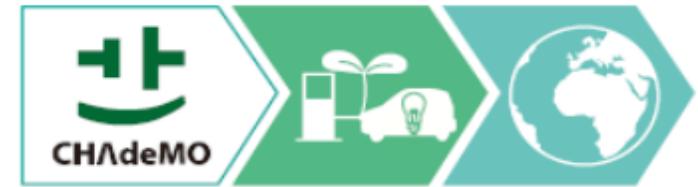




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BARCELONA
17th-20th November 2013



CHADEMO Fast Charging Projects

Tomoko Blech • Senan McGrath • Narcis Vidal CHADEMO
Association
20 November 2013

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In our presentation today

- About CHAdeMO
- CHAdeMO installation around the globe
- Standardisation and multi-standard chargers
- Ireland's national network
- CHAdeMO to Home, CHAdeMO to Grid in Spain

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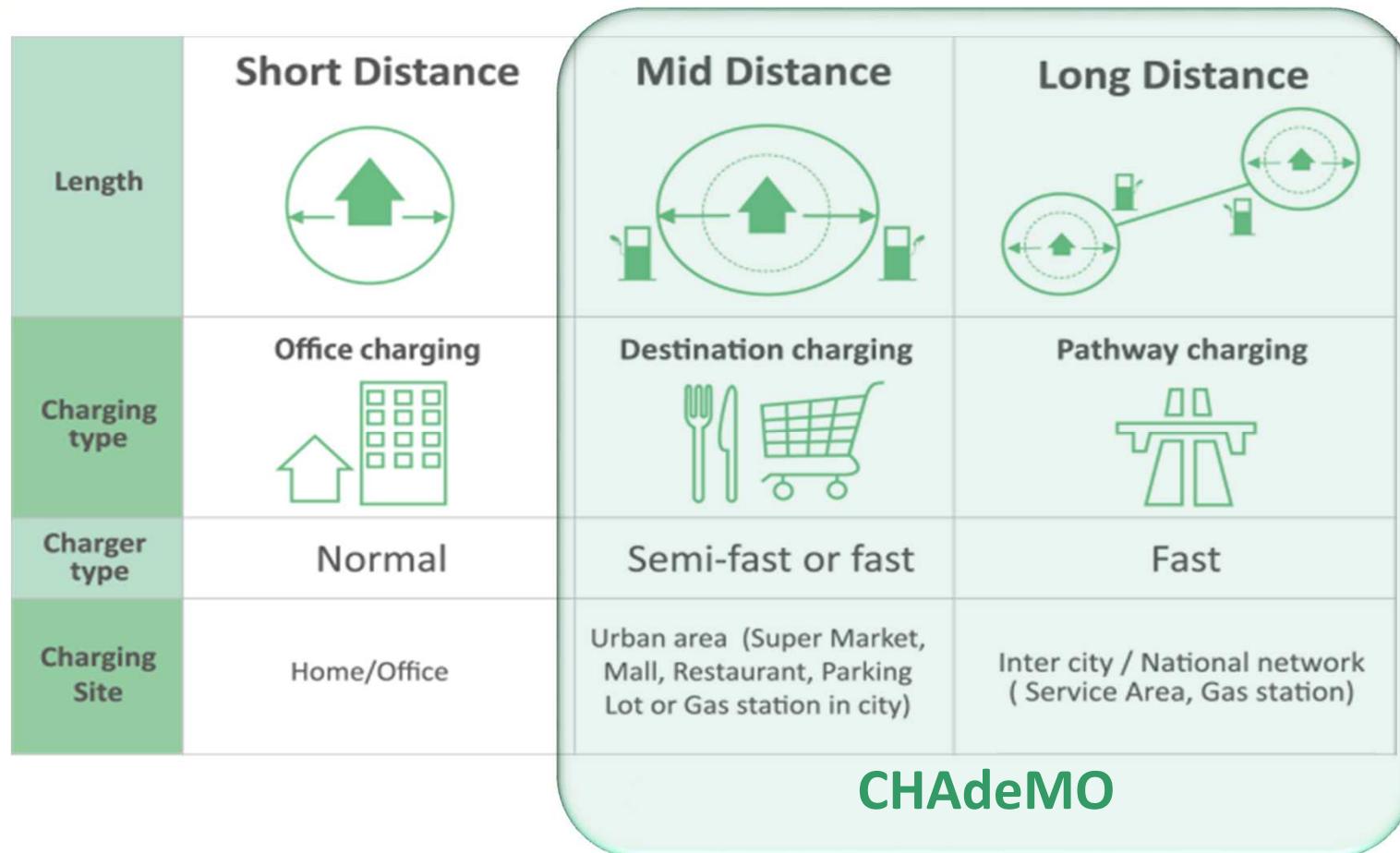


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About CHAdeMO

- Proven pioneer DC fast technology commercialised since 2009
- Safe and reliable, flexible for the future



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CHAdeMO members

- 430+ members in the world
- Over 70 entities from 17 European countries



Note: This represents a selection of CHAdeMO members

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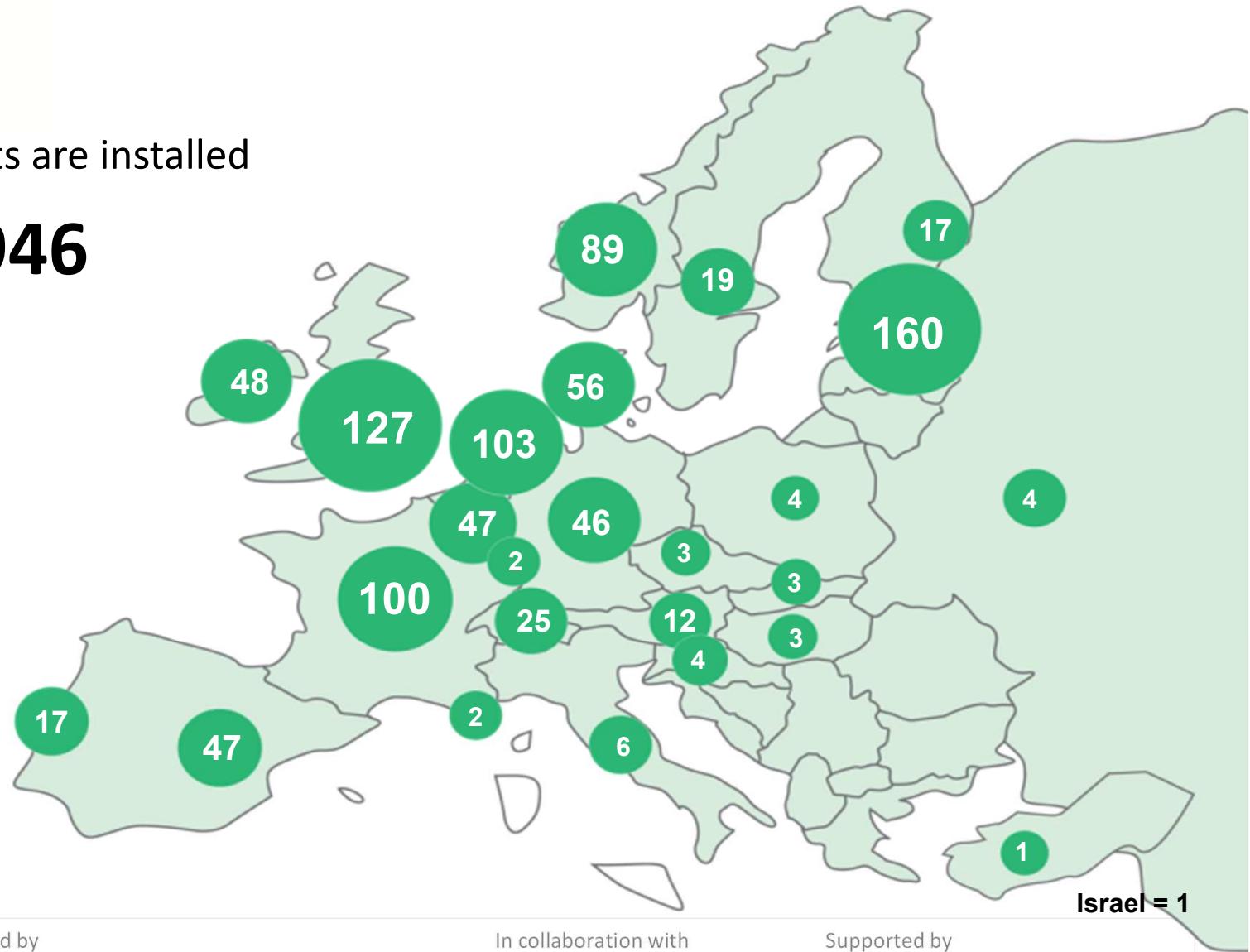
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- Almost 1,000 units are installed

TOTAL = 946

CHAdeMO chargers in Europe



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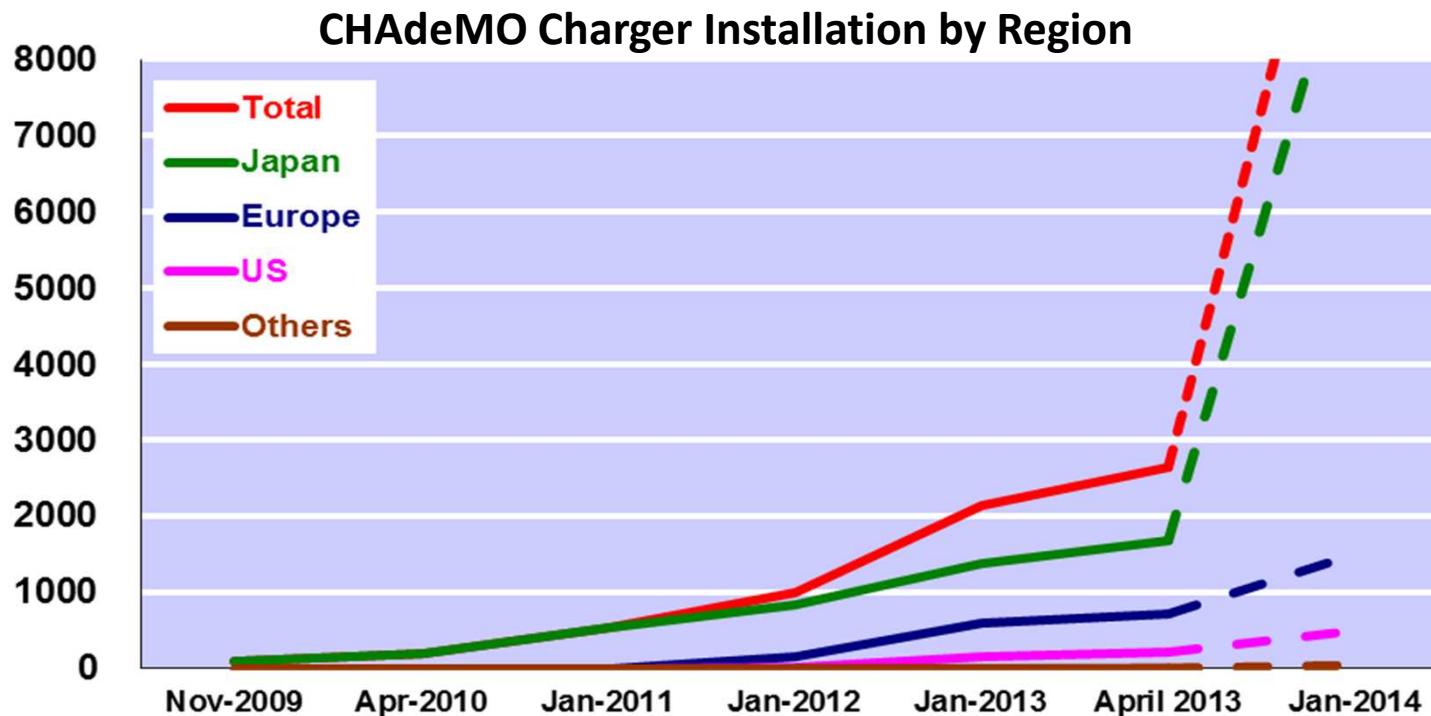
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Growth of CHAdeMO chargers

- 3,122 CHAdeMO chargers world wide
 - A rapid growth expected in Japan with government funding support



Note: data as of October 2013

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- 115,000 CHAdeMO compatible EVs are already on the road globally, accounting for 71% of all EVs available

Already Introduced



Nissan : LEAF



Peugeot: Partner



Citroen: C-ZERO



Mitsubishi Motors : i-
MiEV



Citroen:
Berlingo



Mitsubishi Motors:
Outlander PHEV



Mitsubishi Motors:
MINICAB-MiEV



BD Otomotive :
eTRAFIG



BD Otomotive :
eKANGOO



Toyota: eQ



Peugeot: iON



Mazda:
Demio EV



Subaru :
Plug-in Stella



Protoscar: LAMPO2



BD Otomotiv :
eScudo



BD Otomotiv :
e-Fiorino



Mitsubishi Motors:
MINICAB-MiEV (Truck)

To be Introduced



BMW: i3 (Japan)



Nissan: eNV200



Nissan: Infiniti EV Sedan

Note: data as of November 2013

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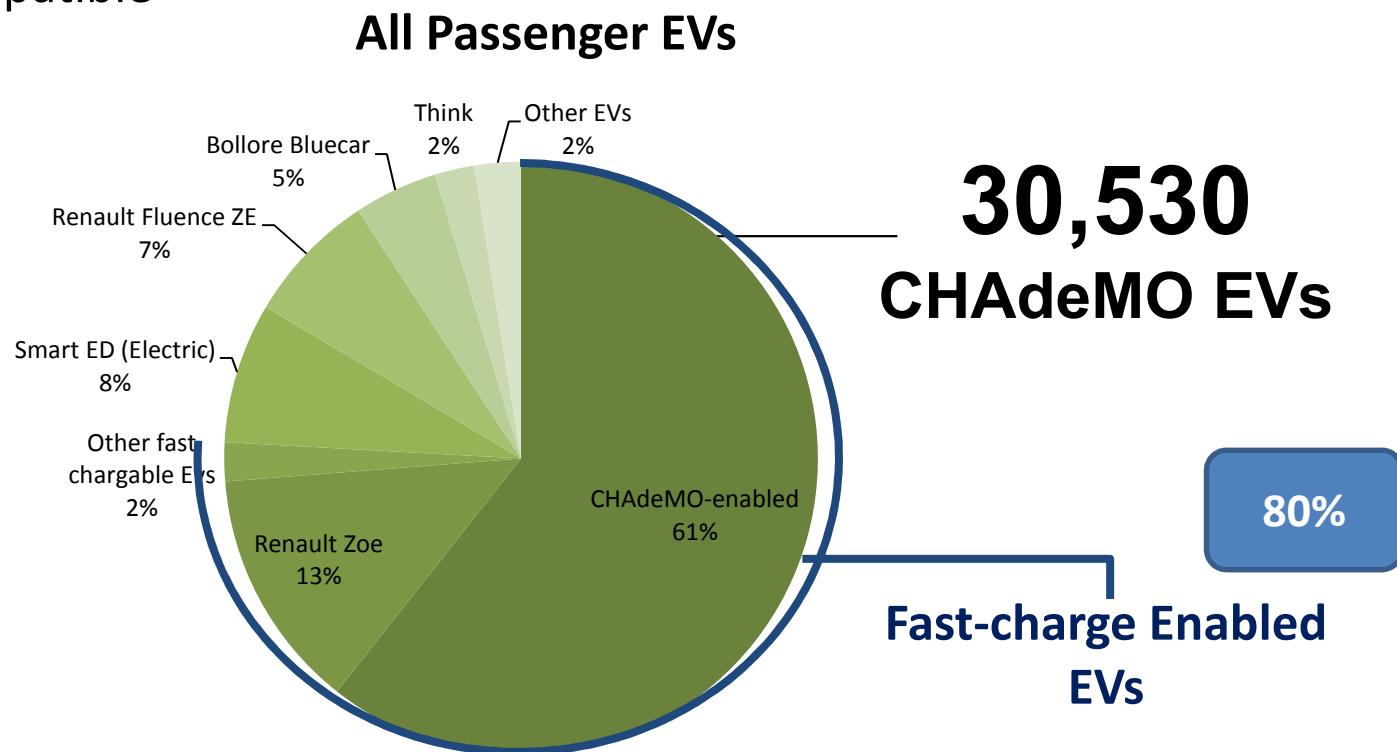


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European EV market snapshot

- A great majority of fast-charge enabled EVs on the roads in Europe are CHAdeMO compatible



Note: Statistics as of September 2013 not including electric light commercial vehicles (LCVs) or e-quadricycles.
All Passenger EVs = 52,729, Fast-charge Enabled EVs = 38,234

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- The IEC DC charging system catalog standards shall be published early 2014

IEC DC Charging Systems

	System A CHAdeMO (Japan)	System B CATARC (PRC)	System C COMBO1 (US)	System C COMBO2 (DE)
Connector				
Vehicle Inlet				
Communication Protocol	CAN		PLC	

Note: TC69 61851-23, TC69 61851-24, SC23H 62196-3

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Why multi-standard chargers

EV USERS

- More charge stations for all



OPERATORS / INVESTORS

- Faster recovery of cost
- Limited incremental cost
(5-10% of overall cost)



OEM'S

- Competition with cars (not with charge standards)



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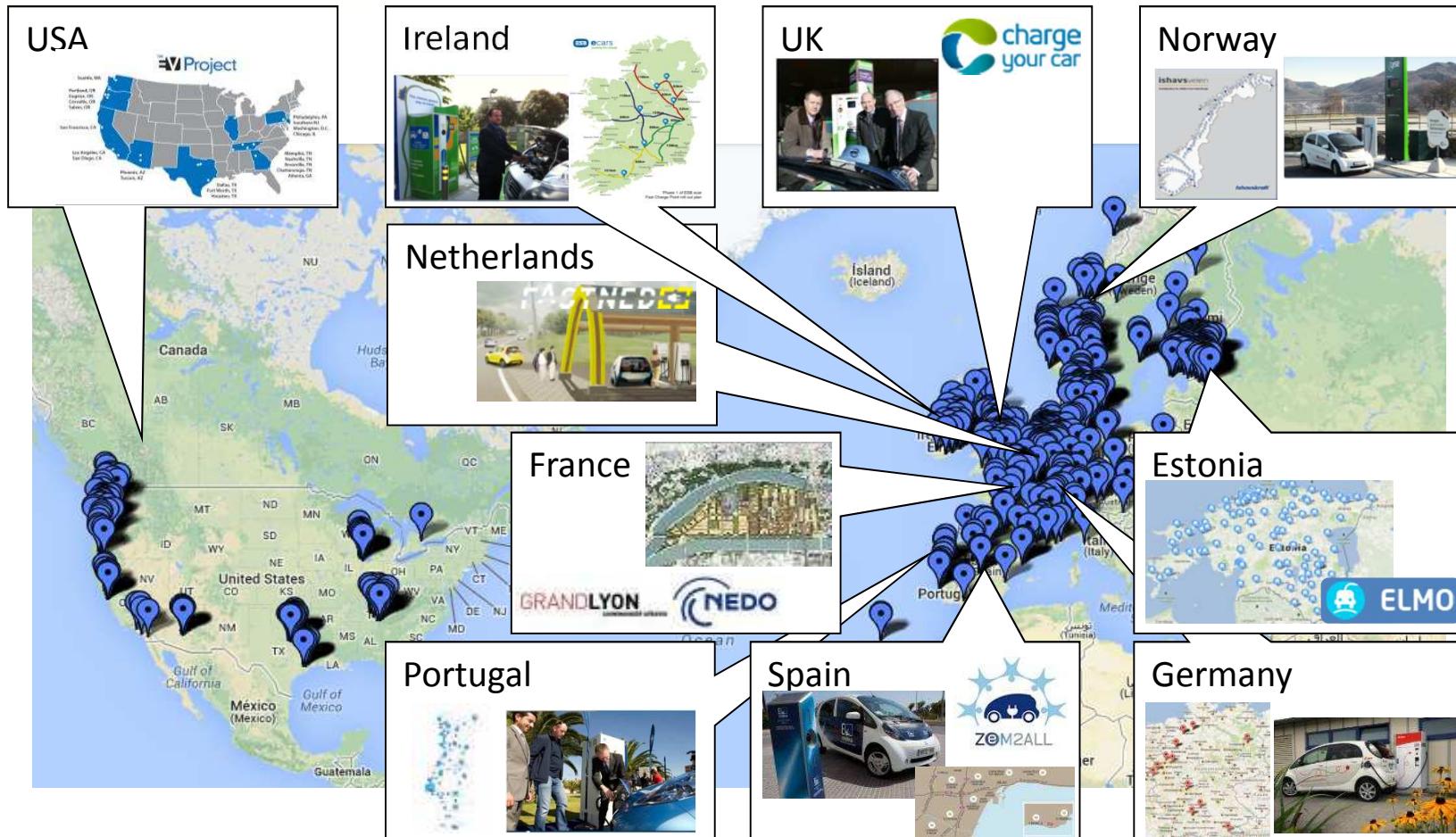
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CHAdeMO project examples



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Ireland – eCar Ireland Project

Public chargers Ireland

- All towns with population of 1500+
- National Plan 1000 (654 to date)

Public Chargers Northern Ireland

- 320 in Northern Ireland (installed)

Fast Chargers every 60km on Key interurban routes

- Original Plan 40
 - 30 (Ire); 9 (NI)

Revised Plan

- **100 (Ire); 14 (NI)**

Worldwide Purchase - 15 companies in 11 countries

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TEN-T Ireland

- Study role of Fast Charging in the deployment of EVs
- Technology requirements
- IT support systems
- 46 Fast Chargers on Core TEN-T Network
- Normal Chargers at Key Intermodal Transport Hubs
 - train stations, ports, airports (secondary objective)

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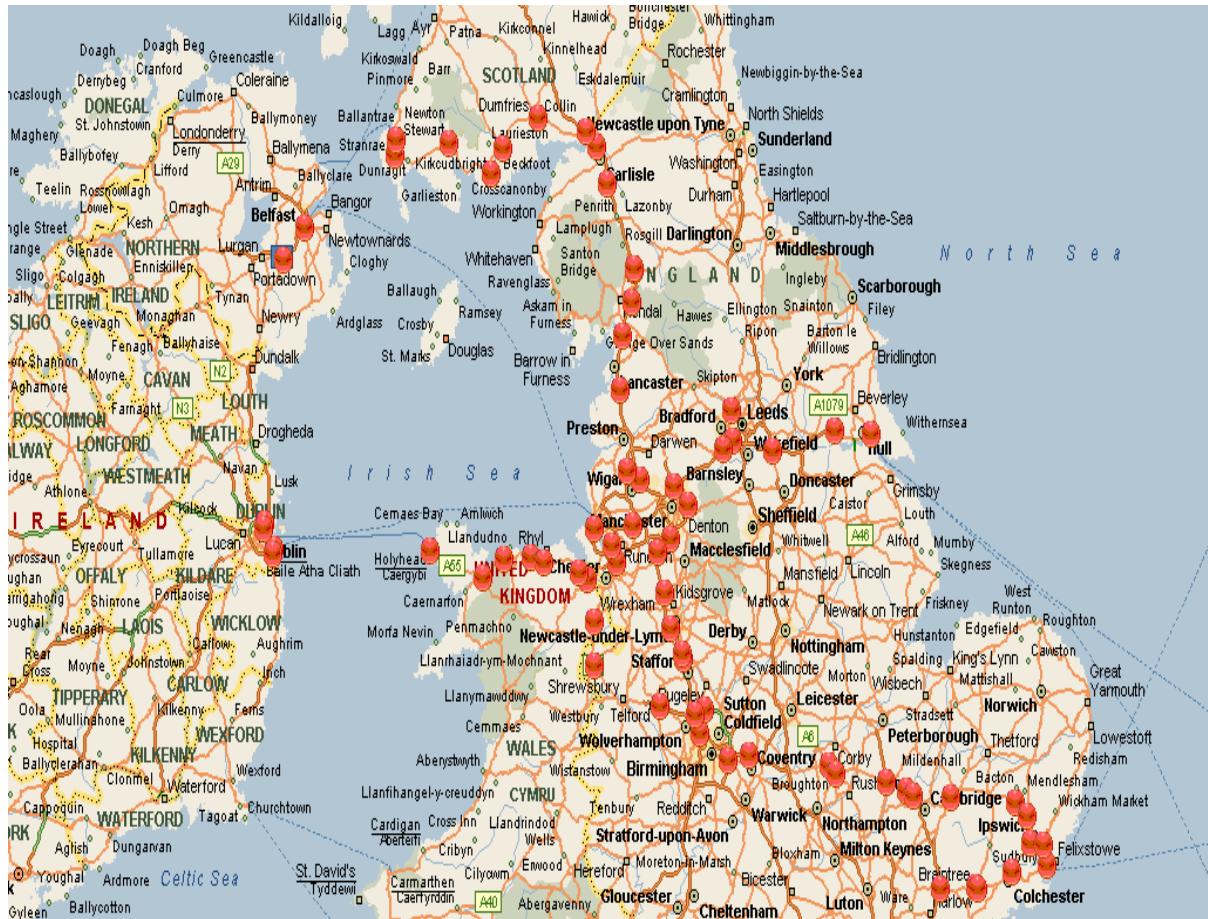


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Rapid Charge Network (TEN-T UK & Ireland)

- Consortium

- Nissan, VW, BMW, Renault
- ESB,
- Newcastle, DfT
- 74 Fast Chargers
- 2 routes North-South (M6) and East-West (M62)
- Linking Belfast & Dublin via UK to North Sea Ports



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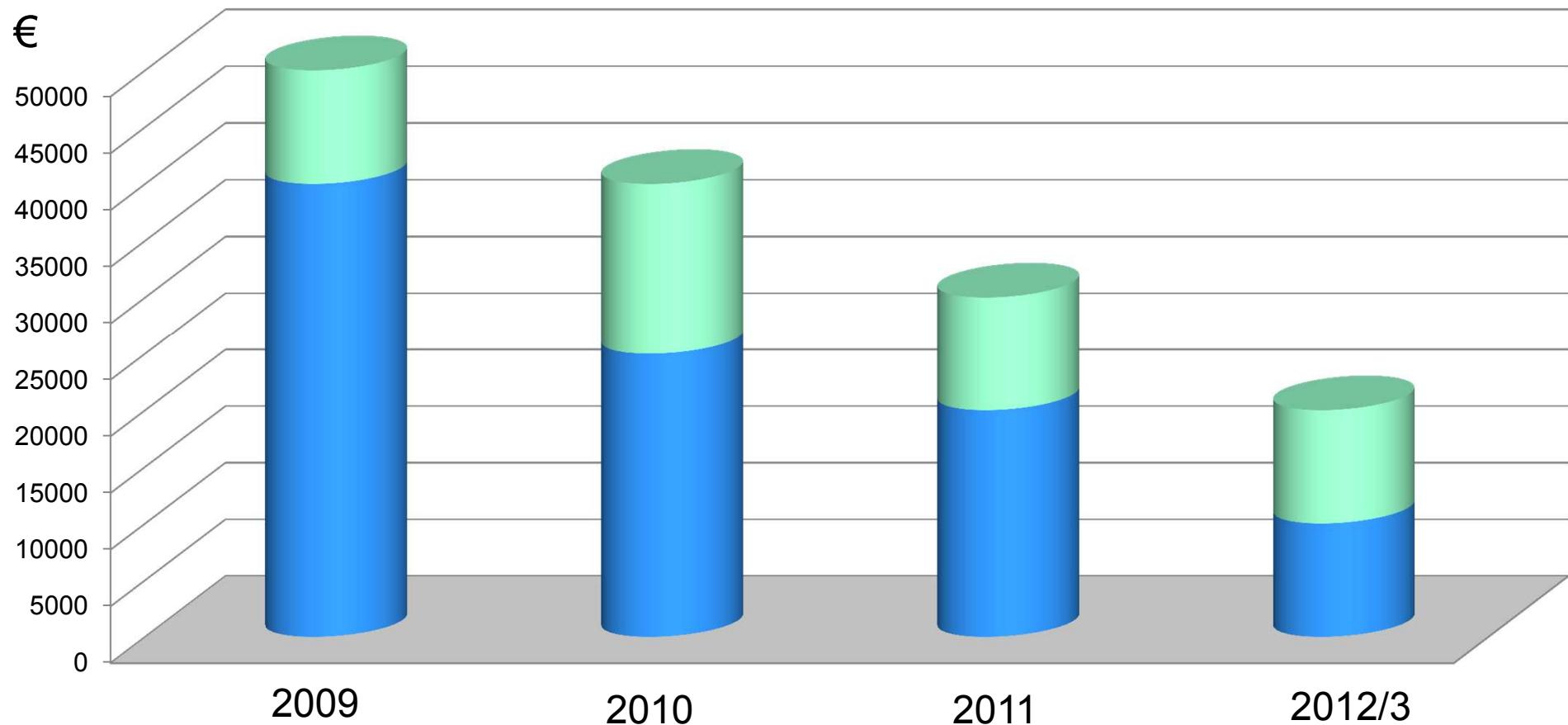
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Capital Cost of DC Fast Charger



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Buyers of Electric Cars Ireland

- EV buyers are not just city dwellers
- 85% charging at home
- 89% believe fast charging needed



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V2X

R&D{

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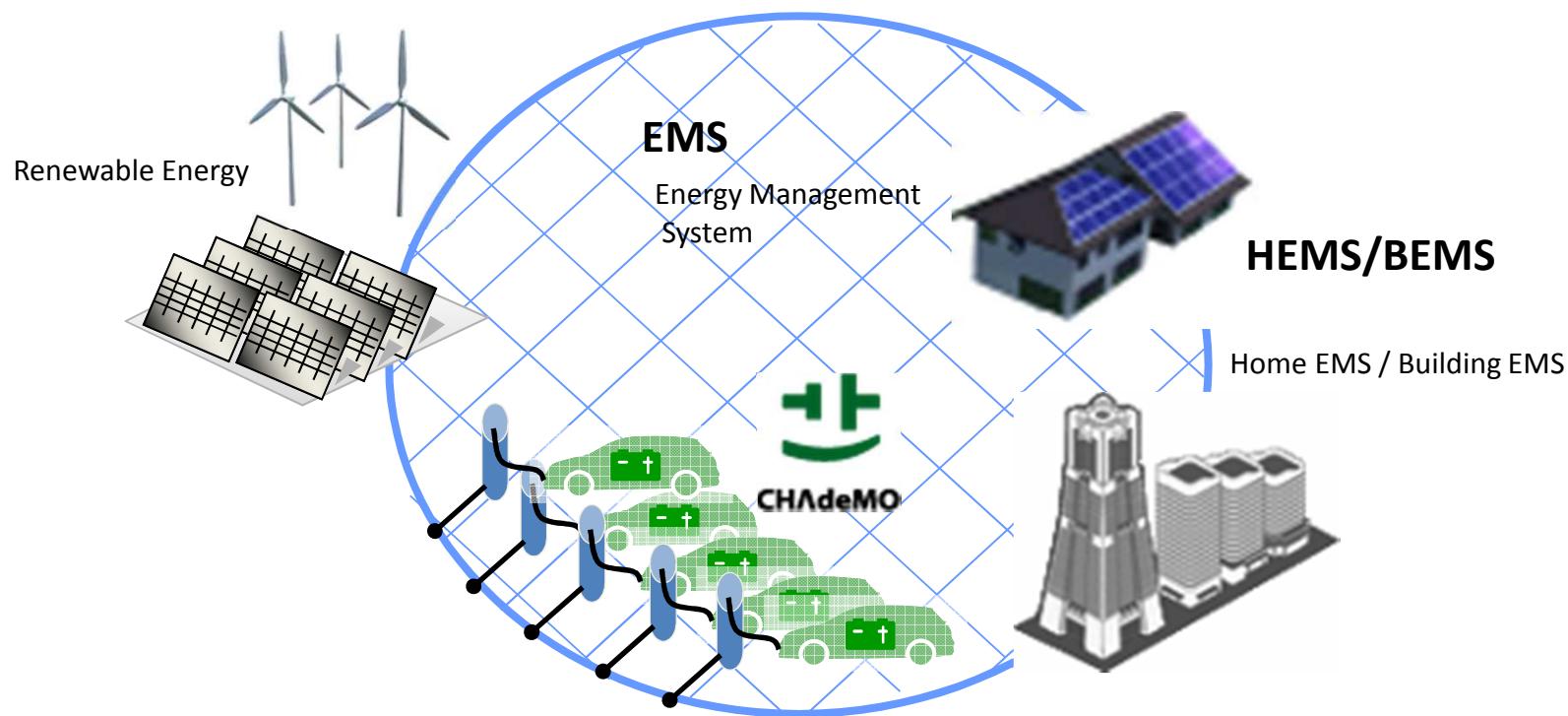


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CHAdeMO for Smarter Energy Management

- CHAdeMO contributes to utilise EVs as an energy source: proven and available in the market today



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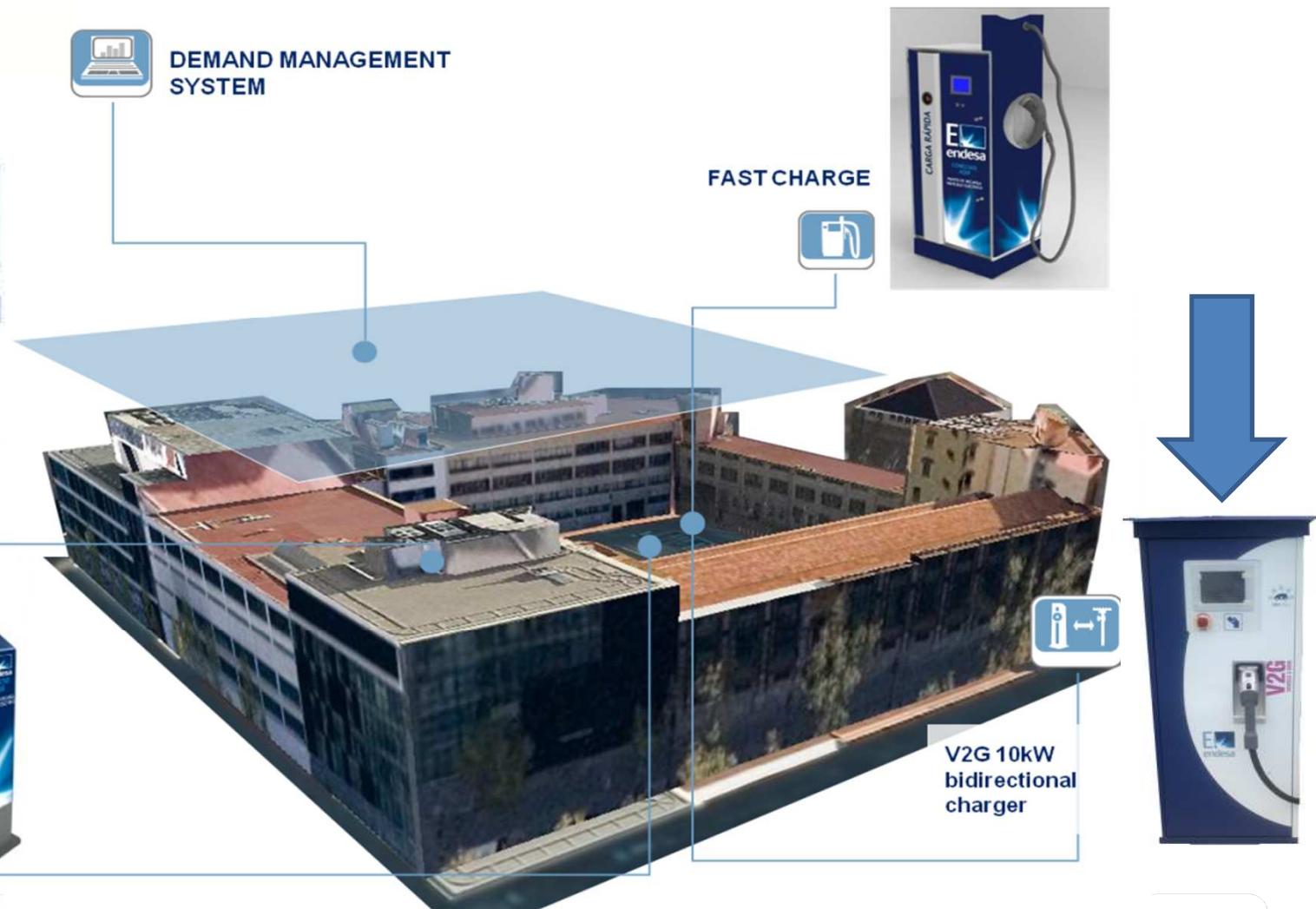


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Endesa Headquarters in Bcn, Smart Energy management with V2G



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6 V2G chargers installed on the field



Biggest V2G
demonstration
in Europe



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6 V2G chargers installed on the field



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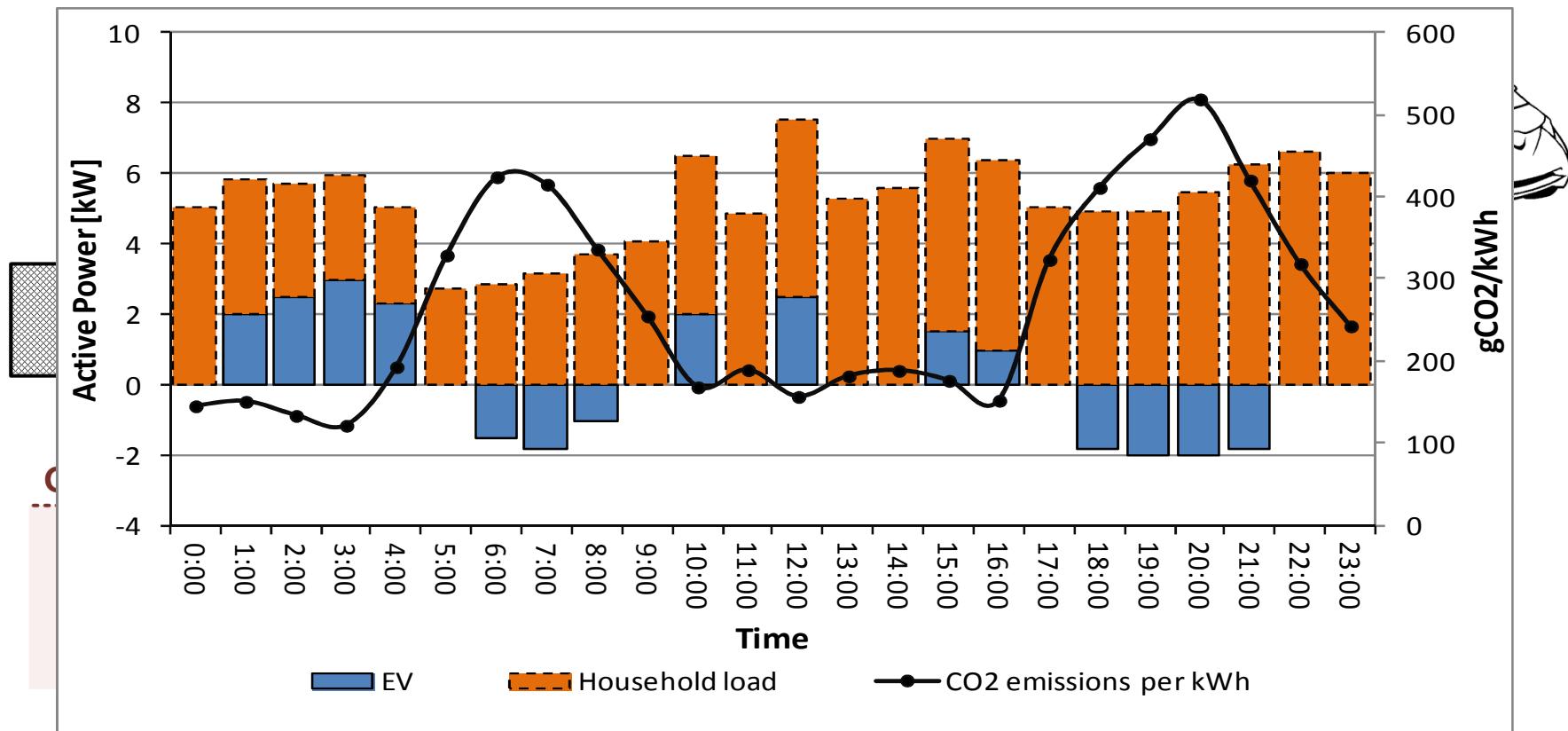


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@EV RALLY
TOUR VE
POITOU-
CHARENTES



@EV Rally Tour VE Poitou-Charentes, Sept 2013

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