Measure title: **Electric vehicles use and e-car sharing scheme in Vitoria-Gasteiz**

City: **Vitoria-Gasteiz** *Project:* **CIVITAS MODERN** *Measure number:* **01.12**

Executive summary

A Car Sharing Service (CSS) is a scheme that provides collectively available vehicles that can be booked for exclusive use on a pay-as-you-drive basis. Such a scheme is based upon the principle that an individual does not necessarily need to own a car to be able to access one. CSSs are increasingly recognized as a mechanism for transferring from a model of owner-driver allocation of vehicle assets to one which decouples car ownership from car usage.

This measure has set up this new e-CSS in Vitoria, consisting of 6 EVs (4 smaller pure EVs 4-seater Peugeot IONs for short trips and 2 larger Plug-in Hybrid EV 5-seater BYD F3DM for longer trips with no limits on range) at 3 new locations. These new cars, Peugeot ION (pure electric) and BYD F3DM (plug-in hybrid), are available to businesses, public sector employers and residents throughout the IBILEK platform, a car-sharing company to introduce electric vehicles in the three Basque capitals.

This initiative is the starting point of a wider and growing e-CSS network in both the city of Vitoria-Gasteiz and the Autonomous Community of the Basque Country. The network of City Car Club (CCC) cars deployed across the City of Vitoria-Gasteiz is part of a growing initiative. This measure was part of this wider development.

The impacts of the demonstration have been evaluated during a short period of one month, just after this new measure was established, due to some delays on its implementation, by carrying out a survey of users of the service.

At the same time, the creation of an electro-mobility centre in Vitoria has proved to be a positive landmark in the development of EVs in the city. Perhaps the most significant figure for any assessment of the centre's activity is the number of users who have come to find out more about electric vehicles:

- daily average: 13.83 users.
- total number of visits: 1768 users.

Without any direct point of comparison, the daily average is difficult to evaluate on its own. The figure for total visits is easier to interpret, however. We believe the figure is good for the opening period of the centre.

With regard to the centre's informational role, it is worth noting the growing demand for more specific information from some users, with an increase in the quality of the questions.

Finally, it is worth noting the centre’s importance as a person-to-person information point for the general public interested in grants for buying EVs. Many users welcome the chance to receive personal advice as opposed to using other media to answer their queries.

A Introduction

A1 Objectives

The measure objectives are:

(A) High level / longer term:

- To reduce congestion and pollution in the city of Vitoria-Gasteiz.

(B) Strategic level:

- To contribute to facilitating less car dependent lifestyles in the City of Vitoria-Gasteiz trough the set up of a e-car sharing service.
- To offer mobility opportunities using alternative (and more sustainable) modes of transport to people.

(C) Measure level:

(1) To set up a Car Sharing Service (CSS) in Vitoria Gasteiz in order to improve sustainable mobility.

(2) To use Electric Vehicles (EVs)in the abovementioned CSS in order to decrease carbon emissions in the transport sector and introduce a new transport technology in Vitoria-Gasteiz.

(3) To set up a Electromobility Centre that will act as a demo and info relay node in order to raise the knowledge of citizens on EVs and promote their use, as well as to promote the new CSS.

A2 Description

The main output of this measure consist in the set up of a e-Car Sharing Service (e-CSS) so it combines the use of two mobility solutions in the same service: the CSS and the use of EVs in such service.

A Car Sharing Service (CSS) is a scheme that provides collectively available vehicles that can be booked for exclusive use on a pay-as-you-drive basis. Such a scheme is based upon the principle that an individual does not necessarily need to own a car to be able to access one. CSSs are increasingly recognized as a mechanism for transferring from a model of owner-driver allocation of vehicle assets to one which decouples car ownership from car usage. In doing so CSSs tackle the highly inefficient vehicle and kerbside asset utilisation of the dominant ownership model. In addition, previous research suggests that some of those who join CCs undergo a more fundamental change towards more sustainable mobility, including through adopting more multimodal lifestyles.

Electric Vehicles (EVs) are vehicles that are driven by an electric motor powered by a rack of batteries or other power storage systems. It operates entirely using batteries that can be recharged from the mains. EVs have several advantages over vehicles with internal combustion engines (ICEs):

- Energy efficient. Electric vehicles convert about 59–62% of the electrical energy from the grid to power at the wheels—conventional gasoline vehicles only convert about 17–21% of the energy stored in gasoline to power at the wheels.[1]
- Environmentally friendly. EVs emit no tailpipe pollutants, although the power plant producing the electricity may emit them. Electricity from nuclear-, hydro-, solar-, or wind-powered plants causes no air pollutants.
- Performance benefits. Electric motors provide quiet, smooth operation and stronger acceleration and require less maintenance than ICEs.
- Reduce energy dependence. Electricity is a domestic energy source.

MODERN Measure 01.12 has set up this new e-CSS in Vitoria, consisting of 6 EVs (4 smaller pure EVs 4-seater Peugeot IONs for short trips and 2 larger Plug-in Hybrid EV 5-seater BYD F3DM for longer trips with no limits on range) at 3 new locations. These new cars, Peugeot ION (pure electric) and BYD F3DM (plug-in hybrid), are available to businesses, public sector employers and residents throughout the IBILEK platform.

This initiative is the start of a wider and growing e-CSS network in both the city of Vitoria-Gasteiz and the Autonomous Community of the Basque Country. The network of electric-Car Sharing Service (E-CSS) deployed across the City of Vitoria-Gasteiz is part of a wider development.

Alongside the new EVs, new 3 parking bases including charging points were introduced as part of the measure:

- Base 1. The Artium Museum parking - C/ Prudencio María Berástegui, 1
- Base 2. Electromobility Centre - C/ José Mardones, 24
- Base 3. Iradier Arena Parking - C/ Manual Iradier, 82

Additionally a Electromobility Centre, consisting of a plot with an information point, EVs exhibition, e-car sharing basis, charging centre for electric vehicles, electric motorcicles and bicycles, has been set up in Vitoria-Gasteiz in order to improve information, promote the e-CSS and the use of EVs.

[1] *Note: EV energy use estimated by ORNL as follows:*

- ✓ *Electric motor efficiency—including inverter and gear reduction losses—assumed to be 76.4–80.2%, using estimates from Miller et. al. (SAE 2011-01-0887) and adjusting downward by 4% for parasitic losses.*
- ✓ *Battery and battery charger efficiency are assumed to total 81% (roughly 90% each) based in part on estimates from published studies (Chae et. al., 2011; Gautam et. al., 2011).*

B Measure implementation

B1 Innovative aspects

The innovative aspects of the measure are:

- **New conceptual approach.** This is the first time a CSS has been introduced in Vitoria-Gasteiz.
- **Use of new technology.** The use of EVs in the CSS is also an innovative aspect.
- **Targeting specific user groups.** The expansion of the car club is targeted at Vitoria-Gasteiz residents, businesses, and public sector employees.
- **Use of new inter-modality approach**. The Electromobility Centre, including the e-car sharing bases and recharge point is situated opposite the Vitoria-Gasteiz bus station.

B2 Research and Technology Development

- **Identification of bay locations:** e-CSS has looked to identify locations for cars in areas where there is likely to be significant demand. Experience shows that the most suitable areas for a e-CSS bay are those which have:
  - a high population density and
  - significant levels of parking pressure, combined with
  - close proximity to local facilities and
  - good access to other transport modes such as public transport or cycling facilities.

  The locations of the e-CSS bays were decided on jointly by Vitoria-Gasteiz city council and EVE, based on these criteria.
- **Identification and test of EVs:** Research was undertaken to identify and appraise the most suitable vehicles for the demonstration. A study was conducted of the electric vehicles available on the market. The final choice was made with a view to offering a service that would cater to the needs of all types of customers in terms of vehicle size and range..
- **Identification and testing of telematics systems:** A satellite location system has been selected for the purpose. It shows the position of the vehicle at all times, and can provide customers with information on the closest charging stations.

B3 Situation before CIVITAS

The car-sharing system is still largely unfamiliar in Spain. Despite the very slow pace of implementation, several initiatives are now underway. These include Sarecar in the town of Ataun in Gipuzkoa, Cochele in Seville and E:sharing, in Sagunto (Valencia).

240 EV units were registered in Spain during the first six months of 2012, a 92% increase on the same period in 2011 (according to figures from the Institute of Automotion Studies for the Spanish Association of Automobile and Truck Vendors (Anfac)). The market is, therefore, small but emerging.

The belief is that using EVs in car-sharing services will help popularise the option: consumers can try them out, familiarise themselves with the special features and address any concerns they may have.

Before the CIVITAS MODERN project there were no electric vehicles, charging points, car-sharing initiatives or specific parking places in the city of Vitoria-Gasteiz. Hence the measure is going to contribute to the new Local Strategy for the Prevention of Climate Change of Vitoria-Gasteiz 2010-2020. The target of this strategy regarding electric vehicles is that 5% of the total car fleet of the city and 25% of the motorbikes and freight distribution vans should run electrically by 2020.

B4 Actual implementation of the measure

The measure was implemented in the following stages:

Stage 1: Electromobility Logistic Centre design and implementation *(October 2010 – July 2012)***:**

This first step consisted on designing the Electromobility Logistic Centre and the e-car sharing scheme.

To this end, EVE and the city of Vitoria-Gasteiz signed a collaborative agreement that enabled to develop the works to be undertaken.

The tasks started by searching an appropriate location for the Mobility Logistic Centre to be situated in a plot in the city centre with demonstration and awareness objectives.

The site for the mobility logistic centre has then been identified. (see Figure 1)

Figure 1: The Electro-Mobility Centre location

Once the location of the centre had been agreed upon, EVE defined and prepared a bid for tenders, with the conditions to award the contract for drawing up the preliminary design, technical specifications, assistance in staff-hiring and site management. The contracting procedure began on 2 March 2011, with a deadline for tenders of 20 April 2011.

The 5 tenders submitted were analysed and on 14 June 2011 the winning tender was announced in accordance with the terms of the bid .

The successful tenderer submitted the definitive design of the project for the electrical mobility centre (see Figure 2) within the agreed times. However due to the fact that Vitoria-Gasteiz City Council and EVE were still engaged in negotiations at the time, execution of the work was delayed.

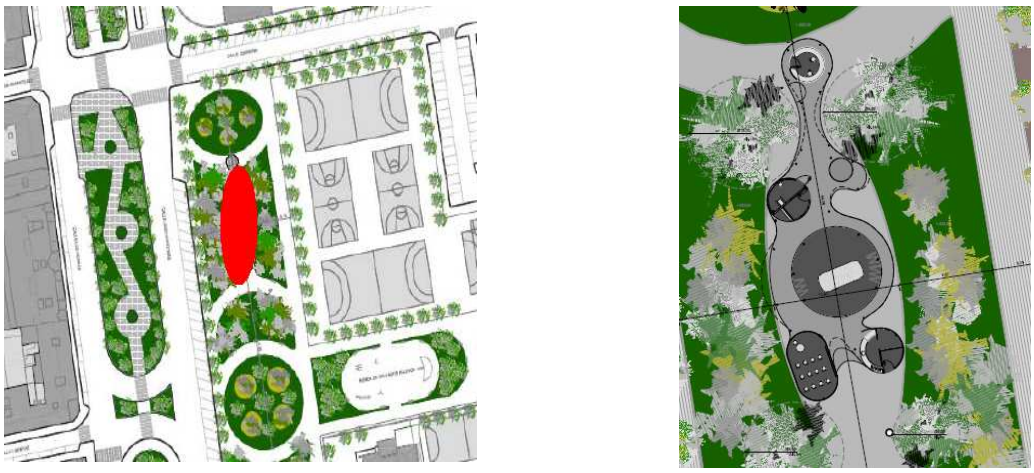


Figure 2: Project layout for the electrical mobility centre

Finally, following the signing of the new agreement between EVE and the city council on 17 February 2012, development of the project resumed, and on 23 February 2012 the specifications for the tendering procedure for hiring a builder to execute the work were posted on the EVE website.

All tenders submitted before the deadline of 12 March 2012 were appraised and on 25 April 2012 the successful tenderer for construction of the work was announced in accordance with the tender assessment report issued by EVE.

EVE and the builder signed the contract on 7 May 2012, after which work began and the Electromobility Center was opened on 17 July 2012.

Stage 2: e-Car Sharing scheme design *(October 2010 – July 2012)***:**

As part of the strategy implemented by the Basque Government through the Ente Vasco de la Energía to promote the electric vehicle in the Basque Country, there were two key strategic axes:

1. **Development of recharge point infrastructure**: *A new differently-powered type of vehicle requires a whole new supply network; neither will work without the other. This situation can put off potential EV buyers –who see no assurance that there will be facilities for charging the vehicles; at the same time, it can also deter companies that might be interested in developing this type of charging facility, who see a lack of potential customers. It is therefore the task of the public authorities to break this vicious circle.*

   For this reason, development of a charging network to allow EV users to use their vehicles has been prioritised in the strategy for final development of EVs in the Basque Country.

   As a consequence, following negotiations, EVE and REPSOL set up a new company, IBIL, GESTOR DE CARGA DE VEHÍCULO ELÉCTRICO, S.A., in October 2010, in which each of them had a 50% stake. Ibil was charged with the building and creation of a network of private and public charging stations in the Basque Country.

2. **Creation of a critical mass.** *For a variety of reasons, market penetration is expected to be very slow for the first few years. Firstly, as goods, vehicles have a long useful life (around 15 years) and it therefore takes a long time to renew the automobile fleet. Secondly, the leading EV manufacturers have very modest production plans for the coming years. And, thirdly, the first EVs on the market will be very expensive and will only cater to certain needs.*

   For all of these reasons, the Basque Government, through the Ente Vasco de la Energía, decided to intervene to get a critical mass of EVs out on the roads in order to reach a market take-off point

as quickly as possible. To this end, the Ente Vasco de la Energía is promoting this areas in 3 ways:

- Creation of an EV car-sharing company
- Programme of grants (complementary to aid from the Spanish central government)
- Agreements with key agents (municipal authorities, manufacturers, fleet managers, etc.)

As a result of all the efforts described and with the mission of *"catering to people's mobility needs of people by optimising the use of transport, land and energy and using EV technology"*, it was deemed necessary to create an e-carsharing company.

At the end of 2010 and beginning of 2011, work began on preparing a business plan with a view to launching the company's operations. This business plan includes the following activities:

- Creation of brand image
- Definition of sales policy (prices, standard contracts)
- Promotion and advertising: marketing plan
- Definition of policies on partnerships with key agents
- Agreements with public authorities and contracts with owners of the land
- Purchase/rental of vehicles
- Contracting of telecommunications and systems companies
- Contract with Ibil gestor de carga de vehículo eléctrico, s.a
- Contract with a call centre
- Contract with company for vehicle maintenance and cleaning
- Search for grants and other means of financing
- Customer acquisition
- Control of management, invoicing and payment collection
- Identification of staff
- Physical location of the bays

Finally, after several months of hard work, IBILEK CAR-SHARING VEHÍCULO ELÉCTRICO, S.A. was finally launched on 15 March 2011. It is 100% owned by IBIL, GESTOR DE CARGA DE VEHÍCULO ELÉCTRICO, S.A

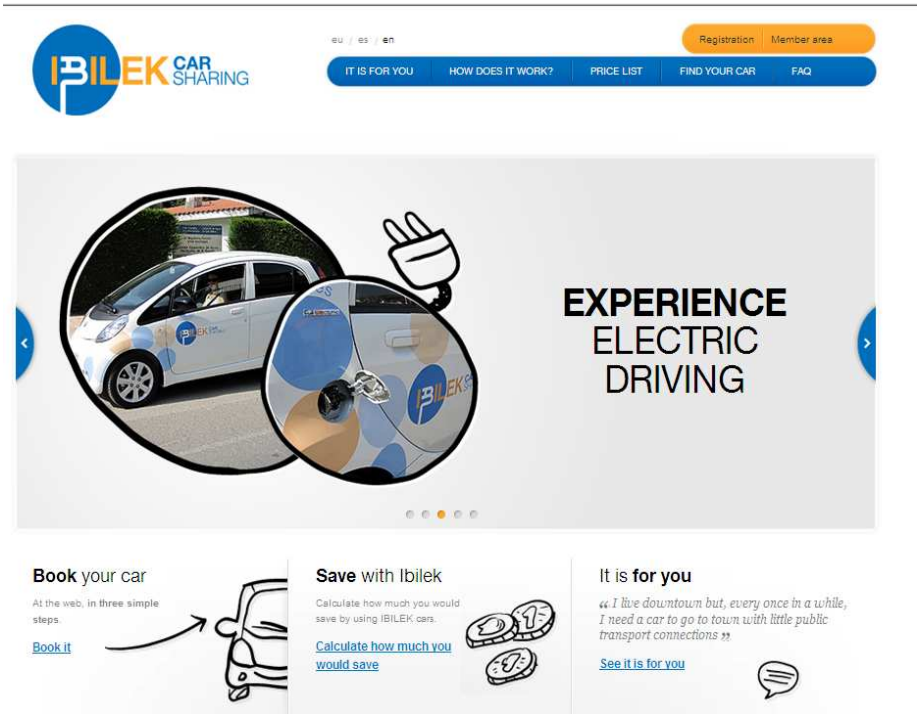


Figure 3: e-CSS flyer

Based on the mutual interest of Ente Vasco de la Energía and Vitoria-Gasteiz City Council in promoting the introduction of the electric vehicle In the Basque Country as a way of improving energy efficiency in transport, and following the criteria set out in the collaboration agreement signed between the two parties, negotiations began into the location of the bays and the conditions for implementing the e-CSS in the city of Vitoria-Gasteiz.

Like the e-mobility centre, on 17 July, 2012, the e-CSS opened its three logistical bases, thus beginning operations in the city of Vitoria-Gasteiz.

OPERATION OF THE SERVICE

The rates for using the service are as shown in the table below (taken from www.ibilek.es):

Figure 4: e-CSS rates

Once the necessary documents have been submitted for registering with the e-CSS service, the customer is given the IBILEK card(s). Each user receives a personal and non-transferrable card; this ensures that only the card holder can access the vehicle previously reserved over the Internet or by phone.

VEHICLE BOOKING

Vehicles must be booked in advance, using either the members' zone on the IBILEK website or the customer support line. Users can make bookings as far in advance as they wish and any time up to 15 minutes before they need to use the vehicle (provided there are units available).

IBILEK confirms the booking by e-mail, with information on the user's identity, duration, pick-up and return point and car registration.

Cars can be booked for a minimum duration of 30 minutes. If customers wish to extend their time when they are already in possession of the vehicle, they can do so from the vehicle's on-board unit (provided that the change does not interfere with any other bookings).

USE OF THE VEHICLE

Once the booking has been confirmed, the user can pick up the vehicle at the allocated base at the pre-arranged time. The steps to be followed for correct use of the service are as follows:

1. *Opening the vehicle*. The user holds the IBILEK card close to the sensor on the windscreen (on the driver's side), automatically unlocking the vehicle. The vehicle can only be unlocked during the booking times. Users cannot gain access to the vehicle if a booking has not previously been made.

   Before driving off, the user must disconnect the vehicle from the charging point. This involves holding the IBIL card close to the display on the terminal and stowing the charging cable in the boot (the IBIL card is kept in the glove compartment of the vehicle together with the rest of the documentation).

2. *Before driving off*. Before driving off, users should inspect the vehicle. If they notice any anomalies, (vehicle dirty, dents and scratches, any personal effects left by previous users, etc.), they should report them using the on-board unit.

3. *Starting up the vehicle*. The key is in the glove compartment of the vehicle. (Electric vehicles make no noise when the motor is started up, so users need to check the control panel to ensure that the motor is running).

4. *Interrupting a trip*. Users wanting to leave and lock their vehicle should leave the key in the glove compartment and lock the vehicle using the IBILEK card.

   On returning to the vehicle, they follow the same procedure as when they picked it up, holding their IBILEK member card to the windscreen to unlock and enter the vehicle.

5. *Returning the vehicle and completing the reservation*. Once they have finished using the vehicle, customers return it to the bay where they picked it up within the booking period (any delay could impact possible subsequent bookings). On arrival at the bay, the user selects the vehicle return option on the on-board unit, leaves the key in the glove compartment, takes the charging cable out of the boot, plugs it into the Ibil charging point at the base, and activate the charging point using the IBIL card in the glove compartment. Once charging commences, the user can lock the vehicle with the IBILEK card (the vehicle will not lock until it has been plugged in to the charging station). The reservation period ends once the vehicle is locked and charging. IBILEK sends confirmation of completion of the reservation by text message to the customer's mobile phone.

FUEL AND POWER SUPPLY

If users need to charge or refuel the vehicles, they use the IBIL card (for recharging pure EVs and plug-in hybrids) or Solred card (for petrol for plug-in hybrids). These cards are in the glove compartment.

Using the IBIL card, customers can charge the car only within the reservation times at any of Ibil's public charging stations. The cost will be met by IBILEK. However, if they charge it at stations run by other load managers, the cost will not be met by IBILEK.

In the case of plug-in hybrid vehicles, users can choose between charging the vehicle or refuelling with petrol using the Solred card at any of the petrol stations in the Repsol, Petronor or Campsa networks. The cost will be met by IBILEK. IBILEK will not meet the cost of the fuel if the vehicle is refuelled at any other network of petrol stations.

If the event that the Solred card is missing, the user can pay for the fuel and send the receipt to IBILEK, which will refund the corresponding amount in the next invoice.

Stage 3: Location Selection of the e-CSS bays *(January 2011 –July 2012)***:**

Following the signing of an initial collaboration agreement between the Ente Vasco de la Energía and Vitoria-Gasteiz City Council in January 2011 and the creation of the e-carsharing firm IBILEK in March 2011, research was carried out throughout 2011 to decide on the bays for the e-CSS in the city of Vitoria-Gasteiz.

The initial idea was to locate them in car-parks in the city. The study therefore began with an analysis of the demographic distribution of the town and the public car-parks available in the city.

Having identified the first potential areas, the next step was to identify the local facilities that were most often frequented by the general public (shopping centres, museums, urban centres, etc.).

It should be remembered that one of the reasons for setting up an e-CSS is the complementarity it offers with public transport services in the city. It was therefore essential to take into consideration the major changes in the city that have arisen from the city council's efforts to promote a high-quality public transport service.

Taking all these factors into account, talks began with the city council to analyse the initially proposed locations for the 3 e-CSS bases. The result, as explained in previous sections, was determined by a joint decision of Vitoria-Gasteiz City Council, EVE and IBILEK itself (see Figure 5).

Figure 5: The 3 e-CSS bays location

A good example of the research carried out can be seen in the location of the Vitoria-Gasteiz bus station, which stands between and at a short distance from “The Artium Museum Car-park” and the “Electromobility Center”.

Stage 4: Identification & securing of 6 EVs and associated telematics system *(November 2011 – March 2012)***:**

Thanks to ongoing contacts between EVE and IBILEK and the various EV manufacturers, an analysis of the electric vehicles available on the market has been made. IBILEK undertook research to identify and appraise the most suitable vehicle for the demonstration.

The e-CSS company decided to offer a combination of two electrical mobility technologies in order to offer a service that would cater to the needs of all types of customer in terms of size and range. As a result, there are four smaller pure EVs (4-seater Peugeot IONs) for short trips (urban and inter-urban) and two larger Plug-in Hybrid EV (5-seater BYD F3DM) for longer trips with no limits on range.

The pure electric vehícle will be **PEUGEOT ION** with the following characteristics:

ION	
GENERAL CHARACTERISTICS	
Vehicle type	100% electric
Number of seats	4
Autonomy	150 km
SCx rate	0.706
Electric power steering	●
Front suspension	Axle with independent wheels, pseudo Mac Pherson type
Rear suspension	Rigid axle with three arms
Transmission	Rear-wheel drive
Reducer	Reversible
Wheel type	Rim
Tyres	Dunlop – 145 / 65 R (front) – 175 / 55 R 15 (rear)
ELECTRIC ENGINE	
Type	Synchronous reversible electric of permanent neodymium magnet
Position on the vehicle	In front of the rear axle
Anti-pollution standard	Euro 5
CO_2 Emissions (g/km.)	0 g/km.
Weight (kg)	65
Continuous power in kW	35
Maximum power in kW (CV)	49 (66)
A.r.p.m.	2.500 a 8.000
Continuous torque / max. (Nm)	65 / 180
A.r.p.m.	0 a 2.500
Feeding	By the modulator according to the orders of the supervisor 330V three-phase
Engine cooling, modulator and charger	Water circulation by 12v electric pump

BATERY	
Type	Lithium ions manganese oxide
Capacity (kW.h)	16
Number of cells in series	88
Capacity of one cells (kW.h)	0.187 / 3.75 v
Total weight of the pack; battery and cover protection	230
Max. voltage of a cell (v)	4.1
Min. voltage of a cell (v)	2.75
Standard recharging in household power feeding / duration	220v AC / 100% in 6 h
Fast recharging in specific power feeding / duration	330v continuous / 80% in 30 min.
Energy recovery during deceleration	Engine in generator mode
Refrigeration	By ambient air or refrigerated

Figure 6: The Peugeot ION

The plug-in hybrid will be **BYD F3DM** with the following characteristics:

F3DM	
Weight	1,560 kg
Max. speed	150 km/h
0-100 km/h	10.5 seconds
EV autonomy (automatic mode)	100 km (68 miles)
Electricity consumption	<16 kW/100km (<25.6 kW/100 miles)
Engine	50 kW (67 hp)
Generator	25 kW (33.5 hp)
Fuel engine	50 kW (67 hp)
Combined power	125 kW (168 hp)
ELECTRIC ENGINE	
Max. rotation speed	>7,500 rpm
Type	Permanent magnet synchronous motor
Max. engine torque	
FUEL ENGINE	
Model	BYD371QA
Cubic capacity	0.998 L
Compression ratio	10.5:1

Max. engine torque	90Nm/3500-4500 rpm (66lb-ft/3500-4500 rpm)
BATTERY SYSTEM	
Battery type	Iron battery system
Energy management system	Central intelligent management system
Charging system	Normal domestic load
Power feeding	AC220V (110V) / 16A (30A)

Figure 7: The BYD F3DM *(More information at: www.ibilek.es)*

All vehicles are fitted with a positioning system that allows the vehicle's location to be tracked at all times, and which can provide customers with information on the nearest charging stations. IBILEK seeks to respect the customer's privacy at all times. The system is used only to assess delays in vehicle returns, in the event of theft, and for supplying information on the location of charging stations.

IBILEK uses the "on-board units" to allow remote access to the vehicles and to help with the invoicing process. The company carried out a study to assess the different systems available on the market and performed tests to identify the most suitable one. The following were the key aspects of the efficiency tests: ease of use (for the end user and e-CSS); functionality of the system (requirements for recording distance travelled, distance to nearest charging station, extended booking, etc.) and, above all, compatibility with different types of vehicles.

The communications system was finally chosen taking into account compatibility with the vehicles selected. In this task, the collaboration of the vehicle manufacturers was indispensable for implementing and developing installation of the unit.

As mentioned, the on-board unit, where necessary, enables remote location of the vehicle via GPS and also offers a direct communications link with the IBILEK control centre and call centre. This application has proved to be of real benefit for users. The system also allows remote access from the central setting system, which is useful if members have problems with the reservations system.

Stage 5: Launch of the Electromobility Centre *(July 2012)***:**

On 17 July, 2012 EVE opened Spain's first electromobility centre in Vitoria-Gasteiz. At the innovating centre, members of the public can see for themselves the latest electric models from leading manufacturers, obtain information on grants for buying electric vehicles. They can also manage bookings and pick up electric vehicles rented from Ibilek, an EV car-sharing organisation created by the Basque government and Repsol.

The new mobility centre was officially opened by the regional deputy minister of Industry and Energy, Xabier Garmendia. It is designed to give members of the public a first-hand view of electric vehicles and showcase the different EV models on the market.

The project is one of the most important of the various actions carried out by Vitoria-Gasteiz City Council as European Green Capital 2012 and the Basque Government, through its energy agency Ente Vasco de la Energía, for promoting the use of electric vehicles in the city. Other developments include the installation of charging stations, and the launch of the IBILEK e-car sharing organisation (based in the same centre), making Vitoria-Gasteiz a nerve centre and reference point for EV use.

The centre is located in a specially-designed area in the public park in the east of Vitoria close to the bus station and has a floor area of 200 square metres. The area has been provided by the city council as part of its collaboration with the Basque Government's energy agency, Ente Vasco de la Energía. This singular project is designed to make Vitoria-Gasteiz a focus point in the implementation and development of EVs in the Basque Country.

Every fortnight or month, the glazed exhibition space will showcase EVs provided by different brands dealers . Visitors to these exhibitions (which will be open in the morning and evening) will be offered information on the technical characteristics of the vehicles will have a chance to try out the equipment. Detailed information will also be provided on all the grants managed by EVE for buying electrically-driven vehicles. Up to €5,000 in grants is available for cars and vans, €750 for electrical motorcycles and up to €400 for e-bicycles.

At the same time, the mobility centre will also serve as the new operations base for the car-sharing organisation IBILEK, through which the public and businesses can sign up to the scheme and rent out EVs. For this purpose the mobility centre has 3 charging stations that will serve as the IBILEK operating base, from which customers can pick up and return cars. The centre will have the necessary staff and computers to cater to anyone wishing to sign up. Cars can also be booked on the website at www.ibilek.es.

Stage 6: Operation of the e-CSS *(July 2012 – December 2012)*

A number of activities have been carried out to publicise the opening of the electromobility centre and the e-CSS bays in Vitoria-Gasteiz.

Ente Vasco de la Energía had already booked a series of radio slots for advertising grant schemes for 2012 and it was decided to include information on the measures included in the project.

As part of the Civitas Forum held in Vitoria-Gasteiz from 24 to 26 September, a site visit was organised to the centre.

> *The 16 participants in the call were picked up by bus at the Europa Conference Centre and taken to the electromobility centre on Calle José Mardones where they were given a short guided tour.*
>
> *At the centre they were given an explanation of the local/regional strategies on EV implementation, the activities carried out at the centre, the workings of the charging stations, etc.*
>
> *In addition, at the e-CSS base located next to the mobility centre, they were given an explanation of the carsharing system (vehicle bookings, rates, etc.), including EVs. Participants were given an opportunity to try out the vehicles for themselves.*

To complement this site visit, a large poster on the Civitas forum was designed and exhibited at the electromobility centre from 24 September 2012 on.

Finally, in order to facilitate access to IBILEK's ecar-sharing service among residents of Vitoria-Gasteiz, EVE and IBILEK agreed to meet part of the costs of the first users. Visitors to the centre who are in the e-CSS scheme can avail of the following special deals:

Free test voucher: 100% of the price of the first four hours is deducted (including the kilometre package corresponding to the hourly rate), and no registration or monthly fee is charged. The voucher is valid for one calendar week. If the user exceeds the 4-hour free test period, he or she pays only for the surplus.

- 60% discount vouchers: The user gets a 60% discount on the registration fee, the monthly fee and the first 4 hours of use.

The offer will continue after the end of CIVITAS MODERN.

B5 Inter-relationships with other measures

The measure is related to other CIVITAS MODERN measures as follows:

- **Measure no. 02.01. New public transport network in Vitoria-Gasteiz**

  The mobility plan of Vitoria-Gasteiz should integrate all public transportation services, thus when designing the e-car sharing scheme, this should bear in mind the new public transport network and the possible interactions among them.

C Impact Evaluation Findings

C1 Measurement methodology

The following table summarises the Indicators identified to evaluate the impacts of this measure. Where available, data have been collected on the two types of vehicles used in the Vitoria-Gasteiz fleet prior and during the demonstration:

- Pure electric. Peugeot ION (four vehicles in total) – available in the Vitoria-Gasteiz fleet prior and during the demonstration.
- Plug-in hybrid. BYD F3DM (two vehicles in total) – available in the Vitoria-Gasteiz fleet prior and during the demonstration.

It should be noted that according to the delays in the implementation of the measure, the evaluation period has been only of one month (from early october 2012 to early november 2012), so just a few indicators have been evaluated in such short period, mainly attitudinal and perception data collected through qualitative interviews (described later in this template).

C1.1 Impacts and Indicators

No.	Impact	Indicator	Data used	Comments
13	Awareness	Awareness level	Survey	
14	Acceptance	Acceptance level	Survey	
19	Quality of service	Quality of service	Survey	
	Local indicator	Nº of users of the service	Registration forms	
	Local indicator	km per reservation	Data obteined in the e-mobility centre	
	Local indicator	Statistics on queries	Data obteined in the e-mobility centre	

Detailed description of the indicator methodologies:

- **Indicator 13** (*Awareness level*) **14** (*Acceptance level*) and **19** *(Quality of service)*

  Unit: Percentage

  Data will be obtained through surveys performed by making filling a questionnaire to Vitoria-Gasteiz e-car sharing users. This questionnaire includes questions related to noise perception, awareness level, acceptance level, perception of accessibility and quality of service. The "ex-ante" survey is carried out when a person make the registration for the first time in the e-car sharing scheme, before the first use. The "ex-post" survey is made once the user has already used the service 4 times, thus after the 4th registration.

- **Indicator Local indicator** (*Nº users of the service*)

  Unit: Nº of users of the e-car sharing scheme

  The e-car sharing users have to register (most of them by internet) to the service every time they rent a vehicle. So these data can then be extracted to know the evolution of use of the service.

- **Indicator Local indicator** (*km per reservation*)

Unit: Nº of km per reservation and type of vehicle

As there are two type of vehicles, one pure electric and one plug-in hybrid, the use should be different. These data is utilised to know the use of the vehoicles.

- **Indicator Local indicator** (*Visits to the e-mobility centre*)

  Unit: No. of visits

  In the e-mobility centre, members of the public can see for themselves the latest electric models from leading manufacturers, obtain information on grants for buying electric vehicles. They can also manage bookings and pick up electric vehicles rented from Ibilek, the EV car-sharing organisation created by the Basque Government and Repsol.

  We believe an indicator of succcess for this centre is the number of visitors it has during its operation. We expect to have at least 250 visitors per month during the operation of the centre.

C1.1.1 Survey of e-CSS members: sample characteristics

In order to facilitate access to IBILEK's e-Car Sharing Service among residents of Vitoria-Gasteiz, EVE and IBILEK agreed to meet part of the costs of the first users. Visitors to the centre who are in the e-CSS scheme can avail of the following special deals:

- Free test voucher: 100% of the price of the first four hours is deducted (including the kilometre package corresponding to the hourly rate), and no registration or monthly fee is charged. The voucher is valid for one calendar week. If the user exceeds the 4-hour free test period, he or she pays only for the surplus.
- 60% discount vouchers: The user gets a 60% discount on the registration fee, the monthly fee and the first 4 hours of use.

As already described, these deals have been thought to attract first customers and, at the same time, get their feedback for evaluation purposes, i.e. by asking them to provide feedback to the surveys designed to get information related to Awareness, Acceptance and Quality of service.

The survey period took place between 5 October and 5 November 2012. This period is quite short, and a 12 month evaluation period would have been more convenient, but the delays in the implementation of the measure didn’t allow a longer evaluation period.

Considering that in the period of the survey the e-car sharing service had 30 clients (25 individuals plus one company with 5 users), the response rate was over 56%, with N=17 completed questionnaires for the ex-ante survey and over 23%, with N=7 completed questionnaires for the ex-post survey.

C1.2 Establishing a Baseline

The e-CSS started operating in Vitoria-Gasteiz in July 2012, and so this moment in time has been defined to be the baseline.

In order to define the ex-ante values for the selected indicators, the so-called ‘ex-ante surveys’ have been performed by asking users to fill a questionnaire before accessing the servig. The results of these surveys show the following results:

- 16 out of 17 users have heard about electric vehicles before.
- Most of the people consider that the highest limitation to use EVs is the high initial purchase cost (8), followed the reduced autonomy (4), the lack of recharge infrastructure (4) and the current charging time (1).

- Most of the people considered themselves fairly committed with the environment (9), while the rest consider themselves fully committed (4) and somewhat committed (4).

Indicator	Before (July 2012)
13. Awareness	limitation to use EVs - high initial purchase cost (47%) - reduced autonomy (23%), - lack of recharge infrastructure (23%) - current charging time (7%). Environmental commitment. - fully committed (23%) - fairly committed (53%) - somewhat committed (24%).
14. Acceptance	N.A.
19. Quality of service	N.A.
Nº of users of the service	N.A.
km per reservation	N.A.
Statistics on queries	N.A.

C1.3 Building the Business-as-Usual scenario

Vitoria-Gasteiz didn't have a car sharing service nor an electric car sharing service prior to MODERN. The project has been ambitious enough to start the car sharing scheme in Vitoria-Gasteiz using electric vehicles, which adds a risk to the car sharing scheme, so it is unlikely that it would have been able to take the risk of operating vehicles such as electric cars in Vitoria-Gasteiz without CIVITAS support and there would have been no trial of innovative technology at this stage without the project.

Due to market uncertainties, it is unclear what would have happened in the absence of MODERN, in particular if EVs had been used for the car sharing service. For these reasons, the Business As Usual Scenario is assumed not to involve the creation of this service or the use of EVs.

C2 Measure results

The results are presented under sub headings corresponding to the areas used for indicators – economy, energy, environment, society and transport.

C2.1 Society

Results for the Society Indicators are reported below. Data have been collected through the surveys between October and November 2012. We must state that the service started in July-August 2012, but due to holidays, the real start can be considered mid September. The surveys were conducted between 5 October and 5 November, and the use of the service for the moment is still very little, so we have just got 7 ex post (after using the service) surveys completed.

In addition, the electromobility centre has provided us with valuable information on these items, complementing the information drawn from the questionnaires.

13. Awareness

With regard to the results of the questionnaires, most of the people consider that the highest limitation to use EVs is the reduced autonomy (4 users, 57%), followed the high initial purchase cost (2 users, 29%) and the lack of recharge infrastructure (1 user, 14%).

Most of the people considered themselves fairly committed with the environment (3 users, 43%) and fully committed (3 users, 43%), while just one considers him/herself somewhat committed (14%).

Likewise, in the electromobility centre, information is offered to match the interests of the target audience. Some people know nothing at all about electrical transport, whereas other have more specific questions on the issue. Among those knowing nothing about the subject, many are surprised at the performance of EVs, given that there is a preconceived idea that it is something akin to a golf cart and not a proper vehicle. Nonetheless, many people say they would prefer greater battery range and a more affordable price.

It is worth noting that as the months have passed, despite a fall in the number of visits due to weather conditions, it is now more common for people to come with specific queries which take a considerable amount of time (30-40 min) to deal with.

The centre also offers information on the electric vehicles available on the market. This makes it possible to offer information on EVs clearly and concisely. The aim is to is provide individuals interested in purchasing one of these vehicles with the basic information on them and the point of sale or distribution where they can get more technical or commercial information. Procedure: To date, we have drawn up four lists, (another two are currently being prepared) covering most of the EVs on the market:

- Pure electric automobiles
- Hybrid automobiles
- Quads
- Bicycles

These lists are revised and updated on a regular basis, given that the industry is expanding rapidly and the EV market is therefore particularly dynamic.

Visitors to the centre looking for information on EVs have found these lists very helpful, obviating the need for them to compile and summarise all the data themselves, a task which could be very complicated for someone without a knowledge of the area. At the same time, it allows us to organise

the existing commercial information as objectively as possible, without laying more emphasis on one manufacturer or distributor over others.

14. Acceptance

Asked about the reasons the interviewed people have decided to use the e-car sharing service, most of them expressed it was because of curiosity (12 users, 71%), while 6 expressed that they don't own a car (35%), 4 for being more sustainable (23%), 1 sometimes needs a second car (6%), 1 was interested in replacing the car for the e-car sharing service (6%) and 3 (18%) indicated other reasons such as concern about the use of fossil fuels, because it is a smart idea and because it is useful for the urban environment.

Out of the 4 answering about sustainability to the previous question, 1 wants to replace the car because of the high cost of maintenance, 1 because of the reduced amount of km per year made and 1 to stop worrying about the maintenance of owned car (insurances, parking, repairs, cleaning, etc).

Most of the visitors to the mobility centre expressing an interest in the car-sharing service have taken advantage of the promotional offer allowing access to a one-week cost-free contract with the first four hours free of charge. To date, 46 of the 50 available bonuses have been distributed, out of which a total of 26 have been used, with the rest yet to be used. After enjoying their test bonus, some users have expressed an interest in continuing to use the service; they include three users who have signed up to Ibilek for a 6-month period.

19. Quality of service

All the people interviewed (7) expressed satisfaction about the service offered, and proposed the following improvements:

- Not monthly charge if the disponibility of vehicles is not guaranteed
- Increase the variety of vehicles: motorbikes, bicycles.
- Increase the number of charging points
- Reduce the price
- Only charge for the use, not a membership monthly fee
- Simplify the procedure for using the service

Asked about the intention of going without their own car after using the e-car sharing service, 4 answered yes, while 3 answered no.

Out of the 4 positive answers to the previous questions 2 explained it was because of the few yearly km made while 2 explained it was to stop worrying about the maintenance of owned car.

When asked about the number of vehicles available in the e-car sharing, 3 considered it was enough while 4 considered it wasn't.

When asked about the number of e-car sharing basis in the city, 1 considered it was enough while 6 considered it wasn't.

Finally 6 out of 7 interviewed would use the e-car sharing service again.

Most of those interested have preferred to carry out the formalities directly at the office of the centre rather than doing them online, despite the fact that both options are available to them. This means that the existence of the electro-mobility centre in Vitoria-Gasteiz offers an extra service that facilitates the formalities for those interested in Ibilek car-sharing.

Table C2.1.1: Society Indicators

Indicator	Before (July 2012)	After (December 2012)	Difference: After –Before
13. Awareness	limitation to use EVs - high initial purchase cost (47%) - reduced autonomy (23%), - lack of recharge infrastructure (23%) - current charging time (7%). Environmental commitment. - fully committed (23%) - fairly committed (53%) - somewhat committed (24%).	limitation to use EVs - high initial purchase cost (29%) - reduced autonomy (57%), - lack of recharge infrastructure (14%) Environmental commitment. - fully committed (43%) - fairly committed (43%) - somewhat committed (14%).	limitation to use EVs - high initial purchase cost (-18%) - reduced autonomy (34%), - lack of recharge infrastructure (-9%) - current charging time (-7%). Environmental commitment. - fully committed (20%) - fairly committed (-10%) somewhat committed (-10%).
14. Acceptance	N/A	Reasons to use the e-CSS. - curiosity (71%), - they don't own a car (35%) - for being more sustainable (23%) - sometimes needs a second car (6%) - was interested in replacing the car for the e-car sharing service (6%) - other reasons such as concern about the use of fossil fuels, because it is a smart idea and because it is useful for the urban environment (18%) This question nincluded the option of choosing more than one answer. Most of those interested in the e-CSS have taken advantage of the promotional bonuses offer. - Bonuses handed out: 46 of 50 - Bonuses used: 26. - Contracts entered into: 3	N/A
19. Quality of service	N/A	- satisfaction about the service offered (100%) - 6 out of 7 interviewed would use the e-car sharing service again.	N/A

C2.2 Local Indicators

Nº of users of the service

The number of members of the e-car sharing service is 25 individuals plus one collective (with 5 individual drivers).

km per reservation

With the data collected during the tests performed, it follows that the average use of reserved vehicles are:

- 84 % of the reservations are with pure electric vehicle Peugeot ION
- 22 km/reservation as average for the Peugeot ION
- 76 km/reservation as average for the BYD F3DM

Statistics on queries

We keep a detailed record of the number of visitors to the centre for subsequent analysis. Each user of the public information office is registered, as are those who come to the exhibition expressing an interest in the EVs on display or the various information sources (sales, Ibilek information centre, brochures, etc.) Visitors are classified by sex, time of visit (am or pm) and categories:

- General queries
- Queries on grants for buying EVs
- Queries about charging services offered by Ibil
- Queries on Ibilek Car Sharing
- Queries on EV automobiles
- Queries on EV motorbikes
- Queries on EV bicycles
- Others

At the end of month, we obtain the daily average of queries to measure the impact of the centre among the general public.

Based on the information obtained, there are several points worth noting:

- the majority of visitors were men (74% male, 26% women).
- the number of visits in the morning and evening were similar (51% a.m., 49% p.m.).
- with regard to subjects of interest:
    - General queries 50%
    - Car-sharing 24.6%
    - Cars 19 %
    - other categories make up the remaining 6%.

The daily average for the period (13.83 people) is considered positive. The breakdown by month shows the decisive influence of the weather on the number of visits. This is logical, given that the centre is situated on the roadside in a green area, and people tend to call in while they are out walking when the weather is good.

The relevant statistics are shown below:

Table 1. Visits received in 2012 and breakdown by gender and time

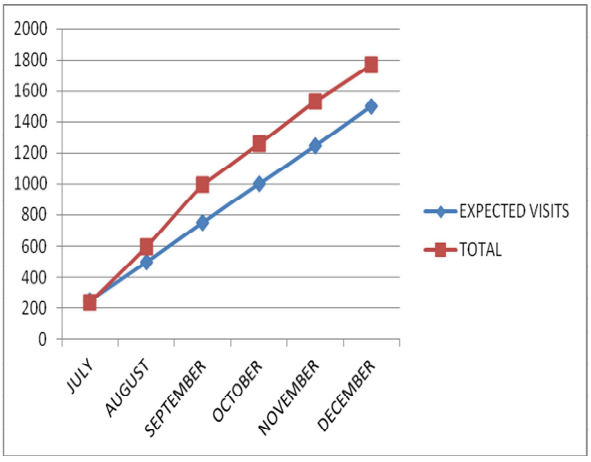
2012	MORNING	EVENING	MEN	WOMEN	TOTAL
JULY	126	106	184	48	232
AUGUST	191	174	270	95	365

SEPTEMBER	191	207	290	108	398
OCTOBER	121	145	189	77	266
NOVEMBER	158	113	201	70	271
DECEMBER	128	108	167	69	236
ACCUMULATED TOTAL	915	853	1301	467	1768

Table 2. Average daily visits in 2012 and breakdown by reason for visit

2012	DAILY AVERAGE	GENERAL	GRANT	IBIL	SHARING	CARS	MOTORCYCLES	BIKES	OTHERS	TOTAL
JULY	21	150	6	1	65	1	4	1	4	232
AUGUST	14	220	4	3	118	13	2	2	3	365
SEPTEMBER	16	111	3	2	87	181	2	3	9	398
OCTOBER	10	130	7	1	74	42	3	3	6	266
NOVEMBER	11	168	2	0	64	9	11	10	7	271
DECEMBER	11	107	0	1	27	91	0	1	9	236
ACCUMULATED TOTAL	13.83	886	22	8	435	337	22	20	38	1768

Table C2.2.1: Local Indicators

Indicator	Before (July 2012)	After (November 2012)	Difference: After –Before
Nº of users of the service	N.A.	- Individual users: 25 - Colective users: 1 (with 5 individual drivers). (Until November 2012)	N.A.
km per reservation	N.A.	Use of vehicles: - Peugeot ION: 84% - BYD F3DM: 16% Kilometres by type of vehicle: - 22 km/reservation as average for the Peugeot ION - 76 km/reservation as average for the BYD F3DM These figures indicate most of the travels made by the users are short travels that can be made with pure electric vehicles.	N.A.
Statistics on queries	N/A		N/A

C3 Achievement of quantifiable targets and objectives

No.	Target	Rating
1	Electromobility Centre Implementation of The Electromobility Centre.	**
2	3 e-car sharing services bases	**
3	4 electric vehicles for e-car sharing services 6 electric vehicles for e-car sharing services (4 pure EV and 2 Plug-in Hybrid EV)	***
4	Parking places for electric vehicles in the city center 8 parking places in the city center with a public recharging points	***
NA = Not Assessed O = Not Achieved * = Substantially achieved (at least 50%) ** = Achieved in full *** = Exceeded		

C4 Up-scaling of results

As for the mobility centre, in view of the results and the good reception in Vitoria-Gasteiz, we do not rule out the possibility of building similar centres in the other Basque provincial capitals (Bilbao and Donostia-San Sebastian) if the economic situation allows.

An action and promotion plan has been drawn up for the Vitoria-Gasteiz centre to try to reach as many members of the public as possible. Since the beginning of the year, we have been holding weekly talks aimed at the general public. Another of the activities to be organised in the near future will involve producing publicity brochures and organising guided visits to the mobility centre for students at vocational training colleges. We have already established the first contacts and preparations for these visits with colleges in the city.

As for the organisation of an e-CSS company, in the short term we do not plan to extend or alter the service. However, depending on the reception and increase in the number of users the company might have, we do not rule out the possibility of acquiring some other extra vehicles or even opening another base. In any case, before making any changes in the service, we would consult with Vitoria-Gasteiz City Council.

C5 Appraisal of evaluation approach

The evaluation period was very short and only results from the questionnaires could be obtained. A one year evaluation period would have been required for more comparative data and thus the results could have been improved. This was not possible due to delays in the implementation of the measure.

If the evaluation period had been longer (i.e. 12 months), a number of indicators would have been considered for evaluation purposes:

- Economy
  - ✓ Operating revenues. Revenue per hour and/or per km based on financial analysis. Comparison to conventional vehicles of similar class.
  - ✓ Operating costs. Costs per hour and/or per km based on financial analysis. Comparison to conventional vehicles of similar class.
- Energy
  - ✓ Fuel Saving. Amount of saved fuel. Comparison to conventional vehicles of similar class.
- Environment
  - ✓ CO2 emissions. Comparison to conventional vehicles of similar class.
  - ✓ CO emissions. Comparison to conventional vehicles of similar class.
  - ✓ NOx emissions. Comparison to conventional vehicles of similar class.
  - ✓ Particulate emissions. Comparison to conventional vehicles of similar class.
  - ✓ Noise perception

C6 Summary of evaluation results

As a result of the measure, we have managed to Promote introduction of electric vehicles in Vitoria as a means of improving Energy Efficiency in transport. In addition, we can highlight the following achievements:

- Implementation of the e-car sharing: We have installed logistics for the e-car sharing service along Vitoria. In order to provide the best service to the citizens, for location of these bases various aspects such as location of public parks, city centres, shopping centres, public transport, etc. have been taken into account.
- Charging points for Evs. Besides charging points installed for the e-car sharing, 10 additional public charging points have been installed in Vitoria for electric vehicle users.
- Electromobility Centre: As a symbol of a modern city, committed to change, an innovative centre to serve as a showcase and information centre for electric vehicles has been established.

The key results are as follows:

- 13. Awareness. Most people have some knowledge about EVs before using the service. The perception on their limitations changed a bit after using the service (although the number of received questionnaires is not that relevant for taking out conclusions). Finally there is a certain level of concern about environmental issues on the users of the service.
- 14. Acceptance: Curiosity is the most important driver, for the people who answered the questionnaire, to use the service.
- 19. Quality of service. All the people interviewed (7) expressed satisfaction about the service offered.
- Nº of users of the service. The number of members of the e-car sharing service is 25 individuals plus one colective (with 5 individual drivers).
- km per reservation. With the data collected during the tests performed, it follows that the average use of reserved vehicles are:22 km/reservation as average for the Peugeot ION and 76 km/reservation as average for the BYD F3DM.

C7 Future activities relating to the measure

- Durability of the results

Thanks to the agreement signed between EVE and the city council of Vitoria-Gasteiz on 17 February 2012, the Electro-Mobility Centre will be able for the citizens for at least the next four years.

Nevertheless, for charging points and bases of e-car sharing it was agreed that these would offer service over the next 25 years.

- The potential transferability

The developments and bet on new, cleaner and more efficient technologies in transport made in this project, allow Vitoria be a showcase and a best example on sustainability that can be transferred to other cities.

- The impact on the city

All these measures have enabled the establishment of the basis for implementing electromobility in the city transportation. In this way, we will influence awareness of citizenship on the use of more efficient and environment friendly means of transport.

Because of its size, urban configuration and also due to policies undertaken within the city, Vitoria-Gasteiz is well positioned to put a stop to unsustainable tendencies in mobility and at the same time double its efforts to favour a quality public space.

D Process Evaluation Findings

D.1 Deviations from the original plan

No significant changes were made to the description of works included in the project submission, but for the little evaluation time of the measure due to a delay in the implementation.

D.2 Barriers and drivers

This measure has been a success with minimal barriers during the RTD process. As for the implementation, there has been a delay caused by an initial lack of consensus on the location of the recharging points and e-CSS stations. There must be considered that the new e-CSS is an innovative initiative in Vitoria –Gasteiz where no car-sharing service existed before.

D.2.1 Barriers

Preparation phase

- **Technological:** During the RTD stage there was a lack of available types of electric vehicles on the market. Although this process was undertaken less than 4 years ago there are now significantly more vehicles available, both in terms of electric vehicles and plug-in hybrid types.

Implementation phase

- **Strategic/political:** Due to the fact that Vitoria-Gasteiz City Council and EVE needed a long negotiation process for decision making on the conditions for the e-CSS, execution of the work was delayed.
- **Spatial:** In terms of the implementation of on-street parking spaces, recharging points and e-CSS stations there has been a barrier due to the complex nature of urban planning laws. This has caused delays in the implementation of the measure that were not foreseen during the task definition, and caused a shorter demonstration period.

Operation phase

- **Technological:** The recharging equipment didn't work properly at the beginning as regards programmed-loading process. These problems were solved within the first month.

D.2.2 Drivers

The drivers relating to this particular project cover a number of different areas.

Preparation phase

- **Strategic/political:** This initiative answers directly to The Basque Government's EV strategy, specially as refers to two aspects: development of recharge point infrastructure and creation of a critical mass. The initiative also seeks to promote behavioural change. The MODERN project can be identified as being a driver.

Implementation phase

- **Technological:** the measure has allowed CCC to introduce new vehicle types in the city of Vitoria-Gasteiz, contributing to cleaner urban environment.

Operation phase

- **Dissemination:** to facilitate access to the e-CSS among residents of Vitoria-Gasteiz, EVE and IBILEK agreed to meet part of the costs of the first users. Visitors to the centre who are in the e-CSS scheme can avail of the following special deals: free test voucher and 60% discount voucher.

D.2.3 Activities

Preparation phase

- **Technological:** The research and development process allowed e-CCS to identify the most suitable vehicle type, vehicle telematics and the network of new on-street car club parking bays required to ensure a successful service operation. In this sense, IBIL is reaching agreements with different EV manufacturers (i.e. Peugeot, Nissan-Renault, etc.) which allow optimisation of the communication between the vehicle and the charging points.

Implementation phase

- **Spatial:** The delay on the implementation of on-street parking spaces required the development and definition of a formal agreement between the Basque Energy Agency (EVE) and the city of Vitoria-Gasteiz (AVG) to promote the use of electric vehicles in this city. The signature of this agreement was the settlement of the foundations of a joint bid for these two Bodies to promote the introduction of electric vehicles in Vitoria as a means of improving energy efficiency in transport.

Operation phase

- **Technological:** The direct contact with recharging equipment suppliers has allowed the identification and quick solution of the problems that appeared with the recharging equipment as regards programmed-loading process.

D.3 Participation

D.3.1. Measure Partners

- **EVE -** The Ente Vasco de la Energía (Basque Energy Board) is the Basque Government's energy agency. Its mission is to:

✓ Propose energy strategies for the Basque Country, based on criteria of supply security, cost competitiveness, sustainability and technological development.

✓ Participate in developing these strategies and contribute to meeting the targets established therein.

In order to achieve this mission, the agency provides a service to the Basque Government's Department of Industry, Innovation Trade and Tourism in matters related to energy and geological and mining resources. It also participates in projects, involving private companies and government institutions. It works to disseminate the values and messages underpinning its strategies amongst society at large.

EVE's capacity for action is backed by the technical capacity, commitment and leadership of its staff and by efficient planning and management of its resources.

- **Ayuntamiento de Vitoria-Gasteiz** – With a population of 233,399 inhabitants, the capital of the Autonomous Community of the Basque Country, Vitoria-Gasteiz has been characterised for its balanced growth, its quality urban planning and its concern for the environment. Today, it is important to maintain this view of the city, as it is engaged in a

process of major urban growth, which has altered the scale of the city and modified its urban structure. The new challenges faced by Vitoria-Gasteiz relate to mobility management and the consolidation of a diverse, compact, efficient model of public space developed jointly with the participation of it's citizens.

D.3.2 Stakeholders

- **IBIL -** One of the priority actions identified by the Basque Government for the success of this policy is the deployment of an infrastructure of electrical vehicle charging points to cover the entire Basque Country, in order to guarantee the mobility of electrical vehicles within the Basque Country. For this purpose, on 29/10/09, the presidents of EVE and REPSOL (the leading company in the Spanish oil sector) signed, in the presence of the President of the Basque Government, a protocol of intentions to collaborate in the implementation of an electrical vehicle charging network in the Autonomous Community of the Basque Country. As a result of this collaboration, on 13/10/2011 the company IBIL, gestor de carga de vehículo eléctrico, S.A. was set up, owned 50-50 by EVE and REPSOL. Its aim is to develop a network of electrical vehicle charging infrastructures and the commercialisation of charging services (electricity and added value) in the private and public spheres. IBIL aims to be leader in the Basque Country in the number of charging points and a technological reference model in electrical vehicle charging technologies.

- **IBILEK** – Company owned 100% by IBIL, is a car-sharing company to introduce electric vehicles in the three Basque capitals with the following characteristics:

✓ Pure electric vehicles and plug-in hybrids

✓ Coverage of the whole Basque territory

✓ Coordinated with the development of EV charging points powered by IBIL

✓ In coordination with municipal mobility plans

D.4 Recommendations

D.4.1 Recommendations: measure replication

- **Importance of the research and development process:** This is a very important step that needs to be carefully conducted if the measure is replicated elsewhere with a different type of vehicle. The R&D process allowed e-CSS to identify the most suitable vehicle type, vehicle telematics and the network of new on-street car club parking bays required to ensure a successful service operation.

- **Raising awareness to e-CSS members:** the possibility of having special offers to newcomers to this new type of service and mobility technology are very positive. In this sense, to facilitate access to the e-CSS among residents of Vitoria-Gasteiz, EVE and IBILEK agreed to meet part of the costs of the first users. Visitors to the centre who are in the e-CSS scheme can avail of the following special deals: free test voucher and 60% discount voucher.

D.4.2 Recommendations: process (related to barrier-, driver- and action fields)

- **Engaging in communication with the Council** to resolve issues at preparation and implementation stage helped commence the demonstration on time and ensured that each stage of the process was carried out with the full involvement of all parties.

ANNEX 1: SURVEY MODELS AND RESULTS

EX-ANTE survey.

Total no. Of answers: 17

Basic information on electric vehicles

1. Have you heard about the electric vehicle? (Yes/No)

   Yes: ***16***

   No: ***1***

They are electric-powered vehicles that consume and pollute less and require less maintenance than conventional cars, but have some limitations, mainly three:

- Have an autonomy of 120-180 km
- Currently it requires about 6 hours to charge, but in the future is expected to fall to less than 30 minutes.
- The initial price is higher than a petrol or diesel car, but this is compensated later because they have less energy and maintenance.

Basic information and car use models

1. How many vehicles have you got at home?

   None: ***6***

   One: ***7***

   Two: ***3***

   Three: ***1***

2. What kind of vehicle do you regularly use?

   a. Motorcycle ***5***
   b. Micro *(very small, SMART type)* ***0***
   c. Small *(small, Ford Fiesta or Opel Corsa)* ***3***
   d. Medium *(Renault Megane, VW Golf, Opel Astra, Audi A3)* ***5***
   e. Berlina *(VW Passat, Toyota Avensis, Peugeot 407, BMW serie 3)* ***2***
   f. Monovolumen *(VW Sharan o Touran, Seat Alhambra, Renault Space)* ***1***
   g. All-terrain vehicle *(VW Touareg o Tiguan, Toyota RAV4, Opel Antara)* ***1***
   h. Executive *(Citroen C5, BMW serie 5, Opel Insignia, Peugeot 607)* ***0***
   i. Luxury *(Audi A8, Mercedes Clase S)* ***0***
   j. Sports car ***0***

3. (*If you have more than one vehicle at home*) The car you use regularly, is the first or second car at home?

   Undifferent: ***2***

   First: ***1***

Second: ***0***

4. Throughout the day, do you use the car to go to work?

   Yes: ***3***

   No: ***14***

Electric vehicle

5. ¿Which limitations seem most important for you not to use an electric car?
   a. Reduced autonomy (between 120-180 km) ***4***
   b. Current charging time (6 hours) ***1***
   c. Future charging time (30 min) ***0***
   d. Higher initial vehicle price ***8***
   e. There isn`t currently a network of charging points on streets and highways (there is only the possibility to do it at home or at jobs parking) ***4***
   f. It is a new technology ***0***
   g. Others ***0***

6. Do you consider yourself a person committed with the environment?
   a. Fully committed ***4***
   b. Fairly committed ***9***
   c. Somewhat committed ***4***
   d. Little committed ***0***
   e. Not committed ***0***

e-Car Sharing

7. Why have you decided to use the e-car sharing? Please prioritize the three most important among the following (1 to 3)
   a. Out of curiosity ***12***
   b. Because I don´t own a car ***6***
   c. To be more sustainable ***4***
   d. Because I have a car at home but sometimes I need another. ***1***
   e. Because I am interested in replacing my vehicle for the e-car sharing service ***1***
   f. Others (please indicate) ***3***
      Concern about the use of fosil fuels
      Because it is a smart idea
      Because it is useful for the urban environment

8. *(If you chose answer c in the previous question)*, why do you want to replace your car?
   a. Because of the high cost of a parking place ***0***
   b. Because of the high cost of owned car maintenance ***1***
   c. Because I make few kilometres annually ***1***

d. To stop worrying about the maintenance of owned car (insurances, parking, repairs, cleaning, etc) ***1***

EXPOST survey

Total no. Of answers: 7

Información básica y uso de los coches

1. ¿ How many vehicles have you got at home?

   None: ***1***

   One: ***3***

   Two: ***2***

   Three: ***1***

2. What kind of vehicle do you regularly use?
   a. Motorcycle ***3***
   b. Micro *(very small, SMART type)* ***0***
   c. Small *(small, Ford Fiesta or Opel Corsa)* ***0***
   d. Medium *(Renault Megane, VW Golf, Opel Astra, Audi A3)* ***4***
   e. Berlina *(VW Passat, Toyota Avensis, Peugeot 407, BMW serie 3)* ***2***
   f. Monovolumen *(VW Sharan o Touran, Seat Alhambra, Renault Space)* ***1***
   g. All-terrain vehicle *(VW Touareg o Tiguan, Toyota RAV4, Opel Antara)* ***0***
   h. Executive *(Citroen C5, BMW serie 5, Opel Insignia, Peugeot 607)* ***0***
   i. Luxury *(Audi A8, Mercedes Clase S)* ***0***
   j. Sports car ***0***

3. *(If you have more than one vehicle at home*) The car you use regularly, is the first or second car at home?

   Undifferent: ***2***

   First: ***0***

   Second: ***0***

4. Throughout the day, do you use the car to go to work?

   Si: ***3***

   No: ***7***

Electric vehicle

5. ¿Which limitations seem most important for you not to use an electric car?
   a. Reduced autonomy (between 120-180 km) ***4***
   b. Current charging time (6 hours) ***0***
   c. Future charging time (30 min) ***0***
   d. Higher initial vehicle price ***2***
   e. There isn`t currently a network of charging points on streets and highways (there is only the possibility to do it at home or at jobs parking) ***1***

f. It is a new technology ***0***
g. Others ***0***

6. Do you consider yourself a person committed with the environment?
   a. Fully committed ***3***
   b. Fairly committed ***3***
   c. Somewhat committed ***1***
   d. Little committed ***0***
   e. Not committed ***0***

e-Car Sharing

7. Are you satisfied with the e-car sharing service that is offered? What could be better?

   Yes: ***7***

   No: ***0***

   Proposed improvements:

   Not monthly charge if the disponibility of vehicles is not guaranteed

   Increase the variety of vehicles: motorbikes, bicycles.

   Increase the number of charging points

   Reduce the price

   Only charge for the use, not a membership monthly fee

   Simplify the procedure for using the service

8. In case of having owned a car, after using the e-car sharing service, would you go without it?

   Yes: ***4***

   No: ***3***

9. *(If you answer yes in the previous question)* Why would you replace your vehicle?
   a. Because of the high cost of a parking place ***0***
   b. Because of the high cost of owned car maintenance ***0***
   c. Because I make few kilometres annually ***2***
   d. To stop worrying about the maintenance of owned car (insurances, parking, repairs, cleaning, etc) ***2***

10. Do you consider there are enough vehicles available in the e-car sharing?

    Yes: ***3***

    No: ***4***

11. Do you consider there are enough e-car sharing basis in the city?

Yes: ***1***

No: ***6***

12. Would you use the e-car sharing service again?
13. Yes: ***6***
14. No: ***1***