Local Action Plan for Electric Mobility in Lisbon

Final Version

18th June 2012

Occam / EMEL

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Introduction

The intensive use of fossil fuels is responsible for several negative environmental impacts and considering our activity dependence on those, this situation is unlikely to be reversed in the near future. In Portugal, and although the fact that we have been assisting a decrease of the primary energy consumption since 2005 and that the renewable share as been increasing over time (in 2009 represented 14% of the total primary energy consumption), fossil fuels still have an expressive significance being responsible for 49% of the primary energy consumption. In terms of the energy consumption by the sector of activity, the transport sector has the largest share of energy consumption with approximately 40% of all the final energy consumed in the country.

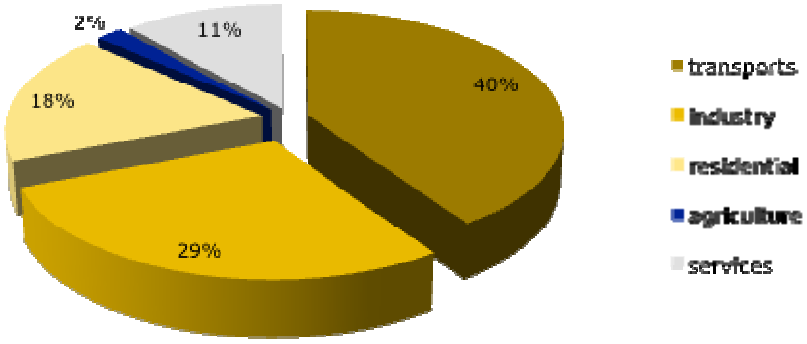

Figure 1: Final energy consumption distribution by sector in Portugal, 2009 (source: Eurostat, 2011; Edition: Occam)

Hence the Portuguese Government has increasingly acknowledged the need for an integrated long-term strategy, and several policies and measures have been created over the last years aiming the promotion of a more efficient management of energy, both in its production and use. The main strategy that defines the guidelines for energy sector is the National Strategy for Energy - ENE 2020[1] - that prevails since 2010, based on 5 priorities in which energy efficiency, security of supply and sustainability are included. In fact, many are the priorities and objectives established at National and European level, which have to be fulfilled in a not so long-term:

- 2020: 31% use of energy from renewable sources (EU/PT);
- 2030: Reduce in half the number of conventional vehicles used in urban transport (EU);
- 2050: End of use of conventional vehicles in cities (EU);
- 20% EV in public fleets.

[1] Resolution of the Council of Ministers n.º 20/2009

In 2008 the Portuguese Government launched the National Programme for Electric Mobility (Mobi.E[2]) - created under ENE 2020 - that aims the creation of an innovative electric mobility system including an intelligent electric grid management. This program addresses partially the national objectives of reducing our energy dependency by promoting the substitution of fossil fuels and the following reduction of emissions in transport sector. A public network with national coverage - 1350 charging points (1300 slow charging and 50 fast charging) in the 25 cities that subscribed the programme - has been implemented, in order to facilitate the access of drivers to charging facilities all over the country.

Electric Mobility in Lisbon

In February of 2010, a survey was conducted by the National Energy Agency (ADENE) about electric mobility on the 25 cities that are part of the Mobi.E programme. A total of 1663 interviews were made of which 125 in Lisbon, and 7,2% of these stated the intention of buying an EV in the following 2 years. Nevertheless, 69% believed that EVs should be cheaper and 27% would consider buying an EV if the price was 20% less than conventional vehicles showing that are still several constraints would have to be overcome before EVs can be a complete reality.

Considering that Mobi.E aims at the introduction and take up of electric vehicles by creating a pilot network of public access points for recharging vehicles, Lisbon is one of the 25 pioneer municipalities of this initiative, having the responsibility to install 687 charging points that will integrate the national Mobi.E network. At the end of 2011 Lisbon had already installed 480 charging points for light vehicles, and it is foreseen that until the end of September 2012 the last 34 will be installed. It is also expected that until the end of December this year 30 charging points for motorcycles will also be operational.

[2] from the Portuguese *Mobilidade Eléctrica*

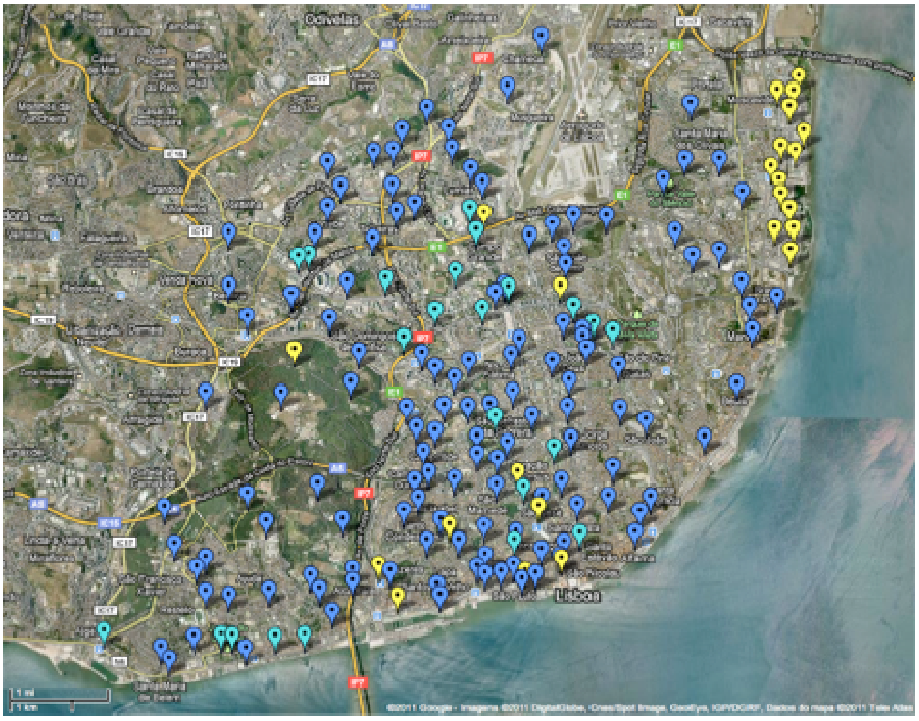

Figure 2: Mobi.E charging points network in Lisbon (source: EMEL)

EMEL (Lisbon's Municipal Mobility and Parking Company) and Lisboa E-Nova (Lisbon's Municipal Energy and Environmental Agency) were responsible for the development of the plan for the public recharging stations' location in the city and with the support of a research group from IST (Technical University of Lisbon), the Municipality of Lisbon and other experts elaborated the document that defines these locations (as expressed in the previous figure).

In this context it became necessary to consolidate the local strategy for electric mobility with the objective of integrating it with all the policies and measures that have been being developed by the municipality in order to meet the efforts and needs of the different stakeholders: decision-makers, suppliers, associations and citizens. Under the framework of EVUE - Electric Vehicles in Urban Europe project that began in July 2010 a set of activities has been developed that intend to create the conditions for the development of such work. This project, of which EMEL is partner representing the city of Lisbon, focuses on the development of integrated, sustainable strategies and dynamic leadership techniques for cities to promote the use of electric vehicles which considering what was previously presented is consistent with the national strategy on this matter.

Furthermore the municipality has been particularly committed to improve air quality in the city centre: in 2010 it was created a Reduced Emission Zone ("Zona de Emissões Reduzidas") – ZER – that bans pre-1992 vehicles (except those that have been fitted with a catalytic converter, public transport vehicles, emergency vehicles, among other specific cases) from circulating in the major avenues of the city (and gradually extended).

The Lisbon City Council has also signed an agreement that at least 20% of all new vehicles bought should be electric, as part of it's leading by example approach, consolidating the number of EVs in the municipality fleet that in 2011 was already of 36 EVs.

The process

According to the URBACT Guide on the creation of the LAP, the Local Action Plan is a document that provides a complete set of solutions to tackle the core issues identified at the start of the EVUE project. The LAP should be produced and validated in a collaborative way by the different local stakeholders involved in the project, and overall intends to:

- improve the impact of transnational sharing and learning about local policies;
- shape the outputs of the networking activities developed by the partners;
- be an instrument of additional change.

In order to ensure a participative method along the process, the URBACT Local Support Group (ULSG) was created with the intention to bring together representatives of the main intervenient in the mobility system of the city of Lisbon. In this sense the elaboration of the LAP was subject to the auscultation of several agents in order to collect contributions that can express each stakeholder's perspective on this theme, to share experiences and initiatives about electric mobility and discuss the best practices and strategies for the implementation of EVs in Lisbon. It can be easily understand that a LAP has more chance of being implemented if it as been produced by the local key stakeholders and with the involvement of the Managing Authorities, that is why Lisbon tried to involve the entities that were considered essential in the achievement of these objectives.

The following table presents the main stakeholders involved in the ULSG and its main activity.

Table 1: ULSG stakeholders

Stakeholder	**Role**
APVE	EV association
Carristur	alternative mobility solutions
CCDR-LVT	regional development
CML	local authority
EDP Inovação	pre-procurement (energy supplier)
EFACEC	pre-procurement (technology supplier)
EMEL	local parking and mobility management entity
GAMEP	national electric mobility programme

Prio.E	pre-procurement (energy supplier)
Galp Energia	pre-procurement (energy supplier)
GPPQ	R&D funding opportunities
IDMEC-IST	R&D on transport and mobility
INTELI	pre-procurement (technology supplier)
Lisboa E-nova	energy agency

In order to collect its contributes and reflections, a set of meetings and interactions was also established with the ULSG, according to the following plan:

1. 22 February 2010 kick-off meeting of the ULSG;
2. 15 November 2010, ULSG meeting;
3. 1 March 2011, ULSG meeting;
4. 23 February to 25 March, 1st phase of the consult on structure and content of the LAP;
5. 1 to 10 of May, 2nd phase of the consult with interviews to: Alderman of the Urban Environment, Green Spaces and Public Space and the Alderman of Mobility and Road Infrastructures of the Municipality of Lisbon and the coordinator of the Office for Electric Mobility in Portugal;
6. 18 October 2011, ULSG meeting;
7. 17 April 2012, ULSG meeting;
8. 21 May to 8 June, consultation on draft LAP;
9. 18 June 2012, ULSG meeting and public presentation of the LAP.

The first step, and in order to evaluate the relevance of the several agents that are part of the ULSG, a consultation was conducted which was intended to understand their motivations and their involvement in the development of the LAP, including a problems and solutions activity.

Figure 3: ULSG group dynamic

After this exercise, and with the identification of the core problem based on the previous activities, a problem tree dynamics was promoted with the objective of potentiate the reflection of the incentive measures that could be adopted to the use of electric vehicles

in Lisbon. This reflection allowed the determination of the business model that should be adopted for Lisbon in order to introduce EVs in urban mobility.

Objective of this plan

The Local Action Plan intends to be a document where it is expressed the strategy of the city of Lisbon and the measures that will be adopted by the local stakeholders and that can contribute in a short term to a better take up and integration of EVs in urban mobility.

Overall, a set of key questions where established at the beginning of the development the plan so that it would be easier to understand what should be expected at the end of this process:

- What's the Vision for the city of Lisbon?
- Which are the goals?
  - diversification of mobility services supply;
  - environmental sustainability;
  - meet national commitments;
  - increase competitiveness;
  - pioneering/innovation on electric mobility;
  - ...
- What's the perspective of each stakeholder on the vision?
- What's the best way to put in practice?
- ... etc.

The approach adopted required the definition of what is the desired Vision for the city of Lisbon, from which it is possible to define the main objectives and goals to achieve. Afterwards, it was possible to develop the strategic plan for the implementation of EVs in Lisbon, the business model that can integrate the several stakeholders that are involved at the local level and finally the global communication strategy for electric mobility in the city. The next figure represents the approach that was adopted for the LAP in Lisbon.

Figure 4: Approach adopted in the development of the Lisbon LAP

Overall, the main challenges that the LAP can contribute to address are the following:

- integration of the local strategy with the global national strategy;
- promote the take up of EVs in a difficult economy moment;
- create a sustainable but also efficient (feasible!) business model.

The Vision

As previously mentioned the Vision reflects where, in the long term, the city expects to be and to achieve. This strategic statement provides a general goal for the future, so that that afterwards more specific objectives and activities can be defined in order to achieve the desired Vision.

Due to its significance to the city, it was essential that the Vision translated the opinions and expectations of the local politics. Thus there was the need of conducting private interviews to the 2 alderman of the main offices whose activities are related to the theme of mobility and electric vehicles: Urban Environment, Green Spaces and Public Space and Mobility and Road Infrastructures.

Furthermore considering the Mobi.E national programme it's also important that the LAP is in line with this strategy, however with specific objectives meant to be applied locally. As a result it was also necessary to carry out an interview to the coordinator of the Office for Electric Mobility in Portugal (GAMEP). The summary of these interviews is in the *Annex*.

On this basis, the following Vision was attained:

In 2020 Lisbon will be a pioneering city in the urban mobility field, offering mobility solutions that articulate the various transport modes and ease its access and sharing. The city urban dynamics settled in an effective and efficient mobility model, along with the combination of mobility and urban policies, will set Lisbon as a reference city on the quality of its urban environment

Specific objectives and goals

Once Lisbon's Vision was established, it was necessary to get into a level of more detail and specificity, identifying the objectives that have to be achieved in the timeframe horizon and its particular goals.

The specific objectives defined are the following:

- improve cities' competitiveness and citizens' quality of life by facilitating their ability to move around;
- reduce the negative impacts of transport (air pollution, noise, congestion and accidents);
- contribute to the reduction of 5% in the concentration of pollutants in the major avenues in the city;
- contribute to the achievement of a global reduction of 8,9%[3] until 2013 of the primary energy consumption in the city;
- achieve an integration of at least 20% electric vehicles in the municipal fleet.

[3] when comparing to the year of 2002 and for the three main sectors: residential, services and road transport.

Main target groups

The Local action Plan intends to be a guide for the achievement of electric mobility in Lisbon. Considering the theme and all the constraints entailed it was also very important to understand to whom is this plan is developed for.

Therefore, to define the measures to implement it was previously necessary to establish what are the target groups to which they were intended. Considering the timeframe and the limitations EVs actually present, the following entities were considered as the main target groups:

- citizens (residents, students and visitants);
- operators of flexible mobility solutions;
- companies with captive fleets (light vehicles);
- operators of mobility management.

Business Model

Several approaches are possible for cities to adopt in order to make a shift towards EVs. In the case of Lisbon a thorough approach was given to this model, and considering the national and local situations regarding EVs the development of a sustainable and feasible business model was the main concern.

The measures and milestones were established considering the strategic European, national and local guidelines on this theme, not only to comply with them, but also to potentiate a more effective adoption considering the local specificities of Lisbon.

Approach

There are many converging elements that can really contribute for the creation of a favourable environment for EVs to spread in, such as, environmental, institutional regulation, technological, political and economical factors.

From the analysis of the current situation, it can be seen that the incentives are mostly based in supply side measures, e.g. the creation of the national network of 687 charging points in Lisbon. This is obviously an important step in the process, but not enough when talking about a subject that is unknown for the majority of the population. From the work developed with the ULSG it was concluded that the main barriers/constraints considered more relevant for the development of electric mobility are:

- *very high investment cost;*
- technologic constraints:
    - *autonomy;*
    - *charging time;*
    - insufficient public charging network;
- maladjusted expectations;
- lack/inadequacy of incentives;
- lack of information, disinformation and misinformation:
    - low cost of usage;
    - uncertainty about the reliability of the technology (e.g. maintenance);
- *limited supply:*
    - *small range;*
    - *unavailability of delivery (e.g. for a fleet).*

The barriers relate to different aspects ranging from technology to social aspects, but considering those mainly related to the technology side (in italic), where the involved authorities cannot have an active role, the measures developed for the Lisbon LAP focus

on overcoming the remaining of the identified constrains focusing also on the demand side.

Measures and activities to implement

The measures and milestones defined for the LAP follow an integrated approach considering the main intervention areas that are seen as fundamental to achieve the objectives proposed. These four strategic priorities result on the following relationship:

Figure 5: Type of measures adopted for the Lisbon LAP

The following chapters present the measures developed for each of the intervention areas defined, describing in more detail the proposed action, its main intervenient(s), to whom is intended and the respective timeline.

Resources Management

The first priority deals with the management of resources, in particular with respect to actions at the infrastructural and equipment level, providing the target users the necessary conditions to the regular use of EVs in daily activities, e.g. through the acquisition of these vehicles or by strengthening the already existent public network.

MEASURE:	MUNICIPAL FLEET RENEWAL
STAKEHOLDER:	Municipality of Lisbon
TARGET GROUPS:	• citizens (residents and workers/students) • companies with vehicle fleets
MILESTONES:	54 EV in 2012

MEASURE:	MUNICIPAL FLEET RENEWAL
Acquisition in an operational leasing scheme of 54 exclusively electric vehicles (passenger and light duty) to the municipality fleet that will renew. The international tender will be launched during the month of May 2012. The municipality already has a fleet comprised by 36 EVs (of a total of 880 vehicles): 5 light passenger cars for generic transport activities, 17 light duty vehicles to support municipal urban cleaning operations and 14 quadricycle (Segways and Gems) used by the Municipal Police.	

MEASURE:	EMEL FLEET RENEWAL
STAKEHOLDER:	EMEL - Lisbon Mobility and Parking Company
TARGET GROUPS:	• citizens (residents and workers/students) • companies with vehicle fleets
MILESTONES:	• 3 EV in 2012 • 5 EV in 2013
Due to its experience and satisfaction level, EMEL expects to acquire a total of 8 electric vehicles until the 2013. The company already has 1 EV used by the administration.	

MEASURE:	CONSOLIDATION OF THE PUBLIC CHARGING NETWORK
STAKEHOLDERS:	• Mobi.E consortium • Municipality of Lisbon • EDP • Prio.E
TARGET GROUPS:	• citizens (residents and workers/students) • companies with fleets
MILESTONES:	• 34 charging points for light vehicles until September 2012 • 30 charging points for motorcycles until December 2012
Integrated in the Mobi.E programme, by end of 2011 a total of 480 charging points for light vehicles were already installed in Lisbon. The national network is expected to consolidate and expand, namely in Lisbon, with the operation of more 64 charging points by the end of 2012. It is also predicted the set up 9 fast charging points, but due to the absence of legislation in this theme the implementation date cannot yet be defined.	

Mobility Services

This strategic priority focus on the potential of the implementation of measures related to the demand of services, namely through the promotion of cooperation activities between several mobility agents in the city and also by the use of new resources that had not been yet tested.

MEASURE:	CAR-SHARING IN BUSINESS CLUSTERS
STAKEHOLDERS:	• Municipality of Lisbon • Carristur

MEASURE:	CAR-SHARING IN BUSINESS CLUSTERS
TARGET GROUP:	• companies with on duty travels needs
MILESTONES:	*tbd*
Implementation of a car-sharing service with EVs in clusters, namely on those with companies that have needs of performing on duty trips. Carristur is a spin-off/subsidiary company of Carris, the public transport operator in Lisbon, and is responsible for the management of the Mob Carsharing, an innovative mobility service allowing private citizens and companies to rent a vehicle, with some facilities included namely fuel, parking for free in public spaces, integration with other modes of transport, etc. The service can be very advantageous for companies since it can help to reduce costs associated with maintaining a fleet providing a ready to use product available 24h a day and daily allowances.	

MEASURE:	PROMOTION THE RENEWAL OF URBAN TAXIS FLEET
STAKEHOLDERS:	• Municipality of Lisbon • OEMs • Autocoope (Cooperative association Lisbon taxis)
TARGET GROUP:	• taxi drivers
MILESTONES:	pilot test during May and June 2012
During two months, two Renault Fluence Z.E. vehicles will operate in real conditions being used for taxi service in Lisbon. This pilot is the result of a cooperation protocol established between the Municipality and Autocoope that considers the possibility of having its fleet converted into EVs. Nevertheless, aware of the constraints that these vehicles have and considering the extremely demanding service in question it is important to have a first trial test in real operating conditions.	

MEASURE:	CREATION OF AN EV SHARING SERVICE
STAKEHOLDERS:	• Municipality of Lisbon • EMEL • OEMs • Prio Energy
TARGET GROUP:	• citizens (residents and tourists)
MILESTONES:	construction of 2 islands until September 2013
This measure intends to promote the use of electric bicycles, scooters or vehicles trough the establishment of a sharing system in two different hot spots in the city: Belém and Cidade Universitária. The first one is a touristic area and the second one is one of the biggest university campuses of the city, both with high potential of users that can intend to make their journeys in the city in an easier and practical way. Tourists will experience a more practical and efficient way to visit the city and students will avoid the use of private car in small distances. The system will combine other facilities, such as car parking and integration with the mobility card and the student card, which will contribute to the multimodality of the operation.	

Positive Discrimination

The success of the incentive to the use of EVs requires that is also structured by a group of measures on positive discrimination that favour its dissemination and further use. Some of these services are already provided, but the objective it's to adapt them to the

electric mobility reality, through regulation and taxation practices, encouraging the users to consider these vehicles as an option for their regular activities.

MEASURE:	CREATION OF BENEFITS IN PUBLIC PARKING
STAKEHOLDERS:	• Municipality of Lisbon • EMEL
TARGET GROUPS:	• citizens (residents and regular workers) • companies with vehicle fleets
MILESTONES:	*tbd with the municipality*
Creation of a set of benefits for users that have EVs, namely: temporary exemption of parking fees during different hours of day, parking in preferred spaces, discount in parks, ….	

MEASURE:	CREATION OF BENEFITS IN THE ACCESS OF HISTORICAL NEIGHBOURHOODS
STAKEHOLDER:	• EMEL
TARGET GROUPS:	• citizens (residents and regular workers) • companies with vehicle fleets
MILESTONES:	*tbd*
The access to the historical neighbourhoods in Lisbon is conditioned and free of cost access is only possible to those who have a special permission given by EMEL (such as residents). Within this measure, it is expected to grant benefits to the users that have an EV and intend to access these historical areas of the city, for instance, extending the period of loading and unloading of traders.	

MEASURE:	PERMISSION FOR USE OF BUS LANES
STAKEHOLDER:	• Municipality of Lisbon
TARGET GROUP:	• urban logistics companies
MILESTONES:	*tbd*
Permission of the use of bus lanes by urban logistics companies driving EVs, allowing these companies to have a gain in the operating time, which may be a key factor at the moment of achieving such vehicles.	

Capacity Building

The measures presented in this priority aim at providing the necessary knowledge and resources to improve the target group's skills so that the acceptance and usage of EVs is boosted. This strategy focuses mainly on communication initiatives, with the

dissemination of electric mobility through the promotion of meetings or other public events.

MEASURE:	EV EXPERIENCE ACTIONS
STAKEHOLDERS:	• Municipality of Lisbon • OEMs • APVE - Portuguese Association of Electric Vehicles
TARGET GROUPS:	• citizens (residents and workers/students) • companies with vehicle fleets
MILESTONES:	• 6 EVs experience during 2012 • 12 EVs experience during 2013
Development of dissemination activities on electric vehicles including test-drives, workshops, etc., where the potential users can have a greater contact with these vehicles and understand in real conditions their main characteristics, advantages and disadvantages.	

MEASURE:	PROMOTION OF MEETINGS / THEMATIC EVENTS
STAKEHOLDERS:	• Municipality of Lisbon • EMEL • OEMs
TARGET GROUP:	• Public entities with vehicles fleets
MILESTONES:	*Tbd in the Communication Plan*
Organization of meetings with the fleet management or procurement departments of public entities in order to discuss and present the LAP and the measures that are going to be implemented, so that they have fully knowledge of the foreseen activities which afterwards can influence their predisposition on buying EVs. Also, introduce them to common procedures as joint procurement as practices that can be adopted in an integrated manner by several public entities and thus obtain advantages as cost reduction and the optimization of the overall procedure.	

MEASURE:	PROMOTION OF COMMUNICATION ACTIONS
STAKEHOLDERS:	• Municipality of Lisbon • EMEL • APVE • ...
TARGET GROUPS:	• citizens (residents and workers/students) • companies with vehicle fleets
MILESTONES:	*Tbd in the Communication Plan*
Development of several communication activities with the objective of promoting EVs.	

Resources

- URBACT Programme website: www.urbact.eu
- The URBACT II Local Support Group Toolkit, a guide on creating Local Action Plans, 2009.