

ABSTRACT

e-SMART - e-mobility SMART grid for passengers and last mile freight transports in the Alpine Space

Programme priority: Priority 2 - *Low Carbon Alpine Space*

SO2.2 - Increase options for low carbon mobility and transport

Project duration: 30 months

Starting date: 01/10/2019

End date: 31/03/2022

Project number: 753

Total Budget: 2.5 M €

Lead partner: **Ricerca sul Sistema Energetico - RSE S.p.A. (IT)**

PROJECT SUMMARY

Even though e-mobility diffusion is increasing in Alpine Space (AS) countries, with 66.583 publicly accessible Electric Charging Stations (E-CS) and 594.042 e-vehicles registered in 2018, in order to ease a wider diffusion of e-mobility and its innovative modalities, Public Administrations (PA) should address e-mobility applied to Local Public Transport (LPT) and to City/Last-Mile Freight Logistic (LML) in synergy with private e-mobility and energy integration. Key barriers are represented by the lack of coordination among public and private actors, lack of a participatory approach based on smart territory, an extended smart city logic, and lack of energy and mobility networks integration in the deployment of e-mobility in LPT&LML. Moreover, PA's competences on energy and smart grid functionalities and digitalization topics should be increased. e-SMART, built on e-MOTICON results, will activate cooperation among PAs and e-mobility and energy operators through LIVING LAB. It will lead, through a ROAD MAP for AS decision makers, to a common approach in development of e-mobility services in LPT & in LML and in planning of adequate E-CS network for entire AS. It will design and test a set of transnational operational instruments for public and private technicians to plan e-mobility infrastructure and services in passengers and freight transports in the framework of smart grid and smart territories: a TOOLKIT. PAs and private sector will benefit from cooperation with research centres & e-mobility users through transnational Living Lab, based on quadruple helix approach. They will collaborate on a common definition of the Road map and on testing appropriate innovative measures of e-mobility applied to LPT&LML, overcoming local approaches. Cooperation model of Living lab will be replicable in all AS countries, Road Map and Toolkit will guide a common transnational approach and method for national, regional and local PA Energy and Mobility Strategic Plans improvement.

OVERALL OBJECTIVE

Project aims to contribute to a larger diffusion of e-mobility in the AS, thanks to cooperation of regional and local authorities with the private sector, by designing and testing an operational model to plan E-CS (Electric Charging Stations) in the framework of smart grid, smart territories and e-mobility services in passengers and freight transports (Local Public Transport and City/Last-Mile Freight Logistics). This model will enable PA's policy makers and technicians to analyse and assess the energy grid needs related to e-mobility and, together with private operators, to plan E-CS networks and to support the growth of e-mobility options and services in transport sectors, increasing accessibility of peripheral and urban areas of the AS.

SPECIFIC OBJECTIVES

- SO1 - Foster the transnational cooperation between public and private actors for an integrated planning of E-CS and e-mobility services development in LPT and LML sectors & energy and mobility integration.
- SO2 - Promote a harmonised AS level approach for energy and e-mobility planning in E-CS of LPT and LML.
- SO3 - Increase methods and tools to plan e-mobility E-CS and services in the field of smart energy and mobility

MAIN OUTPUTS

OT1 - Living Lab concept: Quadruple Helix Open Innovation partnership to experiment & evaluate innovative approaches (smart charging, energy storage, e-mobility 4.0, info mobility, autonomous vehicles, personal rapid transit) & institutional innovations (digitalization for PA, policy effectiveness in transport management, financial instruments) related to integrated planning of E-CS, energy supplying grid and e-mobility in LPT&LML.

OT2 - Road Map for decision makers: practical guide for e-mobility implementation in LPT&LML in synergy with private e-mobility and for appropriate measures application in smart territories of AS.

OT3 - Toolkit: lean digital smart territories tools to support PAs in identifying needs for e-mobility applied to LPT&LML planning (effectiveness vs transport demand; energy efficiency of services& infrastructures) & analyzing energy impacts (energy grid, generation, consumption, congestion; gaps and scenario) and citizens & stakeholders for e-LPT & e-LML service acceptance and utilization.

TARGET GROUP

PAs will receive instruments to identify needs and co-design with research & private stakeholders (Infrastructure & service providers in freight, energy, e-mobility and LPT) an adequate E-CS network for electric LPT and LML in AS. Policy makers & private operators will benefit from Road Map as an operational guide to plan short & mid-term goals of the E-CS planning and e-mobility diffusion on LPT&LML; Public & Private technicians will benefit from the Toolkit because of its practical methods to assess energy needs and impacts of E-CS in the LPT and LML; End-users will benefit from new e-mobility services promoted by Toolkit. Private operators, end-users & PAs will benefit from Living Lab that will activate a four-helix approach involving partners & observers (PA, provider, utility, research, multiplier, agency, end-user) to co-design & validate Road Map, to test the appropriate measures and tools of e-mobility applied in LPT and LML, to share needs and increase acceptance of new e-mobility options.

PARTNERSHIP

Italy

- Lead partner - RSE Ricerca Sistema Energetico
- Piedmont Region DIRECTION Environment and territory
- Veneto Strade SPA
- The smart city association Italy (TSCAI)

Slovenia

- Regional Development Agency of Gorenjska, Business Support Center, Ltd., Kranj -
- GIZ ACS, Automotive cluster of Slovenia

France

- Cluster Pôle Véhicule du Futur
- Auvergne-Rhône-Alpes Énergie Environnement

Germany

- Hochschule of Kempten
- Climate Alliance
- Italienische Handelskammer München-Stuttgart
- Landkreis München

Austria

- Magistrat der Landeshauptstadt Klagenfurt
- Codognotto AU - Global Logistics Operator
- Stadtwerke Klagenfurt AG/Energie Klagenfurt GmbH

WORK PLANS and MAIN DELIVERABLES

WPM - MANAGEMENT

WPC - COMMUNICATION

WPT1 - SMART LIVING LABS

The objective of this WP is to develop a capacity building environment involving experiential learning based on active inclusion of stakeholders, experts and end users. This will be achieved through the set up and operation of a Transnational Network of 5 Regional Living Labs (RLLs), one hub per country, capitalizing experiences of other EU initiatives, activating a four-helix approach by involving partners (PP), observers (OBS) and territorial stakeholders in the field of energy, mobility, local public and freight transport and logistic (PAs, service providers, utilities, research centres, multipliers, sectoral agencies and end-users). The Transnational Living Lab Network (TLLN), involving representatives of all 5 RLLs, also through webinar connection, will deliver OT1 - e-SMART Living Lab concept that is a cooperation model for PAs and Private actors of e-mobility for LPT&LML with active involvement of research centres and e-mobility users (citizens and students).

MAIN ACTIVITIES/DELIVERABLES

- e-SMART Living Lab methodology
- e-SMART Regional Living Labs (RLL) - 5 regional living lab Italy; Slovenia; France; Germany; Austria
- e-SMART Transnational Living Lab Network (TLLN)
- Best practices and Training Material and related learning session
- List of follower cities and regions and letters of commitments

OUTPUT OT1

e-SMART Living Lab concept:

Transnational quadruple-helix cooperation model to co-create, experiment and evaluate smart approaches and digital tools for an integrated E-CS planning and e-mobility services diffusion in LPT and LML in relation to smart grid.

WPT2 - SMART MOBILITY ROAD MAP

WPT2 aims to define the strategic transnational vision and operational models to be adopted for the planning and the deployment of an adequate charging infrastructure and smart services for the diffusion of e-mobility in LPT and LML sectors. It will deliver e-SMART Road Map (OT2) for public and private decision makers based on common transnational approach for national, regional and local PAs,

considering Energy and Mobility Strategic Plans improvement. One tactical road map will be co-designed and validated in Transnational Living Lab Network and five operational road maps will be created and delivered by Regional Living Labs (WPT1), one for each AS country, collecting specific needs and defining objectives, targets, resources, business model, scenarios and expected results.

MAIN ACTIVITIES/DELIVERABLES

- Mapping of e-mobility LPT and LML infrastructure and services.
- Tactical road map key elements and criteria
- e-SMART tactical road map
- e-SMART operational road map

OUTPUT OT2

e-SMART Road Map for decision makers:

A practical document that will provide effective guidance to regional and local public and private decision makers to plan with an integrated approach E-CS and e-mobility diffusion in LPT and LML.

WPT3 - SMART ENERGY INTEGRATION

WPT3 aims to prototype & experiment in a Smart territory ecosystem a toolkit for smart management and planning of e-mobility services & infrastructure for LPT&LML. Toolkit (OT3) will be implemented following cycle “planning, prototyping, experimenting, evaluating” and will aim to define and assess energy impacts of E-CS planning in specific LPT&LML use cases in the perspective of energy grid optimization following smart grid and territories logic. OT3 will be a toolkit based on a core ecosystem consisting of a) existing models and exchange protocols based mainly on open data, b) existing/new e-Mobility Platforms to exchange data from different target groups’ sources: PAs & private sector like energy & mobility services providers that will provide new e-mobility service offers, E-CS and other loads scenarios, cost and impacts on grid. Accessible data will be the base for implementation of new digital applications, tools and Apps, (i.e. decision-making tree, model to calculate energy impacts, to define new e-mobility services and to plan E-CS localization), but also to promote awareness & acceptance of citizens, end-users of new e-mobility services. A Smart Monitoring Team (SMT) will define and promote a Smart Mobility Model to facilitate the integration of e-SMART outputs into daily activity of main public & private mobility players in AS region.

MAIN ACTIVITIES/DELIVERABLES

- Definition of Smart territories ecosystem in relation to energy and mobility integration
- Digital Tools set up and implementation (Feasibility study, analysis of requirements, prototype, roll-out)
- Smart Monitoring Team (SMT) and evaluation of outputs

OUTPUT OT3

e-SMART Toolkit:

Set of digital tools for PA & operators based mainly on open data ecosystem for integrated planning & promotion of new e-mobility services in LPT&LML and E-CS. It includes decision support systems, energy demand assessment tools for E-CS & e-mobility services