



Feasibility analysis and development of on-road charging solutions
for future electric vehicles

EV-CONNECT

**A Roadmap for the deployment of the
Electric Vehicle Charging Infrastructure**

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Agenda

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EV-CONNECT Project Partners



- Experience: Battery Lab, Mobility Projects, Business Modelling and R&D Projects.
- Focus: Socio-Economic Mobility and Exploitation
- Main Tasks: Project and Workshops Coordinator



- Experience: training activities, dissemination, Formula ATA Coordinator.
- Focus: Technology
- Main Tasks: state of the art, mapping and engaging potential stakeholders as well as networking.



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- Experience: National EV Pilots, Range Anxiety, EV Value and Chain analysis.
- Focus: EU policies and National initiatives
- Main Tasks: Benchmarking and market evaluation, preliminary methodology to monitor progress.

Project Topics and Objectives

1. Shifting from the current random and isolated charging infrastructure to interconnected charging networks oriented to:

- market demand (holidays, business, public service, car sharing)
- in different operational positions (home, private installations, urban areas, motorways, parking facilities, rural locations)
- linked through ICT connection with vehicles/users and Mobility Management Operator
- Based on interoperable energy exchange technical facilities
- Design how Europe future charging network could be

Roadmap focus

Focused on 3 different regions... The geographic scope will then be extended

Catalonia

Area: 32,106.5 km²

Census: 7,539,618

GDP: €200.3 billion



Catalonia

Piedmont

Area: 25,402 km²

Census: 4,646,251

GDP: €127.0 billion



Piedmont

Belgium

Area: 32,106.5 km²

Census: 11,099,554

GDP: €353.6 billion



Belgium

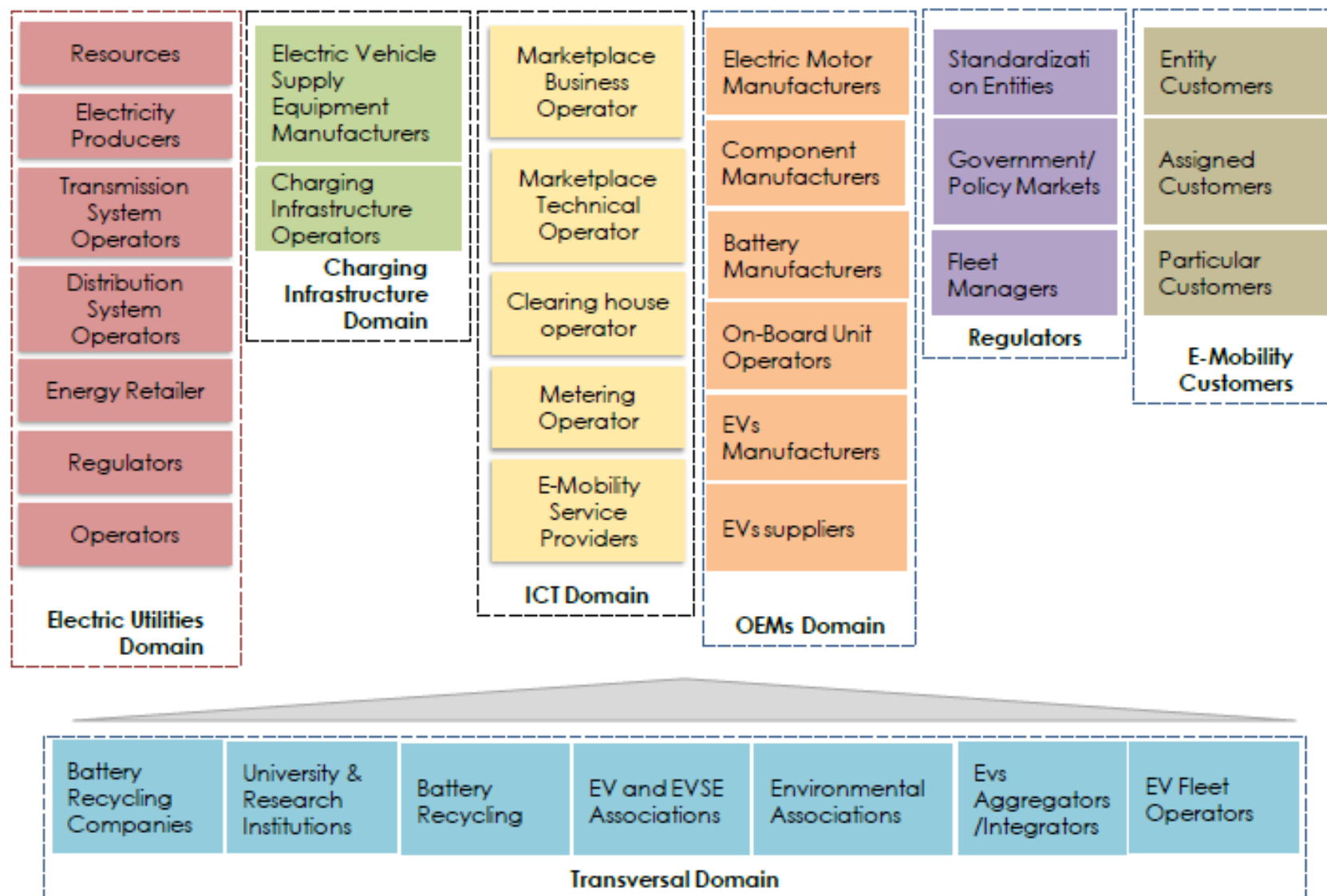


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Target Groups involved for the definition of the road map



Target Groups (I)

Target Groups and Collaborators invited for the definition of the actions for the road map

Car Manufacturers and supply chain

1. **IVECO** is an Italian industrial vehicle and bus manufacturer based in Turin of CNH Industrial.
2. **LITHOP**: Italian battery component manufacturer
3. **FICOSA** is a multinational corporation (Tier 1) devoted to the research, development, production and commercialisation of systems and parts for the automobile, as well as for both commercial and industrial vehicles.
4. **SEAT** is a Spanish automobile manufacturer. Today it is a Volkswagen Group subsidiary.
5. **NISSAN**
6. **TOYOTA**

Target Groups (II)

Charging infrastructure and supply chain

ACS Servicios is a world leading company in building and construction of industrial and energy infrastructures and associated services.

Estebanell Energia: Regional Power Supplier

SIMON HOLDING (Electric components manufacturer)

ENEL (Italian Utility)

IREN: Italian Energy Supplier

Public bodies

ICAEN (Catalan Institute of Energy) - Spain

CUNA (Italian National Standardization Body)

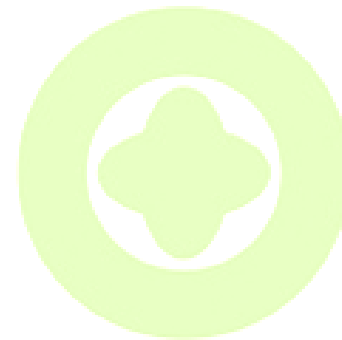
ENEA (Italian Research Institution)

Universities

Università degli Studi di Napoli Federico II

University of Rome Niccolò Cusano

Politecnico di Torino



Methodology for Roadmap definition

- **Analysis of barriers** to the development of infrastructures and to the diffusion of Electric Vehicles
- **Definition of actions** to foster the development of infrastructures for energy supply to EVs and accelerate the diffusion of Electric Mobility

Analysis domains:

- Policies and National Initiatives
- Socio-Economic Mobility and Exploitation
- Technologies
- Safety
- Specific position of
Public Bodies, Regulators, Local Councils
Automotive Industry, Charging infrastructure Manufacturers
Utilities

Analysis conducted with

- Questionnaires and interviews with stakeholders
- Workshops in the three Regions (Torino, Barcelona, Brussels)

Final Roadmap Scheme synthesis

Definition of actions to be performed, with indication of:

- Stakeholders categories to be considered specifically involved in the Roadmap deployment
- Terms of implementation in accordance to the priorities,
- Output indicators for monitoring the development,
- Data sources,
- Targets to monitor the development,
- Frequency of dissemination,
- Cost estimation of the Human Resources for the implementation

Results: Final Roadmap General Scheme (1/5)

Track	Action	Site	Actors	Priority
1. Create appropriate Governance Structures & Strategies for Charging infrastructure deployment	1.1 Create the European EV Network as general contact for information and advise services on e-Mobility	European	• European Commission	Near term
	1.2 Programme for supporting regions for developing e-Mobility Plans	Piedmont	• Public Administrations	
	1.3 New taxation scheme introduction	Catalonia	• Municipalities	
	1,4 New systems for collecting information and analyzing charging behaviour	Belgium	• Transport & Communication Entities	
2. Accelerating Deployment of Charging Infrastructure	2.1 Development of public accessible charging infrastructure	Catalonia	• Public territorial Administrations	Mid term
	2.2 Development of private accessible charging infrastructure	Piedmont	• Municipal Authorities	Near term
	2.2.3 Adapting building codes to require all construction to be EV ready		• EVSE Operator • OEMs • Transport & Communication Entities	

Results: Final Roadmap General Scheme (2/5)

Track	Action	Site	Actors	Priority
3. Implementing Measures to overcome Range Anxiety	<p>3.1 Creating an Open Dynamic registry of public accessible charging points</p> <p>3.1.3 Standardize information provided per charging point, type of connection, EVSP, payment option and availability</p> <p>3.1.5 Integrating charging stations with mapping systems</p>	European	<ul style="list-style-type: none"> Municipal Authorities EVSE Providers End Users 	Near term
4. Facilitating deployment of new Business Models for exploitation of charging infrastructures	<p>4.1 Developing a TOOLKIT for supporting new business models around the charging infrastructure</p> <p>4.2 Business models for increasing usage of charging infrastructure</p> <p>4.2.3 Promoting measures to stimulate e-Car sharing initiative</p> <p>4.3 Create a unified billing system for all public accessible charging infrastructure (slow & fast)</p>	<p>European</p> <p>Catalonia</p> <p>European</p>	<ul style="list-style-type: none"> Venture capitalists Consultants Entrepreneurs Public administratives Transport & Communication Entities Municipalities Car sharing companies 	<p>Near term</p> <p>Near term</p> <p>Mid term</p>
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Results: Final Roadmap General Scheme (3/5)

Track	Action	Site	Actors	Priority
5. Learning new electromobility concepts	5.1 Developing tailored workforce training programs/courses 5.1.1 Development of EV Infrastructure Training Program and European Certification for electricians installing EV Supply Equipment 5.1.2 Development and promotion of a European Open Massif Online Program for Public Mobility Managers	Belgium	<ul style="list-style-type: none"> Professional Schools EVSE Manufacturers EVSE and EV Associations EV Charging providers Public Administrations 	Mid term
	5.2 Enhance participation of University Teams to Formula Electric 5.2.1 Promoting and organizing demonstration events for University and High School students 5.2.3 Dissemination and making value of results of the demonstration competitive events (e.g. Formula Electric Italy) 5.2.4 Increasing the participation of University teams	Piedmont	<ul style="list-style-type: none"> Universities High School and Technical institutes OEM vehicle, Systems and Component Manufacturers Electric Vehicle Associations Standardization Bodies 	Mid term
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Results: Final Roadmap General Scheme (4/5)

Track	Action	Site	Actors	Priority
5. Learning new electromobility concepts	<p>5.3 Developing an Educative platform on electric vehicle technology at both primary and secondary schools</p> <p>5.3.1 Engaging editorials, primary school teachers, educators and representatives from EV Industry with the educative platform project</p> <p>5.3.2 Developing a Learning Management Platform, a software application that manages educational systems containing digital content</p> <p>5.3.3 developing the digital content for teachers on the concepts of e-mobility</p>	Catalonia	<ul style="list-style-type: none"> • Professional Schools • EVSE Manufacturers • EVSE and EV Associations • EV service providers • Public Administration representative 	Near term
6. Raising awareness of E-Mobility	<p>6.1 Promotion of Green Tourism</p> <p>6.1.2 Selection of areas with cultural historical and ecological interest and elaborate a plan for introduction of EV</p> <p>6.1.3 Developing a plan for solar charging station in selected areas</p> <p>6.1.4 Developing a financial program to support regional governments for introduction of EVs in selected areas</p>	Piedmont	<ul style="list-style-type: none"> • EVSE Manufacturers • Public Administration representative • Regional governments • Environmental ists 	Near term

Results: Final Roadmap General Scheme (5/5)

Track	Action	Site	Actors	Priority
6. Raising awareness of E-Mobility	<p>6.2 Introduction of the Advanced Air Quality Monitoring Systems</p> <p>6.2.1 Benchmarking on devices and sensors for measuring air pollution</p> <p>6.2.2 Developing an app for collecting real time information about contamination levels</p> <p>6.2.3 developing a platform for disseminating all the information and integration with map systems</p> <p>6.2.4 Engaging new contributors by subsidizing partly the cost of the sensors</p>	Belgium	<ul style="list-style-type: none"> • Instrument Makers • Educators and community leaders • Open source coders • Citizen Scientists • Public representative 	Near term
	<p>Prepared as a synthesis of the Final Report of the Project</p> <p>«Building and Implementing Strategic Roadmaps of Demand – side Policy Measures to boost Demand for Industrial Innovations»</p> <p>Interconnecting Electric Vehicle Infrastructures Roadmap</p>			

Conclusion

The strategically established infrastructure network for energy transfer grid to vehicle, supported by an information-communication system is a basic requisite for the e-Mobility development

EV CONNECT Project, with the involvement and effective support of stakeholders operating in the various field of Mobility has tackled this point and identified a roadmap of actions to be considered and actuated to foster and speed up the development of an infrastructure network of energy supply facilities to assure the mission fulfillment of electric vehicles of various classes and in various conditions and with user friendly interaction with the infrastructure.

In the various identified a recommended actions, emphasis is given to the education and dissemination of the culture of electric mobility system as regard to the technology, the interconnective communication and the professional formation for operators



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Thank you!

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