Policy Strategy and Recommendations

A publication by the E-Mob project

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POWER Low Carbon Economies
INTERREG IVC
European Union
European Regional Development Fund
emob®

Colophon:

The E-mob project aims to define common strategy and policy recommendations to accelerate successful market implementation of electric vehicles in the participating regions.

Participating partners

STUNS in Uppsala
MEERI in Krakow
University of Malaga
Townhall of Malaga
Oxford Brookes University in Oxford
Brabant Development agency in Tilburg

www.interreg4c.eu
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I. INTRODUCTION

This document describes the policy and strategy for the recommendations that have been developed within the E-Mobility Accelerator Project (POWER Programme INTERREG IVC), within the work package “Phase of Strategy and Recommendations”.

The document consists of six chapters with various subsections within them. The first describes the initial considerations related to electric mobility , the second shows the methodology used for the study, analysis and diagnosis of work, the following three show the principles, the target list and the set of final recommendations to raise to those responsible for the European program.

Moreover, in the concluding chapters the aspects related to the use and application of the recommendations are described. To complete the document includes references and bibliography.

II INITIAL REFLEXIONS ON ELECTRIC MOBILITY

II.1 Scope

To understand mobility in cities and metropolitan areas it is necessary to know the journeys that are made in this area and its characteristics as these determine the model of existent mobility.

Thus, the fundamental characteristics to be assessed are the total number of trips the distribution of the different reasons why they are made, the slots in which they occur, their duration, frequency and various modes of transport.

Today, in our cities half of all the journeys are made by motorized means of transport. Of these approximately two thirds are in private vehicle which have had a dominant and unstoppable growth in recent decades, without criteria regarding sustainability and environment.

Motorization is one of the inventions during the last century which has most transformed society. The central role that the private vehicle fulfils with millions of journeys in all cities of the world, has resulted in substantial levels of welfare, and has allowed the individual to travel farther and longer.

At the same time, it is also true that this mobility and dependency has established a wide range of problems for today's cities, which accounts for 80% of all journeys being made worldwide. They all generate environmental, social and economic impacts which have been considered separately by urban transport policies

There is no doubt that current transport activities should be revised towards a sustainable approach. The European Commission in the document "Strategy for Europe on clean and energy efficient vehicles" COM (2010) 186 final, dated 28/04/2010, expected the global vehicles park to pass from 800 million to 1 600 million by 2030. This doubling of the global fleet requires radical technological change

to ensure long-term sustainable mobility consistent with the objective of eliminating carbon emissions from transport.

The Commission in their White Paper "Roadmap to a single European Transport Area - towards a competitive and resource efficient transport system "COM (2011) 144 final, dated 28/03/2011, also outlines the challenges to halve the use of "propulsion-conventional" cars in urban transport by 2030 and progressively phase them out in cities by 2050.

With these assumptions, in this century we are witnessing the beginning of substantial changes in how to interpret the model city in terms of the mobility of its citizens. Reconciling the dynamics of the city, its planning and economic development with environmental protection and the improvement of quality of life is becoming a real challenge that society has in this common space.

II.2 Negative impact of today's automotive

Clearly there is an undeniable challenge for the coming decades which entails minimizing the negative impacts of vehicles as we know it. The negative impacts that occur are:

-Environmental impacts, pollutants, emissions of NOx, CO and particulates, to CO_2[1] emissions that effect global warming and climate change and ending with noise contamination, all tremendously harmful for our citizens.

-Impacts of congestion that increase the level of accidents and therefore lower levels of road safety with road accidents of all types.

-Impacts associated with the fragmentation of land use and development of imposing inappropriate urban policies, associated to dispersion, low density and monofunctional urban development that cause disproportionate and unreasonable increase of the distances travelled by citizens in their daily functions.

[1] According to RACC(Royal Automobile Club of Catalonia)"Vehicles and environment": facing average emission of 160 g/km in 2006 for new cars, in 2015 CO_2 emissions must be reduced to 130 g/km

In particular, all these previous impacts together, lower quality of life, air and the urban environment of our cities[2].

Addressing these negative factors is not easy, vehicles with internal combustion engines are generating the impacts described above, creating serious health problems in our cities.

So it should be noted that governments, manufacturers and citizens have to play a major role in promoting a mobility culture coupled with an environmentally friendly and energy efficient technology.

As shown in this project, the studies focused on opening paths to new technologies for mobility plug are the potential future for the plug in hybrids and battery electric vehicles (BEV) and are an example of the future challenges that must be addressed.

II.3 Challenges with clean technologies

The plug-in vehicles can contribute significantly to the more efficient use of resources, achieving a more "green" and efficient economy. With this statement and all the content the E-mob Accelerator project entails, efforts have focused on the analysis of a series of business cases developed in the European regions.

The documentary basis for the work has been supported and linked to certain documents of the EU to be explicitly mentioned and from which the key ideas aimed at sustainable mobility, energy conservation and clean technologies have been extracted and all specifically on electric mobility and conceptual approaches to address the various ideas in the Strategy and Policy recommendations phase for the future in Europe. The basic texts of European level have been the White Paper, The green paper, the action plan on Urban mobility, European strategy on clean and energy efficient vehicles and the solution for electric vehicles[3].

[2] Estimates from the European Union about 360,000 deaths annually in the EU, is seven times the number caused by traffic accidents

[3] "bibliographic see section"

II.4 Stakeholders´ role in electric mobility

The triangle below is formed at its vertices by administration, producers and the public. Administrations in different regions should have the ability to establish measures and actions to encourage the new scenario linked to electric mobility and towards a more sustainable environment. In another corner are the industry producers, manufacturers who take advantage of innovation and ”green” technology to launch business opportunities in the market, since the “PEAK OIL”[4] is a tangible reality in the current energy situation. Finally the third vertex is represented by the public who have to play a participatory role, engaging more environmental awareness and the reality that “green” technologies are savings for their households.

This in a territory where some of the latest statistical data to predict future growth, rapid mobility, should be included, indicating that the global market of hybrid and electric vehicles will grow rapidly but overall sales are far behind. Most surveys do not expect a reasonable price in the mass market until five years have passed.

Another recent study[5] in the 27 EU member states analyzed certain issues of interest among which are the level of support in payment policies for road use, the disposition of citizens to pay more to buy “clean” vehicles or ideas to reduce the number of daily travels in private vehicles using petrol.

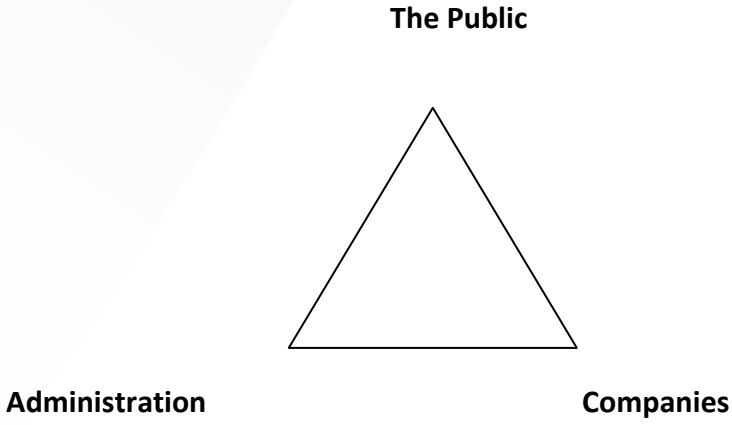

Figure 1: Stakeholders´ role in electric mobility

[4] Scenario relative scarcity of oil is implying concerns about security of supply in countries that are dependent on imports of the same.

[5] Flash Eurobarometer 312- The Gallup Organization. “ Future of transport” Publication, march 2011.

This strategy aims to provide a European framework for clean Plug-in and EV efficient vehicles, including the promotion of clean and energy efficient vehicles based on facilitating the deployment of ultra-low-carbon vehicles such as the Power Program define.

The strategy contains a pyramid structure based on Principles, a list of ten Objectives and forty Recommendations, classified in general and specific type with a wide range of policy fields covering: regulatory framework for reduction of environmental impacts, research and innovation in green technologies, market uptake and citizens information, trade and employment aspects as well as standardisation, normalization, infrastructures or batteries.

II.5 E Mobility Accelerator Project: General Issues

In the POWER INTERREG IVC Programme, the E-mob Accelerator Project is looking at electric mobility in the European regions. One of the project activities is the development of Strategy and Policy Recommendations, which are presented on three different levels. Firstly, the “Principles “set out the proposals or key and fundamental ideas. Secondly, a "List of Objectives" allow us to get to a more tangible and specific level in identifying the fields of work to consolidate the future challenge of electric mobility. Finally, the "Recommendations" provided in the scheme will allow us to describe the precise operation level of measures to be implemented.

III METHODOLOGY

III.1 Initial conditions

What has been found in European cities with regard to electric mobility in the baseline 2010-2011 has been analyzed with the PESTLE methodology. Six macro environments have been studied in the cities of the project partners. It has been possible to identify the problems that "plug-in hybrids" and EV have to overcome in our cities and their causes.

To solve these problem ten goals have been marked and supported by 5 key principles that contain the basic concepts to provide the development of future mobility. All that covering a balance in the economical, social, environmental and legal responsibility of the whole society.

All this without forgetting that the future of mobility must follow the trends of sustainable development outlined in the new European guidelines[6] on transport and finally, the recommendations have been raised to reach the ten specified goals and common strategy of the EU.

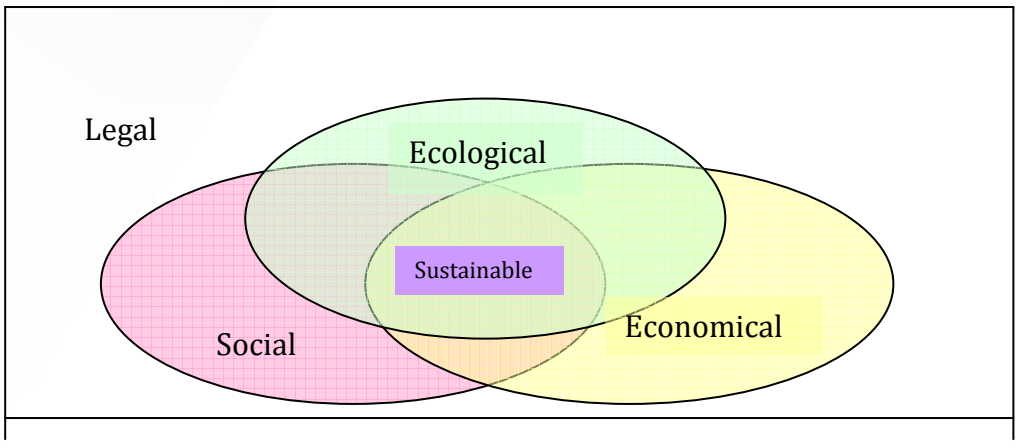

Figure 2: Diagram of sustainability

[6] White Paper. Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system. SEC(2011) 359 final. SEC(2011) 358 final. SEC(2011) 391 final. COM(2011) 144 final.

Green Paper. Towards a new culture for urban mobility (presented by the Commission) SEC(2007) 1209. COM(2007) 551 final.

In short, after the PESTLE analysis in each of the cities of the project partners they have been able to conclude the following results in each of the micro environments:

- The political issues: the recharges of the plug-in vehicles are not yet fully integrated in both pricing and in hiring in the distribution of plug-in vehicles.

- The economical issues: there already is a European directive to adopt measures to boost and increase the input of plug-in vehicles in the EU, only waiting for the transposition into national law in each member country.

- The social issues: in general there is a lack of knowledge of how plug in vehicles can be integrated and its benefits for mobility, therefore emphasis should be placed on communication and research.

- The technological issues: progress in technologies is progressive but a further boost in R+D+I is needed.

- The legal issues: regulatory barriers to be overcome in different fronts: funding, standardization, certification and regulation.

- The environmental issues: due to the awareness of citizens and policy makers with pollution, they all wish to promote any process that helps improve the environment; therefore it is only important to transmit the benefits of driving a plug in vehicle in these terms.

The diagram below shows the information channels used to study the different techniques applied in the phase of strategy and recommendations.

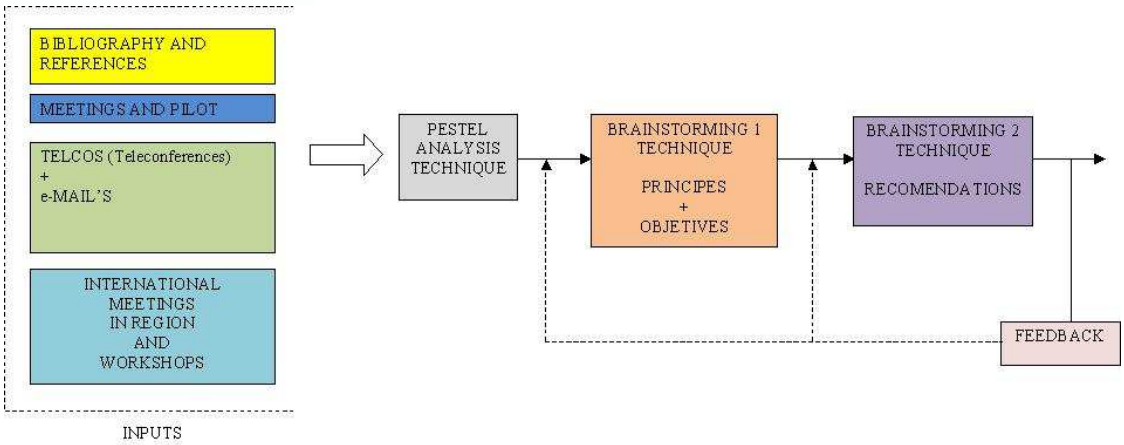

Figure 3: Diagram of work process

To continue the following phases in the methodology the table is shown assigning each technique to the period it corresponds to:

Methodology Phases	Global Strategy	Specific Strategy	Feedback Strategy
PESTLE ANALISIS	**X**	**X**	**X**
PRINCIPLES	**X**	**X**	**X**
OBJECTIVES	**X**	**X**	**X**
RECOMMENDATIONS		**X**	**X**

Table 1: Methodology Phases

III.2 PESTLE Analysis

What is the PESTLE analysis?

The PESTLE model provides key insights and analyzes the six macro environments to diagnose and promote a new product on today market. The six macro environments analysed are the following:

Political: what is happening politically in the environment in which you operate, including areas such as tax policy, employment laws, environmental regulations, trade restrictions and reform, tariffs and political stability.

Economical: what is happening within the economy, for example; economic growth/ decline, interest rates, exchange rates and inflation rate, wage rates, minimum wage, working hours, unemployment (local and national), credit availability, cost of living etc.

Sociological: what is occurring socially in the markets in which you operate or expect to operate, cultural norms and expectations, health consciousness, population growth rate, age distribution, emphasis on safety, global warming.

Technological: what is happening technology-wise which can impact in electric vehicles. New technologies are continually being developed and the rate of change itself is increasing. There are also changes to barriers to entry in given markets, and changes to financial decisions like outsourcing and insourcing.

Legal: what is happening with changes to legislation. This may impact employment, access to materials, quotas, resources, imports/ exports, taxation etc.

Environmental: what is happening with respect to ecological and environmental issues? Many of these factors will be economic or social in nature.

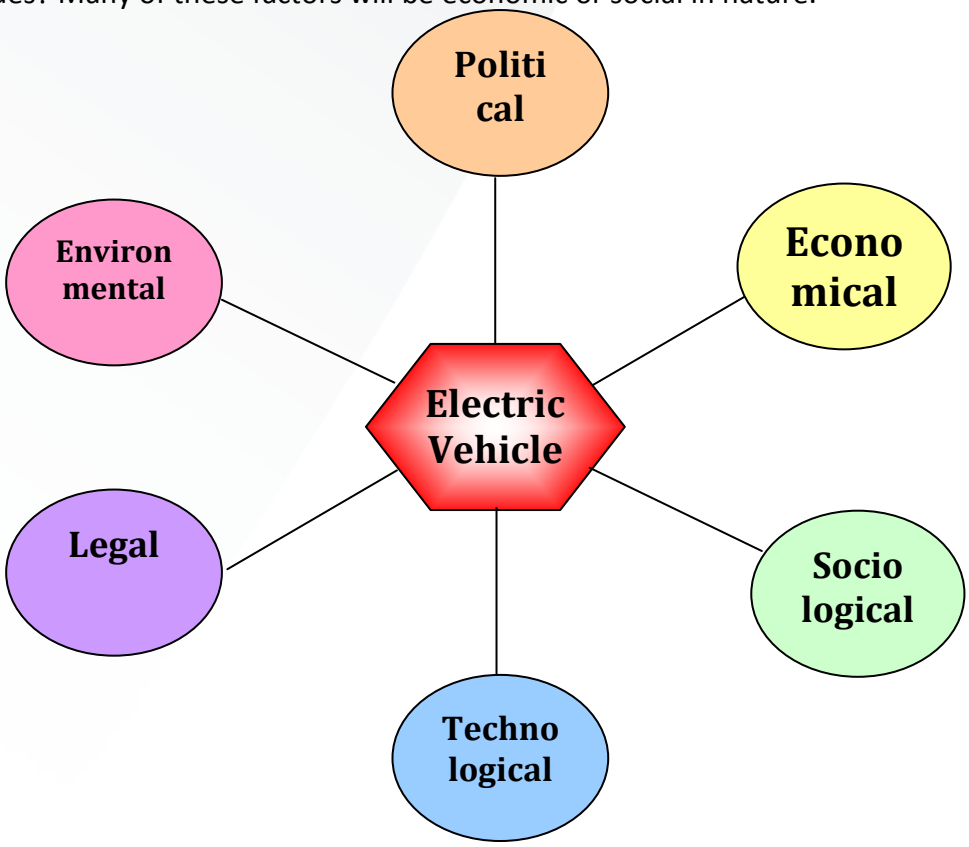

Figure 4: Diagram of fields in PESTLE technique for electric vehicle.

III.3. “Brainstorming” method

Two processes have been developed for analysis by brainstorming technique. Rather than a technique of group dynamics it is an activity designed to explore the creative potential of the group.

From the first analysis process PESTLE, the 5 fundamental principles were defined associated with economical, social, legal, environmental and management of mobility areas. It has also generated a list of ten main objectives that showed the key ideas for the definition of the subsequent recommendations and according to the different weaknesses observed in the PESTLE analysis in different macro environments. These two concepts were subjected to this technique by all partners.

With the second process 80 recommendations were identified after reading bibliographical documents and to achieve the ten goals. After several meetings with the two Spanish partners of Malaga and again with brainstorming, forty recommendations were set into two groups: global, common to all members and specific business cases. The latter also generated through SWOT[7] Analysis of Business Cases.

III.4“Feedback” Strategy

After each phase the results have been checked with all the partners. The proposals were reviewed and improvements have been made as feedback in the final process of the strategy, all this both in the PESTLE analysis, decision of principles, objectives and recommendations.

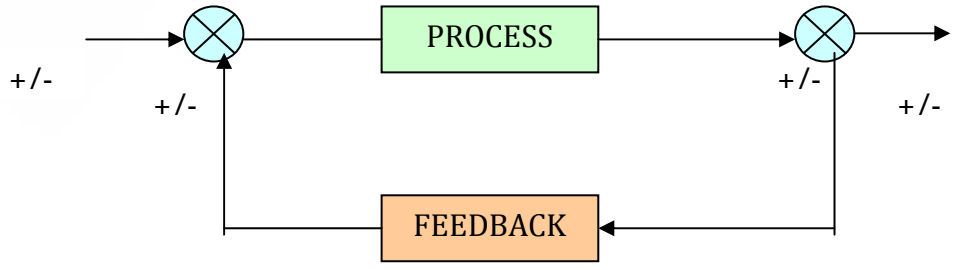

Figure 5: Diagram of fields in FEEDBACK technique

[7] It is a strategic planning method used to evaluate the **S**trengths, **W**eaknesses, **O**pportunities, and **T**hreats in a project.

IV PRINCIPLES

Fundamental principles need to be established that guide sustainable future mobility models without introducing social inequalities. It is only then that recommendations for policies can be made that require political intervention.

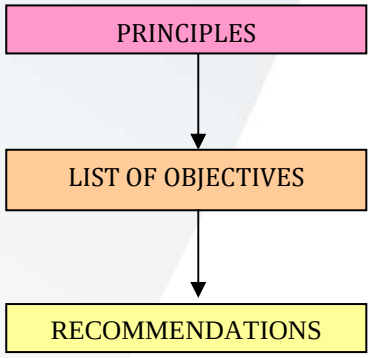

Figure 6. Strategy Scheme

1. MOBILITY OPTIMISATION

In cities around the world motorized vehicles have acquired a central and dominant role. These vehicles have brought benefits as well as problems with continuous expansion and associated traffic congestion and emissions. This imbalance must be corrected, bringing the vehicle to more rational and integrated use through sustainable mobility. To overcome this imbalance, the resultant objectives should be transparent, progressive and coherent. To achieve three-pronged approach, differents modes of transport in urban and suburban settings of the in urban and suburban settings of the city need to be made available, ie "*intermodality*" [8]

[8] Different modes of transport (walking, cycling, public transport, private vehicle). It is a term related with "integrated mobility". The concept is how one person can make a trip in the city by combining modes of transport. One trip includes several stages. It must be reached the optimized way using several modes.
Optimized Intermodality: Best efficient and combined transport modes.
One strong point is the term "integrated mobility" and it is a common denominator of all documents of partners. It should be a force –idea supported in 6 basic pillars to evaluate the degree of the development of sustainable mobility:

- Pedestrian
- Bicycles
- Public Transports
- Private cars: In future, current vehicle park (MCE) will pass to EV and plug-in vehicle park
- Distribution and delivery of goods in the city
- Parking offer and demand (one side in streets and other in buildings)

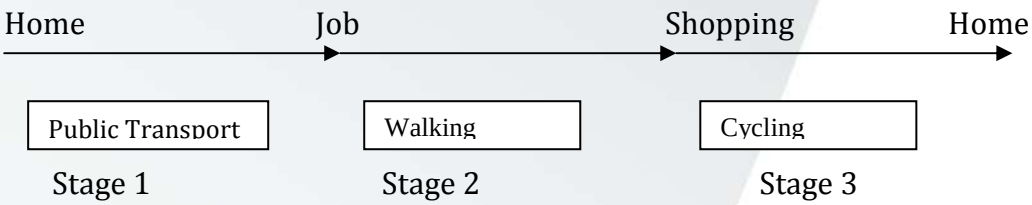

Figure 7. Intermodality Scheme

2. ENVIRONMENTAL PROTECTION AND HEALTH

Mitigating the current course of climate change and generating sustainable mobility will result in the reduction of GHG gases, which affect global warming and whose main element is the emission of CO2 from the car's combustion engine. Additionally, the decrease of pollutants (NOx gases, CO, etc.) and suspended particles may improve air quality and thus human health. The environmental impacts produced by fragmented occupation of land and noise pollution from vehicles must be reduced. Thus, in the concept of sustainability, the proper management of natural resources in urban areas is important.

3. ECONOMIC GROWTH AND INNOVATION

In this century, the automobile industry will show major changes in technologies relating to vehicles, among which is electric technology for future mobility. Therefore there is an opportunity for economic, creative and innovative development of energy efficient, clean and sustainable technologies. The European car industry can achieve a leading position in which standardization and certification of products, services and infrastructure in this sector and some other complementary things will be determinant targets on the market.

4. LEGAL AND REGULATORY UNIFICATION

Legislation at local, national and European has to encourage the integration of electric vehicles in three specific aspects. Firstly, related to the electricity sector reforms to strengthen supply guarantees, regulation and pricing to businesses and consumers. Secondly,

the rules and regulations on the electric vehicle itself and thirdly, to establish the regulation to achieve common mechanisms in the European regions which promote the supply and demand of electric mobility.

5. SOCIAL EQUITY IN A COMMON AREA

With regards to urban space in cities and the role of citizens, electric mobility has to be promoted with a clear and progressive vision, shared by all those involved, such as administrations, producers and public users. Plans for sustainable urban mobility and commuting are presented as a fundamental tool to generate changes in behaviour in the public and achieve equitable development opportunities. The rapid development of social welfare and the quality of citizens' life in European regions can be laid out backed by the recent White Paper of the European Policy and the Green Paper on Sustainable Urban Mobility.

V. LIST OF OBJECTIVES

Before defining the Strategy and Policy Recommendations of this project it is necessary to mark goals with a common use for all participants and based on business cases developed.

1. **To promote** the culture of electric mobility in the urban setting in terms of education, training, information and citizen participation, prioritizing behavior change through innovative communication channels associated with ICT, computing, internet and telecommunications of today society. (SOCIAL)

2. **To define** in each region the involvement of the car manufacturer sector and the related indirect subsectors (maintenance, repair businesses, rental car ...) in electrical mobility, revitilizing the economical and trade area associated with it. (INDUSTRIAL-ECONOMICAL)

3. **To encourage** the use and develoment of new technologies and innovation in industry, the analysis and studies of R&D, particularly in the areas of standardization, certification and authorizations of EV makers, in both public and private initiative.(TECHNOLOGY-LEGAL)

4. **To stimulate** the implementation of infrastructure related to electric mobility in three coordinated aspects of the local area; Sustainable Urban Mobility Plans, Commuting Transport Plans and General Urban Development Plans. This could be done by introducing zero emission zones and developing a framework for urban road pricing. (POLICY-MOBILITY.MANAGEMENT)

5. **To encourage** the electricity sector to adapt to the generation, use and distribution of electric power to boost the supply and demand of EV, by energy mix where cleaner and eco-friendly processes dominate (well to wheel). (ENVIRONMENTAL-POWER- POLICY)

6. **To promote** the differents modes of transport in current mobility to less polluting modes and lower power consumption through the optimal combination of different modes of transport with strong emphasis on the development and optimization of "intermodality" in the component stages of journeys. (ENVIRONMENTAL-MOBILITY-MANAGEMENT)

7. **To provide** new business model for governments, businesses or citizens that incentivize EV demand with the introduction of “green” taxes. (ECONOMIC-POLICY).

8. **To further develop** the quality of public transport with electrical or hybrid vehicles incorporating the development of clean technologies, passenger information systems, reserve lanes, interoperability[9] and unification tariff. (MOBILITY POLICY)

[9] Common management among different transport enterprises.

9. **To recommend** a medium-term plan action to local governments within the framework of European policies, which monitor and control the promotion of EVs. This would highlight the positive energy and environmental aspects of using EVs, in coordination between government and stakeholders in the sector and with the advice of research and study centres dedicated to it. (POWER-ENVIRONMENTAL-POLICY)

10. **To remove** any possible regulatory barriers to the development of EVs by adjustment of legislation (European, national, regional and local). (LEGAL)

VI POLICY AND STRATEGY RECOMMENDATIONS

VI. 1 Introduction

OBJECTIVE 1

To Promote the culture of electric mobility in the urban setting in terms of education, training, information and citizen participation, prioritizing behavior change through innovative communication channels associated with ICT, computing, internet and telecommunications of today´s society.

Global Recommendations

Number 11. Implement R & D programs aimed specifically at strengthening the capabilities of the automobile industry in each country by making reference to technologies related to improving the environmental impact on cars. (N)

Number and description

Scope: EU European,
N: National
R-L: Regional/local

Specific Recommendations

Number 12. Create a forum for the development of the EV industry and market in each country. This would have to bring together all interested parties, including those participating; policy makers, vehicle manufacturers, power generators and distributors, technologists, research centers, urban designer, transport, planners, etc. (N)

OBJECTIVE 1

To Promote the culture of electric mobility in the urban setting in terms of education, training, information and citizen participation, prioritizing behavior change through innovative communication channels associated with ICT, computing, internet and telecommunications of today society.

Global Recommendations

Number 11. To implement R & D programs aimed specifically at strengthening the capabilities of the automobile industry in each country by making reference to technologies related to improving the environmental impact of vehicles. (N)

Number 15. To promote new training related to the electric vehicle through reform of University curricula and the creation of new professional profiles. (EU,N,R-L)

Number 18. To create a European Observatory for electrical mobility to oversee the development of the EV fleet and related infrastructure, to collect on a voluntary basis statistical data based on a common methodology. (EU)

Specific Recommendations

Number 12. To create a forum for the development of the EV industry and market in each country. This would have to bring together all interested parties, including those participating; policy makers, vehicle manufacturers, power generators and distributors, technologists, research centers, urban designer, transport, planners, etc. (N)

Number 13. To create a consensus cluster of electric mobility in each region as a benchmark for the development of the recommendations contained in this Strategy. (R-L)

Number 30. To promote the use of EV by awareness campaigns which show EV as sustainable means of transport. (N,R-L)

Number 31. To promote public procurement of electric vehicles in public administrations. (N,R-L)

OBJECTIVE 2

To Define in each region the involvement of the car manufacturer sector and the related indirect subsectors (maintenance, repair businesses, rental car ...) in electrical mobility, revitilizing the economical and trade area associated with it. (INDUSTRIAL-ECONOMICAL).

Global Recommendations

Number 6. To monitor and supervise the recharge process for public use to obtain information on various aspects of EV fleet. (R-L)

Number 11.To implement R & D programs aimed specifically at strengthening the capabilities of the automobile industry in each country by making reference to technologies related to improving the environmental impact of vehicles. (N)

Number 18. To create a European Observatory for electrical mobility to oversee the development of the EV fleet and related infrastructure, to collect on a voluntary basis statistical data based on a common methodology. (EU)

Number 35. To position internationally the Emob regions as attractive locations for electric vehicles. (EU,N,R-L)

Specific Recommendations

Number 12 . To create a forum for the development of the EV industry and market in each country. This would have to bring together all interested parties, including those participating; policy makers, vehicle manufacturers, power generators and distributors, technologists, research centres, urban designer, transport, planners, etc. (N)

Number 13. To create a consensus cluster of electric mobility in each region as a benchmark for the development of the recommendations contained in this Strategy. (R-L)

Number 30. To promote publicly the use of EV by awareness campaigns which show EV as sustainable means of transport. (N,R-L)

Number 32.To incentivate economically to buy EV(N,R-L)

Number 36. To create new business models related to EV. (R-L)

OBJECTIVE 3

To Encourage the use and development of new technologies and innovation in industry, the analysis and studies of R&D, particularly in the areas of standardization, certification and authorizations of EV makers, in both public and private initiative.(TECHNOLOGY-LEGAL)

Global Recommendations

Number 5. To standardize at the charging points at European level. (EU,N)

Number 6. To monitor and supervise the recharge process for public use to obtain information on various aspects of EV fleet. (R-L)

Number 7. To set up Pilot projects to promote fast and very fast recharge. (EU,N)

Number 11. To implement R & D programs aimed specifically at strengthening the capabilities of the automobile industry in each country by making reference to technologies related to improving the environmental impact of vehicles. (N)

Specific Recommendations

Number 2. To boost research and development (R&D) related to the ability of electric vehicles to act as a distributed system of electric energy storage, given the large profits with respect to the energy efficiency of electric systems "vehicles to grid"(V2G) (EU,N)

Number 9. To encourage the introduction of "smart grids" in the electrical system and the use of renewable energy in transport. (N,R-L)

Number 14. To support R&D projects for new EV technologies. (N)

Number 33. To promote pilot projects of technological nature. (N)

Number 34. To promote demonstration pilot projects. (N)

OBJECTIVE 4

To Stimulate the implementation of infrastructure related to electric mobility in three coordinated aspects of the local area; Sustainable Urban Mobility Plans, Commuting Transport Plans and General Urban Development Plans. This could be done by introducing zero emission zones and developing a framework for urban road pricing. (POLICY-MOBILITY MANAGEMENT).

Global Recommendations

Number 6. To monitor and supervise the recharge process for public use to obtain information on various aspects of EV fleet. (R-L)

Number 7. To set up Pilot projects to promote fast and very fast recharge. (EU,N)

Number 18. To create a European Observatory for electrical mobility to oversee the development of the EV fleet and related infrastructure, to collect on a voluntary basis statistical data based on a common methodology. (EU)

Number 21. To install recharging points in the Park & Ride areas. (R-L)

Number 22. To incorporate Electric vehicle in the Business Travel Plan (BTP) (R-L)

Number 24. To implement specific signs for parking areas and associated EV charging points. (R-L)

Number 25. To promote the formation of parking area reserved for EV on the roads. (R-L)

Specific Recommendations

Number 1. To implement an Infrastructure Plan for EV associated with the common management of Metropolitan Areas integrating the Municipalities with more than 25000 inhabitants(N,R-L)

Number 4. To develop and promote the implementation of private recharging points, preferably supplied by renewable energy. (R-L)

Number 13. To create a consensus cluster of electric mobility in each region as a benchmark for the development of the recommendations contained in this Strategy. (R-L)

Number 19. To develop a 20 year work plan for the continued development of electric vehicles and Plug-in hybrids. (N)

Number 26. To promote the use of EV car sharing. (N,R-L)

Number 27. To stimulate the deployment of EV through the development of Sustainable Urban Mobility Plans and Business Travel Plans in the regions. (R-L)

Number 40. To elaborate a guide to support local urban adaptation to the infrastructures associated with EV. (R-L)

OBJECTIVE 5

To encourage the electricity sector to adapt to the generation, use and distribution of electric power to boost the supply and demand of EV, by an energy mix where cleaner and eco-friendly processes dominate (well to wheel).(ENVIRONMENTAL-POWER-POLICY)

Global Recommendations

Number 6. To monitor and supervise the recharge process for public use to obtain information on various aspects of EV fleet. (R-L)

Number 10. To define technical characteristics and method of integration of the charging stations to fixed electrical installations in:
a)Single Family Homes.
b)Property owner garages.
c) Charging stations installed in public roads.
d) Charging stations in public areas, department stores, dealers, stations dedicated to the burden of goods. (N)

Number 39. To adapt the tariff system of electricity supply companies to favour charging EV at night. (N)

Specific Recommendations

Number 2. To boost research and development (R&D) related to the ability of electric vehicles to act as a distributed system of electric energy storage, given the large profits with respect to the energy efficiency of electric systems "vehicles to grid"(V2G) (N,R-L)

Number 3. To encourage in companies energy distribution, purchasing electricity from the users who have stored energy in the EV battery.(N)

Number 4. To develop and promote the implementation of private recharging points, preferably supplied by renewable energy. (R-L)

Number 9. To encourage the introduction of "smart grids" in the electrical system and the use of renewable energy in transport. (N,R-L)

OBJECTIVE 6

To promote the different modes of transport in current mobility to less polluting modes and lower power consumption through the optimal combination of different modes of transport with strong emphasis on the development and optimization of "intermodality" in the component stages of journeys. (ENVIRONMENTAL-MOBILITY-MANAGEMENT)

Global Recommendations

Number 17. To set up a maximum standard of emissions of 130g of CO2 per km by 2015 and 95g of CO2 per km by 2020, in line with the position of the European Commission (EU,N,R-L)

Number 18. To create a European Observatory for electrical mobility to oversee the development of the EV fleet and related infrastructure, to collect on a voluntary basis statistical data based on a common methodology. (EU)

Number 20. To authorise the use of electric vehicles in public transport lanes and restricted areas for private vehicles. (R-L)

Number 21. To install recharging points in the Park & Ride areas. (R-L)

Number 22.To incorporate Electric vehicle in the Business Travel Plan (BTP). (R-L)

Number 25. To promote the formation of parking area reserved for EV on the roads. (R-L)

Number 37. To promote the implementation of integrated public transport fares that are combined with the use of EV, thus limiting the use of internal combustion vehicles in urban areas. (R-L)

Specific Recommendations

Number 1. To implement an Infrastructure Plan for EV associated with the common management of Metropolitan Areas integrating the Municipalities with more than 25000 inhabitants.(N,R-L)

Number 19. To develop a 20 year work plan for the continued development of electric vehicles and Plug-in hybrids. (N)

Number 26. To promote the use of EV car sharing. (N,R-L)

Number 27. To stimulate the deployment of EV through the development of Sustainable Urban Mobility Plans and Business Travel Plans in the regions. (R-L)

OBJECTIVE 7

To provide new business model for governments, businesses or citizens that encourage EV demand with the introduction of “green” taxes. (ECONOMIC-POLICY)

Global Recommendations

Number 28. To reduce/eliminate the various taxes and fees associated with EV in European countries. (EU,N,R-L)

Number 39. To adapt the tariff system of electricity supply companies to favour charging EV at night. (N)

Specific Recommendations

Number 3. To encourage energy distribution in companies, purchasing electricity from the users who have stored energy in the EV battery (N)

Number 4. To develop and promote the implementation of private recharging points, preferably supplied by renewable energy. (R-L)

Number 32. To incentivate economically to buy EV(N,R-L)

Number 33. To promote pilot projects of technological nature. (N)

Number 34. To promote demonstration pilot projects. (N)

Number 36. To create new business models related to EV. (R-L)

Number 38. To incentivate the use of electric vehicles such as toll reductions and the complimentary use of parking areas(R-L)

OBJECTIVE 8

To further develop the quality of public transport with electrical or hybrid vehicles incorporating the development of clean technologies, passenger information systems, reserve lanes, interoperability and unification tariff. (MOBILITY POLICY).

Global Recommendations

Number 20. To authorise the use of electric vehicles in public transport lanes and restricted areas for private vehicles. (R-L)

Number 37. To promote the implementation of integrated public transport fares that are combined with the use of EV, thus limiting the use of internal combustion vehicles in urban areas. (R-L)

Specific Recommendations

Number 19. To develop a 20 year work plan for the continued development of electric vehicles and Plug-in hybrids. (N)

Number 27. To stimulate the deployment of EV through the development of Sustainable Urban Mobility Plans and Business Travel Plans in the regions. (R-L)

OBJECTIVE 9

To recommend a medium-term plan action to local governments within the framework of European policies, which monitor and controls the promotion of EV. This would highlight the positive energy and environmental aspects of using EV, in coordination between government and stakeholders in the sector and with the advice of research and study centres dedicated to it. (POWER-ENVIRONMENTAL-POLICY).

Global Recommendations

Number 6. To monitor and supervise the recharge process for public use to obtain information on various aspects of EV fleet. (R-L)

Number 17. To set up a maximum standard of emissions of 130g of CO2 per km by 2015 and 95g of CO2 per km by 2020, in line with the position of the European Commission (EU,N,R-L)

Number 18. To create a European Observatory for electrical mobility to oversee the development of the EV fleet and related infrastructure, to collect on a voluntary basis statistical data based on a common methodology. (EU)

Number 37. To promote the implementation of integrated public transport fares that are combined with the use of EV, thus limiting the use of internal combustion vehicles in urban areas. (R-L)

Specific Recommendations

Number 13. To create a consensus cluster of electric mobility in each region as a benchmark for the development of the recommendations contained in this Strategy. (R-L)

Number 27. To stimulate the deployment of EV through the development of Sustainable Urban Mobility Plans and Business Travel Plans in the regions. (R-L)

Number 30. To promote the use of EV by awareness campaigns which show EV as sustainable means of transport. (N,R-L)

Number 31. To promote public procurement of electric vehicles in public administrations. (N,R-L)

Number 40. To elaborate a guide to support local urban adaptation to the infrastructures associated with EV. (R-L)

OBJECTIVE 10

To remove any possible regulatory barriers to the development of Ev by legislation adjustment (European, national, regional and local). (LEGAL).

Global Recommendations

Number 5. To standardize at European level the charging points. (EU,N)

Number 8. To change the regulatory and policy framework for infrastructure charging at the corresponding national level. (N)

Number 16. To streamline regulatory legislation at national level to include instructions for the regulation of new technologies in EV. (N)

Number 23. To design of specific signalling of parking areas and charging points associated to EV at European level.. (EU)

Number 28. To reduce/eliminate the various taxes and fees associated with EV in European countries. (EU,N,R-L)

Number 29. To strengthen the regulatory and policy framework that encourages the introduction of the EV as an essential part of sustainable mobility. (N)

Number 39. To adapt the tariff system of electricity supply companies to favour charging EV at night. (N)

Specific Recommendations

Number 40. To elaborate a guide to support local urban adaptation to the infrastructures associated with EV. (R-L)

	OBJECTIVES										SCOPE			STAKEHOLDERS		
RECOMMENDATIONS	nº 1	nº 2	nº 3	nº 4	nº 5	nº 6	nº 7	nº 8	nº 9	nº 10	EU	NATION	REGION/LOCAL	Administration	Companies	Citizens
nº 1				x		x						x	x	x	x	
nº 2			x		x						x	x		x	x	
nº 3					x		x					x		x	x	
nº 4				x	x		x						x	x	x	
nº 5			x							x	x	x		x	x	
nº 6		x	x	x	x				x				x	x	x	
nº 7			x	x							x	x		x	x	
nº 8										x		x		x	x	
nº 9			x		x							x	x	x	x	
nº 10					x							x		x		
nº 11	x	x	x									x		x	x	
nº 12	x	x										x		x	x	x
nº 13	x	x		x					x				x	x	x	x
nº 14			x									x		x	x	
nº 15	x										x	x	x	x	x	x
nº 16										x		x		x	x	

	OBJECTIVES										SCOPE			STAKEHOLDERS		
RECOMMENDATIONS	nº 1	nº 2	nº 3	nº 4	nº 5	nº 6	nº 7	nº 8	nº 9	nº 10	EU	NATION	REGION/LOCAL	Administration	Companies	Citizens
nº 17						x			x		x	x	x	x		
nº 18	x	x		x		x			x		x			x		
nº 19				x		x		x				x		x		
nº 20						x		x					x	x		
nº 21				x		x							x	x		
nº 22				x		x							x	x	x	x
nº 23										x	x			x		
nº 24				x									x	x		
nº 25				x		x							x	x		
nº 26				x		x						x	x	x	x	x
nº 27				x		x		x	x				x	x	x	x
nº 28							x			x	x	x	x	x		
nº 29										x		x		x		
nº 30	x	x							x			x	x	x	x	x
nº 31	x								x			x	x	x		
nº 32		x					x					x	x	x		

	OBJECTIVES										SCOPE			STAKEHOLDERS		
RECOMMENDATIONS	nº 1	nº 2	nº 3	nº 4	nº 5	nº 6	nº 7	nº 8	nº 9	nº 10	EU	NATION	REGION/LOCAL	Administration	Companies	Citizens
nº 33			x				x					x		x	x	
nº 34			x				x					x		x	x	
nº 35		x									x	x	x	x		
nº 36		x					x						x	x	x	
nº 37						x		x	x				x	x		
nº 38							x						x	x		
nº 39					x		x			x		x		x	x	
nº 40				x					x	x			x	x		

Table 2: Objectives & Recommendations Descriptive Table

Specific Recommendations	Noord Brabant (Holanda)	Uppsala (Suecia)	Oxford (Reino Unido)	Malaposka (Polonia)	Málaga – Andalucía (España)
1	X			X	X
2			X		
3			X		
4			X		
9			X		
10			X		
12	X			X	
13	X				
14		X			
19	X	X	X		X
26					X
27				X	
30	X			X	X
31		X		X	
32		X		X	
33		X			
34				X	
36	X				X
38	X			X	
40	X			X	X

Table 3: Specific Recommendations Descriptive Table

VI.3 Descriptions of recommendations

<u>Recommendation 1.</u> To implement an Infrastructure Plan for EV associated with the common management of Metropolitan Areas integrating the Municipalities with more than 25000 inhabitants.

All the metropolitan areas of the Europe regions have at least one main city and a series of homogeneous productive characteristics as regards road communication infrastructures, professional, social, commercial or industrial activities which start up. For this, the main idea is identify and vertebrate the group of Town councils that can integrate a Common Public Recharge Infrastructure Plan for electric mobility, coordinated from the Regional-local administration.

<u>Recommendation 2</u>. To boost research and development (R&D) related to the ability of electric vehicles to act as a distributed system of electric energy storage, given the large profits with respect to the energy efficiency of electric systems "vehicles to grid"(V2G).

It takes a strong support of R&D in connection with the procurement of new services and products related to emerging technologies that allow the integration of the EV grid, as well as harnessing the EV energy storage capacity,

And for this it is necessary to carry out actions in:

*Support for innovation in V2G

*Definition of standards of training and development to create a stable and secure environment for investments in V2G.

* Involve businesses in pilot tests on these new materials.

<u>Recommendation 3</u>. To encourage energy distribution in companies, purchasing electricity from the users who have stored energy in the EV battery.

It is also necessary following the R2 strategy, to involve energy distribution companies in relation to the buying of energy, making the process easier with renewable energies.

<u>Recommendation 4.</u> To develop and promote the implementation of private recharging points, preferably supplied by renewable energy.

To enable greater participation of renewable electricity

In mixed and electric vehicles, the electrical system should be more flexible to allow integration of energy generated from renewable sources by variables such as wind and solar power. Electric vehicles combine long periods of network connection with a large capacity of battery storage. However they will only do so if they are equipped with an on-board measurement system (meters).

Recharging should be managed properly so that electric vehicles, a future role in the energy system towards the goal of achieving 100% renewable energy.

Most electric cars are charged at night, flattening the curve of power consumption, allowing the introduction of renewable energies in the market in peak hours, important in wind power production.

<u>Recommendation 5</u>. To standardise the charging points at European level.

The purpose of this recommendation is to universalize the use of electric vehicles throughout Europe. For this an essential aspect is the homogenisation of the charging infrastructure and defines the minimum requirements. In particular key aspects to be considered are: minimum benefits provided, standard mechanical and electrical system, robust measures and vandalism protection, security protection for the user, identification communication code, application protocol (limited time, emergency etc) and standard methods of payment.

Policies to guide this normalisation should aim for simplicity in use and cost optimization.

<u>Recommendation 6.</u> To monitor and supervise the recharge process for public use to obtain information on various aspects of EV fleet.

There is a need to provide the system with elements which allow the control of supply, demand management and service user ID for exploitation. With proper monitoring you can:

-Manage demand

-Manage information and statistics on energy consumption and savings

-Know the savings in CO2 emissions

-Know the load times

-Know the user information

-Authorize or deny the charge

-monitor any peaks or surges

-Control the payment system: flat rates, prepayment etc.

<u>Recommendation 7</u>. To set up Pilot projects to promote fast and very fast recharge.

Fast charging which requires a special plug in addition to normal load can be loaded in shorter time (15mins), allowing autonomy of 60 to 100kms.

Today different standards are being studied, covering different geographical areas, involving different companies worldwide. There is a pilot project in Malaga and the electricity company Endesa will install recharging points compatible with the standard CHAdeMO[10], already adopted by various vehicle manufacturers.

There are already studies to design an electric vehicle recharge point that allows the storage of energy and integration of renewable energies to help manage the system.

In these charging points the situation in terms of use and the infrastructures associated to the area have to be studied very thoroughly. Conditions to the grid as well as its security are complex.

<u>Recommendation 8.</u> To change the regulatory and policy framework for infrastructure charging at the corresponding national level.

The purpose of this recommendation is to eliminate whatever existing barrier that impides the electric vehicle entering the EU in a medium or long term. Among these there are operative aspects to clarify:

-Modify the compensation system for the activity of electricity distribution to provide essentials such as consumption in different points of supply or supply individual buildings.

[10] CHAdeMO (sometimes spelled CHΛdeMO) is the trade name of a quick charging method for battery electric vehicles delivering up to 62.5 kW of high-voltage direct current via a special electrical connector.

-Regulatory framework which will affect the figure of the so called

"Transmission charge"

-Based on market research establish a sufficient range of tariffs to achieve the incentive peak to ensure overnight charge.

The resulting framework of measures must have the appropriate communication mechanisms to ensure the transmission of them to the final user.

<u>Recommendation 9</u>. To encourage the introduction of "smart grids" in the electrical system and the use of renewable energy in transport.

The smart grids or smart networks provide automatic management of its operations, in a more efficient, reliable and flexible way. Regarding the implementation of electrical vehicles, these networks favour the control and optimization of charging operations, thus allowing the increase in the contribution of the renewable generation to the transport sector, moreover allowing one facet of electrical vehicles that will improve the electrical system as a whole: the storage of electrical energy. Also remote management should be encouraged in individual electricity meters (smart metering)to allow efficient recharge of vehicles.

<u>Recommendation 10.</u> To define technical characteristics and method of integration of the charging stations to fixed electrical installations in:

a. Single Family Homes.
b. Property owner garages.
c. Charging stations installed in public roads.
d. Charging stations in public areas, department stores, dealers, stations dedicated to the burden of EV.

To achieve this recommendation the following strategic considerations will be taken into account:

Technological solutions should be given that guarantee the introduction of EV in private electric system with mechanism for the management of the demand with a line of support and technical requirements to legalize and review the current regulatory framework in the field of electrical installations with a processing guide for the installation of charging points to facilitate the process by users.

<u>Recommendation 11.</u> To implement R & D programs aimed specifically at strengthening the capabilities of the automobile industry in each country by making

reference to technologies related to improving the environmental impact of vehicles.

It is also necessary following the strategy of recommendation 2, a firm support in R +D+I programs related to new technologies required in EV automotive.

<u>Recommendation 12.</u> To create a forum for the development of the EV industry and market in each country. This would have to bring together all interested parties, including those participating; policy makers, vehicle manufacturers, power generators and distributors, technologists, research centres, urban designer, transport, planners, etc.

The forum will help in a more effective participation of agents related to electric mobility, so that communication between these different agents is more fluid and direct.

<u>Recommendation 13</u>. To create a consensus cluster of electric mobility in each region as a benchmark for the development of the recommendations contained in this Strategy.

The EU should promote a proactive stance in the manufacturing sector to enhance leadership of the electric vehicle industry. To achieve this goal it will be necessary to:

-Promote and monitor the process of formation of conglomerates or “clusters” and collaboration between them.

-Synchronize public and private strategies in the field of electro mobility.

-Promote the creation of multidisciplinary experimental centres(where agents can investigate and carry out engineering tests, sharing infrastructure and equipment)

-Create a monitoring and surveillance box to determine the rate of penetration and industrialisation of the electric vehicle.

-Develop a joint strategic marketing policy that unites the different sectors and stakeholders and report a valuable image that encourages industrial investment.

<u>Recommendation 14</u>. To support R&D projects for new EV technologies.

The design and development of electric vehicles in any form has a complexity that requires the collaboration of partners from different profiles and dimensions (companies, research institutes, universities, administration) which should resolve the complications in technology, manufacturing, finance and marketing. Over and above the vehicle itself, initiatives will also arise on new products and services related to electric mobility. These projects need both financial support and the promotion of collaboration between various agents.

<u>Recommendation 15.</u> To promote new training related to the electric vehicle through reform of University curricula and the creation of new professional profiles.

The gradual introduction of electric vehicles involves the need of new knowledge for future professionals. This new knowledge will be introduced in a flexible manner in the curriculum of higher levels of both academic and professional education. However they should also be progressively incorporated into previous levels of education. On the other hand, it is necessary to design training programs that allow professionals to update their knowledge and adapt to the new challenges of electric vehicles.

<u>Recommendation 16</u>. To streamline regulatory legislation at national level to include instructions for the regulation of new technologies in EV.

Remove all legal barriers in the various fronts of regulation, standardisation and particularly in norms. To do this we have to revise current training at state level, check the transposition of existing policies and the changes needed for deficiencies that may limit the implementation of new technologies.

<u>Recommendation 17</u>. To set up a maximum standard of emissions of 130g of CO2 per km by 2015 and 95g of CO2 per km by 2020, in line with the position of the European Commission.

The internal combustion vehicles are sources of greenhouse gases and pollutants. In the coming decades adjustments should be made to the limitations of CO2 emissions, but linked to each individual vehicle emission produced and comply to the European motto "polluter pays" for each vehicle unit with a respective tax.

<u>Recommendation 18</u>. To create a European Observatory for electrical mobility to oversee the development of the EV fleet and related infrastructure, to collect on a voluntary basis statistical data based on a common methodology.

It will be essential to establish the future network of statistical data at European level and uniform consistency conducive to having a common standard for electric vehicles. It is therefore desirable to develop a European Monitoring Centre to focus on this effort.

<u>Recommendation 19.</u> To develop a 20 year work plan for the continued development of electric vehicles and Plug-in hybrids.

Develop the Action Plan for the continual advance of measures during 20 years(2011-2030)for BEV and PHEV vehicles entails three strategic lines: economical, social and environmental. Temporary intermediate landmarks have to be looked at carefully structuring three basic parts: short term in the first 4 years, medium term in the following eight years and long term until the year 2030, where the EU wants half the fleet of European vehicles to be represented by this technology.

<u>Recommendation 20.</u> To authorise the use of electric vehicles in public transport lanes and restricted areas for private vehicles.

Cities must develop specific studies of organization and management of mobility which do not reduce the Town environment or collective transport so as to allow electric vehicle access (BEV) in a selective way in protected environments or in lanes reserved for collective transport as a temporary measure to launch and promote the increase of electric mobility, testing when the conditions of initial context have changed and need specific reconfiguration. Another option is to generate intermodality through integrated combination of EV sharing public transport Bus Rapid Transit (BRT) with high passenger capacity.

<u>Recommendation 21</u>. To install recharging points in the Park & Ride areas.

The “park& ride” car parks allow vehicles to be left in the peripheral station or terminal in a city at a reduced rate or free of charge and continue the journey by public transport. For the charging points physical space will have to be reserved and analysed and suitable slow recharge rates and set of parameters set up to promote the management of this infrastructure at bus, train or airport terminals.

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Recommendation 22. To incorporate Electric vehicle in the Business Travel Plan (BTP)

A Transport to work or business plan (PTTE-PDE) is a group of measures to give alternative ways of transport other than private vehicles to people in their travelling home-to-work. The fleet options of "micro-van" or company microbuses with electric technology are options which should be studied, also local administration bonuses on taxes to the companies who help reduce energy consumption and emissions is recommended.

Recommendation 23. To design of specific signalling of parking areas and charging points associated to EV at European level

The next steps in electric mobility recommend adding signs to the recharging infrastructure to inform drivers. This should include how they will communicate, what criteria to follow and how they will convey to the citizen so he will be updated. The coloured signalling on the registration plaque informing the environmental level is also recommended.

Recommendation 24. To implement specific signs for parking areas and associated EV charging points

Talking about criteria to be used in the parking area is to talk about the location of points, what environment they will be in and what relation they will have with the type of road or street. What we mean is, we recommend evaluating the locations depending on which types of roads (primary, secondary or neighbourhood districts).

Recommendation 25. To promote the formation of parking area reserved for EV on the roads

Reserved parking spaces should be created in the most important points of attraction in a city to generate short and medium term the citizen's sensitivity to use electric mobility. In fact, in Town areas where there is a set fee for parking, formulas should be devised to benefit users of this type of mobility. New technologies coupled with social networks are a good channel to promote the industry among young people.

Recommendation 26. To promote the use of EV car sharing

The idea in question relates to the transport system based on a fleet of shared cars "e-sharing" for partners who only pay for the hours and miles they use, without owning the vehicle. A particular legal formula and contract should be established between a private entrepreneurial business and the company who grant the exploitation. This format will show all the potential of using electric vehicles.

<u>Recommendation 27</u>. To stimulate the deployment of EV through the development of Sustainable Urban Mobility Plans and Business Travel Plans in the regions

The latest White Paper of March 2011 re –emphasises that Town mobility plans with company transport plans must be work tools which will reduce the use of contaminating vehicles in the citizen and work transport. The adoption of both mechanisms in municipalities with more than 5,000 people is recommended. The stimulus should be promoted by the regional and local authorities joined with state financial and economical support.

<u>Recommendation 28.</u> To reduce/eliminate the various taxes and fees associated with EV in European countries.

Undoubtedly, it is essential to proceed to the reduction of various taxes and fees associated with electrical vehicles in the countries of the EU to further the acquisition of electric vehicles by the citizens of the European Union. Therefore, we must implement measures at all government levels to promote this technology as opposed to internal combustion vehicles.

<u>Recommendation 29.</u> To strengthen the regulatory and policy framework that encourages the introduction of the EV as an essential part of sustainable mobility.

It is necessary to overcome regulatory, legal and standard barriers that may prevent the development of EV, creating a policy framework to facilitate the introduction of electric vehicles by ensuring its viability in all aspects such as approvals, maintenance, security, safety, recycling etc.

All barriers of this nature should be identified, as well as developments, and approvals of the vehicle, its components and recharging infrastructures in all its conditions:

- Legal barriers regarding the use of electric vehicles throughout their lifecycle (approval, registration, circulation and end of life span).

- Legal barriers related to charging (security, protection, electric, communication protocol, pin recharge services, etc)

- Legal barriers related to battery (hazardous material, recycling)

<u>Recommendation 30.</u> To promote the use of EV by awareness campaigns which show EV as sustainable means of transport.

One of the main challenges in the current state of electric vehicle is to solve the lack of citizen information of the characteristics, limitations, autonomy or possible uses of the electric vehicle. The administration must become a proactive agent to provide greater transparency. Management has to move information about the usability of the vehicle, demonstrative advantages or disadvantages, as well as the most common problems and their solutions.

There is a need for a level of communication on electric vehicles, associated costs, the benefits that can be associated with its implementation, the advantages in relation to mobility, available incentives, and at the same time that all this information be easy, accessible and unified.

<u>Recommendation 31.</u> To promote public procurement of electric vehicles in public administrations.

It is considered desirable to introduce into the bidding contracts that the Governments make some more positive values for the companies who offer electric vehicles compared to vehicles with less environmental sustainable engines. It is therefore necessary to guide the bidding to acquire this type of vehicles so that it is feasible to incorporate the new models of electric vehicles in the coming years to the Public administration fleet.

<u>Recommendation 32</u>. To incentivate economically to buy EV

Today the cost of electric vehicles is superior than the cost of internal combustion vehicles. Given the energy and environmental advantages presented by electrical vehicles, the incentives for purchase must be one of the active policies in the next few years. the cost of batteries and production in small quantities puts electric vehicles at an uncompetitive price level, although this should improve over the years. Vehicle manufacturers announced that prices would fall and that eventually more economical vehicles will reach the market, but a priori the price will remain above

market prices of conventional vehicles. Therefore activation of the demand for electric vehicles on the market will need aids and incentives to purchase them.

<u>Recommendation 33.</u> To promote pilot projects of technological nature

The complexity and novelty of some aspects of technologies which involve electric vehicles require evidence to demonstrate the results achieved both at a more purely technical level and at an exploitation level. For example, it is necessary to promote projects that demonstrate the integration of electric vehicles in intelligent networks, in the use of the batteries of electric vehicles as storage for the grid and in fast recharge or recycling of used batteries.

<u>Recommendations 34</u>. To promote demonstration pilot projects.

The introduction of electric vehicles is a major change in some aspects of citizen mobility. As a way of bringing these aspects closer and familiarize potential users with new technologies, demonstration projects should be encouraged, such as introducing electric vehicles in the fleets of public transport, or making it easier for citizens to try actual electric vehicles in collaboration with manufacturers.

<u>Recommendation 35.</u> To position internationally the E-mob regions as attractive locations for electric vehicles

The international positioning of different regions involved in the E-mob project is to be leader in the use and technological development and strategy of electric vehicles.

From each of these regions the different recommendations based on the development and expectations created in them will be enhanced. As an example, each of the E-mob business cases may be mentioned.

<u>Recommendation 36.</u> To create new business models related to EV.

The industrialization of electric vehicles creates a series of business opportunities and investment requirements for companies wishing to be part of the value chain of electric vehicles. The activities of the new sector can be classified in five areas including:

- industrial (industrial suppliers)

- infrastructure (infrastructure suppliers)
- Services (ICTS, battery recycle, maintenance, training…)
- renewable energies
- logistics

<u>Recommendation 37.</u> To promote the implementation of integrated public transport fares that are combined with the use of EV, thus limiting the use of internal combustion vehicles in urban areas.

Since the urban areas are those which best suit the current characteristics of the electric vehicle, a good way to promote electric vehicles is drawing the necessary intermodality between public and private transport. For this special fares must be implemented to benefit the users of electric vehicles in cities as opposed to users of internal combustion vehicles.

<u>Recommendation 38.</u> To incentivate the use of electric vehicles in toll reductions and the complimentary use of parking areas

Citizens make decisions related to mobility based on two parameters: the travel time and expenses associated. This is why those actions that affect these two factors cause changes in the patterns of mobility. The ability to use free parking areas both in public and storey car parks and the pricing of tolls favouring electric vehicles will allow a faster and complete acceptance of electric vehicles by citizens.

<u>Recommendation 39.</u> To adapt the tariff system of electricity supply companies to favour charging EV at night.

It is necessary to develop regulations to introduce elements of management demand to allow the electric system to take advantage of inherent flexibility associated with electric vehicle night recharge, without having to perform production electricity increases in the system or transport network. You can create a new access fee for specific electric charging in peak hours because the current supply of off-peak low voltage may not be sufficient incentive to locate the recharging of electric vehicles in peak hours. Also new models of recruiting low voltage conditioned to night hours will have to be contemplated.

<u>Recommendation 40 .</u> To elaborate a guide to support local urban adaptation to the infrastructures associated with EV.

Town Councils play an important role in terms of adequacy of regulations, town planning and general rules for the deployment of the infrastructure necessary for electric vehicles. Given the depth and extent of the required infrastructure it is necessary to describe in a guide the procedures to be followed to implement the necessary infrastructure in the urban environment, so that the development of this implementation is as homogeneous as possible.

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VII. Conclusions

WHAT CAN BE DONE WITH THE RECOMMENDATIONS?

Each of the recommendations themselves are a line of work, a concrete project that can be studied, analysed and diagnosed. The definition and configuration you purchase to put into action , could be developed within the POWER program or other EU calls in the coming years.

HOW CAN POWER USE THEM IN THEIR PROGRAMS?

Power will find a stage divided into three distinct levels. The first at a strategic level,defining the configuration of fundamental principles and the list of general objectives of electric mobility. The second at a tactic level shows the global and specific recommendations related to business cases presented by the regions. Finally the third level should be at an operational level and from the responsibility of POWER those lines are configured to enable work on projects with future focus related to recommendations in the coming years.

HOW CAN THE PARTNERS USE THE RECOMMENDATIONS INTHEIR OWN REGIONS?

The recommendations are the fruit of two concrete work aspects:

a) The coordination and transmission of the partners in each meeting and pilot test.

b) Reading, analysis and evaluation of documents mentioned in the bibliography section.

This paper has collected a series of descriptive tables of affinity or relationship to each of the recommendations raised in the business cases, which will surely serve as a starting point for development in each of the regions.

IS THERE A PLANNED FOLLOW-UP?

The next steps depend on the managers and policy planners of POWER. It would be highly desirable to take into account the guidance provided herein when addressing the Action Plan for the coming years as it is considered that many of the ideas have a clear example of innovation, development and challenge to strengthen electric mobility in the evolution of European cities.

WHO WILL IT BE SHARED AND DISCUSSED WITH?

The final event of the E mobility Accelerator project in the UK on the 7th and 8TH of SEPTEMBER will share the experiences developed during the work project. The knowledge on the subject can be displayed by conversations, opinions and points of view of the state of art with live actors represented by institutions, companies in the sector and civic society in general. Likewise, each partner will have the opportunity to disclose in his region.

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