Pilot Project MOVELE :

An initiative of the IDAE in favour of energy efficiency in transport

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PROJECT MOVELE

- ***PROJECT MOVELE IS AN INITIATIVE MEANT TO SHOW THE TECHNICAL, ECONOMIC AND ENERGY FEASIBILITY OF ELECTRIC MOBILITY IN URBAN AND PERIURBAN AREAS.***

- ***THE CURRENT STATE OF ELECTRIC MOBILITY TECHNOLOGIES WILL DETERMINE THE NEED TO CARRY OUT DEMOS, WITH PUBLIC LEADERSHIP, THAT SHOULD ASSESS THE ADVANTAGES AND DISADVANTAGES OF THESE MOBILITY ALTERNATIVES, DISPELLING MOST OF THE DOUBTS THAT MAY EXIST.***

- ***THE RESULTS OF THE PROJECT ARE TO BE USED AS A BASE TO MAKE SUITABLE DECISIONS THAT SHOULD LEAD TO A WIDESPREAD EXPANSION OF THESE TECHNOLOGIES IN THE SHORT AND MEDIUM TERM.***

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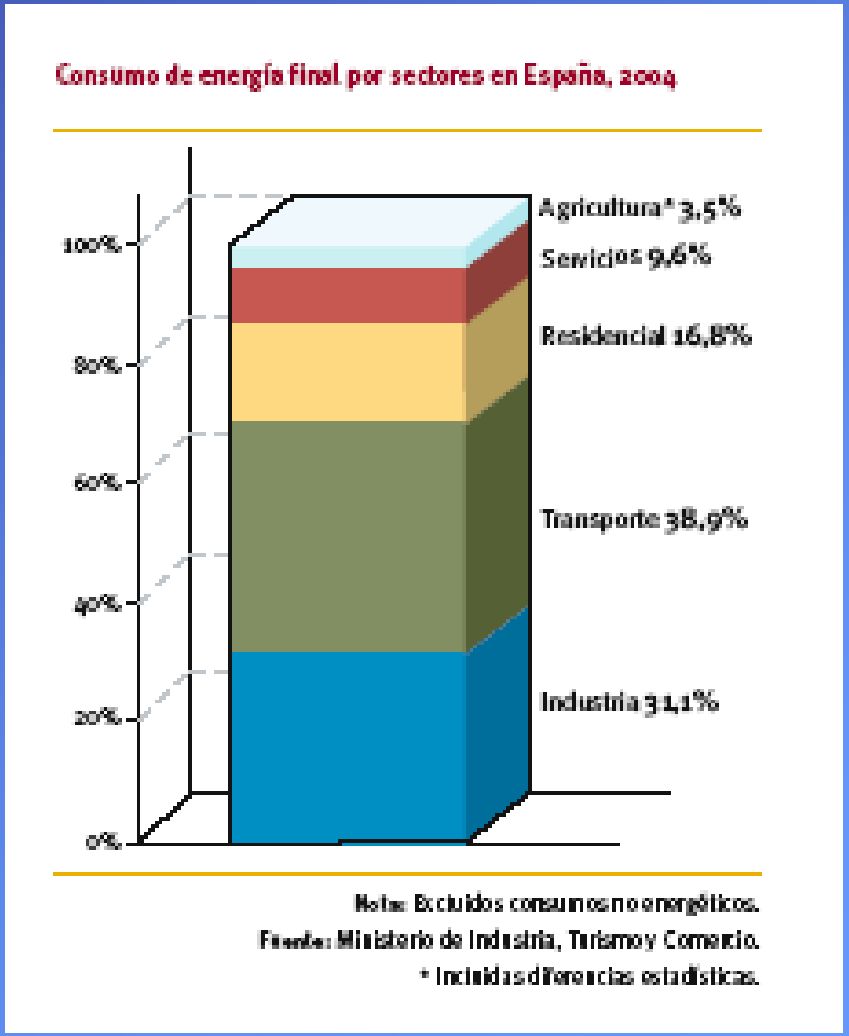
INTRODUCTION

- *Transport is the final sector with the highest energy consumption in Spain.*
- *25% of greenhouse effect gases are due to transport.*
- *80% of transport energy consumption takes place on roads.*
- *Oil-derivatives account for over 98% of the sources used in transport.*

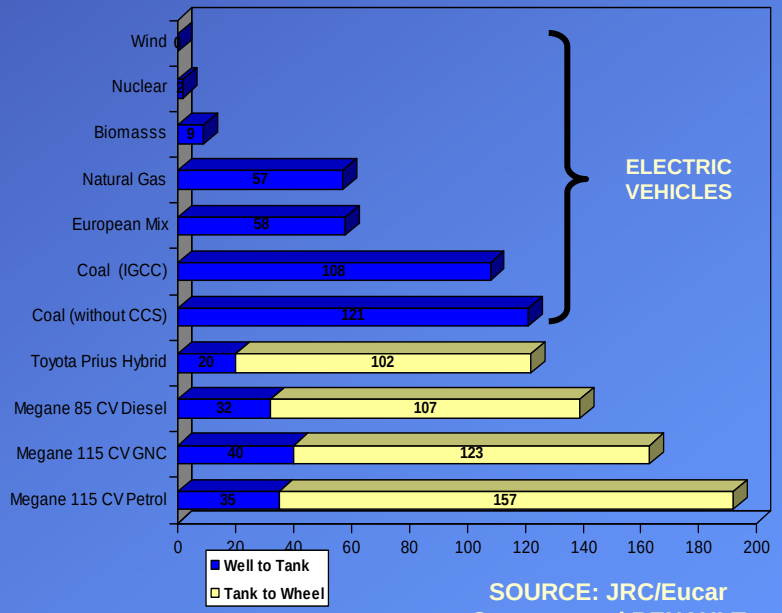


INTRODUCTION

WHY ELECTRIC MOBILITY?

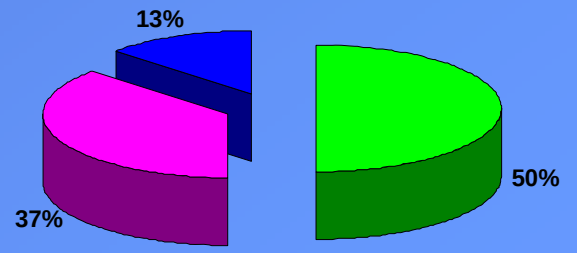
- *Because it improves transport energy efficiency as a whole and the electric system efficiency.*
  - o *It adds up a new renewable energy*
  - o *It reduces gaps between peaks and off-peaks.*
- *It reduces the energy dependence on oil derivatives.*
- *It includes the "diffuse" transport sector into the greenhouse-effect gas emission market.*
- *It reduces transport pollutants in urban environments.*

EMISSION BENCHMARKING ACCORDING TO THE USED TECHNOLOGIES



SOURCE: JRC/Eucar Concawe and RENAULT

DISTRIBUTION OF THE DISTANCE COVERED BY URBAN DRIVERS IN THE ÎLE DE FRANCE AREA



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INTRODUCCION

ICE
Conventional Technology

MICRO HEV
Start-stop

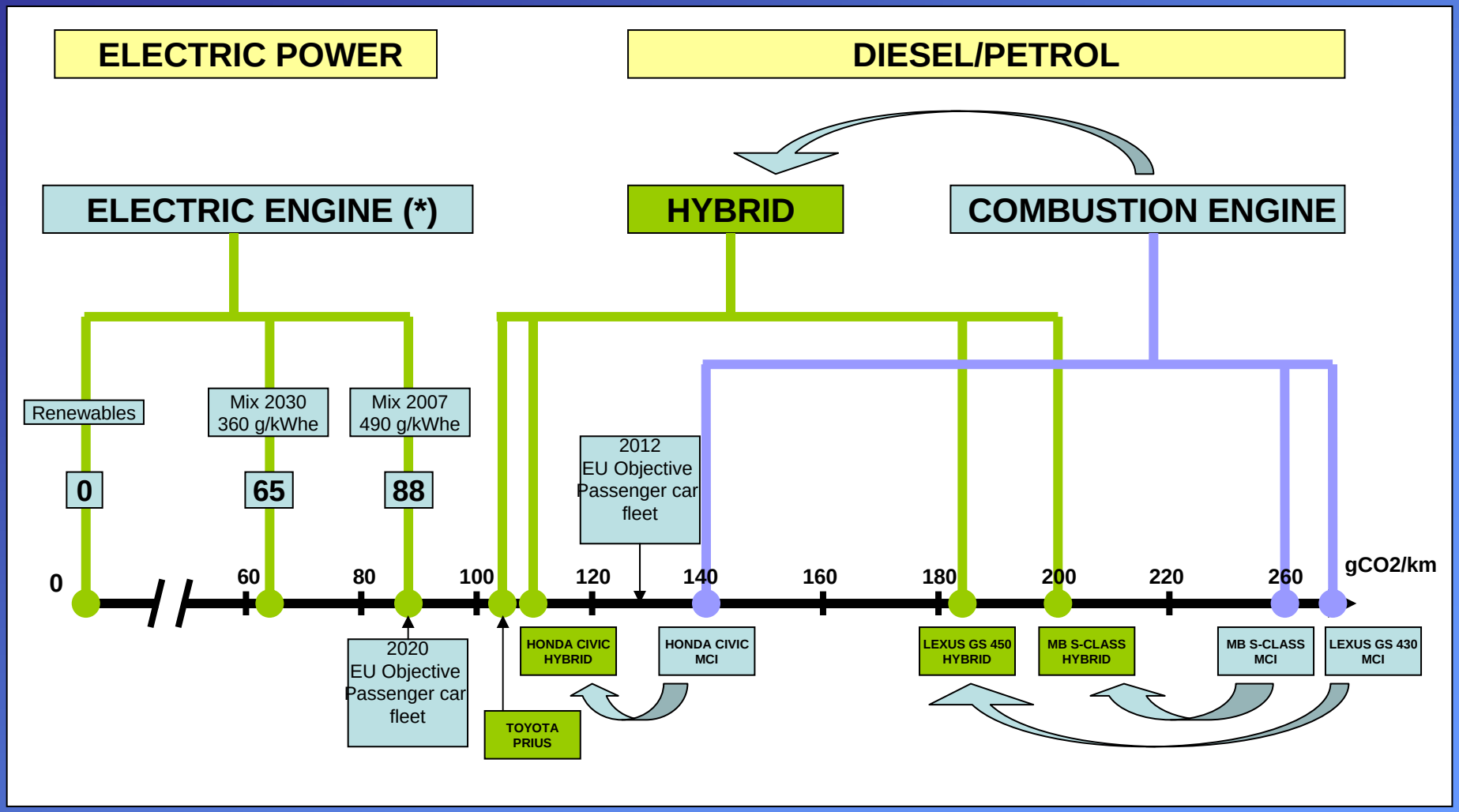
Mild HEV
Start/stop
Regenerative brake
Electric support drive

Full HEV
Exclusive electric mode driving (few km)
Regenerative Brake
Start/stop

PHEV
Electric mode driving (greater autonomy)
Internal or external power charge
REEV

ELECTRIC VEHICLE (BEVs)
Electric mode driving with a battery

INTRODUCTION



HYBRID VEHICLES ARE THE TECHNOLOGICAL BRIDGE TOWARDS ZERO-EMISSION VEHICLES

(*) Estimated consumption: 18 kWh/100 km.

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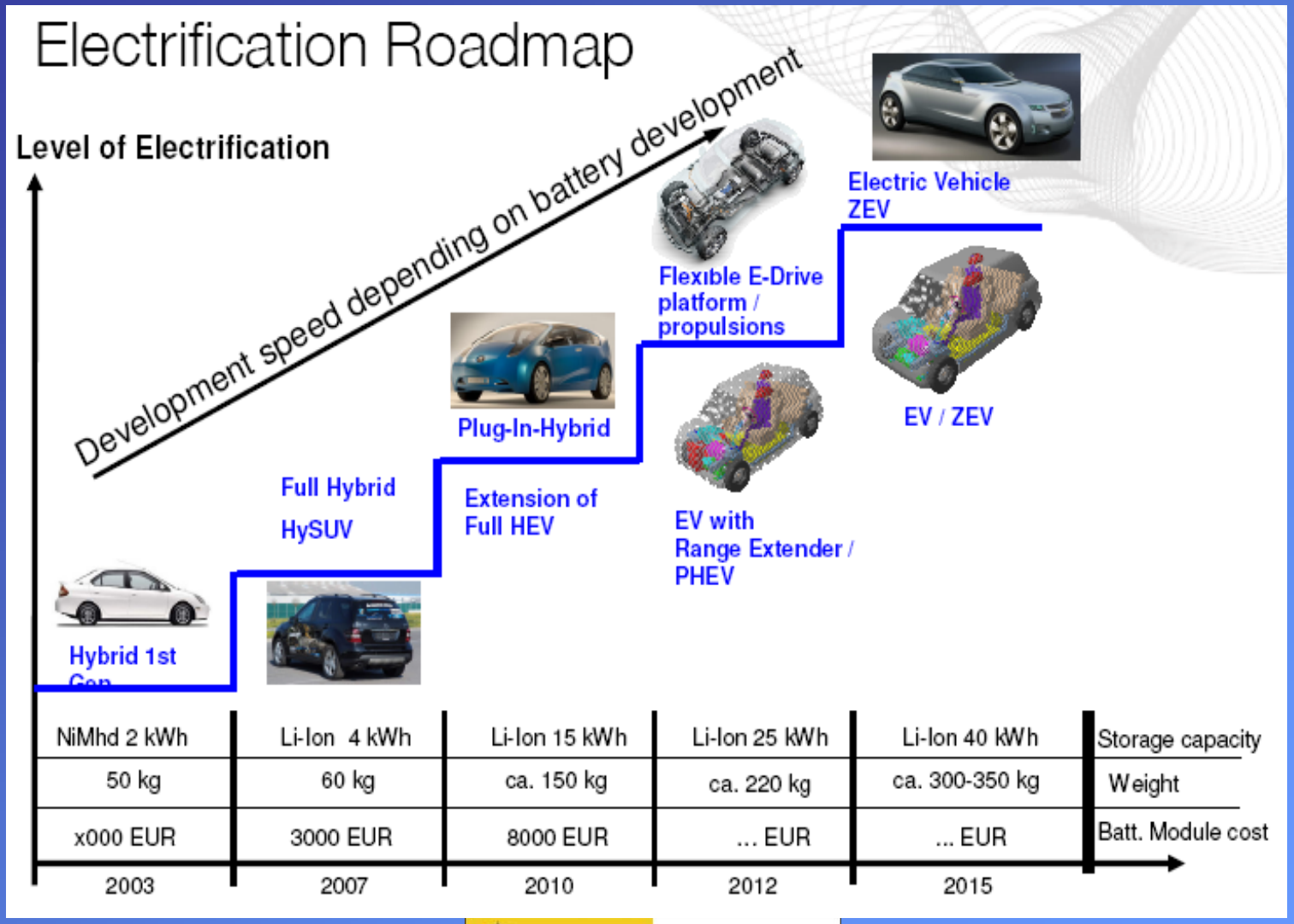
INTRODUCTION

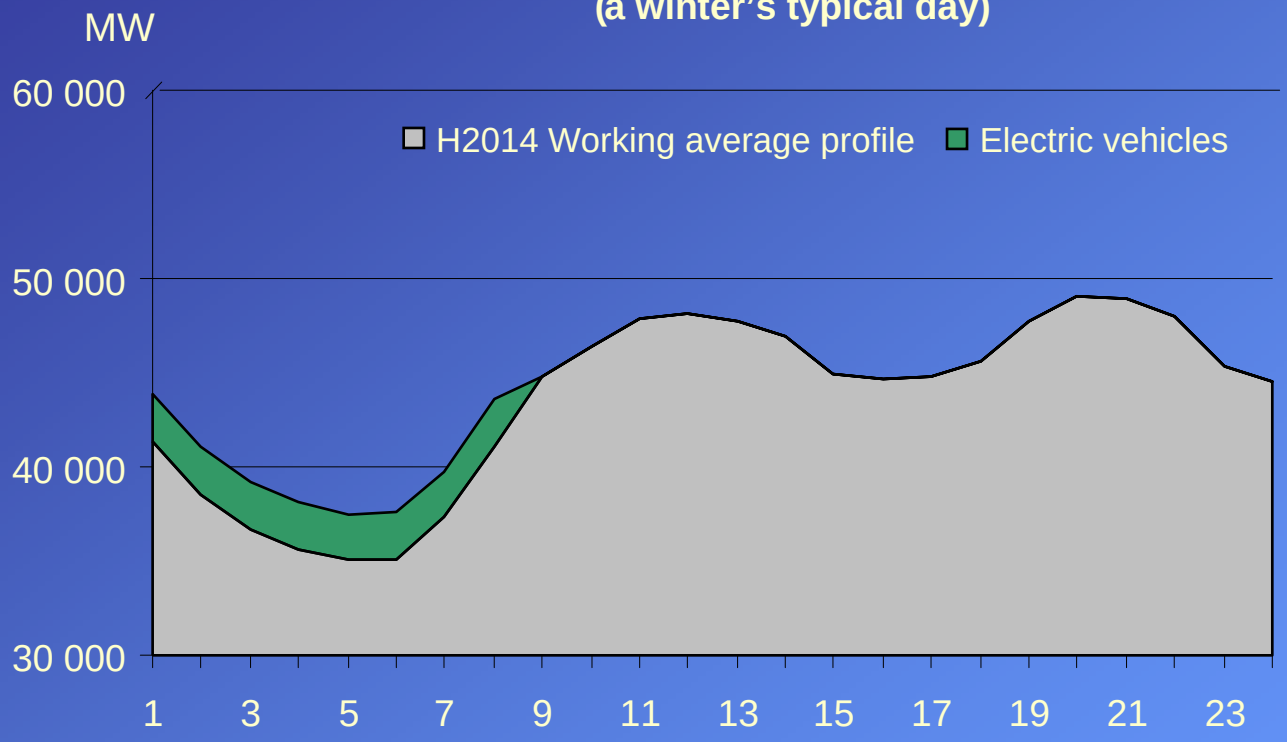
ELECTRIC VEHICLE ROAD MAP



Source: MAGNA (Austria)

INTRODUCTION

Demand profile for a penetration of one million electric vehicles in 2014 during an 8-hour simultaneous recharge (a winter's typical day)



It gets recharged in 8 off-peak hours with smart management

Load curve flattening

⇒ Greater efficiency and profitability than with conventional generation

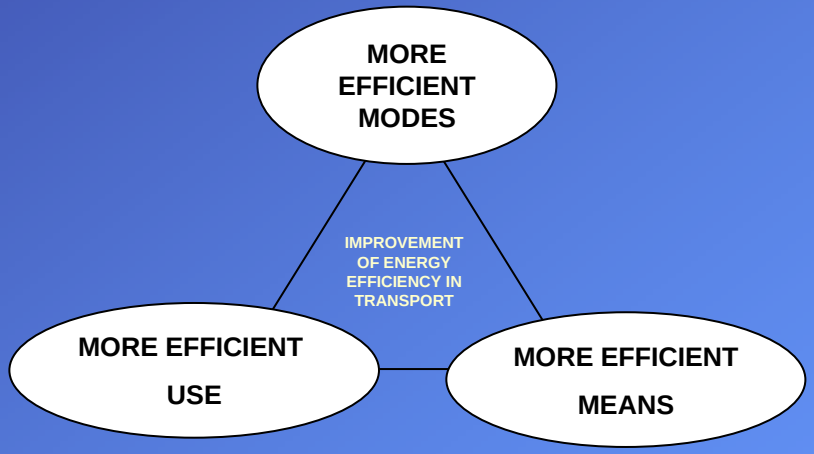
⇒ Greater introduction of renewable sources

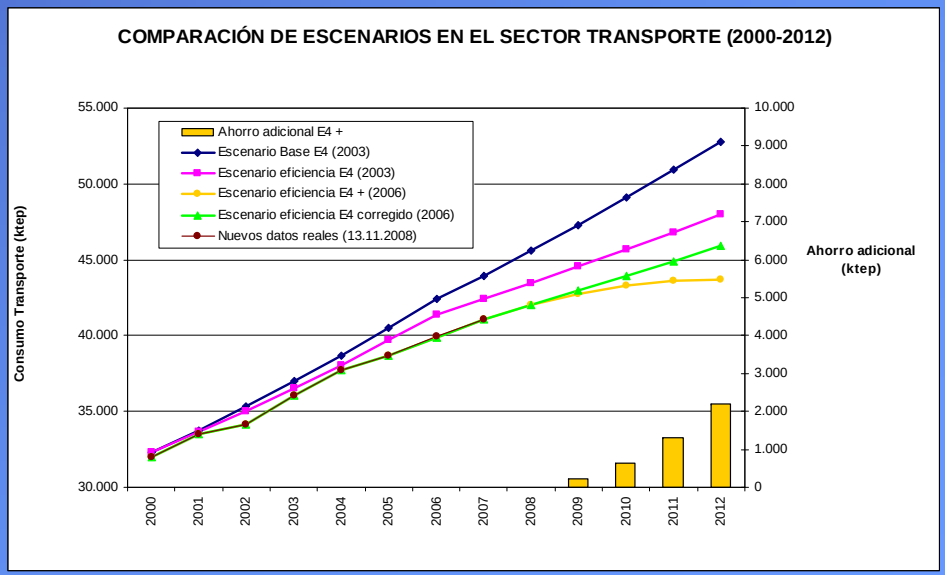
⇒ Low-risk operation for limited VE incorporation (1M)

Source: REE

ACTION FRAMEWORK

- *Saving and Energy Efficiency Strategy in Spain (E4) 2004-2012.*
- *E4 Action Plans 2005-2007 & 2008-2012*
- *Saving and Energy Efficiency Activation Plan 2008-2011.*
  - *Objective EV in 2014.*
  - *Energy services.*
- *Engagements as regards the reduction of greenhouse effect gases.*





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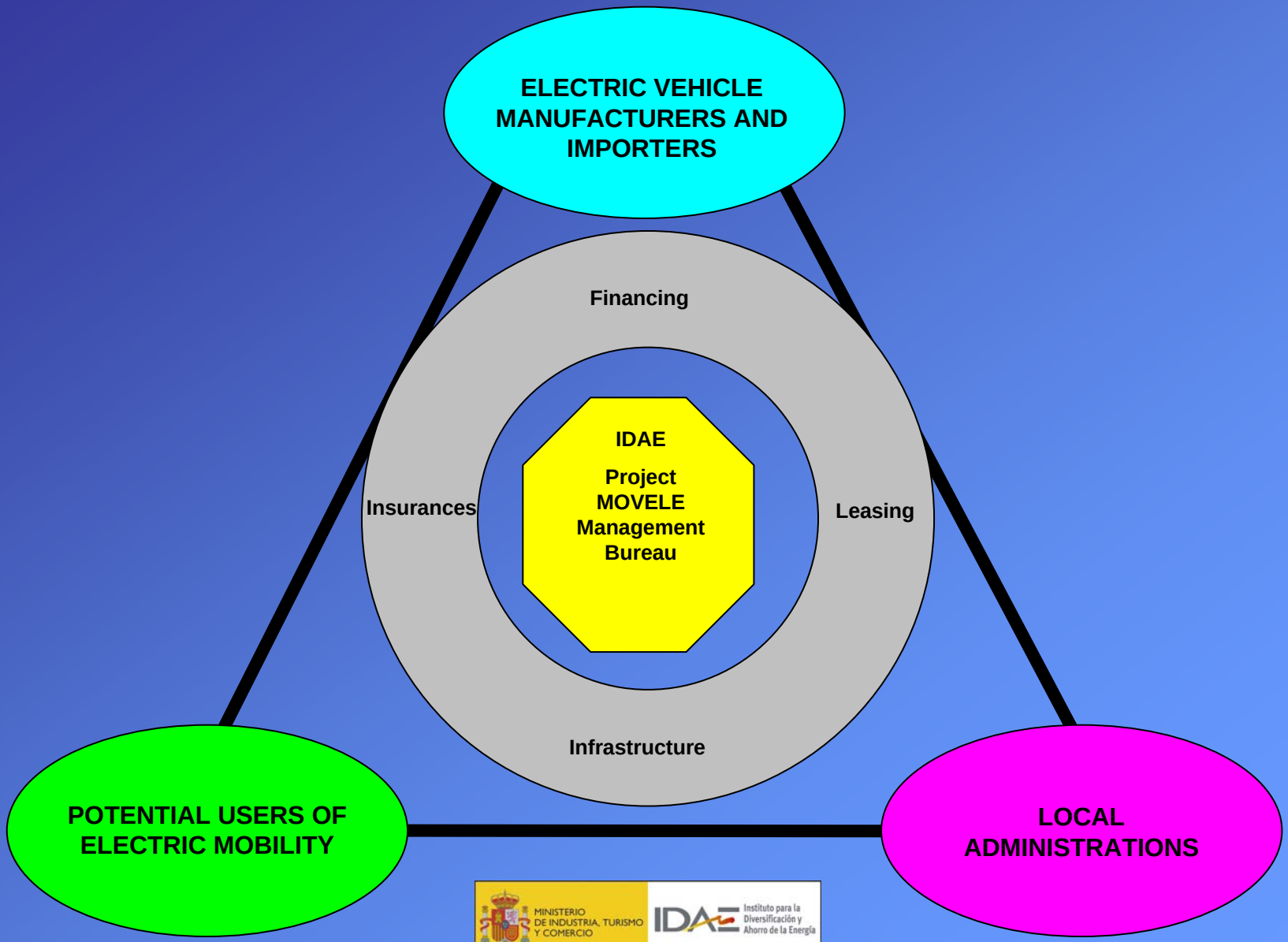
OBJECTIVES

- ***Introduction of 2,000 electric cars on the market, preferably in fleets, with mobility in urban and periurban environments.***
- ***Installation of a charging stations network in some of the main cities of the country.***
- ***Analysis of the energy results under real use conditions.***
- ***Proposal of regulatory amendments that may enable wider development of these mobility alternatives.***
- ***Position of Spain as a preferential scenario to introduce these new vehicles.***

OUTLINE


ELECTRIC VEHICLE MANUFACTURERS AND IMPORTERS
Financing
IDAE
Project MOVELE Management Bureau
Insurances
Leasing
Infrastructure
POTENTIAL USERS OF ELECTRIC MOBILITY
LOCAL ADMINISTRATIONS

INVOLVED AGENTS

- **CAR MANUFACTURERS**
  - Vehicle and service offer
- **TRANSPORT USERS**
  - Adaptation of demand
- **LOCAL ADMINISTRATIONS**
  - Development of infrastructures and positive framework for EV
- **ENERGY SECTOR - SERVICES**
  - Regulatory-financial support
- **OTHER AGENTS**
  - Insurances, leasing, renting, …

INSTRUMENTS

- ***COLLABORATION AGREEMENT with municipalities to develop infrastructures***
- ***DIRECT SUBSIDIES to purchase vehicles.***
- ***MONITORING of the energy and mobility results***
- ***SPREADING OF RESULTS***
- ***Proposal of REGULATORY CHANGES***

DEVELOPMENT

- ***Execution period***

  2009-2010

- ***IDAE's budget***

  k€ 10,000

Procurement support: k€ 8,000
Infrastructure support: k€ 1.500
Assistance and analysis: k€500

- ***Agreements with municipalities:***

  April/May 2009

- ***Call for vehicle aids:***

  May/June 2009

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EXPECTED RESULTS

- **ELECTRIC VEHICLES :** 2,000
- **PUBLIC CHARGING STATIONS :** more than 500
- **OIL CONSUMPTION AVOIDED :** 4,282 toe/y. (4.7 million liters/y.)
- **ENERGY CONSUMPTION :** 1,510 toe/y. (7,000 MWh/y.)
- **ENERGY SAVING:** 2,772 toe/y.
- **AVOIDED EMISSIONS :** 4,471 tCO_2/y. (411 gCO_2/kWh)

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FURTHER INFORMATION….

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