Implementing a large car sharing scheme

In a nutshell

SUMMARY

It is best practice to support and encourage the creation of a large car-sharing scheme in the territory of the municipality. Car-sharing services are not generally run by the city in which they operate; however, the municipality can set up supportive infrastructure, establish appropriate policy and legislation to integrate car sharing into the city fabric and with public transport. The public administration can also become a business customer of the local car-sharing service, create public awareness, promote the service and establish standards that car-sharing operators must meet in order to be able take advantage of the city's supportive infrastructure (e.g. preferential lanes, low-traffic zones). Cities may also decide to subsidise a car-sharing operator to expand or accelerate the rate of growth.

Target group

Public administrations responsible for mobility and/or public transport in their territory

Applicability

This best practice is particularly relevant for local authorities with an urban territory with more than 200 000 inhabitants. Local authorities of territories with a lower population may encounter limitations in the applicability of the best practice due to the limited number of customers of the car-sharing scheme, higher costs, less-developed public transport network, etc.

Environmental performance indicators

- Number of car-sharing users per 10 000 inhabitants (number/10 000 inhabitants)
- Number of registered users per car-share vehicle (number of users/number of vehicles)
- Number of inhabitants per shared car available (number of inhabitants/number of vehicles)
- Mileage driven annually by car-sharing users (km/user/year)
- Number of privately owned cars replaced by each vehicle in a car-sharing operator's fleet (number of privately owned cars replaced/number of car-shared vehicles)

Benchmarks of excellence

- At least 8 privately owned cars were replaced by each vehicle in the car-sharing operator's fleet
- At least 1 shared car available per 2,500 inhabitants

Description

Car sharing provides its users with access to a car without the need to own one. Electronically controlled 24/7 access, decentralised stations (with reserved parking spots) and a variety of vehicle types provide a reliable, flexible and cost-efficient alternative to car ownership that supplements the sustainable modes of walking, cycling and public transport. The availability of a variety of vehicle types in a wider mobility context allows one to choose the mode and vehicle that best fits the purpose of each journey.

Car sharing services are not generally run by the city in which they operate. But while a private operator runs the service, there are significant actions that a city can take to create a supportive atmosphere that encourages and increases car sharing as a supplement to walking, cycling and public transport. These can include setting up supportive infrastructure,

establishing appropriate policy and legislation to integrate car sharing into the city fabric and integrating car sharing with public transport. It can also include becoming a business customer of the local car sharing service, creating public awareness and promoting the service and establishing standards that operators must meet in order to be able take advantage of the city's supportive infrastructure. In some cases, cities may also decide to subsidize a car sharing operator to expand or accelerate the rate of growth.

Car sharing levels of use and services vary greatly across Europe, with services currently provided in 14 European countries. The largest operator by far is Mobility in Switzerland. Run as a cooperative and the only car sharing provider in Switzerland, Mobility has roughly 112,000 users who have access to 2650 vehicles parked at 1395 stations in 500 towns and cities across Switzerland (Mobility Car Sharing, 2013).

According to the EU momo project, if Swiss car sharing levels were achieved across Europe, there would be 6,000,000 car sharers, meaning removing up to 600,000 cars from the cities of Europe, the equivalent of a row of cars end-to-end from Stockholm to Madrid (Momo Project, 2011) – a substantial environmental benefit both in reduced emissions and in public space gained.

The potential role of cities in supporting and encouraging large-scale car sharing in European cities is the focus of this best practice.

Terminology:

There is often confusion about exactly what car sharing is and how it works. This is compounded by the range of terms used to describe it. Further, in recent years, different forms of car sharing have been introduced. We will thus begin by defining car sharing, the problems it addresses and where it works best in comparison to carpooling, another form of shared car use. We will then differentiate among the three main forms of car sharing that currently exist.

Car sharing vs. carpooling

Carpooling[1] is defined as two or more people travelling together in a car (usually a car owned by the driver of the vehicle) to a shared destination, whereas car sharing allows different people access to the use of a fleet of vehicles (normally owned and maintained by a private company or a cooperative) by booking a vehicle for a defined period of time. Each works best in a different context (urban vs. suburban/rural), addresses different issues (urban space issues vs. pollution and congestion) and serves a different target audience (those who don't need a car for regular daily journeys vs. those who depend on a car for daily use).

Table 1: car sharing vs. carpooling

	Car sharing	**Carpooling**
Basic description	Cars can be reserved and accessed by individuals at car sharing stations at any time of day	two or more people travelling together in one car to a common destination
Where it works best	Where people don't need a car for regular trips to work, school or shopping	For work journeys that are regular
Key problems it addresses	• urban parking problems • over-filled street space • complements public transport, cycling and walking to reduce the need for car ownership	• congestion • fuel consumption • pollution

Key target groups	• those in urban areas who do not need a car on a daily basis • companies and authorities (for fleet management)	• those in suburbs or the countryside who need a car for their daily trip to work • employees of companies (as part of a mobility management strategy)

Different forms of car sharing[2]

The *Bundesverband Carsharing*, the German national umbrella organisation for car sharing operators, has developed a comprehensive definition of car sharing for its own purposes (see box). The key aspects include 24/7 booking and pick up for all registered users, cars located at a network of decentralised stations and fees based on both distance driven and time.

In recent years, several new car sharing services have started up with involvement of the motor industry (and in one case of the battery manufacturer).[3] These offer cars that are parked randomly on local streets rather than at fixed stations and that are located by potential users through GPS. Users can take a car for as long as they want and park it anywhere within the operating area of the provider. Rates are based solely on time with no cost based on distance.

These “free-floating” operations require no prior reservation and users are not required to register a return time when they take a car. On the other hand, they don’t allow early pre-reservation, meaning availability of a vehicle cannot be guaranteed. These systems have no fixed stations, meaning there are no (or in some cities few) reserved parking spots for the return. They generally offer only one (small) car type.

Bundesverband Carsharing definition of car sharing

Car sharing is the organised, common use of motor vehicles. Car sharing organisations offer the service of car sharing as an integrated component of the group of sustainable modes (rail, bus, bicycle, walking). The result is an individually-organised mobility that complements and supports public transport and reduces impacts on the environment and the local transport system. By reaching a larger market share, providers aim to further increase this effect further. The service of car sharing is defined by the following components:

- Within the limits of liability of the registered user of a car, the service is open to all insofar as the preconditions for participation are met – free of discrimination and transparently operated.
- Use is based on a framework contract; there is no separate contract for each individual journey.
- There is a decentralised network of stations with vehicles available near to residences as well as to public transport stations and stops.
- The vehicles can be booked, picked up and returned 24/7 by customers at unattended stations.
- Use is calculated by time and distance driven (including journey-related operating costs).
- Bookings as short as one hour are possible. The hourly price may not be more than one-eighth of the daily price.

The complete *Bundesverband Carsharing* definition of car sharing can be found (in German) at www.momo-cs.eu.

Another recent development (2011) is one-way car sharing, meaning customers can pick up a car at one station and return it to a different one. Autolib’ in Paris pioneered one-way car sharing,[4] which also requires no pre-booking and no pre-defined reservation time. The service offers users the advantage of a guaranteed parking spot at the end of a journey but again, only small cars are available.

Unlike station-based car sharing, the question of what kind of journeys free-floating and one-way car sharing replace has not been clearly established, but studies on Car2Go in Amsterdam (Gemeente Amsterdam, 2013) and Autolib’ in Paris (6t – bureau de recherche, 2014) indicate that there is a tendency for them to replace public transport journeys, putting them in competition with the “eco-modes” rather than complementing them. While the impacts of free-floating and/or one-way systems could improve through alliances with station-based systems, and indeed this is being experimented with in some

places,[5] no research has yet been carried out.

Further, although accurate data are difficult to find, the existing free-floating and one-way car sharing systems are highly subsidised,[6] whereas most station-based car sharing operations are run on a break even or for-(modest) profit basis.

Table 2*:* Comparison of station-based, free-floating and one-way car sharing operations

	Station-based	***Free-floating***	***One-way[7]***
Pre-booking	Yes (can also be done immediately before travel)	No	No
Rental time must be specified	Yes	No	No
Fixed stations	Yes	No	Yes
Reserved parking space	Yes	No	Yes
Payment based on	Time, distance and vehicle size	Time only	Time only
Car types available	Small car to passenger van or transporter	One type (small)	One type (small)
Car return	To the same station	To anywhere within the service area	To any station with a free space
Impact on car ownership	Each vehicle replaces 4-8 privately-owned cars (Loose, 2009a)	Each vehicle replaces roughly 1 privately-owned car (Gemeente Amsterdam, 2013)	Each vehicle replaces 3 privately-owned cars (6t – bureau de recherche, 2014)

Station-based car sharing, with its range of vehicles and tariffs based on both time and distance, has demonstrated a positive effect on mobility patterns and has proved to be an alternative to car ownership. The impacts of the newer free-floating and one-way systems on the environment have yet to be established on a similar scientific basis. For this reason, this report refers to station-based car sharing as defined by the *Bundesverband Carsharing* and any environmental (or other) effects described are limited to this form of car sharing.

[1] Also called ride sharing or lift sharing or sometimes (confusingly!) car sharing

[2] Called car clubs in the UK and Ireland

[3] For example Car2Go by Mercedes, DriveNow by BMW and Autolib' by Bolloré (the producer of the battery)

[4] As Autolib' cars are electric, stations were necessary for recharging. The push for a fully electric car sharing operation was led by Bertrand Delanöe, the mayor of Paris, who based the system on Paris' popular Vélib' bicycle sharing system.

[5] In 2013, *Grünes Auto Göttingen* in Göttingen, Germany made many of its smaller cars available for one-way use in addition to its existing station-based service. In 2014 in Hanover and Mannheim, Germany, the station-based car sharing provider *Stadtmobil* set up a parallel free-floating system called Joe Car.

[6] According to the *Frankfurter Allgemeine Zeitung online*, the investment required for Autolib' was estimated at roughly €200 million, with €60 million coming from Bolloré (the manufacturer of the battery), €35 million from Paris and €50,000 per station from the participating surrounding municipalities.

[7] The only full one-way car sharing scheme we're aware of is Autolib' in Paris. Data are based on this service.

Environmental benefits

Car sharing has achieved several measurable (as well as some more difficult to measure) environmental benefits.

Reduced car ownership

A comparison in Switzerland of households before and during car sharing participation shows that the proportion of car-free households grows with car sharing participation and the proportion of personal cars kept in the household drops (Interface Institut für Politikstudien, 2006). With car sharing participation, personal cars become, to a large extent, unnecessary. According to another report (Loose, 2009a), on average, four to eight private cars are replaced by each car sharing vehicle, resulting in reduced parking pressure in the neighbourhoods in which large numbers of car sharing customers are well served. There is potential for a significant space gain through car sharing.

Surveys by the Bremen-based car sharing operator cambio show even more positive results on the impact on car ownership. According to cambio, about 50% of new car sharing customers had a car before they became car sharers but only 13% of them maintained a car. There are statistically 40 users for every cambio car in Bremen, meaning a replacement rate of about 10 cars by every car sharing car. At least in Bremen, a combination of walking, cycling, public transport and car sharing appears to be a full replacement for many for car ownership.

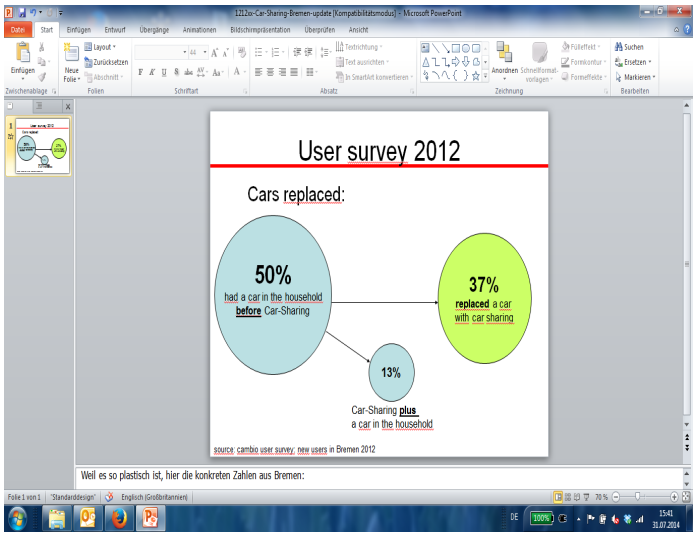


Figure 1: Excerpt from the 2012 annual user survey of cambio in Bremen showing car sharers who have got rid of a car since becoming cambio members

Changes in individuals' transport choices

Car sharers have been demonstrated to drive fewer kilometres and to use bicycles and public transport more. A survey carried out in the context of the EU momo project (Muhr, 2009) surveyed cambio customers in Brussels. The results showed that after becoming a car sharer:

- 25% used buses and trams more (10% much more)
- 22% used trains more (5% much more)
- 19% cycled more (7% much more)
- 28% walked more

Similar results were found in a study commissioned by the Swiss Federal Energy Agency (Interface Institut für Politikstudien, 2006) where car sharing users were shown to use public transport considerably more than they did before they began car sharing. They also made use of bicycles, taxis or rental cars much more than they did previously. The Swiss study measured the effect this transport behaviour had in relation to traffic-related CO_2 emissions. In the emission calculations, the study concluded that each active Swiss car sharing user emitted 290 kg of CO_2 less each year because

of car sharing participation than he or she would without it.

Lower carbon emissions

The use of car sharing vehicles in fleets with different car types (and different price categories) allows users to select based on need. As many car sharing journeys are taken without large amounts of luggage and without many passengers, compact cars are the predominant vehicles in most car sharing fleets. Users take a large vehicle only if they need to transport something large. This compares favourably to individuals who may purchase a vehicle large enough for an annual family holiday and use it for regular travel. The fuel requirements and the CO_2 emissions of the car sharing vehicles are correspondingly small.

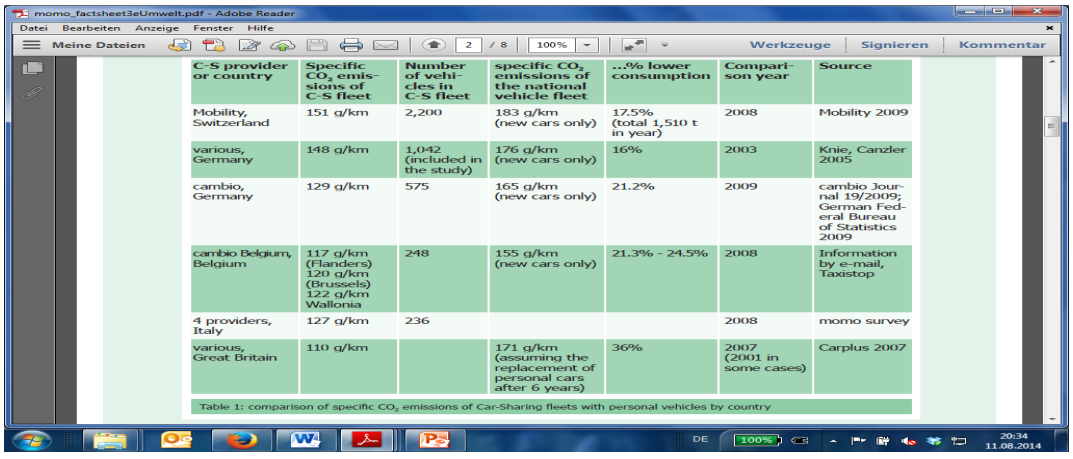
According to the Swiss study (Interface Institut für Politikstudien, 2006) the average carbon dioxide emissions of the fleet of the Swiss car sharing provider, Mobility, in 2005 were approximately 18 percent lower than new cars on the road in Switzerland in the same years and 25 percent lower than the average emissions of all private cars in Switzerland in 2005. Similarly in Germany, in 2009, the cambio fleet in Bremen emitted an average of 129g CO_2/km, in comparison to 169g/km for the average new vehicle in Germany. The current Ford Fiesta, the main vehicle procured by cambio in Germany, emits only 98g/km.

Comparable results were found through a survey carried out by the *Bundesverband Carsharing* (Loose 2009a). Car sharing fleets in Switzerland, Germany, Belgium, and Great Britain all showed lower specific CO_2 emissions for car sharing fleets than for the personal vehicles in the respective countries, with differences ranging between 32 and 61g/km (see Table 3). Since car sharing fleet vehicles, on average, are upgraded more frequently than personal cars, they always meet the latest environmental standards.

Table 3: Comparison of specific CO_2 emissions of car sharing fleets with personal vehicles by country

C-S provider or country	Specific CO_2 emissions of C-S fleet	Number of vehicles in C-S fleet	specific CO_2 emissions of the national vehicle fleet	...% lower consumption	Comparison year	Source
Mobility, Switzerland	151 g/km	2,200	183 g/km (new cars only)	17.5% (total 1,510 t in year)	2008	Mobility 2009
various, Germany	148 g/km	1,042 (included in the study)	176 g/km (new cars only)	16%	2003	Knie, Canzler 2005
cambio, Germany	129 g/km	575	165 g/km (new cars only)	21.2%	2009	cambio Journal 19/2009; German Federal Bureau of Statistics 2009
cambio Belgium, Belgium	117 g/km (Flanders) 120 g/km (Brussels) 122 g/km Wallonia	248	155 g/km (new cars only)	21.3% - 24.5%	2008	Information by e-mail, Taxistop
4 providers, Italy	127 g/km	236			2008	momo survey
various, Great Britain	110 g/km		171 g/km (assuming the replacement of personal cars after 6 years)	36%	2007 (2001 in some cases)	Carplus 2007

Table 1: comparison of specific CO_2 emissions of Car-Sharing fleets with personal vehicles by country



Side effects

There are no identifiable negative side effects of (station-based) car sharing. To the contrary, it has been demonstrated that car sharers use more public transport, cycle more and own fewer cars than non-car sharers. Car sharing serves as a

complement to walking, cycling and public transport, allowing customers access to a car when they need it, otherwise allowing them to select the most appropriate mode from the range available to them for each journey.

As noted above, free-floating and one-way car sharing may tend to induce car travel by attracting users away from public transit or cycling.

Applicability

Car sharing is generally more successful in urban settings than suburban or rural areas, although there are examples in all three settings. While no minimum city size should be dictated, some indicators of potential success include:

- A reasonably high population density so that there is a market for the service
- Well-developed public transport and/or cycling infrastructure so that a good number of people can meet their daily needs without a car

Given these basic criteria, car sharing should be applicable in almost any city in Europe of at least 200,000 inhabitants.

However, it is possible to implement the service even in smaller towns and cities. For example, most of the places where the Swiss operator, Mobility, has its cars located are towns of fewer than 20,000. It must be noted, however, that Mobility is a cooperative, meaning decisions can be made based on factors other than pure economics. Switzerland also has an excellent public transport network, even in small towns, meaning that many people in smaller centres are indeed able to meet their daily needs without a personal car.

Car sharing can also be applicable in small towns where there is a solid base of volunteers to run the organisation. This is the case in Vatterstetten, near Munich in Germany. The town of 21,000 has had a thriving volunteer-run car sharing organisation since 1992, and supports other volunteer-run groups in Germany in setting up their own car sharing organisations.[1] In Ansbach, Germany, a strategic alliance between a citizens' initiative, the city, the municipal utility and a local car rental company managed to establish a successful car sharing scheme for its 40,000 inhabitants.

A third option for smaller centres is to collaborate with a car sharing provider in a nearby larger city, as is done by *Stadtmobil* in the Hanover, Karlsruhe and Rhine-Neckar areas of Germany. The smaller town can procure the vehicles for use in its local area but make them part of the larger city's booking system. Depending on the distance, the smaller town may also provide (or contract) the maintenance of the local vehicles so that the car sharing operator does not need to travel to the smaller town to deal with minor issues.

[1] It should be noted that there is often less interest in car sharing in smaller towns and cities than in larger cities because the pressure on parking space is less extreme. In such cases, other driving forces (e.g. environmental ones) must be stronger in order for such an initiative to be successful.

Economics

While this document is intended to address actions that cities can take with regard to car sharing, it is important to understand the economic aspects important to a city, a car sharing provider and to (potential) car sharing users.

City perspective

From the perspective of a city, parking management is a major financial incentive to support car sharing, assuming the choice is between continuing to provide parking for every new car or making efficient use of both space and vehicles.

A single off-street parking space costs €20,000-€30,000 to build and roughly €20/month to operate and maintain. Again using numbers from cambio in Bremen, the 9,000 current car sharing users have done away with more than 2,000 cars. In order to accommodate that number of vehicles using parking garages, the city of Bremen estimates an investment of

approximately €40,000,000-€60,000,000, plus €480,000 annually for maintenance. Some of these costs savings are realised by developers, who are able to build housing with less car parking than a comparable development without car sharing.

Another economic factor from the perspective of a city is fleet management. If the city becomes a car sharing customer, the efficiency gain in booking and optimised use of vehicles create a cost saving. It also allows the city to allocate journeys to specific departments or drivers, offering transparent pricing and full-cost accounting of work-related travel.

Costs incurred by a local authority can range from nothing (i.e. allow the for-profit business to run its operation in the city without any interaction) to the thousands, depending on how they choose to support the activity (e.g. setting up supportive infrastructure, integrating car sharing with public transport, creating public awareness or subsiding an operator to accelerate the rate of growth as described under Operational Data above).

A city may decide whether a car sharing operator should pay rent for the use of land for stations on public space. Examples of both exist: in Bremen, the operator pays for the space, whereas in Rome, it may use the space free of charge.

If a city is interested in its local car sharing fleet offering electric cars, this may require further subsidy (which could come, for example, in the form of supplying charging stations). While the situation may change in the future – and many car sharing operators are already experimenting with electric vehicles (Rupprecht Consult, 2013) – with charging time and higher purchase costs, no car sharing operator to date has been able to develop a cost-recovery model for electric cars.

Operator perspective:

From the perspective of a car sharing operator, the business case has been demonstrated for station-based car sharing. For-profit operations and cooperatives exist in many European cities that do not require subsidies from the cities in which they operate. As noted above, one-way and free-floating car sharing operations are financed by the corresponding car (or battery) manufacturer.

Customer perspective

From the perspective of the user, car sharing has an influence on travel choices, and choices made based on finances (e.g. take a bike rather than booking a car for a short journey) serve to enforce the environmental benefit of car sharing. Once a person has purchased a private vehicle, the cost of the car and road tax are typically paid for, so there is no disincentive to use the car less. In contrast, car sharers sees the cost of each individual journey, which leads them to reassess the best transport option available for each journey, whether it be a bus, bike, compact car or a transporter.

Driving forces for implementation

Because car sharing is not necessarily the first solution cities think about (or perhaps they aren't aware of the potential benefits of the service), awareness may be the first requirement before implementation can occur.

For cities that already have a well-established car sharing operation, the demand by operators for more space for additional stations can be one driving force.

In cities that currently have no car sharing, factors that could serve as driving forces are connected to space, access, quality of life and the environment. These include:

- A mismatch between the number of cars and the amount of street space available, considering that space is also needed for pedestrians and cyclists
- A lack of off-street parking space and the high cost of building parking garages (see economics above)
- Safety and access issues for emergency vehicles and waste collection vehicles[1]
- Quality of urban life
- CO_2 reduction (based on an assumption of less car use and car ownership resulting from car sharing)

In any city where any of these factors create challenges, it is possible for a city to create its own driving force by establishing a car sharing action plan with concrete goals and timelines to achieve them, as has been demonstrated through the ongoing implementation of the city of Bremen's car sharing action plan (Stadt Bremen 2009; Stadt Bremen

2013).

[1] The city of Bremen has found allies among fire fighters and waste collectors by consulting them on particularly tight neighbourhoods and having them test drive streets that have been redesigned to prevent illegal parking and create car sharing stations.

Reference organisations

As noted above, it is not generally seen as the responsibility of cities to establish a car sharing operation. This would normally be done by a private operator. However, cities that have been exemplary in creating positive conditions for car sharing to grow include:

City of Bremen

- Embedding car sharing into its development plans
- Establishing *mobil.punkte* (mobility points) in public space including car sharing stations near public transport stops
- Establishing a car sharing action plan
- Becoming a business customer of the local car sharing provider
- Creating a series of promotional videos on car sharing (see: https://www.youtube.com/user/GlotzRichter)
- Creating a public campaign to “Use it. Don’t own it” for car sharing (see: http://mobilpunkt-bremen.de/index.php?/)

City of Brussels

- Creating rules for the use of public street space that support and encourage high-quality car sharing operation and lead to increased use of sustainable modes of transport.
- Integrating car sharing with public transport (car sharing stations marked on public transport maps, advertising in buses and metro, discounted prices for those who use both services)

City of Paris

- Providing large amounts of public street space for car sharing stations

Literature

6t – bureau de recherche (2014), *One-way carsharing: which alternative to private cars?* Available at: http://6t.fr/download/AD_ExecutiveSummary_140523.pdf

Gemeente Amsterdam (2013), *Effectmeting introductie Car2Go in Amsterdam*. (in Dutch)

Stadt Bremen (2009), Aktionsplan „Car-Sharing für Bremen“. Available in German at: http://www.umwelt.bremen.de/sixcms/media.php/13/Car%20Sharing.pdf and in English at: www.momo-cs.eu/index.php?obj=page&id=146&unid=5f92381cad4acd316656767e6db01870

Stadt Bremen (2013a), http://www.mobilpunkt.info/. (The city of Bremen’s website on its car sharing initiatives – mainly in German)

Stadt Bremen (2013b), *Umsetzung des Car-Sharing Aktionsplans*. https://ssl.bremen.de/bauumwelt/sixcms/media.php/13/BdV_S_Car-Sharing_Endf.pdf (in German)

Ville de Bruxelles (no date), *Règlement organisant l'agrément des opérateurs des voitures partagées*. http://www.bruxelles.be/dwnld/92829089/r%C3%A8glement%20voitures%20partag%C3%A9es%20FR.pdf (in French)

Bundesverband Carsharing (2007), *Definition CarSharing.* Available at: http://www.momo-cs.eu/index.php?obj=page&id=146&unid=81d0925fd3b2dd0ebf7ff4ebd58e9dee (in German

Frankfurter Allgemeine Zeitung (2010). *Pariser sollen sich Elektroautos teilen.* Available at: http://www.faz.net/aktuell/wirtschaft/unternehmen/verkehr-pariser-sollen-sich-elektroautos-teilen-1574623.html.

European Union Sustainable Energy Week (2014), *Car Sharing Summary*. http://www.eusew.eu/component/see_projectview/?view=see_projectdetail&projectid=9190&catId=3&pageNum=0&index=5 .

Interface Institut für Politikstudien (2006), *Evaluation Car-Sharing Schlussbericht*. www.bfe.admin.ch/themen/00526/00541/?lang=de&dossier_id=00888 (full report in German, summary in English and French).

Loose, W. (2009a), *Momo fact sheet 3: The environmental impacts of Car-Sharing use*. Project MOMO. Available at: www.momo-cs.eu/index.php?obj=page&id=151&unid=5f92381cad4acd316656767e6db01870.

Loose, W. (2009b), *Momo fact sheet 6: Car-Sharing stations in public street space*. Project MOMO. Available at: www.momo-cs.eu/index.php?obj=page&id=151&unid=5f92381cad4acd316656767e6db01870.

Loose, W. (2009c), *Momo fact sheet 7: Support by local councils*. Project MOMO. Available at: www.momo-cs.eu/index.php?obj=page&id=151&unid=5f92381cad4acd316656767e6db01870.

Mobility Car Sharing (2013). *Facts & Figures*. Available at: www.mobility.ch/fileadmin/files/documents/media/Facts_Figures_Mobility_Cooperative.pdf

Momo Project (2011), *momorandum*. Project MOMO. Available at: http://www.momo-cs.eu/index.php?obj=page&id=146&unid=d3703cce8091a0b8bd85772d4f3a6df8

Muhr E. (2009), *Report Customer Survey Car-Sharing Brussels*, Project MOMO.

RAL gGmbH (2010), Basic Criteria for Award of the Environmental Label: Car Sharing. Available at: http://www.blauer-engel.de/produktwelt/haushalt-wohnen/car-sharing-ausgabe-juli-2010/car-sharing-ausgabe-juli-2010. (German and English)

Rupprecht Consult (2013), *Prospects for electric car sharing and use in small and medium cities and towns*. Project ELMOS. Available at: www.elmos-project.eu/fileadmin/content/documents/Internal_reports_surveys_tenders/2013-11-15_ELMOS_report_electric_car_sharing.pdf.