(a) Car pooling</b>													
Burgos	Car pooling (09.01)			✓	✓								✓
Debrecen	Car-pooling service for students (09.03)						✓						
Krakow	Car pooling system (09.02)						✓			✓			✓
Norwich	Carpooling (11.04)	✓		✓		✓							
Potenza	Development of a car pooling [system?] (09.03)							✓					✓
Preston	Promotion of car sharing (09.03)	✓							✓				
Stuttgart	Carpooling and mobility marketing (09.03 & 11.04)										✓		
Toulouse	Promotion of car-pooling and integration with Public Transport services (09.01)									✓			✓
<b>(b) Car sharing</b>													
Genova	Car sharing service (09.04)	✓							✓				
Krakow	Policy options for car sharing (09.05)										✓		
La Rochelle	Deployment of new car sharing fleet (09.01)								✓				✓
Malmö	Car sharing for business & private travel (09.01)		✓										
Norwich	Development of a car sharing club (09.02)										✓		
Preston	Promotion of car clubs (09.03S)			✓				✓					✓
Toulouse	Implementation of a new car-sharing service linked to Public Transport services (09.02)	✓	✓		✓		✓			✓	✓		
Venice	Expansion and diversification of the car-sharing scheme (09.04)	✓	✓	✓				✓		✓			

## 4 Impacts

### 4.1 Car pooling

Eight of the sixteen measures in this cluster relate to car pooling. A summary of the outputs and impacts is given in Table 4.1

**Table 4.1: Achieved Outputs and Impacts for car pooling**

City	No.	Outputs	Economy Energy Environment	Transport	Society
Burgos	9.01	<ul style="list-style-type: none"> <li>Developed a car pooling service primarily for an industrial area</li> <li>Promotion and support through web based info-tool and mobility office</li> <li>Stakeholder engagement, campaigns and publicity</li> </ul>	No information	<ul style="list-style-type: none"> <li>Average car occupancy increased from 1.15 (2005) to 1.46 (2007) &amp; 1.53 (2008)</li> <li>325 system users (200 drivers &amp; 125 passengers)</li> <li>72% of target usage achieved</li> </ul>	Between 2007 & 2008: <ul style="list-style-type: none"> <li>Acceptance of car pooling as a transport strategy increased from 97% to 100%</li> <li>Willingness to share own vehicle increased from 57% to 87%</li> </ul>
Debrecen	9.03	<ul style="list-style-type: none"> <li>Website to facilitate car pooling among students at Debrecen University</li> <li>promotion and marketing</li> <li>engagement with student leaders</li> </ul>	No information	<ul style="list-style-type: none"> <li>68 registered users</li> <li>Only 30% of users revisited website 1 month after registration</li> </ul>	<ul style="list-style-type: none"> <li>Sample too small for statistical analysis, but interviews have identified the stronger features of the site and form the basis of a marketing plan</li> </ul>
Krakow	9.02	<ul style="list-style-type: none"> <li>Car pooling system developed for students and staff at Krakow University of Technology</li> <li>Web-based system established</li> <li>Advertising campaign</li> </ul>	Between 2007 & 2008: <ul style="list-style-type: none"> <li>Operating cost reported to have reduced by 27%, though Krakow advises caution in using this figure</li> <li>Fuel consumption reported to have been reduced by 32% (caution advised)</li> </ul>	Between 2007 & 2008: <ul style="list-style-type: none"> <li>Average car occupancy (on workdays) increased by 7.2%</li> <li>Car pooling trips per week increased by 18%</li> <li>524 system users (3% of University staff &amp; students)</li> </ul>	Between 2007 & 2008: <ul style="list-style-type: none"> <li>Awareness of car pooling increased from 34% to 66%</li> <li>Interest in car pooling did not change significantly</li> </ul>
Norwich	11.04	<ul style="list-style-type: none"> <li>Established a car pooling service using an existing commercial provider</li> <li>Recruited 15 organisations, mainly business and education</li> <li>Update of existing web based system</li> <li>Stakeholder engagement, campaigns and publicity</li> </ul>	Between Sept 2005 & May 2008: <ul style="list-style-type: none"> <li>collective fuel and car running cost savings of £99,369 (approx. 12,000 euro). Estimated from 993690 vehicle miles saved</li> <li>304 tonnes of CO2 saved</li> </ul>	<ul style="list-style-type: none"> <li>Over the two and a half year period, 1646 single occupancy car trips removed from the network at peak times, with numbers growing over time as new companies join the scheme</li> </ul>	<ul style="list-style-type: none"> <li>Convenience and cost savings were the main reasons for use</li> </ul>
Potenza	9.03	<ul style="list-style-type: none"> <li>Market survey for a partnership of companies</li> <li>Initial car pooling</li> </ul>	No information	<ul style="list-style-type: none"> <li>No results for Potenza</li> <li>Bergamo has 34 active car pooling trip</li> </ul>	<ul style="list-style-type: none"> <li>60% of people in the survey expressed interest, of whom 50% would</li> </ul>

City	No.	Outputs	Economy Energy Environment	Transport	Society
		system established with a small number of users <ul style="list-style-type: none"> <li>• Develop web based registration and information system</li> <li>• Stakeholder engagement and information campaign</li> </ul>		makers	be willing to pay for the service
Preston	9.03	<ul style="list-style-type: none"> <li>• Established and promoted an internet-based car pooling site</li> <li>• Several corporate users as well as individuals</li> <li>• Stakeholder engagement and information campaign</li> </ul>	<ul style="list-style-type: none"> <li>• Fixed annual operational costs of £5,000 for website upkeep and £4,000 for promotion are anticipated.</li> <li>• The average reduction in emissions from sharing a journey was 7.7g of CO<sub>2</sub>, based on analysis of a small sample of 17 matched trips.</li> </ul>	<ul style="list-style-type: none"> <li>• Estimated 500 members have succeeded in finding a car share partner</li> <li>• In a survey of one organisations car pooling subscribers, 75% had never shared a journey mainly due to journey compatibility problems</li> <li>• 89% of shared journeys were for commuting trips</li> </ul>	In a survey of one organisation's car pool members: <ul style="list-style-type: none"> <li>• 86% travelled to the same place of work as their sharing partner</li> <li>• 40% of users became aware of the system through the internet</li> </ul>
Stuttgart	9.03	<ul style="list-style-type: none"> <li>• Expansion of existing city car pooling system to incorporate event related travel</li> <li>• Stakeholder engagement, campaigns and publicity</li> </ul>	No information	Between 2007 & 2008: <ul style="list-style-type: none"> <li>• c. 30% increase in registered users to around 1,700 people</li> <li>• 15 major events/year connected to car pooling system</li> </ul>	Between 2007 & 2008: <ul style="list-style-type: none"> <li>• Awareness of car pooling declined from 15% to 7%</li> </ul>
Toulouse	9.01	<ul style="list-style-type: none"> <li>• Developed an existing volunteer car pooling service</li> <li>• New web-tool, information and reservation system</li> <li>• Better integration with public transport</li> <li>• Stakeholder engagement</li> </ul>	Between 2005 & 2007: <ul style="list-style-type: none"> <li>• Cost saving of c€321,880</li> <li>• Energy savings of 0.06 gas oil equivalent litre per km for a medium sized car</li> <li>• Emissions savings of 0.338kg of CO<sub>2</sub> per km for a medium sized car</li> </ul>	Between 2005 & 2007: <ul style="list-style-type: none"> <li>• New registered users of system increased 246% from 510 to almost 1800</li> <li>• Successful new connected trips rose from 112 to 718</li> <li>• Number of daily trips avoided by users increased from 57 to 479</li> <li>• 22% of users are non-drivers</li> </ul>	<ul style="list-style-type: none"> <li>• 43% of respondents saw variable working hours as the main constraint to car pooling</li> </ul>

Across the eight measures, five (Burgos, Krakow, Debrecen, Potenza and Preston) involved the introduction of a new car pooling system whilst three (Stuttgart, Toulouse and Norwich) involved the expansion or adaptation of an existing car pooling scheme. In each case, this core objective of establishing or expanding a system was substantially achieved or achieved in full. Whilst these measures have been successful in themselves, an added value is their high profile in raising awareness of sustainable transport issues more generally.

All the schemes operated and were administered through a web based service and their implementation was dependent upon the engagement of local stakeholders and the use of advertising campaigns to provide information on the services available and promote their use. The marketing of schemes was strong, as shown in the poster from Stuttgart (see below).



Substantial impacts on car occupancy and use, with commensurate savings in energy and fuel costs, were demonstrated in Krakow, Toulouse, Norwich and Preston. Other schemes will take more time to show impacts, as might be expected with a new policy measure such as this. One of the marked results in CIVITAS is the relatively high conversion rate of membership to successful trip pairings. This was particularly the case where the initial market research was good and the software tool for reservations was well developed.

The principal transport impacts reported related to vehicle occupancy with clear gains achieved in terms of overall vehicle occupancy (Burgos and Krakow) and the reduction of single occupant trips (Toulouse and Norwich). In Toulouse, significant seasonal variation in usage was reported with low usage in the summer followed by a significant peak in the autumn, coinciding with the new academic year. Toulouse also reported social inclusion benefits in that 22% of members were non-drivers. It was noted in several areas that not all the transfers to car pooling would come from own-car use: some might formerly have used public transport or cycled.

The number of registered users was another important measure of success, although there is a significant distinction between registered use and active use. In Debrecen, there was some initial interest followed by declining engagement and use. In Preston there were major difficulties in finding journey matches with 75% of subscribers unable to make a successful match. In Stuttgart there was an issue around people being reluctant to register to use the system informally. System registration is a critical success factor for a car pooling system because it is necessary to have a substantive mass of visible users in order for a system to operate successfully.

Awareness of car pooling services was the key measure of societal impact and also a key determinant of success. This could be a particular issue for cities with little or no experience of car pooling. In Krakow, misunderstanding of the concept of car pooling remained a significant issue and this may have affected the accessibility of the system with 77% of people viewing the system as difficult or very difficult to access. In Burgos people were keen to be given sufficient support to have confidence to use the system.

Even in cities with experience of car pooling, awareness remained an issue. In Stuttgart, advertising restrictions, combined with a lack of buy-in from some major local travel generators was a barrier to success. In Norwich, it was reported that raising awareness helped to dispel myths and negative perceptions surrounding car pooling, particularly in relation to safety.

## 4.2 Car sharing

Eight of the sixteen measures in this cluster relate to car sharing. A summary of the outputs and impacts is given in Table 4.2.

**Table 4.2 Achieved Outputs and Impacts for car sharing**

City	No.	Outputs	Economy Energy Environment	Transport	Society
Genoa	9.04	<ul style="list-style-type: none"> <li>Expanded and developed the range of car sharing services in the city</li> <li>Stakeholder engagement, campaigns and publicity</li> </ul>	<ul style="list-style-type: none"> <li>The scheme had achieved 'breakeven' status until September 2008 when the economic situation deteriorated</li> <li>Energy savings of 0.58 MJ/km per vehicle in the urban area</li> <li>Average fuel savings of 477 litres per year.</li> </ul>	Between 2005 & 2008: <ul style="list-style-type: none"> <li>Car sharing fleet increased from 16 to 96</li> <li>Monthly users increased from 417 to 1820</li> <li>Parking spaces increased from 15 to 52</li> </ul>	Between 2004 & 2008: <ul style="list-style-type: none"> <li>Awareness of service increased from 54% to 69%</li> <li>Willingness to use service increased from 19% to 41%</li> <li>The main reasons for use were lack of access to a private car and convenience</li> <li>The main journey purposes for use were shopping and leisure travel.</li> </ul>
Krakow	9.05	<ul style="list-style-type: none"> <li>Studied options for car sharing service in Krakow determining the business and implementation approach (achieved in full)</li> <li>Reviewed European best practice</li> </ul>	No information	No information	<ul style="list-style-type: none"> <li>11% of people were aware of car sharing</li> <li>Once aware, 46% expressed willingness to use the service</li> </ul>
La Rochelle	9.01	<ul style="list-style-type: none"> <li>Expanded and develop the range of car sharing services in the city</li> </ul>	<ul style="list-style-type: none"> <li>Costs outweigh revenues for the car sharing scheme although income grew by 13% per month in 2008</li> <li>52% of members have a private car</li> </ul>	<ul style="list-style-type: none"> <li>Vehicle fleet grew from 49 to 54 between 2007 &amp; 2008</li> <li>Average monthly membership fell from 445 in 2006 to 374 in 2008</li> <li>Utilisation of the vehicle fleet has improved between 2006 &amp; 2008</li> </ul>	<ul style="list-style-type: none"> <li>awareness of the service amongst city residents grew from 40% in 2006 to 70% in 2008</li> <li>The main journey purposes for scheme users were food shopping and commuting</li> <li>Saving travel costs was the main motivation for uptake</li> </ul>
Malmö	9.01	<ul style="list-style-type: none"> <li>Designed and implement a car sharing service for the city</li> <li>Stakeholder engagement, campaigns and publicity</li> </ul>	<ul style="list-style-type: none"> <li>300,000 SEK monthly profit from service achieved in 2008</li> <li>59% of the energy used by system vehicles was from sustainable fuels</li> <li>Monthly carbon emissions reductions of 42%</li> </ul>	<ul style="list-style-type: none"> <li>Modal shift from public transport to the car is reported, but there are significant data weaknesses</li> </ul>	<ul style="list-style-type: none"> <li>65% of people were aware of car sharing</li> <li>Car access without ownership and cost savings were the main reasons cited for joining the car sharing scheme</li> </ul>
Norwich	9.02	<ul style="list-style-type: none"> <li>Introduced car sharing services for a University campus and city centre</li> <li>Stakeholder engagement</li> </ul>	<ul style="list-style-type: none"> <li>26% of members gave up a car on joining car club</li> <li>48% of members did not buy a car as a result of joining car</li> </ul>	<ul style="list-style-type: none"> <li>17% reduction in car use for short journeys by members</li> <li>12% increase in cycling and 9%</li> </ul>	<ul style="list-style-type: none"> <li>24% of people were aware of the car sharing scheme</li> <li>Newspapers were the dominant means by which awareness</li> </ul>

City	No.	Outputs	Economy Energy Environment	Transport	Society
		campaigns and publicity	club • CO2 emissions from car club vehicles 10% below EU targets	increase in walking by members	was generated
Preston	9.03	• None – the car club was not established because a suitable commercial operator could not be found	N/A	N/A	N/A
Toulouse	9.02	• Designed a car sharing service for the conurbation and initiate implementation • Initial service in Toulouse of 11 vehicles expanding to 35 vehicles by year 3	• The threshold for a profitable car sharing service is 40 vehicles for 2000 users	No information	No information
Venice	9.04	• Expanded and develop the range of car sharing services in the city • Stakeholder engagement • Vehicle fleet increased from 22 to 56 • Share of fleet powered by alternative fuels increased from 23% to 45%	• Annual membership fee of €50 introduced in 2008 • Use of alternative fuel vehicles reduces carbon emissions by 20-30%	Between 2005 & 2008: • Total fleet mileage and number of users more than doubled	• 44% of users motivated by cost savings (compared to vehicle ownership and maintenance costs) • Parking and environmental benefits strongly appreciated

Across the eight measures, four (Krakow, Toulouse, Malmö and Norwich) involved the introduction of a new car sharing scheme whilst three (Genoa, Venice and La Rochelle) involved the expansion or adaptation of an existing car pooling scheme. The final measure in Preston was not implemented, but illustrates some valuable lessons which are discussed below.

The measures demonstrated that car sharing takes time to implement. In Krakow the measure involved a feasibility study only and so there are no results to evaluate. For Toulouse, local political difficulties, which resulted in a different ownership structure of an association supported by local authorities, delayed implementation such that evaluation data could not be provided within the project reporting timescales. There were initially low membership levels in Norwich also. In Malmö, the economic and environmental benefits of the scheme were demonstrated, but problems with data collection and low response rates meant that the evaluation of travel behaviour effects was weak.

In spite of difficulties, some clear data on success emerge. Malmö reported that their scheme was profitable, whilst Genoa and La Rochelle are still reporting a loss. The emphasis on using alternative fuel vehicles for the car share fleets in Genoa, Venice, Malmö and La Rochelle delivered significant energy (fuel economy) and environmental (pollution reduction) benefits. In Norwich and La Rochelle the potential energy and environmental benefits derived from reduced car ownership amongst scheme members was emphasised.

In terms of transport impacts, an important factor in the successful operation of a car share scheme is achieving an optimal vehicle fleet size. In Toulouse, it was suggested that the threshold for a profitable car sharing service was 40 vehicles for 2000 users. In Venice, the success of the scheme was reflected in unexpectedly high take up rates, resulting in a user to vehicle ratio of 83:1, the average for Italian schemes was 27:1. This led to operational difficulties at times of peak demand and the scheme was in danger of becoming a 'victim of its own success' if the problem was not urgently addressed.

By contrast the schemes in La Rochelle and Genoa suffered from a surplus of vehicles. In La Rochelle the scheme was very expensive, due largely to the fact the scheme had been running since 1999, so there were the need to renovate stations. In Genoa, the measure increased the number of vehicles from 16 to 96 which had increased the efficiency of use by hours, kms and trips. The high quality and high cost were designed to overcome historic perceptions (La Rochelle)



In Norwich, reductions in the use of cars for short journeys and increases in walking and cycling by scheme members were reported.

In terms of societal impacts, awareness of car sharing as a concept and the specific schemes being promoted was highly variable. Low levels of awareness were reported in Krakow, due to the absence of any experience of car sharing in that city. In Norwich the very small scale application of the scheme resulted in low public awareness. By contrast high levels of awareness were shown in Malmö and increasingly high levels were shown in Genoa and La Rochelle. The principal reasons for joining a scheme were cost savings (compared to car ownership) and gaining access to a private vehicle (also cost related). Preferential parking and access to restricted roads were also appreciated by the users in the cities where these were applied.

## 5 Upscaling and Transferability

A summary of the potential for upscaling and transferability is given in Table 5.1.

### 5.1 Car pooling

#### *Upscaling*

The scope for upscaling car pooling systems has been considered to varying degrees by the eight cities. Burgos and Stuttgart had undertaken research into the expansion of car pooling at the regional level. Burgos stated that the high cost associated with maintaining a mobility office suggested that the model was unlikely to be repeated elsewhere in the province. In Toulouse an upscaling model was suggested involving the provision of an integrated car pooling management service for companies within the policy framework of commuter mobility plans.

A common barrier to the assessment of the potential for upscaling is the limited time to evaluate the benefits and impacts of the existing implementation. This has often led to data limitations which cast doubt upon the feasibility of predicting upscaling impacts.

A number of key factors have been identified in achieving successful upscaling such as: the strong and committed engagement of local stakeholders; employer promotion and support of car pooling is a strong incentive for uptake; a clear dissemination strategy which engages the local media and offers a clear and concise message e.g. saving money was a strong motivation for car pooling which could be the focus of an advertising campaign.

#### *Transferability*

The extent to which transferability issues have been considered in relation to the measures is variable, but overall quite limited. Even when transferability has been a specific component of the evaluation process the focus has generally been upon detailing the implementation process for the specific measure in the individual city context rather than drawing out issues which might influence the transferability potential of the measure to other contexts.

Many of the key points for transferability are similar to those concerning upscaling. Engaging local stakeholders at an early stage is critical to successful transferability, for example by demonstrating to transport authorities the contribution that car pooling can make to wider transport policy objectives. In Toulouse, this has been considered by including car pooling within a commuter and administration mobility plan. However, whilst car pooling might be an important aspect of such a plan, experience in Toulouse suggests that gaining acceptance and uptake for car pooling can be difficult.

The information aspect of car pooling was a critical success factor. The successful schemes had good computer systems and good supporting materials which explained the often complex membership and use conditions in clear terms. The example shown here is from Toulouse.



In both Norwich and Burgos emphasis was placed on the need for sustained promotion of car pooling to encourage interest and uptake and support the development of a critical mass of participation. In

Stuttgart it was felt that the technical issues relating to software and registration processes might have proved to be a barrier to transferability.

## 5.2 Car sharing

### *Upscaling*

The potential for upscaling car sharing schemes was given very limited consideration by most of the cities with only Malmö and La Rochelle demonstrating any tangible upscaling strategy. In Malmö, it was suggested that expansion of the service might be facilitated by aligning the scheme with broader mobility management strategies and the concept of eco-driving. A marketing strategy which fitted with these policy agendas might prove successful. A further aim would be to increase the proportion of alternative fuelled vehicles in the fleet.

A key issue relating to car sharing is land use, and low densities will require greater financial support. The spatial distribution of demand will be a factor in defining the limits to any upscaling activity.

In La Rochelle, potential was identified to upscale the scheme to the whole city and also to adjacent cities. Targeting of particular markets would be an important aspect of upscaling: business usage as part of travel plans, and visitors to the city, were viewed as promising future markets.

### *Transferability*

The extent to which transferability issues have been considered by the cities themselves is variable, but overall quite limited. Even when transferability has been a specific component of the evaluation process the focus has generally been upon detailing the implementation process for the specific measure in the individual city context rather than drawing out issues which might influence the transferability potential of the measure to other contexts.

There have been significant innovations which would transfer well to other areas, such as the inclusion of vans in the Genoa car sharing scheme (pictured).

Many of the scheme delivery aspects for transferability are similar to those for upscaling. Overall, there was a greater degree of confidence in the potential for the transferability of car sharing than car pooling. This is perhaps related to the fact that car rental schemes are less tied to the local context and trip patterns than the specific journey matching services involved in car pooling.

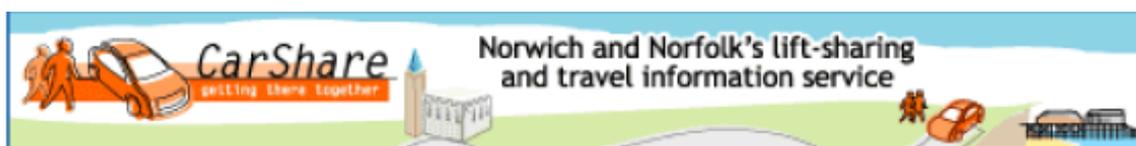


In common with car pooling, successful transferability of car sharing is heavily dependent upon engaging local stakeholders at an early stage. For both Genoa and Krakow, legal, regulatory and administrative factors were viewed as the biggest constraints upon transferability. By contrast, the experience of successfully addressing legal and regulatory barriers was seen as evidence to encourage transferability in Malmö, as was the success of the financial model deployed. In Norwich, demonstrating the sustainability and viability of car sharing was an essential prerequisite which other cities might emulate. In Venice, emphasis was placed on the importance of information provision and sustained promotion to uptake and transferability.

**Table 5.1: Upscaling and Transferability possibilities**

City	No.	Upscaling	Transferability
<b>(a) Car pooling</b>			
Burgos	9.01	<ul style="list-style-type: none"> <li>• Desk study of potential for upscaling to other small cities in Burgos province undertaken</li> <li>• Need to debate with local stakeholders to ensure uptake</li> <li>• High administrative costs of mobility office do not suggest model should be replicated in other areas of the city</li> </ul>	<ul style="list-style-type: none"> <li>• Desk study of potential for transfer to other small cities in Burgos province undertaken</li> <li>• Need to debate with local stakeholders to ensure uptake</li> <li>• Targeted awareness campaigns via the internet are needed</li> </ul>
Debrecen	9.03	<ul style="list-style-type: none"> <li>• Believe that advertising could increase use of system and include other citizens</li> </ul>	No information (measure not selected for transferability analysis)
Krakow	9.02	<ul style="list-style-type: none"> <li>• Could replicate system in other universities or businesses or extend existing system to cover whole city and suburbs,</li> <li>• Requires clear dissemination strategy with advertising in local media</li> <li>• Extend to event-based system</li> <li>• Cooperation with local stakeholders and media is important</li> </ul>	<ul style="list-style-type: none"> <li>• Transferability potential is difficult to predict due to the limited effects identified so far, wider extrapolation of results is not appropriate.</li> </ul>
Norwich	11.04	<ul style="list-style-type: none"> <li>• Strong potential to upscale by engaging travel generators.</li> <li>• Saving money is a strong motivation for uptake that should be reflected in advertising campaigns</li> <li>• Employer promotion and support of car pooling would strongly encourage use</li> </ul>	<ul style="list-style-type: none"> <li>• Reasonably good scope for transferring this measure elsewhere</li> <li>• Proactive implementation with clear ownership of and responsibility for the scheme is integral to success</li> <li>• Critical mass is key and requires sustained promotion</li> </ul>
Potenza	9.03	<ul style="list-style-type: none"> <li>• Hard to predict due to recent nature of implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Highly transferable due to the desire of many cities and operators to reduce the number of single occupancy car commuting trips</li> <li>• Supports wider transport policy objectives on congestion and emissions</li> </ul>
Preston	9.03	<ul style="list-style-type: none"> <li>• No upscaling as it is an existing city-wide measure</li> </ul>	<ul style="list-style-type: none"> <li>• Partnerships are a key factor for transferability.</li> <li>• Appropriate levels of awareness and acceptance are essential to attract sufficient scheme users.</li> </ul>
Stuttgart	9.03	<ul style="list-style-type: none"> <li>• Preparing to expand scheme to the regional level</li> <li>• Nationwide portal to connect all car pooling systems created</li> </ul>	<ul style="list-style-type: none"> <li>• Technical barriers to transferability exist e.g. reluctance to register for use</li> <li>• Success in signing up corporate members is a success factor which would transfer well to other cities</li> </ul>
Toulouse	9.01	<ul style="list-style-type: none"> <li>• Provide an integrated car pooling management service for companies within framework of commuter mobility plans</li> <li>• No predictive data of upscaling impacts are available</li> </ul>	<ul style="list-style-type: none"> <li>• Transferability considered in terms of measure being part of a Commuter and Administration Mobility Plan</li> <li>• Car pooling seen as an important element, but also a significant constraint in delivering the Plan</li> </ul>
<b>(b) Car sharing</b>			
Genoa	9.04	<ul style="list-style-type: none"> <li>• The measure has been concerned with upscaling an existing service and therefore does not envisage further developments in this regard</li> </ul>	<ul style="list-style-type: none"> <li>• Good potential for transferability as fits with wider transport policies and strategies</li> <li>• Legal, regulatory and administrative factors are the most significant constraints</li> </ul>
Krakow	9.05	<ul style="list-style-type: none"> <li>• Upscaling equates to implementation of scoped car sharing service in Krakow which is unlikely to occur in the short term</li> </ul>	<ul style="list-style-type: none"> <li>• Good potential for transferability as fits with wider transport policies and strategies</li> <li>• Legal, regulatory and administrative factors are the most significant constraints</li> </ul>
La Rochelle	9.01	<ul style="list-style-type: none"> <li>• There is potential to upscale the scheme to the whole city and to surrounding cities</li> <li>• Business usage as part of travel plan strategy and visitors to the city are potential future markets</li> </ul>	See D1.1 and D1.2

City	No.	Upscaling	Transferability
Malmö	9.01	<p>Four approaches to upscaling are feasible:</p> <ul style="list-style-type: none"> <li>• More car sharing sites in the city</li> <li>• Expand users and vehicles using existing sites</li> <li>• Use new marketing methods to expand membership in conjunction with eco-driving and mobility management strategies</li> <li>• Increase proportion of alternative fuel vehicles in fleet</li> </ul>	<ul style="list-style-type: none"> <li>• Strong potential for transferability to other cities is demonstrated</li> <li>• Particular success factors relate to the financial model deployed in terms of operating costs and revenues</li> <li>• Technical and regulatory barriers have been addressed which should encourage transferability</li> </ul>
Preston	9.03	N/A	N/A
Toulouse	9.02	<ul style="list-style-type: none"> <li>• The threshold for a profitable car sharing service is 40 vehicles for 2000 users, once this critical mass is achieved extensions to the service are feasible</li> </ul>	No information
Venice	9.04	<ul style="list-style-type: none"> <li>• Measure already covers whole city area, need to expand fleet to meet user demand</li> </ul>	<ul style="list-style-type: none"> <li>• Strong potential for transferability as not closely linked to local context</li> <li>• Integrate car sharing into local traffic plans</li> <li>• Collaborate with local transport stakeholders</li> <li>• develop intensive information and awareness-rising campaigns</li> </ul>



## 6 Conclusions and Recommendations

A series of key messages for the successful establishment and operation of car pooling and car sharing systems can be discerned from the evidence provided by the cities.

1. **Awareness** – All the cities agreed that awareness generation through advertising and information provision was vitally important to both the successful implementation and ongoing operation of car pooling and car sharing services, indeed it was deemed the single most important factor. Marketing and publicity campaigns had to be intensive, seeking to engage across the range of available media with clear and concise messages. The operation of these services needs to be clearly explained as their innovative nature is likely to mean that a large proportion of the population will be unfamiliar with the concepts. The positive benefits of membership needed to be ‘sold’ to potential users. Selling the concept to decision makers is a key prerequisite for successful implementation. There is also clear value in dedicated awareness campaigns to focus on particular target groups for membership. Marketing also had to be sustained in the form of a rolling programme to achieve and retain a critical mass of membership for effective system operation.
2. **Policy integration** – There was unanimity amongst the cities that the successful implementation and ongoing operation of alternative car use services depend on the successful integration of the system with wider transport policies and operations in the city. Car pooling and car sharing are likely to be most effective if they are part of a city’s overall mobility management strategy with complementary measures and incentives. They should be promoted alongside public transport services as part of the package of mobility solutions available to travellers in the city. At the business level, car pooling and car sharing should be integrated into work travel planning strategies.
3. **Clear strategy** – There should be a clear strategy for implementation, with clear objectives which match the needs of potential users and therefore stakeholder engagement is critical at the planning stage. Key factors in determining the need for such services include the energy, environmental and cash costs of motoring, congestion, parking provision and related land use issues, quality of existing public transport and non-motorised transport services and infrastructure (car pooling and car sharing should seek to complement rather than compete with public transport, walking and cycling).
4. Alternative forms of car use such as car pooling and car sharing have the potential to make a valuable contribution to enhancing the sustainability of urban mobility. They can support a new culture of car use. As such services develop it will be important to consider existing and potential future user needs in order to understand the possible long term impacts on car ownership and travel behaviour. However, some schemes, particularly those in the initial stages and/or those using more sustainable and expensive vehicles, may not be financially viable without support from the local authority. The economic case for such support will be based on environmental and congestion savings.
5. Monitoring scheme effects, particularly the longer term changes to vehicle ownership, is important to better inform future development.
6. People who use car pooling and car sharing schemes do so by choice. Therefore, it is crucially important to tailor the scheme to users in a professional and supportive way. There is much evidence presented in the individual measure templates which relate to scheme design and operational parameters which lead to success. This is also introduced in depth in the Process Evaluation Report.