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Expert study on the state of the art

## Prospects for electric car sharing and use in small and medium cities and towns

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## 1. Introduction

This report was prepared for the partners of the INTERREG IVA project ELMOS by Rupprecht Consult GmbH. It looks at the possibilities for introducing electric cars in small and medium sized towns in the context of car sharing and at lessons that can be learnt through car sharing for the introduction of electric cars. Three different car sharing operators from three European countries – all of which have introduced electric cars into their fleets – will be looked at. The example of Barnim County in Germany will also be looked at in some detail. A list of references, contact and suggested reading will also be provided. The report is based on the presentation and discussion of first results at the ELMOS International Expert Conference in Växjö, Sweden (8 October 2013).

## 2. What is car sharing and where does it work best?

The table below provides a basic description of car sharing and indicates where it works best, the problems it addresses and the key target groups it serves. While car sharing is generally more successful in larger cities with denser populations (i.e. more potential users), there are some issues and users in smaller cities that it also speaks to. The most relevant role for car sharing in smaller cities is as a complement to public transport, bicycle use and walking to reduce the need for car ownership. The most appropriate target groups for the introduction of electric cars in towns and smaller cities are local and regional authorities in the context of their fleet management. The role of authorities will be addressed in more detail later in this report.

Car sharing basics	
<i>Basic description</i>	Vehicles can be reserved and accessed by individuals at car sharing stations at any time of night or day
<i>Users</i>	Generally above-average education and above-average income levels
<i>Where it works best</i>	<ul style="list-style-type: none"> <li>• where people don't need a car for regular trips to work, school or other daily needs (private users)</li> <li>• for fleets of cars that are used by a wide range of people, i.e. efficient fleet management (business users)</li> </ul>
<i>Key problems it addresses</i>	<ul style="list-style-type: none"> <li>• urban parking problems</li> <li>• over-filled street space</li> <li>• <b>complements public transport and bicycle use to reduce the need for car ownership</b></li> </ul>
<i>Key target groups</i>	<ul style="list-style-type: none"> <li>• those in urban areas who do not need a car on a daily basis</li> <li>• <b>companies and authorities (for fleet management)</b></li> </ul>

## 3. Financing models for electric cars in car sharing

A range of models is possible for the financing of electric cars in car sharing. The table below describes various aspects of three different models: cambio in Belgium, Mobility in Switzerland and Flinkster in Germany. These three car sharing operators provide car sharing services in three different European countries working under three different business models. Each has introduced electric cars into its car sharing fleet although both cambio and Mobility have indicated that they currently see no feasible economic basis for electric cars in car sharing. No information was available from Flinkster.



Financing models for electric cars in car sharing

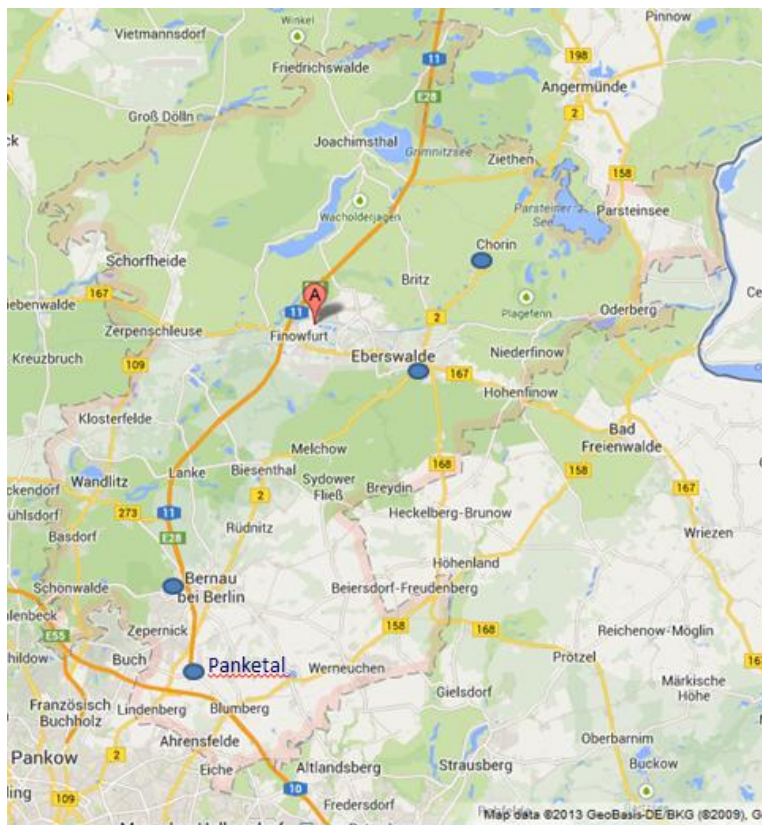
	<b>cambio (Belgium)</b>	<b>Mobility (Switzerland)</b>	<b>Flinkster (Germany)</b>
<b>Business model</b>	cambio is an independent company created as a partnership of Taxistop and TEC (two non-profit organisations), VAB (the largest Flemish automobile association), NMBS holding (Belgian railways), De Lijn (public transport operator in Flanders), and MIVB/STIB (public transport operator in Brussels). Car sharing customers pay a basic monthly fee and a distance- and time-based fee for vehicle use.	Mobility is a member-owned cooperative offering car sharing services all over Switzerland, including small towns and large cities. Of its currently 100,000 customers, 50,000 are owner-members. Mobility members pay a basic monthly fee and a distance- and time-based fee for vehicle use.	Flinkster is one component of DB Rent GmbH, the subsidiary of Deutsche Bahn that manages DB fleets (the other components of DB Rent are leasing, pool vehicles, chauffeur services, long-term rentals, and Call a Bike). The basic monthly fee is waived for holders of the German Rail's <i>BahnCard</i> , an annual discount card for train travel. A distance- and time-based fee for vehicle use applies to all users.
<b>Use of electric cars</b>	cambio has introduced 10 electric cars in four cities in Flanders. The smallest is Hasselt, with a population of 75,000.	Several electric cars have been introduced into Mobility's national fleet of approximately 2600 cars. All are located in major cities, mainly near train stations.	Flinkster has introduced approximately 350 electric cars into its total fleet of 2800 vehicles (with 250 of them located in Berlin as part of a partnership with Citroen Multicity). Most are located in large cities with the notable exception of Panketal in Barnim County (which is, however, listed on the Flinkster website under Berlin).
<b>Reasons for introducing electric cars</b>	cambio Belgium feels car sharing can serve as a laboratory for electric cars. They also see the testing as a social responsibility (as long as it is financially manageable) as well as an opportunity to learn.	Mobility invested in electric cars because of interest expressed by its owner-members.	No information provided.
<b>Pricing for electric cars</b>	cambio is currently (autumn 2013) offering a discount on the use of electric cars (i.e. lower than non-electric cars in the same size category) in order to encourage customers to try them out.	Fees for the use of Mobility's electric car sharing cars are approximately 50% more than non-electric cars of a comparable size (reflecting the higher purchase cost).	Fees for the use of Flinkster's electric car sharing cars are the same as for other cars in the same size class.
<b>Funding source(s)</b>	Nine of the ten cambio electric cars were financed through European project funding. The tenth was paid for by cambio. cambio paid for some charging infrastructure. The rest was covered either through project funding or by the city.	The costs of vehicle purchase and charging infrastructure are covered entirely by the owner-members of the Mobility cooperative.	Flinkster does not provide this information but it can be assumed that at least some of the costs of vehicle purchase and charging infrastructure are subsidised internally by Deutsche Bahn. The Panketal charging station ( <i>see case study below</i> ) was financed by the community of Panketal.



#### 4. Case study: Barnim County

Barnim County is an interesting case study for the ELMOS project because it demonstrates what rural regions can do to introduce electric cars. Barnim County has a population of 176,000 and is made up of 25 communities. The county seat, Eberswalde (pop 40,000), has had electric mobility for decades in the form of a trolley bus network (and they have expanded and modernized it through participation in European projects).

In 2008, Barnim received an €800,000 grant from the German federal Ministry for Environment in order to apply European and national climate goals at the county level. Their aim was to meet EU and national goals ahead of schedule. In 2010, the Barnim Energy Association (Barnimer Energiegesellschaft) was established as an umbrella organisation and a guiding body for the various energy-related initiatives. Interestingly, mobility wasn't foreseen as part of the initial project; electric vehicle initiatives, while under the "umbrella" of the Energy Society, were developed by the county and community administrations and are not financed through the government funding. Nonetheless, between 2008 and 2013, Barnim County and its various communities have undertaken a range of initiatives to encourage the use of electric vehicles in the region. These include:



Barnim County (north of Berlin, Germany)

1. Making electric cars a possibility meant introducing the necessary charging infrastructure. The first charging station (for three cars) was introduced in 2008 in Eberswalde, the county seat of Barnim County. **Charging equipment was installed at three standard parking spots**, creating parking/charging spaces. Charging stations have since also been installed in the towns of Chorin and Bernau.
2. Since January 2010, a **fully electric delivery vehicle** has been on the road in Barnim. Called the EcoCarrier, it was leased from a local firm, which also provides the necessary maintenance.
3. As most journeys were between towns within the county (i.e. within an electric car's range), the county began **testing electric vehicles for fleet use**. The first vehicle came from Think Global in Norway. As the county had determined that 90% of journeys carried one or two people, small cars were found to be sufficient (and have enough carrying capacity for normal use).





The county sees electric mobility as part of a transition to a zero-emission strategy of the county and is therefore willing to accept leasing costs twice as high as for a standard car – recognising, of course, that “fuel” costs are significantly lower.

4. In the summer of 2011, eleven of the county’s 36 fleet vehicles were coming to the end of their lease. With new vehicles on the market, the county decided in November 2011 on **2 new Mitsubishi MIEVs**, which were leased for 4 years. Again, leasing costs are high but charging costs are under €3/100 km.
5. In June 2012, the **Chief Administrative Officer of the county got a hybrid electric car as his new work vehicle**. The hybrid electric vehicle recuperates energy from the engine during use. This again helped raise awareness of electric vehicles in the region.
6. In July 2012 in the tourist area of Chorin, a **private operator purchased a two-seat electric vehicle for rental by tourists** (added to an existing fleet of bikes and 6-seat golf carts) in an environmentally sensitive area. The purchase cost of the Renault Twizy was €10,000.
7. In the community of Panketal (population 20,000), it was determined that most journeys of the town hall’s three fleet cars are between towns within the county (i.e. distances short enough for a single charge). The mayor of Panketal personally contacted all the car sharing operators in the area that offer electric cars and asked if they were interested in a station in Panketal. An agreement was reached with Flinkster in spring 2013 and, as a pilot project, **a Flinkster electric car was stationed at the town hall**, a central location close to the commuter train station from Berlin. The electric car is provided by Flinkster and the charging infrastructure by the community of Panketal.

The Panketal Flinkster electric car is available to all Flinkster customers. The community of Panketal became a customer and town staff reserve the car the same as any other customer. Being a customer also offers access to Flinkster’s 2800 car sharing vehicles across Germany, including everything from small cars to transporters. People can register at Panketal town hall to become Flinkster customers.



The Panketal Flinkster charging at Panketal town hall

To date, uptake has been relatively (but not unexpectedly) slow. The car is currently in use approximately 12-15% of the time. While this is more than double the use of the average private car, it is well below the 35% that most car sharing providers strive for. The Panketal Flinkster pilot project ends in April 2014, after which Flinkster will determine whether to leave the car in Panketal or not.

There are over 14,600 private vehicles among the 20,000 residents of Panketal (i.e. high ownership levels) and many households have more than one car. Travel patterns and less frequent public transport



services in smaller towns and rural areas make it more difficult to live without a car than in large cities but replacing a second or even a third car with car sharing may be an option for some.

Other variations on the Panketal initiative include those undertaken in Munster, Germany and Antwerp, Belgium. In Munster, the city also shares much of its (standard) fleet with the local car sharing operator, but only makes the vehicles available to the public after 16:00. Antwerp makes its two electric cars available to the public through cambio on weekends.

### 5. Lessons for smaller towns and cities from car sharing operators

Car sharing operators can offer several lessons for smaller towns with regard to fleet management, encouraging more environmentally-friendly travel patterns and the introduction and promotion of new transport concepts and ideas. Some of these include:

1. *Optimising your existing fleet may create room in your budget for electric vehicles:* By manually signing out keys, many cities and organisations make inefficient use of their fleet vehicles. Electronic booking and vehicle access have the potential to allow for fleet downsizing while still meeting the same transport needs. Money saved could be invested in electric vehicles.
2. *Transport patterns in small towns and cities (i.e. dependence on cars for daily trips) makes car sharing challenging:* The lack of density in small towns means there are fewer potential car sharing customers for each shared car. The relative lack of parking problems can mean the incentive to reduce the number of cars on the streets is less urgent. While it is probably not realistic to expect people to go entirely without a car in such a context, car sharing may, for example, allow families to reduce costs by owning one car instead of two.
3. *Partnering with a car sharing operator brings benefits both to the town and to potential car sharing customers:* These include more efficient use of fleet vehicles (and the related cost saving), reduced parking problems, improved air quality (with electric cars) and improved health of citizens (because car sharers have been demonstrated to walk, cycle and use public transport more than those who have constant access to a car).
4. *Promotion is crucial to make the idea a real possibility for the general public:* One of the best means to sell a new idea is to hear about it from a respected source. If a local authority publicly supports car sharing, it gives the idea added legitimacy.
5. *Many car sharing operators are interested in electric vehicles but financing is a challenge for them as well:* It is not reasonable to expect a car sharing operator alone to carry the costs for those who would like to test out electric cars. They need some form of support in order to make (electric) car sharing cars viable. These could include:
  - Leading by example, i.e. using electric cars and publicising it
  - Providing charging/parking stations for electric car sharing cars
  - Promoting the benefits of (electric) car sharing widely
  - Sharing your own (electric) fleet cars with the public through a car sharing provider
  - Purchasing an electric car for an existing car sharing operator to use in your town





- Guaranteeing a certain level of use in the start-up phase (e.g. for the first five years) in order to reduce the provider's risk
- Inviting car sharing operators in neighbouring larger cities to provide operations in your town as well
- Providing maintenance services for car sharing cars in your town that are provided by a car sharing operator in a more distant city

## **6. Conclusions**

Car sharing operators in Europe are adding electric cars to their car sharing fleets for a variety of reasons, but none thus far has been able to develop a viable business case to allow for the higher purchase costs, the comparatively short travel range and the charging time required.

Due to mainly car-based travel patterns and relatively low density, introducing car sharing in small towns and cities is more challenging than in big cities. This challenge is multiplied when the relatively new concept of electric cars is added to the equation. On the other hand, it is quite possible that there are those in small towns or cities who would be glad to downsize to one car from two if attractive alternatives are offered.

While it is not reasonable to expect car sharing operators to carry the financial burden for those who would like to try out electric cars and while a town cannot expect its citizens to adopt new mobility options if it does not lead by example, this report has shown that there are a range of possible actions that a small town or city can take to make (electric) car sharing more attractive to its citizens and to make the town an attractive location to car sharing providers.



## Appendix: References, contacts and reading list

### Contacts:

1. Angelo Meuleman – cambio Belgium – [ame@taxistop.be](mailto:ame@taxistop.be)
2. Conrad Wagner – Mobility, Switzerland – [w@gner.ch](mailto:w@gner.ch)
3. Ina Bassin – Barnimer Energiegesellschaft – [ina.bassin@beg-barnim.de](mailto:ina.bassin@beg-barnim.de)
4. Willi Loose – Bundesverband Carsharing (German national car sharing umbrella organisation representing 113 car sharing providers in Germany) – [willi.loose@carsharing.de](mailto:willi.loose@carsharing.de)

### Reading and references:

1. cambio Belgium – <http://www.cambio.be/> (Flemish, French and English)
2. e-cambio – <http://www.e-cambio.be/> (Flemish)
3. Mobility Schweiz – <http://www.mobility.ch/de/pub/> (German, French, English)
4. Flinkster – <http://www.flinkster.de/> (German)
5. Barnimer Energiegesellschaft (Barnim Energy Association) – <http://www.erneuerbar.barnim.de/Mobilitaet.4351.0.html> (German)
6. Series of fact sheets on car sharing from the EU project momo – <http://www.momo-cs.eu/index.php?obj=page&id=151&unid=acf1e2e7598fb351d4a3d1b544f2e9ba>
  - fact sheet 3: Environmental impacts
  - fact sheet 7: Local authority support
  - fact sheet 9: Car sharing in small cities
7. promotional video for electric car sharing in Belgium: <http://www.e-cambio.be/>

