

fundación
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Pilot project to introduce
electric mobility

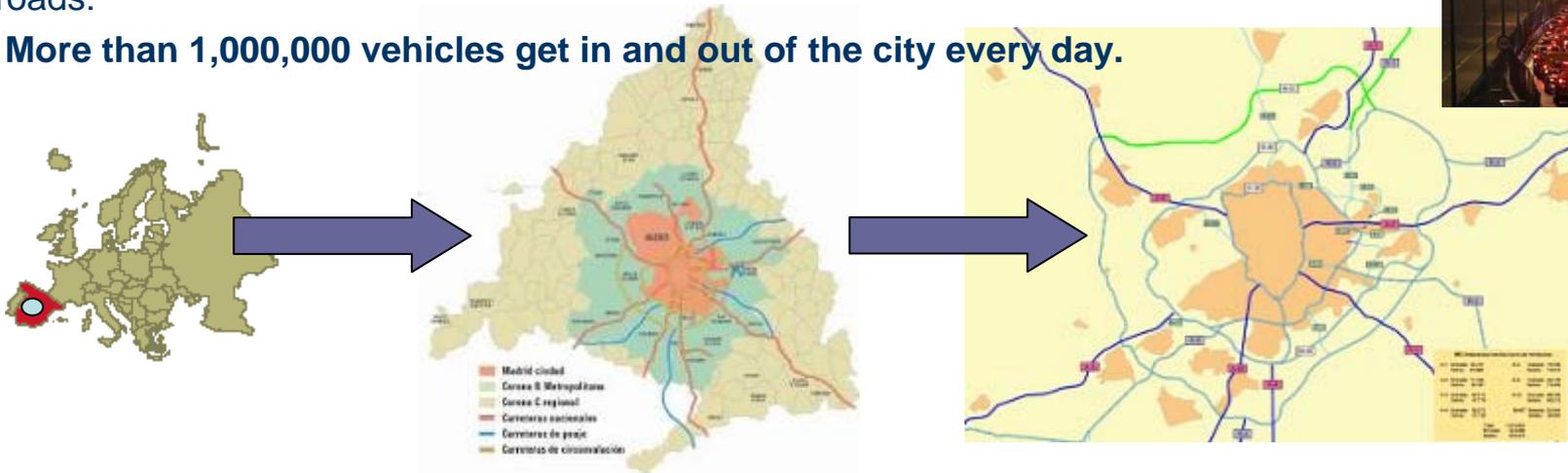


Sergio Fernández
Project Manager

March 2011

Madrid

- Capital and largest city of Spain. Third-most populous municipality in the European Union after Greater London and Berlin. Its metropolitan area is the third-most populous city by urban area in the European Union after Paris and London.
- The city spans a total of 698 km² and the metropolitan area around 4,609.7 km².
- The population of the city is roughly 3.2 million, while the entire population of the Madrid metropolitan area (urban area and suburbs) is calculated to be 6 million.
- The city of Madrid has an average population density of 5,208.6 people / km²
- Madrid has 3,415 km of roads (938 km are high capacity, 790 km of which are free highways). The road network has a radial structure connecting Madrid with main cities in Spain, which is complemented with 2 ring roads and 2 semi-ring roads:
- **More than 1,000,000 vehicles get in and out of the city every day.**



Madrid

Public transport:

- Integrated multi-modal mobility. Fare integration
- 6 transport interchange stations
- Metro system has 338 stations, 2,157 trains and a 339 km network.
- The city bus company (EMT) has 208 routes, 10,024 bus stops, 2,033 vehicles and a 3,725 km network
- Suburban rail network connects a large number of towns in the city's metropolitan area and transports over 200 million passengers per year. It has 337 km of track
- The whole public transport system caters for 1,600 million journeys per year and 5.4 million journeys per working day in the city, and 15.2 million journeys per day in the region



¡MADRID! EMT

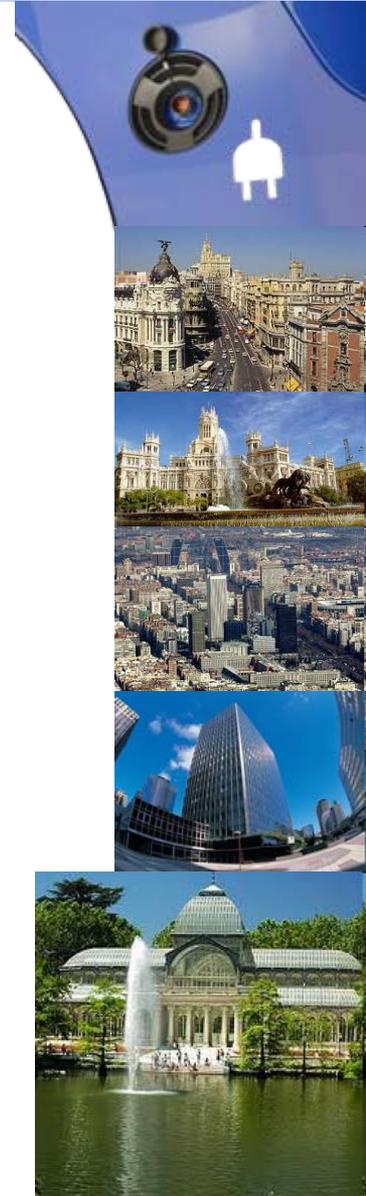


Madrid

- The city is divided into 21 districts and more than 120 neighbourhoods.
- The main economic sectors are the services (80%), industry, construction-real estate market, and tourism.
- Madrid city unemployment rate: 14.1% labour force, compared with regional and national unemployment rate: 14.7% and 18.8% respectively (4th quarter'09 data).
- The average income per capita is € 19,391.18 (range between € 22,564 and € 15,594, depending on the districts, 2007-2008 data)

•Modal split

- Private vehicle: 25% (car + motorcycle)
- Public transport: 46%
- Walking: 29% (walking + cycling, just 0.14%)
- Madrid has not a global Mobility Plan at the moment, but has established since 2006 the “Mobility Board”, to facilitate and enhance the governance of the city regarding mobility issues

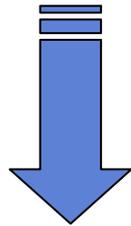


MOVELE PROJECT

ORIGIN:

2008-2012 Action Plan under Spain's Energy Saving and Efficiency Strategy (E4)

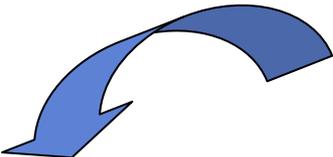
The Action Plan consists of a set of specific and different measures (59 actions have been identified, of which 36 take the form of financial incentives) which specifically target seven disaggregated sectors: Industry, **Transport**, Construction, Public Services, Household and office automation equipment, Agriculture, and Energy transformation.



IDAE*

* The IDAE (Spanish Institute for Diversification and Saving of Energy) is a state-owned business entity that reports to the Ministry of Industry, Tourism and Trade through the State Secretary for Energy. The IDAE coordinates and manages both the measures and funds destined for these plans in conjunction with the autonomous regions

In the **transport and mobility area**, these measures include, among others, a **pilot project** to introduce electric vehicles which will be carried out in collaboration with the governments of the Autonomous Regions and local authorities.



MOVELE PROJECT



The **aim of the pilot** is to demonstrate the feasibility of electric vehicles in technical, energy and economic terms. This project, reached through a consensus with the automotive industry, will set itself the target of a million electric and hybrid vehicles in 2014, giving precedence to domestic production as far as possible.



STAGES:

The **first stage** of MOVELE project consists in the installation of about **500 charging points in three cities before the end of 2010.**

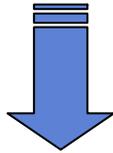
The **second stage** of MOVELE project consists in the staging or introduction of **2,000 electric vehicles within urban areas before the end of 2010.**

To get this goal, in December'08 the IDAE **invited the 13 biggest municipalities in Spain** (each one with more than 300,000 inhabitants) to participate in MOVELE project.

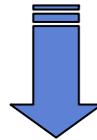


RESULTS:

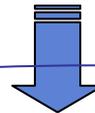
Three cities were selected: Sevilla, Barcelona y **Madrid**



Madrid presented the most ambitious bet, with a planned number of **280 charging points** in the streets or/and public spaces.



To implement this measure, **Madrid City Council through Fundación Movilidad**, identified which entities (both public and private), companies, organizations, etc. expect to have at their disposal electric vehicles (cars, motorbikes, etc.) within the next 18 months, or to receive visitors using these electric vehicles, in order to create a...

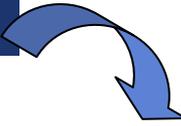


Map of possible charging points through the city





ESTIMATIONS



SUGGESTIONS



This way should optimize this first network of charging points thanks to the **reasonable estimations of use** given by the **social, economic and institutional** elements of the city



The information that was compiled is:

- Estimation of the intended purchase of electric vehicles within the next 18 months, indicating the type (cars, motorbikes, etc.) and in which quantity
- Estimation of the reception of electric vehicles by any reason (clients, providers, subcontractors, visitors, etc.) distinguishing the type of vehicle as well
- Estimation of the places or dependencies (with the location coordinates) where the implementation of a charging point should be of interest (for own or others use), and indicating the feasibility of the proposed location, indicating if it is a public space, on-street, off-street, etc.





To compile the mentioned information, Fundación Movilidad contacted with those agents who could be the most interested (by any reason: big fleets, technologically advanced, etc.). These were the **potential sectors**

- Local administrations (City Districts, Council Departments, etc.)
- National administrations (Ministries, National organizations, etc.)
- Regional administration (Regional Government departments, Regional Transport Authorities, etc.)
- International Organizations located in Madrid (World Tourism Organization-UNWTO, European Union institutions, Embassies, etc.)
- Representative entities that participate in the Mobility Table of Madrid (Chamber of Commerce, Trade Unions, Regional Federation of Neighbours, etc.)
- Other representative entities (CEOE, COE, ONCE, etc.)
- Spanish Cars Associations and Car Insurance Companies
- Universities located in Madrid
- Investigation and Innovation centres'
- Companies appointed to the Pro Clima Forum of Madrid City (companies with big fleets), as well as others companies with significant fleets (AENA, The Post Office, etc.)
- Transport companies





And...

- Mall companies
- Companies that own parkings within the city (rotation parkings)
- Rent a car companies
- Hotels (through the Local Tourism Department)
- Third Sector: Foundations (through the Spanish Foundations' Association), NGO's, etc.
- Media companies (TV, radio, etc.)





- **Smart loading (usage information, communication with the control center, control process, peak hours, rate, security, etc. .)**
- **Slow charge**
- **Scheme open for testing all types of points from a minimum of "intelligence" (INTEROPERABILITY):**
 1. **Development of a technical requirements (already developed by the technical group)**
 2. **After consulting with manufacturers and suppliers (already made, approach very open)**
 3. **In line with European standards in processing**

The strategic approaches of the MOVELE Madrid project have been recognized in the Spanish Strategy to Promote Electric Vehicle (April 6, 2010)

MADRID
TARGET

CHARGING
POINTS

280
in 2012

- **40 in fleets parking**
(some kind of public access)
- **200 in public parking**
- **40 on street**



- **Fit as a demonstration project ("stage 0") (living lab).**
- **-Large- number of charging points in fleets bases (agreement with companies)**
- **Minimize the number of charging points on the street ("opportunity charging")**
- **Parking concession for "opportunity charging"**
- **Opting for a centralized management in demonstration phase**
- **Joint communication project**
- **OPEN PROCESS (catalist):**
 - **Consultation process for mapping**
 - **Ongoing dialogue- manufacturers and potential clients**



Experimental period, living lab, stage "0"

MAPPING

"Early adopters" – open process

MOVELE-IDAE

Phase Charging points

Phase 2: Granting EV selling

MOVELE MADRID

Movele Madrid (Charging points. 5 parts agreement)

1 Charging points installation

2. Management and maintenance (demonstrative)

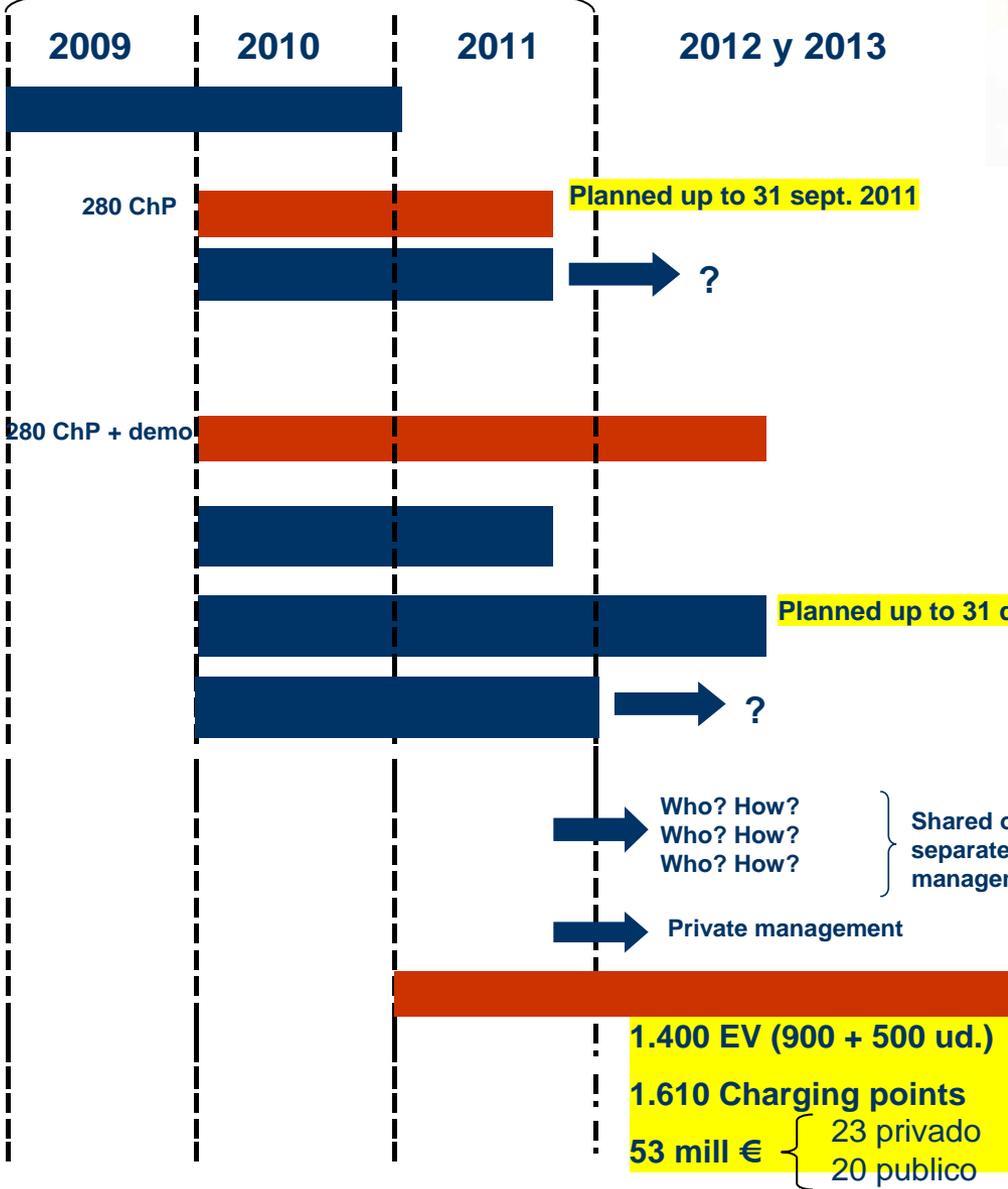
3. Free charging for users

Municipal ChP:

- 1. On street
- 2. Municipal buildings
- 3. Public parkings

PR privados:

MADEV (ELENA programme of European Investment Bank



PROJECT SUMMARY



MADRID OBJECTIVE	→	280 CHARGING POINTS (mostly IN PUBLIC SPACES)
PERIOD	→	2009-2010
BUDGET	→	€ 1,366,000
IDAE contribution	→	€ 586,000 (42,9%)
Madrid Council contribution	→	€ 780,000 € (57,1%)

Associated companies:
charging points in private locations

Movele partners: for municipal points (public spaces, public buildings, others...)





FREE CHARGING
(2010-2011)



Collect Using information

SER PAYMENT
EXCLUDED



Regulated parking service

TIME LIMITS



“Opportunity charging”.
Proposal: 3 hours

LEGAL INSTRUMENT



MUNICIPAL SUPPORT

CONTROL AND PUNISHMENT



No electric vehicles,
no charging EV,
exceeding charging
time EV



MOVELE MADRID IMAGES



National MOVELE presentation.
September 2009



EV cooperation agreement with MOVELE
Madrid partners. December 2009



EV cooperation agreement
Madrid-Renault_Nissan. April 2010



EV cooperation agreement
Madrid-Pamplona. April 2010



First MOVELE charging points installed in May 2010.
Mayor presentation



Mayor official
car turned
into a Plug-In
Hybrid Prius.
September
2010



EV cooperation
agreement
Madrid-SEAT.
February 2011

MOVELE MADRID IMAGES

10 charging points on road from 7 different manufacturers (Siemens, Ingeteam, Temper, Initzia, Emerix, Greenpower, ZIV)



Parking signals



MOVELE MADRID IMAGES

Charging points in Parkings managed by public company MADRID MOVILIDAD (61)



Charging points in Municipal Parkings (165)



Charging points in motorcycles parking on road



Other charging points (privates)





Madrid



Thank you