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Alternative
Fuel



e-mobility

e-MOPOLI aims at contributing to an efficient diffusion of electric and other alternative fuel mobility by promoting mobility patterns, transport systems, infrastructure and sustainable low CO2 emission services

Regional Action Plan of Calabria Region

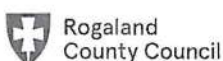


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Responsible partner
Calabria Region – PP02

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Project partners



Low-carbon
economy

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1. Introduction

The energy consumption and emissions production are exponentially increasing worldwide. Based on European Union (europa.eu), the transportation sector has the highest share in energy consumption (30.93% in 2019) and constitutes the second contributing factor in CO₂ emissions (17.76% in 2019). Specifically, the road transportation field is responsible for most carbon dioxide emissions (72,9% in 2016).

The above presented high shares in European, national, and regional level, reveal the need for the design and implementation of interventions and actions towards a more sustainable mobility. Within this framework, electromobility and alternative fuels are considered to be key solutions towards a more environmentally friendly transportation system, having a direct effect on energy saving and emissions reduction.

Based on the above, the e-MOPOLI (Electro **MO**bility as driver to support **POL**icy Instruments for sustainable mobility) project is a European research project financed by the European Regional Development Fund (ERDF) aiming at the diffusion of electromobility and the implementation of innovative strategies for reducing the carbon footprint of economic activities in urban and extra-urban areas.

A key output of e-MOPOLI project is the development of action plans which will contribute to promote electromobility and alternative fuels in the region of each project partner. In order to achieve this output nine regions from eight different European countries will exchange ideas, knowledge and policies already implemented that should be adopted, altered, or avoided. The overall methodological process that will be adopted is illustrated in Figure 1 and explained below.

1.1 The e-MOPOLI Project

The e-MOPOLI project (Electro **MO**bility as driver to support **POL**icy Instruments for sustainable mobility) is a European Interreg project aiming at promoting the electromobility and alternative fuels concept towards more sustainable and environmentally friendly transportation systems. This will be achieved through the improvement of 9 regional policy instruments, 6 of which directly linked to Structural Funds, in 9 European Regions of 8 European countries: Italy, Slovenia, Greece, Belgium, Finland, Norway, Romania and Latvia. More specifically, the project partner regions are:

- Province of Brescia (Italy) – Lead partner
- Calabria Region (Italy)
- Regional Development Agency of Gorenjska (Slovenia)
- Region of Attica (Greece)
- Flemish Government Department Environment (Belgium)
- Regional Council of Kainuu (Finland)
- Rogaland County Council (Norway)
- Bucharest-Ilfov Regional Development Agency (Romania)
- Zemgale Planning Region (Latvia).

Charging and tolling policies in favour of e-vehicles, development of charging infrastructure powered by alternative sources, integration of charging infrastructure and charging hubs in spatial planning, deployment and purchase of alternative fuel vehicles in public transport, enhancement of the capability of public authorities in developing effective policies for reducing the carbon footprint of transport activities, addressing general and specific challenges of environmental protection included in Operational Programmes and promotion of e-mobility in niche market fleets are the main working areas of the project. The policy instruments will be improved through various project activities such as interregional learning process, partner meetings, study field visits and staff exchanges where the project partners will have the opportunity to exchange ideas, knowledge, and practices not only among each other but also with experts actively involved in the field of electromobility and alternative fuels. Additionally, each project partner will formulate a regional stakeholder group, consisting of people with deep knowledge in the field of electromobility and alternative fuels working in the industry, in the infrastructure and (public) service, regional public authorities, in business association and in the academia/research.

e-MOPOLI intends to contribute to the Europe 2020 strategy, by promoting mobility patterns, transport systems, infrastructure, and sustainable low CO₂ emissions services. The promotion of sustainable solutions for e-vehicles deployment and smart infrastructure for charging will enhance the development of e-mobility as a tool for realising smart, sustainable, and inclusive growth. The project is compliant with the INTERREG EUROPE priority axis 3 supporting the shift towards a low-carbon economy. In particular it addresses the specific objective 3.1: improve the implementation of regional development policies and programmes, in particular programmes for Investment for Growth and Job focusing on the transition to a low-carbon economy. The project, in order to effectively reach its goal, will be soundly structured on the following steps:

- e-MOPOLI methodology;
- partners' local and regional Territorial Context Analysis;
- Good Practices selected for exchange of experience and transfer of lesson learnt;
- 9 regional Action Plans;
- monitoring of 9 Action Plans through e-MOPOLI webtool;
- e-MOPOLI Recommendations on business, governance and RIS3 level for regional and local authorities.

e-MOPOLI duration: 1st June 2018 – 30th November 2022

Budget: about 1.8 M €

1.2 The Action Plan

A key output of e-MOPOLI project is the development of Action Plans which will contribute to promote electromobility and alternative fuels in the region of each project partner. In order to achieve this output, nine regions from eight different European countries will exchange ideas, knowledge and policies already implemented that should be adopted, altered, or avoided. The overall methodological process that will be used is illustrated in Figure 1 and explained below.

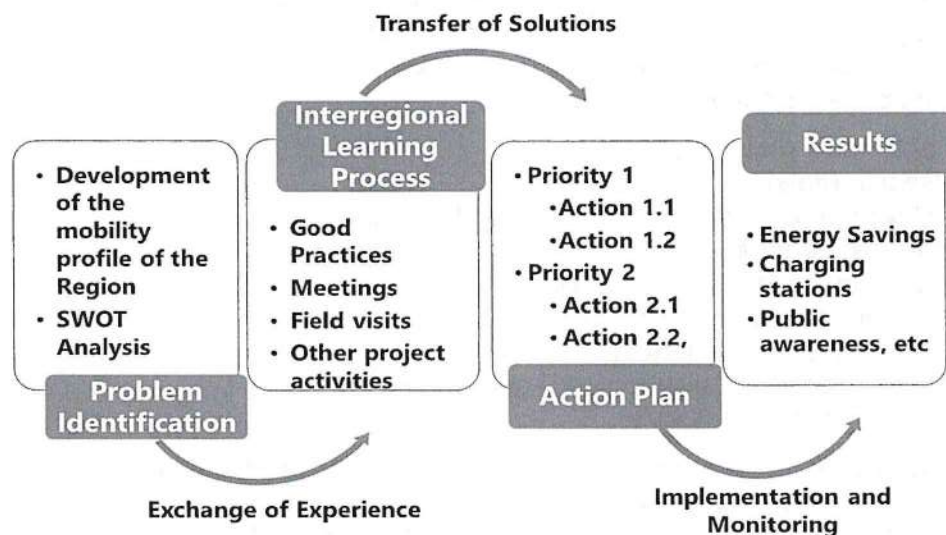


Fig. 1 - Flow Diagram

The first step refers to the problem identification and each Region will assess its SWOT mobility profile in terms of electromobility and alternative fuel, in order to identify main strengths, weakness, opportunities and threats in the examined mobility aspects. The next step, the Interregional Learning Process, represents a core factor for the formulation of the Action Plan. The exchange of good practices among the project partners, discussions and meetings, the field visits and the various project activities are the components for the development of suitable and necessary actions for each region based on the current situation and according to its needs and visions. Inspiration from the learning process and not transfer of a good practice is the key-point for developing a successful Action Plan.

After the identification of good practices and experience sharing among the project partners as well as the consultation with the regional stakeholders' group, each region will formulate, in the third step, an Action Plan which will contain the necessary actions that should be implemented in order to promote electromobility and use of alternative fuels. It should be mentioned that all actions should be categorized in respective priority axes. Finally, the fourth step refers to the implementation and monitoring (in phase 2 of the project) of the actions that are established and presented in the Action Plan. Consequently, the objective of the present report is to develop and present the Action Plan of Calabria Region which aims to promote electromobility and use of alternative fuels in the Region by specific actions.

The present document is structured in four key parts as follows:

- The first part includes general information about the Region.
- In the second part, the policy instrument and its context are specified and described. Additionally, the scope of the Action Plan is presented as well as the way it will contribute to the improvement of this policy.
- In the third part, the current situation of electromobility and alternative fuels is illustrated based on the consultation with the regional stakeholders.
- The fourth part is the core of the document and presents several information about the necessary actions formulating the present Action Plan.

2. General Information

2.1 Calabria Region

Calabria Region, one of the administrative Regions of southern Italy, has a territorial extension of 15.221,90 km² with a population of 1.936.419 inhabitants (ISTAT 2019). It has 4 Provinces, 1 Metropolitan city, Reggio Calabria, the regional capital Catanzaro and 404 Municipalities. Calabria borders Basilicata in the north, in the east by the Ionian Sea and in the west by the Tyrrhenian Sea. Calabria has a mainly hilly surface, which covers 49.2% of its territory, has large mountainous areas that cover 41.8% of its territory, while the remaining 9% are flat areas. The rivers of Calabria do not generally show a significant development due to the elongated shape of the Calabrian peninsula and due to the mountainous reliefs.

2.2 Contact Details

Region Information	
Partner organization	Calabria Region – Infrastructure Department n.6
Country	Italy
NUTS2 region	ITF6 Calabria Region
Contact person	Filomena Tiziana Corallini
Position	Manager of Infrastructure Department
E- mail	f.corallini@regione.calabria.it
Phone number	(+39) 0961 852057

3. Policy Context

- The Action Plan aims to impact:
- Investment for Growth and Jobs programme
 - European Territorial Cooperation programme
 - Other regional development policy instrument

Name of the policy instrument addressed:

CALABRIA REGIONAL OPERATIONAL PROGRAMME (ROP) European Regional Development Funds (ERDF) 2014-2020

Priority Axis IV: Energy efficiency and sustainable mobility.

Specific Objective (SO) 4.6 - Increase sustainable mobility in urban areas.

- Action 4.6.1: implementation of infrastructure and multimodal transport systems that promote the use of collective mobility and the sustainable freight transport.

Beneficiaries: Public and Private bodies.

Total Budget for Priority axis 4: € 480.426.377 (corresponding to 20% of the total budget of ERDF)

Priority Axis VI - Protection and enhancement of the environmental and cultural heritage.

Specific Objective (SO) 6.7 - Improvement of the conditions and standards of provision and use of attraction areas.

- Action 6.7.1: interventions for the protection, valorisation, and networking of cultural heritage.
- Action 6.7.2: support to the development of products and services complementary to the enhancement of identified cultural and natural attractions of the territory.

Specific objective (SO) 6.8 - Repositioning of tourist destinations

- Action 6.8.3: support for the integrated use of cultural and natural resources

Total budget of Priority Axis IV: €324,491,321 (corresponding to 14% of the total ERDF budget)

Priority Axis VII - Development of sustainable mobility networks.

Specific Objective (SO) 7.3 - Improvement of regional mobility, modal integration, and improvement of multimodal connections.

- Action: 7.3.1: transportation public services at regional and interregional level

Total Budget for Priority axis VII: € 223.520.321 (corresponding to 9% of the total budget of ERDF)

Structure of the 2014-2020 ERDF ROP

The strategic articulation of the ERDF ROP concentrates on 14 main consistent and integrated priority axes. Each of these has one or more specific objectives with a related budget and for each specific objective a set of actions are defined. The degree to which the specific objectives are attained, and the corresponding actions implemented, is measured using a set of output and result indicators.

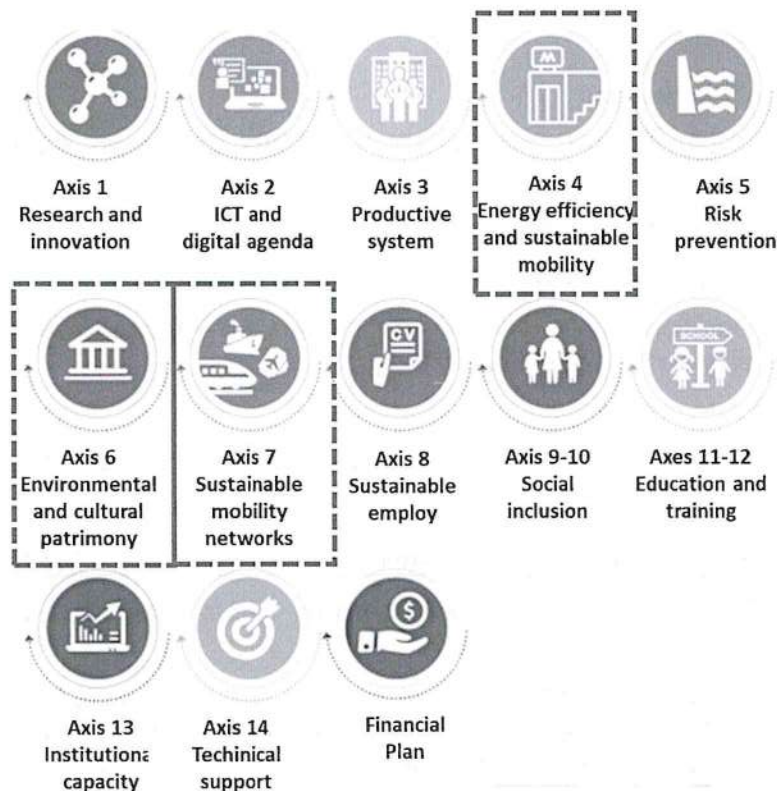


Fig. 2 – Priority Axis of Calabria Region ROP ERDF 2014-2020

As a general framework, the Calabria Region's 2014-2020 Regional Operational Programme (ROP) contributes to the **European Union strategy for smart, sustainable, and inclusive growth, aiming to overcome the structural delays of the Region and to achieve greater economic, social, and territorial cohesion.** Here below the ROP main **challenges to be tackled** in order to recover the regional structural deficiencies:

- the radical renewal of the most promising and reactive components of the regional production system, to be pursued in coherence with the smart specialization strategy and aiming to promote sustainable growth of urban areas, energy efficiency and environmental protection;
- the recovery of competitiveness and productivity of the territorial economic enterprises
- the rationalization of services related to mobility, waste management and the water cycle;
- the protection, enhancement and sustainable use of Calabria's natural and cultural heritage;
- the development and promotion of sustainable tourism;
- the protection of education facilities;
- the implementation of Public Administrations skill and capacities;
- better management of EU funds improving administrative capacity, transparency, evaluation and monitoring of resources at regional level.

Macro priorities: energy, environment, and mobility. Boosting sustainable growth - priority Axis IV, VI, and VII.

Energy

Calabria, as part of the national electricity system, interconnected with the European one, has been in a condition of stable "electricity self-sufficiency" for years, thanks to the high production levels both from fossil and renewable sources, compared to its electricity needs, contributing to the dispatching service. Positive signals come from the level of energy production from renewable sources: in 2018 in Calabria the

share of gross final energy consumption covered by renewable energy was 40.6%, a decrease of 2 percentage points compared to the previous year. It is important to underline that the regional data is very positive compared to the national average of 17.8% (GSE).

Environment

Concerning air quality issues, Calabria is currently among the regions with the lowest number of air monitoring stations: in 2011 it only had 0,3% per hundred thousand inhabitants, compared to 1,1% on national level and 0,9% of the average of the least developed regions. However, observing the levels of greenhouse gas emissions, Calabria's figure has decreased compared to the last few years (from 3,4% in 2005 to 3,2% in 2010) and is lower than the national level (7,5% in 2010). Similarly, the number of days of exceeding the PM₁₀ value for the provincial capital cities of the region is contained and in line with the national figure (53,1 days in 2011). Finally, with respect to NO₂ emissions, the data of the Ministry of the Environment in 2015 showed that in Calabria the level of these emissions was among the lowest in Italy and that the annual limit value set at 40 µg/m³ has never been exceeded.

Mobility

A sector in which the quality of infrastructures and services can have a decisive influence on living and working conditions is transport sector. In Calabria, the mobility of people and goods occurs mainly on the road, with strong negative externalities from an environmental, social, and economic point of view, as well as with serious repercussions especially in urban areas, where congestion from vehicular traffic has a strong impact on the well-being of citizens. The use of Local Public Transport (LPT) is very undersized in cities. The number of passengers using LPT in the provincial capitals (compared to the inhabitants) is 39,0 in Calabria, against a national average of 188,6. Within mobility on public transport, the movements on suburban buses clearly prevail compared to those on the train (more accentuated than the national average).

In Calabria, the demand for passenger rail transport has undergone a progressive reduction in recent years, going from 30,3% in 2005 to 21,1% in 2013. This value is lower, even if not by a great deal, to the national average (28,5%). Much lower are the data relating to the routine use of rail transport (only 2,3%). The inadequacy of the quantity and quality of the services offered, also due to the absence of coordination between rail and road services, is also reflected in the poor satisfaction of users.

As regards the maritime transport of the Calabrian port system, also affected by the project for the construction of the Adriatic-Ionian macro-region, the critical issues concern the level of infrastructure (extension of the berths, extension of the aprons and 10 storage capacities). In a morphologically very complex region highly dependent on road transport, the insufficient quality of the road system is also a particularly critical aspect.

Priority Axis IV – “Energy efficiency and sustainable mobility”

Through the ROP, only interventions aimed at energy efficiency will be promoted to reduce consumption and enhance regional electricity over-production.

The intervention of the ROP will concern the efficiency of Public Administrations buildings and the reduction of consumption in public lighting, on which regional action - with the support of cohesion policies - has already achieved visible advances, in parallel with the increase in the sensitivity of the regional community on issues of energy saving and efficiency.

These interventions will be conducted within the Thematic Objective (TO) n. 4 "Supporting the transition to a low carbon economy in all sectors".

Finally, the regional strategy within the TO 4 is aimed at modernizing the regional transport model in terms of sustainability, efficiency, and modal integration, promoting as much as possible the transport by rail, both passengers and goods, and sustainable and innovative mobility, such as hybrid or electric.

Specific Objectives (SO) in relation to investments priorities of the Programme

In 2010 Calabria produced 6,4 million tons of CO₂ equivalent (corresponding to 1,44% of the national value), equal to 3,2 tons per inhabitant (7,5 in Italy). Given the small size of the regional industrial base, transport is one of the main sources of CO₂ generation in Calabria. The pursuit and maintenance of good

levels of air quality therefore requires a rethinking of public transport models, especially in the urban area. It is therefore necessary to intervene on an energy rationalization of local public transport and on a new sustainable mobility in the urban area, with the aim of increasing the number of passengers transported by LPT and reducing emissions of climate-changing gases and pollutants.

e-MOPOLI project approaches the Priority Axis IV - “Energy efficiency and sustainable mobility”

Concerning Priority axis IV and in particular Action 4.6.1, it promotes sustainable mobility through the implementation of multimodal transport systems, in particular the LPT by commuters and urban inhabitants and switch private transport to the public one, through measures that facilitate access and parking (car parks, bikes and motorbikes, suitable and recognizable routes and crossings).

With the e-MOPOLI project, Calabria Region will increase services of sustainable LPT, with a focus on electric mobility and charging infrastructure, also thanks to the example of good practices of Project Partners. e-MOPOLI will improve the policy instrument by implementing strategies and measures in the field of electric mobility solutions applied to public transport and logistic transport.

Priority Axis VI – “Protection and enhancement of the environmental and cultural heritage”

This priority aims to promote the cultural heritage of the Region and in particular action 6.8.3 aims to improve the connections and accessibility of touristic areas.

Priority Axis VII – “Development of sustainable mobility networks”

This priority axis aims to the improvement of regional mobility and in particular action 7.3.1. aims to improve the regional and interregional connection through public transport.

Apart from the description of the Policy Instrument addressed within the framework of the e-MOPOLI project, is it important to set a **self-defined performance indicator**. For each policy instrument addressed by the project, at least one result indicator has to be defined to be used to monitor the performance of that instrument and therefore to assess throughout phase 2 whether performance has been improved thanks to interregional cooperation. Essentially, this indicator is specific to each policy instrument. It measures the percentage of beneficiaries that are better off thanks to this instrument. Like any other indicator, this indicator must be both meaningful and measurable.

This indicator in the case of Calabria Region is the **number of public charging stations also for public transport vehicles purchased by Public Authorities in the Region. Target: 30 charging stations**

We propose a new indicator for the Region:

- **Indicator related to the Policy Instrument POR 2014-2020.**

% of the Region’s population residing in municipalities that implement new alternative mobility projects. Target: 30

State of play of the POR 2014-2020, axis IV, VI and VII

Total € 2.371.484.198

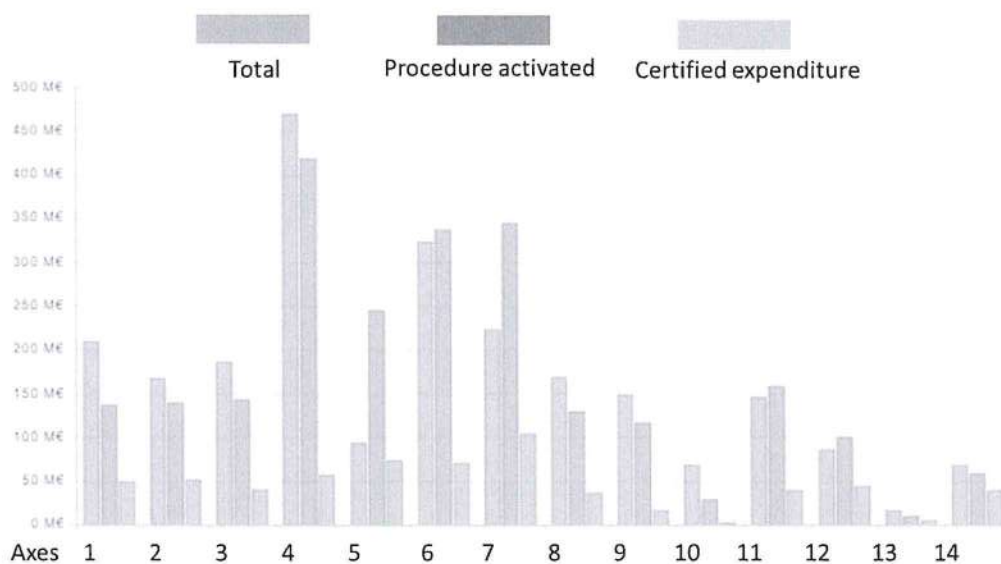
Source: <http://calabriaeuropa.regione.calabria.it/website/view/page/132/index.html> (September 2020)

Source of funding	Total	Procedure activated	Certified expenditure
Axes 4 FESR	20% 480.426.377	419.104.497	57.469.099
Axes 6 FESR	14% 324.491.231	338.144.035	71.355.332
Axes 7 FESR	9% 223.520.321	345.285.800	104.272.957

Metro Catanzaro, Intermodal mobility parking Reggio, e-MOPOLI ...

Bike path of the Parks ...

Upgrade Catanzaro Lido-Crotone railway line, Regional ports. ...



POR 2014-2020, some examples



Broadband and Ultra Broadband connection



Metro Cosenza (Axes 4)



Metro Catanzaro (Axes 4)



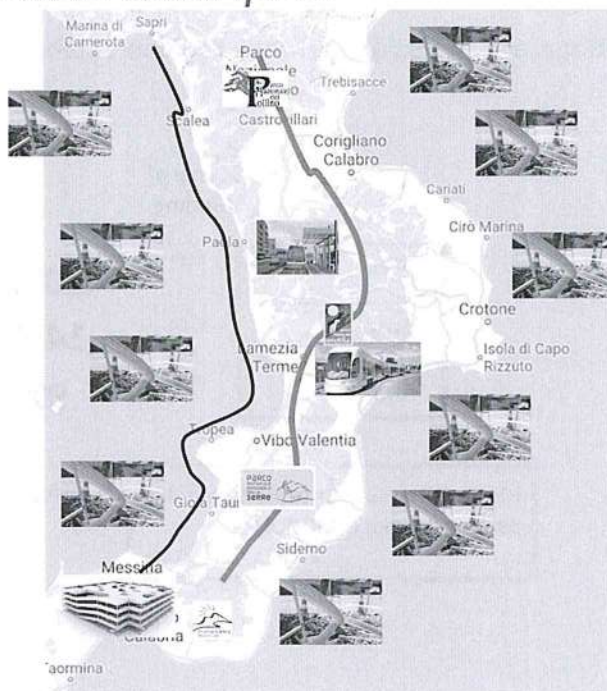
Railway infrastructure (Axes 7)



Intermodal Parking (Axes 4)



Cycle path of the parks



Additional Policy Instruments consistent with this Action Plan

Regional Transport Plan - Year 2016

The Regional Transport Plan (RTP) was adopted, in its final version, by Resolution of the Regional Council no. 503 of 06/12/2016 and approved by Resolution of the Regional Council no. 157 of 19/12/2016, with Strategic Environmental Assessment (SEA). Finally, the RTP has been positively assessed by the EU Commission, Directorate General for Regional and Urban Policy as communicated in note 1086324 of 01/03/2017.

PUBLIC ENGAGEMENT (PE)

Public decision-makers and citizens were actively involved in the formulation of the RTP:

- Public decision-makers: 5 formal steps were taken in the Regional Government, 4 in the Regional Council Committees, 3 by the Regional Council;
- Citizens and associations: several events (more than 50) were held on the regional territory and thematic seminars for the participation and sharing of the Plan choices.

A NEW VISION FOR TRANSPORT AND LOGISTICS IN CALABRIA VISION: 4 GENERAL OBJECTIVES



The RTP defines a Vision in 4 general Objectives for the regional transport and logistics system: economic development, external accessibility, internal accessibility, and sustainability. To pursue this Vision, the RTP indicates 10 Objectives/Actions that translate into 100 operational Measures, 10 for each Objective/Action. The Measures specify which interventions should be carried out on the transport and logistics system and on other systems not directly linked to it, such as tourism.

Among the Plan Objectives, Objective 8 "*Sustainability, streamlining and simplification*" indicates the Action with the Measures for sustainability, simplification and speeding up of procedures, controls and interventions in the regional transport and logistics sector. Among these Measures, those directly related to the promotion of low-carbon mobility are:

- measure 8.1 - promotion of environmental sustainability of development with measures related to the use of different types of vehicles, coordinated with those of the specific other actions, and with those of economic and social sustainability;
- measure 8.2 - promotion of the environmental sustainability of development with specific measures for the zero use of fossil fuels, and support for the use of energy from renewable sources and for the use of electric vehicles, variously articulated and activated, in order to fully commit to a generational balance with an increase in the utility of new generations.

This Action Plan has been elaborated in coherence with the RTP.

4. Background

4.1 Current Situation

Sustainable and electric mobility in the Region

In Calabria, the mobility of people and goods is mainly on the road, with evident negative externalities in the whole region, from an environmental, social, and economic point of view, and with serious repercussions especially in urban areas, where congestion from vehicular traffic strongly affects the quality of life and the environment. In urban and extra-urban roads there is a very limited diffusion of both Electric Vehicles (EV) and charging infrastructure, n.55 EVs in 2017 and n. 104 charging spots in 2018.

Despite the environmental benefits and other Italian Regions situation (i.e. Lombardy Region), electromobility is at an early stage of development in Calabria. Multiple reasons have to be analysed to understand this limited diffusion: high costs of EVs, lack of interoperable infrastructure in the region, lack of financial and non-financial incentives and the deficiency of proper legislation framework.

However, some initiatives of public and private sectors are already existing and implemented in the region: Calabria Region promoted the Ministerial of Transport call for funding (PNIRE) for the installation of charging spots (high and normal power) with public access in metropolitan and not metropolitan areas of the Region; the Region presented an Expression of Interest for the realization of urban sustainable logistics interventions, by implementing the Regional Transport Plan; concerning Smart Specialization Strategy (S3), the Region is developing strategies for the promotion of infrastructures interconnection, including ICT, for sustainable mobility and the improvement of air quality; Mediterranean University of Reggio Calabria is experimenting pilot projects in order to mitigate EV drawbacks (i.e. noise, weigh, etc.) trough better transportation infrastructures and tires; the spin-off of the University of Calabria is experimenting Minicar retrofit by replacing the original oil engine with an electric motor with equivalent power and torque. Concerning the Local Public Transport service in the region, it is divided into railway services, operated by Trenitalia and Calabria railways and road services, operated by 28 companies organized in 6 consortium companies. The LPT services are not very diffused in the region and also LPT fleets do not includes alternative fuels options, such as natural gas or electric vehicles. However, Calabria Region is nowadays committed in new policies and calls for proposal to improve this sector.

4.2 SWOT Analysis

Strengths

The SWOT analysis showed that the Calabria Region has considerable strengths but also several criticalities. As regards the former, the favourable climatic conditions that characterise the region, the possibility of cooperating with universities and research centres for technological development and the Regional Transport Plan adopted in 2016, that already provides for the implementation of measures to support electric mobility, are all significant strengths for the Region. Moreover, the ex-ante risk assessment on the possible negative effects of e-mobility has already been carried out and it has emerged that these mainly concern the increased use of energy, the maintenance of e-vehicles, road and charging infrastructures and the e-vehicles battery recycles. In light of the last mentioned possible negative effect of e-mobility, the possibility to elaborate and analyse long term scenarios in relation to industrial uses of e-vehicles' end-of-life batteries can represent another strength.

Weaknesses

As far as weaknesses are concerned, the Region has to deal with a number of shortcomings related with e-mobility. The main lacks regard policies and governance, knowledge and capacities, awareness on environmental problems, collaboration between Universities/Research Centres and the Public Administration, charging infrastructures and infrastructure in general for new mobility models. In addition, other obstacles need to be overcome in the Region such as the technical problems to book e-car sharing vehicles, the high cost for e-vehicle maintenance, the connection of existing and new mobility infrastructures with info mobility applications including accessibility of tourist services for children and disables, and the mapping on existing cartography of the path and the range of electric vehicles. Finally,

it should be pointed out that local and regional regulations and governance do not promote e-mobility, and this represents undoubtedly one of the most significant weaknesses.

Opportunities

E-mobility can also offer numerous opportunities to the Region, including: the attraction of tourist flows resulting from the increase of sustainable mobility options for sustainable tourism's users, the improvement of cities road system and viability, the development of vehicle to grid technology to contribute to the development of GRID SHARES, the diffusion of Mobility Managers in private and public sectors and the recruitment of new technical staff (specialist in e-mobility alternative fuel mobility) in PAs. Moreover, e-mobility gives the opportunity to promote campaigns on sustainable mobility, RES, decarbonization, multi-modality also through the development of cycle infrastructures and new mobility models, and the use of collective transport by using alternative fuel vehicles. E-mobility, linked with the fact that the current Programming Period 2021-2027 is more focused on sustainable mobility, can also give impetus to the adoption of decisive choices in the Region, leading also to the organisation of specific training for public bodies and to actively involve professors, researchers, and university students in the development of new strategies and policies for mobility.

Threats

Finally, the SWOT analysis revealed some threats constituted on the one hand, by high costs of electric vehicles and recharging services, on the other hand by the fact that planning of sustainable mobility services is not integrated in the overall planning of the territory (i.e. integration with existing mobility services, with energy and environmental planning, planning by "spot" initiatives).

4.3 Regional Analysis

Calabria Region has a territorial extension of 15 221,90 km² with a population of 1.894.110 inhabitants (Eurostat 2020). The Gross Regional Product (GRP) in Purchasing Power Standard (PPS) is about €33,619.41 million while the GRP per capita (PPS) is about €17,500 (Eurostat 2019). The regional unemployment rate is equal to 21% of the population between 15 and 74 years old (Eurostat 2019), the highest in Italy and among the highest in the EU-27, and the annual average income is €11,400 (Eurostat 2018).

As concern energy indicators, due to the COVID-19 pandemic in the first half of 2020 (latest available data), the price of energy fell compared to the previous year and was € 0.2226 per kWh at national level. Even the price of fuels dramatically decreased in 2020, resulting in an annual average of €1.43 per litre (petrol) (Ministry of Economic Development 2020). In the country electricity is mainly produced through renewables (40.8%), followed by natural gas (39.2%), coal (12.3%), nuclear (4.1%), oil products (0.5%) and other sources (3%). As far as renewables are concerned, the main energy sources are hydraulic (42.6%), solar (19.8%), bioenergy (16.7%), wind (15.5%) geothermal (5.3%).

In Italy CO₂ emissions are mainly produced by the energy and heat production sector (34%) and by the transport sector (32%)¹. Focusing on the latter, categories of vehicles that pollute the most are in decreasing order: buses 39%, heavy duty trucks 35%, light commercial vehicles for 12%, passenger cars 9% and finally mopeds and motorcycles 5%. In light of this, considering that in Calabria 80% of the systematic daily travels are made by private car, 19% by public road transport and only 1% by public rail transport, a greater diffusion of e-mobility can undoubtedly have a very positive impact on the reduction of CO₂ emissions in the region. Moreover, in the face of a constant decrease of the regional population, since 2015 the car fleet in the region is steadily increasing and stands at 1,302,302 million cars (ACI 2019). Therefore, on average, each household in the region owns about 2.31 cars. At the same time, the number of electric cars in the region is growing too: while in 2015 there were 712 vehicles, in 2019 the number has risen to 2975 (ACI 2019). Hence the need for more and more charging infrastructure², which stood at 226, with a total of 449 charging points, in 2020 (Motus-E). This increasing trend is confirmed also by national

¹ The remaining emissions are produced by other sectors: 3,1% by other energy; 10,9% by manufacturing, industries and construction; 14,7% by residential and 5,3% by commercial.

² Dedicated station that may include one or more charging points.

data according to which in 2020 the sales of electric vehicles increased by 173% compared to the previous year. However, in spite of these positive figures, both at regional and national level the gap with the other European countries is considerable. For example, in 2020 36,967 e-cars has been sold in Italy (of which only 210 in Calabria) while 204,344 in Germany and 110,876 in France (Motus-E).

Finally, the regional territory is crossed by 4,429.20 km of national roads, 5,880.69 km of provincial roads and 6,700.00 km municipal roads.

Table 4. 1: Regional indicators for the Calabria Region

Energy Indicators (National data)			
		<i>Year</i>	<i>Source</i>

Electricity mix	40.8% renewables 12.3% coal 39.2% natural gas 0.5% oil products 4.1% nuclear 3% other	2018	GSE ³
Renewable energy mix	42.6% hydraulic 15.5% wind 19.8% solar 5.3% geothermal 16.7% bioenergy	2018	GSE ⁴
Electricity price (€ per kh)	0.2226	2020	Eurostat
Fuel price (€ per litre)	1.43	2020	Ministry of Economic Development ⁵

Mobility indicators			
		Year	Source
Transportation mix	80% by private car 1% by train 19% by bus	2011	Regional Programme for Mobility Transport
Vehicle mix	NA	NA	NA
Number of vehicles	1,302,302 (cars)	2019	ACI (Automobil Club Italia) ⁶
Number of cars in household	2.31	2011 - 2019	Census of the population (year 2011) ⁷ and ACI (2019)
Number of Electric Vehicles	2975	2019	ACI (Automobil Club Italia) ⁸
Electric Vehicle Sales (last year)	- 36,967 (Italy) - 210 (Calabria) (+500%)	2020	Motus-E ⁹
		Year	Source

³ Documenti (gse.it)

⁴ GSE - Rapporto Statistico FER 2018.pdf

⁵ https://dgsaie.mise.gov.it/prezzi_carburanti_mensili.php

⁶ <http://www.opv.aci.it/WEBDMCircolante/>

⁷ http://dati-censimentopopolazione.istat.it/Index.aspx?DataSetCode=DICA_NUCLEI#

The data is calculated with this formula number of vehicles in Calabria (year 2019) / number of families (year 2011):
1.302.302 / 530.030 = 2,46

⁸ http://www.aci.it/fileadmin/documenti/studi_e_ricerche/dati_statistiche/Annuario2018/Capitolo2_2018.xlsx sheet "TABIII16"

⁹ Home MOTUS-E - MOTUS-E

		compared to 2019 sales)		
Available Charging Infrastructure	Charging	226	2020	Motus-E ¹⁰
Available charging points	charging	449	2020	Motus-E
Total streets distance (km)	distance	17,000.00	2019	ANAS (National Road Organization) – Observatory on mobility and road safety (Calabria Region)
Street Mix		4,429.20 km national roads; 5,880.69 km provincial roads; 6,700.00 km municipal roads	2019	ANAS (National Road Organization) – Observatory on mobility and road safety (Calabria Region)

4.4 Recommendations

Before the design and plan of the actions described in the next section, several recommendations were formulated, covering all possible aspects that could be improved and contribute to promote electromobility in the region. Recommendations are classified in three main thematic areas: Business, Governance and Research and Innovation Strategies for Smart Specialization (RIS3). Anyway, more recommendations can be found also in the Project Output entitled “e-MOPOLI Recommendations” (Orfanou et al., 2019).

In the **Business** thematic area, it is firstly recommended that the Region imposes common standard and interoperability in charging systems in order to encourage the private sector (i.e. shopping centres, hotels etc.) to install fast charging stations in private areas with public access. Secondly, it would be appropriate to discourage the use of private cars in urban areas by encouraging at the same time the purchase of electric cars with targeted marketing actions. Moreover, the promotion of purchase electric vehicles is recommended not only as concerns private cars but also freight transport and LPT through the introduction of alternative fuels vehicles that produce fewer or zero CO₂ emissions.

As far as the **Governance** is concerned, decision makers should promote policies encouraging (i.e. through tax reduction) the purchase of electric vehicles even through the organization of campaigns for promoting the concept of electromobility and informing people about their advantages and characteristics. Even the organization of campaigns to increase public awareness on environmental issues can be effective in this way as well as the inclusion of electromobility informative actions in schools and universities. Other recommendations indicate to support policies on sustainable mobility in the next programming period 2021-2027, to promote coordination among different public sectors (all contributing to the same sustainable mobility objectives) and finally to promote the use of alternative fuel vehicles in the public transport.

Even the **RIS3** thematic area can contribute to foster the diffusion of e-mobility by promoting studies and researches to increase the battery autonomy, that is now one of the main problems that discourage people in purchasing electric vehicles. Moreover, it can be really useful the development of monitoring systems for roads and vehicles and of projects to improve road surfaces and tires also in relation to new mobility models. Finally, the realization of on-call public services (i.e. buses) and soft e-mobility options (e-bike and e-scooters) may represent a great innovation that would contribute to a greater diffusion of e-mobility in the region.

¹⁰ Ottobre 2020 - Verso la triplicazione del mercato BEV a fine anno - MOTUS-E (motus-e.org)

5. Actions envisaged

5.1 General Information

The following Action Plan is the result of the collaboration between the Department of Infrastructure, Mobility and Transport of the Calabria Region, Observatory sector for Mobility and Road Safety with the Managing Authority and all local and international stakeholders, such as the Universities of the territory, private companies providing services and vehicles, public bodies, whose interest can be positively or negatively influenced by the results of the project execution or its progress. More specifically, they are subjects internal to the organization, subjects belonging to the so-called third parties, members of the project team, users of the project output. In the case of the e-MOPOLI project, the main stakeholder identification techniques were:

- Brainstorming: using the typical technique of creative idea generation, a random and free list of all the people, organisations and subjects falling within the project scope was drawn up;
- Check lists: descriptive checklists of the project environment were consulted;
- Representation: the project environment was simulated to trace internal and external stakeholders.

Obviously not all stakeholders had the same relevance and therefore a classification was made, considering two variables/axes:

1. Interest: indicating the level of influence that the project has on the stakeholder's business environment, in terms of objectives, activities, and results;
2. Power: indicating the level of influence that the stakeholder can have on the setting, execution, and results of the project.

Depending on the values (low/high) assumed by the two variables, four quadrants of a matrix were identified, to which four types of stakeholder correspond:

- Marginal Stakeholders (low interest/low power): these are the figures around the project, who experienced the project indirectly without being able to influence it significantly (e.g. minor external suppliers, logistics and purchasing services);
- Institutional Stakeholders (low interest/high power): who participated indirectly in the project, but exercised corporate control and/or a support function (e.g. other bodies such as municipalities, metropolitan cities).
- Operational Stakeholders (high interest/low power): these are entities that are significantly and actively involved in the project in terms of organizational outcomes, activities carried out, outputs released, but that have little influence on project decisions (e.g. final users such as public transport passengers, mobility).
- Key Stakeholders (high interest/high power): these are the figures with a focal role in the life of the project since they are personally interested in the results of the project and have a strong power to intervene in project decisions (members of the regional team, Managing Authority, project partners).

As far as Marginal Stakeholders are concerned, it was limited to "keeping them informed" about the main aspects of the project, with brief and regular information.

For the Institutional Stakeholders, the role was "acknowledged" by exchanging information and listening to them, without any conflict and/or confrontation.

For the Operational Stakeholders, who is given a co-primary role in the project, the optimal management strategy was "active listening", i.e. absorbing the different points of view expressed by the Operational Stakeholders and giving constant feedback during the life of the project.

For the Key Stakeholders, who is given a leading role in the project, the optimal management strategy was "manage closely", i.e. take care of every detail, even the smallest, of the relationship, especially when this relationship is one of braking rather than supporting the project. In particular, all key stakeholders were involved in the drafting of the project. The Key Stakeholders involved in the project are the following and basically coincide with the so-called "Stakeholder Group": University of Calabria - Faculty of Engineering, group of researchers coordinated by Professor Anna Pinnarelli; University of Reggio Calabria - Faculty of Engineering, coordinated by Professors Filippo Praticò and Francesco Russo; Municipality of Cosenza; Metropolitan City of Reggio Calabria; Mobility Sector (car sharing); Municipality of Reggio Calabria;

Municipality of Catanzaro; AMC, transport company of the city of Catanzaro (funicular railway); Hitachi (production of electric trains). All Stakeholders who actively participated in the 3 regional workshops (n. 3 WRSG - Workshop with Regional Stakeholder Group) are added to the list:

1st Workshop of Regional Stakeholder Group (WRSG1) – Calabria Region
Title: INTERREG EUROPE PROJECT 2014-2020: "Electro Mobility as driver to support policy instruments for sustainable mobility – e-MOPOLI" – 1 st Workshop
Place: General Management Room, Third Floor, Tramontana, Regional Citadel - Viale Europea di Germaneto in Catanzaro
Date: 09.04.2019
Number of participants: 24 Participants are part of public administrations, non-profit associations, companies operating in the field of transport and mobility, Calabria Region, research centres and universities.
List of Institutions: <ul style="list-style-type: none"> • Calabria Region (several departments): <ul style="list-style-type: none"> ▪ Eng. Domenico Pallaria - General Manager Department of Infrastructure, Public Works, and Mobility ▪ Avv. V. A. Scopelliti - Director of the Mobility Observatory of the Calabria Region ▪ Prof. R. Musmanno - Councillor for Infrastructure and Transport • ALOT S.r.l. - Dr. G. Piccoli – Technical Support of the project Lead Partner Province of Brescia • University of Calabria - UNICAL • Metropolitan City of Reggio Calabria • A.R.P.A.C.A.L. Calabria Regional Environmental Protection Agency • ALESCO • CAL MOVING • ENEL • PIN BIKE • CLASS ONLUS • EV-NOW
<u>Topics discussed:</u> <ul style="list-style-type: none"> • Calabria Region's policies for Sustainable Mobility and Energy Efficiency - the e-MOPOLI project: general overview • The e-MOPOLI project: territorial analysis of European partners; European best practices on electric mobility and alternative fuels. Discussion for the elaboration of the Action Plan: <ul style="list-style-type: none"> ▪ Air quality in Calabria: the evolution of the Regional Air Quality Monitoring Network and Air Quality Information System in the Calabria Region. ▪ Advanced use of air quality modelling systems for estimating the impacts of ports, airports and significant road infrastructure; emission inventories for road, port and airport traffic. ▪ State of the art of mobility with alternative fuels and in particular electric mobility. ▪ Main obstacles and risks in the deployment of electric mobility.
2nd Workshop of Regional Stakeholder Group (WRSG2) – Calabria Region
Title: INTERREG EUROPE PROJECT 2014-2020: "Electro Mobility as driver to support policy instruments for sustainable mobility – e-MOPOLI" - 2 nd Workshop
Place: General Management Room, Third Floor, Tramontana, Regional Citadel - Viale Europea di Germaneto in Catanzaro
Date: 23.10.2019

Number of participants: 17

The participants were mainly representatives of the Public Administration and Universities: Calabria Region, Municipality of Reggio Calabria and Catanzaro, ARPA Calabria Region. Teachers and researchers from the Mediterranean University and the University of Calabria.

List of institutions:

- Calabria Region (several departments):
 - Eng. Domenico Pallaria - General Manager Department of Infrastructure, Public Works, and Mobility
 - Avv. V. A. Scopelliti - Director of the Mobility Observatory of the Calabria Region
 - Prof. Roberto Musmanno - Councillor for Infrastructure and Transport
- ALOT S.r.l. - Dott. G.Piccoli – Technical Support of the project Lead Partner Province of Brescia
- University of Calabria - UNICAL
- Mediterranean University of Reggio Calabria
- Metropolitan City of Reggio Calabria
- Municipality of Catanzaro
- A.R.P.A.C.A.L. Calabria Regional Environmental Protection Agency

Topic discussed:

- The e-MOPOLI Project: Regional analysis and the role of the local stakeholder group in project development
- The e-MOPOLI Project: European best practices on electric mobility and alternative fuels
- Discussion for the elaboration of the Action Plan:
 - Implementation of actions on the territory.
 - Review of Good Practices of the Partnership Consortium.
 - Action plan template.
 - Air quality in Calabria: the evolution of the Regional Air Quality Monitoring Network and Air Quality Information System in the Calabria Region.
 - Follow up of the SWOT analysis of the first meeting and recommendations.

Knowledge Exchange n.7 (ILW, RT, IFV, SE) with local and international stakeholders - Calabria Region

Places, dates and topics discussed:

30.09.2020 Staff Exchange in Cosenza:

- Visit to the University of Calabria, with a special focus on: 1) Citizen Energy Community (CEC), multi-energy hybrid systems and electric mobility laboratory, second life battery and charging station for intelligent electric vehicles; 2) spin-off "Creta Energie Speciali S.r.l." and its laboratories. Its mission is the sustainable development of the territories of Calabria, based on renewable energies, electric mobility, retrofit of electric vehicles, smart recharging, sustainable energy management, nano and smart-grid experimentation, efficient public lighting.
- Visit of the Municipality of Cosenza: design and implementation of local public transport and e-bus and cycle path infrastructure projects ("ciclipitana").

01.10.2020 - Interregional Learning Workshop (ILW7): State of Play of the Calabria Region at Policy, Business and RIS 3 level - Calabria Region - Catanzaro Località Germaneto

01.10.2020 - Interregional Round Table (RT7): overview of Calabria Region's projects and initiatives for sustainable mobility - Calabria Region – Catanzaro Località Germaneto

01.10.2020 - Interregional Field Visit (IFV7) in Catanzaro (on-line streaming) - Electric mobility services, charging infrastructure and new projects: AMC's e-bike system, parking and charging areas for electric cars, Metro construction site visit – Catanzaro

02.10.2020 Staff Exchange (SE4) in Reggio Calabria:

- Visit to the Municipality of Reggio Calabria: description of local initiatives and policies for sustainable urban mobility planning with a focus on bike and car sharing services.
- Visit to the Mediterranean University and presentation of new projects and studies on mitigating the inconveniences of electric vehicles through better transport infrastructure and tyres.

Number of participants: 40 on the spot and at least 18 connected on-line

Participants were mainly representatives of Public Administration and Universities: Region of Calabria, Municipalities of Reggio Calabria and Catanzaro, ARPA Calabria Region. Teachers and researchers from the Mediterranean University and the University of Calabria.

List of institutions:

- Calabria Region (several departments):
 - President of Calabria Region, MEP Mrs. Jole Santelli.
 - Eng. Giovanna Petrunaro: Calabria Region, Department of Infrastructure, Public Works and Mobility.
 - Eng. Roberto Luigi Ruffolo: Calabria Region, Department of Infrastructure, Public Works and Mobility.
 - Avv. Tiziana Corallini: Calabria Region, Department of Infrastructure, Public Works and Mobility.
 - Eng. Domenica Catalfamo - Regional Minister for Infrastructure, Spatial Planning and Development, Equal Opportunities.
 - Eng. Giuseppe Iritano - Responsible for "Design and Coordination of Public Works. Public Administration, Seismic Standards, Soil Protection".
 - Eng. Maria Rosaria Trecozzi – Calabria Region, Department of Infrastructure, Public Works and Mobility.
 - Dr. Antonio De Marco - Project Unit "Urban Authority POR 2014/2020", Municipality of Catanzaro
- ALOT S.r.l. - Dr. G. Piccoli - Technical Support of the project Lead Partner Province of Brescia
- Ing. Domenico Scida - Calabria Regional Director of Trenitalia
- Prof. Anna Pinnarelli - University of Calabria - Department of Mechanical, Energy and Management Engineering
- Eng. Andrea Sebastiani - ANAS SpA
- Eng. Viviana Fedele ATAM Spa RC
- University of Calabria – UNICAL
- Mediterranean University of Reggio Calabria (Prof. Santo Marcello Zimbone, Filippo Gianmaria Praticò; Francesco Russo; Corrado Rindone; Domenico Gattuso, Claudio De Capua).
- Metropolitan City of Reggio Calabria
- Municipality of Catanzaro
- Municipality of Cosenza (Vice Sindaco Francesco Caruso)

3° Workshop of Regional Stakeholder Group (WRSG3) – Calabria Region

Title: INTERREG EUROPE PROJECT 2014-2020: "Electro Mobility as driver to support policy instruments for sustainable mobility – e-MOPOLI" - 3rd Workshop

Place: online

Date: 14.05.2021

The objective of the meeting is the validation and dissemination of the action plan to all stakeholders.

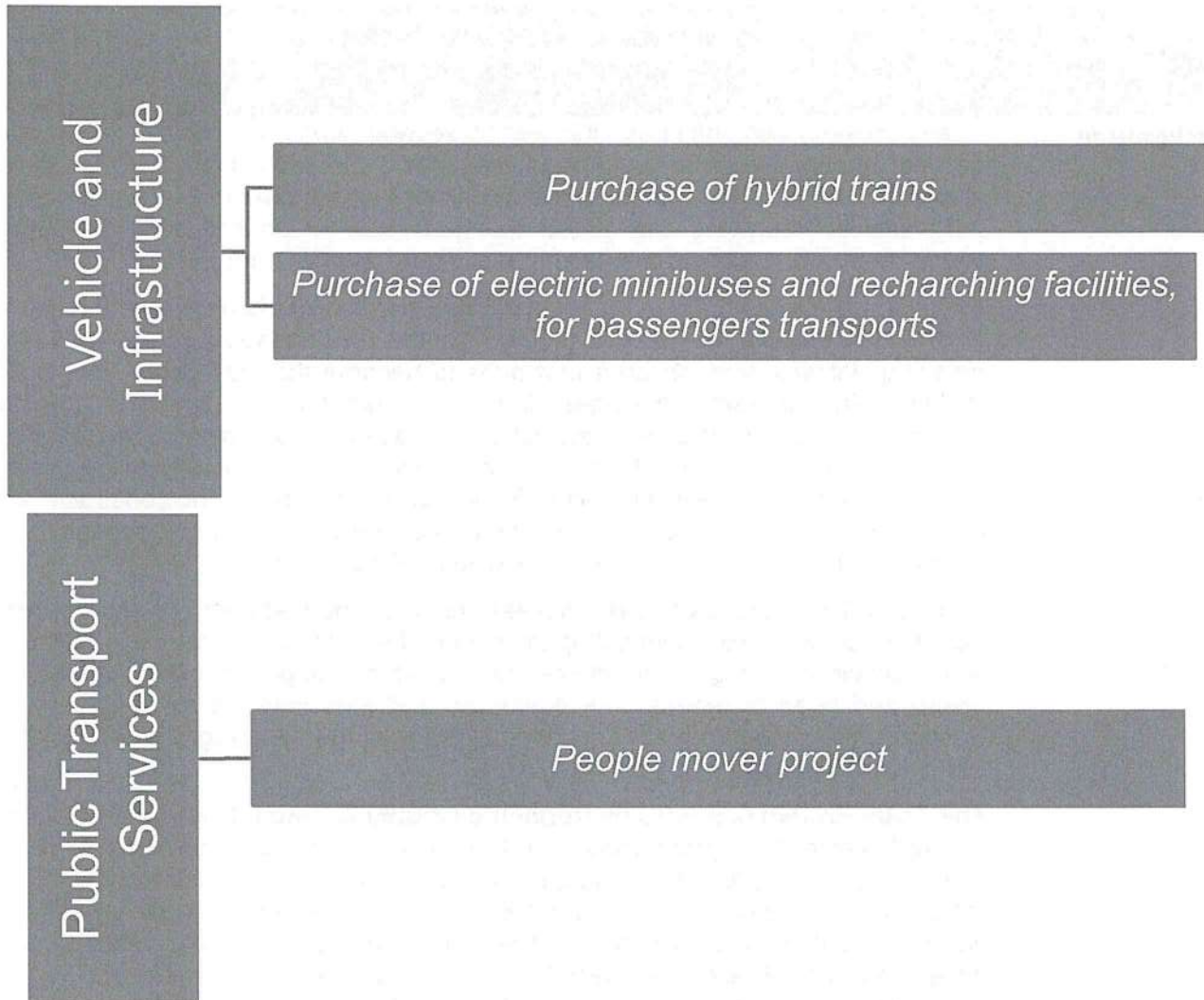
Finally, 5 informal meetings were organized within the Region during the year 2020 with the Community Programming Department and with the Managing Authority of the ROP (Dr. Maurizio Nicolaj, Managing Authority, Dr. Anna Prenestini, Sector Executive, Dr. Marco Merante, Sector Manager, Dr. Ersilia Amatruda, Sector Manager, Eng. Giuseppe Iritano, Sector Manager, Eng. Pia Santelli, member of the structure of the Infrastructure, Public Works and Mobility Department, Eng. Salvatore Frontera, member of the structure of the Community Programming Department).

5.2 Actions for Calabria Region

The Actions that are included in the action plan of Calabria Region are divided in two main priority axes as follows:

- Priority 1 – vehicles and infrastructure
- Priority 2 – Public Transport Services

In the next figure both the priorities as well as the specific actions are presented and analysed below.



General Specification - April 2021: the timing and the possible deferment of the implementation times of the projects identified in this Action Plan are influenced by the institutional situation of the Institution following the death of President Jole Santelli. As provided for by the Statute of the Calabria Region, new regional elections have been called. However, due to the pandemic, elections have been postponed to a date between 15 September and 15 October 2021. In the meantime, the Council in office and the Acting President can only provide for ordinary administration affairs, until the election of the new President

5.2.1 Priority 1: Vehicle and Infrastructure

Promotion and financing of vehicles and infrastructure for sustainable public transport and alternative fuels, through:

The purchase of hybrid "Blues" trains, equipped with diesel engines for non-electrified lines, with pantographs for electrified lines and with batteries for fully electric journeys, financed by Axis VII but consistent with the objectives of Axis IV.

Action 1	Purchase of hybrid trains "Blues", equipped with diesel engines for non-electrified lines, with pantograph for electrified lines and with batteries for full electric travel
Background	<p>The proposed Action has been inspired by several good practices that have been shared among the partners through the e-MOPOLI project and which will be presented below. They represent good practices since, like the Proposed Action, they aim at improving the public transport service offered while favouring environmentally sustainable solutions with low or zero CO₂ emissions.</p> <p>The H2iseO Project carried out by the Province of Brescia aims to implement a hydrogen mobility service (H₂ mobility) on the Brescia-Iseo-Edolo railway line, crossing Valcamonica, an area that aims to become the first Italian "Hydrogen Valley". The project envisages the implementation of two fundamental interventions. On the one hand, the initial purchase of 6 hydrogen-powered trains, with the option of supplying 8 more, to replace the fleet of 14 diesel-powered trains currently running on the Brescia-Iseo-Edolo section. Secondly, the construction of hydrogen production plants. The first hydrogen production, storage and distribution plant will be built in Iseo between 2021 and 2023.</p> <p>As of July 2020, the City of Bucharest has seen the first batch of eight hybrid buses enter circulation, connecting the centre of the Romanian capital to the north of the city where a large shopping centre is located. The project was driven by the desire and need to reduce CO₂ emissions and thus improve air quality in the Bucharest metropolitan area. According to the procurement programme, a total of 130 buses will be in use by January 2021.</p> <p>The TrAM Project promoted by Rogaland County Council (Norway) and funded by the Horizon 2020 programme will develop a set of tools and methods to be used in the industry to design and build land and waterborne vehicles and to make the design more efficient and cost-effective. One of the results of the studies will be the so-called Urban Water Shuttle, a high-speed full-electric vehicle being developed by NCE Maritime CleanTech that will operate between the Norwegian cities of Stavanger and Hommersak. The vessel will be built with lightweight and sustainable materials such as aluminium, ensuring low maintenance and long life. The shuttle will operate a multi-stop commuter route to the city of Stavanger in Rogaland Province. When the ferry will be completed in 2022, it will be the first of its kind. The processes and results of the pilot project will be capitalised on and replicated in other European countries. The project is revolutionary in terms of both zero-emission technology and production methods and will help make electrically powered high-speed vessels competitive in terms of both cost and environmental emissions.</p> <p>It is necessary to specify that the implementation of this action had already been envisaged by Calabria Region before the start of the e-MOPOLI project (June 2018). As a matter of fact, in previous years the Region had already started negotiations with Trenitalia S.p.A. (the main Italian company for the management of passenger rail transport) to define the contractual agreements. The negotiations ended in December 2019 with the signing of the contract. However, the e-MOPOLI good practices listed above have undoubtedly constituted an incentive for Calabria</p>

	<p>Region to continue with the complex negotiations already started and finally reach the agreement which led to finally sign the contract. Indeed, the awareness that many other European regions were and are investing in introducing more sustainable vehicles (hybrid, electric or hydrogen) into their local public transport fleets has led Calabria region to move decisively towards reaching an agreement and thus implementing this action. In particular, the management of public open auction conducted by Bucharest City hall in the field of for the acquisition of hybrid Buses give the opportunity to analyze in detail the evaluation factors system and the procurement process where were specified a series of mandatory technical and environmental (reduction of emissions) conditions that must be respected in order to select the best option in terms of technology, energy efficiency and emission reduction. This practice influenced also action 2.</p>
Objective	<p>The aim of the action is to reduce CO₂ emissions produced by Local Public Transport and promote electric mobility in LPT, expanding at the same time the fleet of vehicles circulating on the Calabria Region's network so as to offer citizens and tourists a valid alternative to private transport.</p>
Relevance	<p>Action 1 is consistent with some of the objectives identified by two policy instruments: the ROP 2014-2020 and the Regional Transport Plan (RTP) adopted in 2016. More specifically, as regards the ROP, the action is coherent with the objectives pursued by Axis IV (Energy efficiency and sustainable mobility) but will be financed by Axis VII (Development of sustainable mobility networks). The action is also coherent with the RTP, especially as far as measure 8.2 is concerned, which foresees the promotion of an environmentally sustainable development through specific measures for the zero use of fossil fuels. Moreover, the measure supports the use of energy from renewable sources and electric vehicles, in order to fully commit to the generational balance with an increase in the utility of the new generations. According to the classification of the Interreg EU Programme - this type of action falls within type 1 i.e. "Implementation of new projects".</p>
Activities	<p>The action provides for 13 so-called HTR/Blues hybrid trains to be put into circulation within the region by 2023 (8 in 2022 and 5 in 2023). These trains will require less energy compared to conventional trains and will contribute to promote electric mobility in public transport. They are equipped with diesel engines for non-electrified railway lines, pantographs for electrified lines and batteries for a full electric travel. In particular, running electrically is useful and more sustainable from an environmental point of view especially when approaching historic town centres or while stationary, as it reduces polluting emissions as well as noise, thus ensuring benefits for both the environment and operating costs in terms of diesel savings. In the station the trains are started up using only the batteries, outside the station they continue to accelerate using the power of the motor-generator; during braking the motor acts as a generator, allowing the batteries to be charged.</p> <p>Here are the sub-activities by November 2022:</p> <ul style="list-style-type: none"> • Finalization of the various financing procedures. • Calabria Region commits to update existing planning instruments on alternative source mobility by the end of the e-MOPOLI project.
Target (optional)	<p>The final target of this action is the users of the alternative source mobility services offered by the new hybrid diesel/electric trains, i.e. the citizens and commuters of the Calabria Region. In addition, the CO₂ reduction targets due to the commissioning of the new trains will be specified. It will thus be possible to verify, after the commissioning of the new trains, whether the CO₂ and NO_x reductions envisaged in the design phase will be met and to calculate the actual CO₂ reduction compared to the existing cars. It is already possible in the design phase to indicate that with the new hybrid trains it will be possible to save 30 % (-30%) of total energy compared to a conventional train and that between 95-97% of the</p>

	materials used will be from recycled materials. Finally, as a comparison of CO ₂ savings with reference to the average CO ₂ emissions (kg) per passenger, there is a reduction of -76% of CO ₂ compared to aeroplanes and -60% compared to private cars.
Bottleneck	The public transport system in Calabria is rather deficient and therefore little used compared to the national average as an alternative to private means of transport. Moreover, considering that the transport sector alone is responsible for 44% of the regional energy consumption, if public transport could offer a wider service, through the introduction of more vehicles (as envisaged by the action) and with a lower environmental impact (such as the hybrid trains envisaged by the action), the current problematic situation would certainly find at least a partial solution.
Stakeholders involved	The main stakeholders involved for the implementation of Action 1 are Calabria Region, Trenitalia SpA - the main Italian company for the management of passenger rail transport - and Hitachi Rail SpA - company specialised in the construction of technologically advanced rolling stock and which will provide the trains. As early as December 2019, Calabria Region had signed a service contract with Trenitalia SpA for the period 2018-2032 which provided for the purchase of 27 trains, 13 of which were generically defined as bi-modal. However, it was not until July 2020 that it was decided, by resolution of the Regional Council no. 180 of 10/07/2020, that those 13 trains would be purchased as hybrid trains, known as 'Blues', with diesel-electric propulsion supplemented by batteries. On this purpose, it is important to underline that e-MOPOLI's good practices had a major influence on the decision to have those 13 trains purchased as hybrids.
Timeframe	The agreement for the introduction of 27 new trains (including 13 HTR/Blues hybrids) was concluded in December 2019. By August 2022 the following activities will be implemented, contributing to the overall achievement of the action: <ul style="list-style-type: none"> • <i>Finalization of the various financing procedures - by 31/12/2021</i> • <i>Updating existing planning instruments on alternative source mobility - by August 2022</i>
Indicative Funding Sources	The service contract signed in December 2019 between Calabria Region and Trenitalia SpA establishes the total investment for rolling stock, financed by Calabria Region and Trenitalia. The Regional funding is in turn composed of ROP 14/20 funds, CIPE 54/2016 funds and DM 408/2017 funds. The Investment Plan establishes the number and type of rolling stock to be purchased, as well as the amounts of the investments in the various years, while it does not specify the source of financing among those provided (Trenitalia funds, POR 14/20 funds, CIPE 54/2016 funds and DM 408/2017 funds) for each type of rolling stock. This aspect will be subsequently clarified by means of appropriate acts during the finalisation phase of the various financing procedures.
Indicative Costs	According to the investment Plan the action will cost approximately € 100.360.000.
Expected Impact - economic - environmental - territorial - on e-mobility	From an economic point of view, it is expected that the action, by increasing the number of trains circulating in the region, will make it possible to expand the existing public transport service, thus making the region more attractive to tourists. This will inevitably have a positive impact on the region's economy. From a landscape point of view, the action will have no significant impact since the new hybrid trains that will enter into circulation will use the existing railway lines. From a territorial point of view, the action, by extending the public transport service offered until now, will make the regional territory more connected, thus allowing tourists and citizens to consider the use of public transport a valid alternative to private means of transport. It is also expected that this will lead to a reduction in

	<p>the region's pollutant emissions due to the introduction of more sustainable public transport and the expected increased use of public transport by citizens and tourists as an alternative to private transport.</p> <p>As far as electric mobility is concerned, the action is expected to lead to a significant increase in the number of hybrid trains available in the region.</p>
Transferability	The action is characterised by a high level of transferability as it can represent good practice for other regions or territories aiming to make their public transport service more sustainable.

1. *Purchase electric vehicles, of the 9-12 seat minibus type, recharging facilities, and related photovoltaic system, for passenger transport for tourist itineraries in the municipalities of Calabria, integrated with an e-bike sharing system. This action, also linked to the Regional Transport Plan and the Regional Plan for Sustainable Tourism, is financed by Axis VI and is fully consistent with the objectives of Axis IV.*

Action 2	Purchase of electric vehicles, of the 9-12 seat minibus type, recharging facilities, and related photovoltaic system, to be used for the transport of people in support of tourist itineraries in Calabrian municipalities.
Background	<p>The Proposed Action has been inspired by several good practices that have been shared among the partners through the e-MOPOLI project and which will be presented below. They represent good practices since, like the Proposed Action, they aim at improving the public transport service offered while favouring environmentally sustainable solutions with low or zero CO₂ emissions.</p> <p>Attica Region's project (Greece) was a great source of inspiration for the conception and design of the Action. In September, the first electric buses started running in Athens. These are highly environmentally friendly vehicles that will gradually replace the most polluting buses; they are equipped with two electric motors and lithium-iron-phosphate batteries, which are environmentally friendly and long-lasting.</p> <p>Another source of inspiration that contributed to the definition of the Proposed Action is the project of the Municipality of Kranj (Slovenia), which aims to introduce 4 electric minibuses to connect the centre of Kranj to Brdo via an electric public transport system.</p> <p>The project of Rogaland County Council (Norway) also contributed to the design of the proposed action. Since July, 17 battery-electric buses have been in circulation to serve the city centre of Haugesund. The transition from diesel to electric is expected to reduce greenhouse gas emissions from public transport in Haugesund by approximately 1,200 tonnes of CO₂ per year and approximately 8.2 tonnes per year of NO_x (local emissions).</p> <p>As of July 2020, the City of Bucharest has also seen the first batch of eight hybrid buses enter circulation, connecting the centre of the Romanian capital to the north of the city where a large shopping centre is located. The project was driven by the desire and need to reduce CO₂ emissions and thus improve air quality in the Bucharest metropolitan area. According to the acquisition programme, a total of 130 buses will be put into use by January 2021.</p> <p>Another inspiring project is the one implemented in the cities of Jelgava and Aizkraukle (Latvia) where a driverless electric bus was inaugurated on 14 August and 9 September 2020 respectively. The autonomous electric bus is programmed according to the route it has to take and is equipped with various sensors capable of detecting any obstacles in the surrounding environment, thus knowing when to slow down or stop completely in the presence of an obstacle.</p>

	<p>Installation of 4 Vehicle-2-Grid EV charging stations in Meltemi (Greece) thanks to the SHAR-Q project which aims to establish an interoperability network that connects the capacities of the neighbourhood and wide regional RES+EES ecosystems into a framework. One of the stakeholders' activities was the installation of adaptive charging of e-vehicles and V2G services. Therefore, within the project 4 Vehicle-2-Grid electric vehicles charging stations in Meltemi in Greece. Focus of the project is on the development of the interoperability adapters.</p> <p>Finally, during the 9th Exchange of Good Practices organised by the Province of Brescia in April 2021, the intervention of the company FRIEM S.p.A., supplier of electric buses, was very interesting. Among its projects, the company presented the possibility of supplying both battery packs and electrification kits for electric minibuses. In particular with a powertrain up to 140 kW and a battery pack up to 120 kWh. These data will be taken into account as a technical reference for the selection of minibuses in Calabria region.</p> <p>All these good practices inspired Calabria Region to identify and focus on action 2. Indeed, the awareness that many other European realities have successfully introduced electric buses in their public transport fleets and that companies such as FRIEM S.p.A. are investing to improve the performance and therefore the service offered by electric minibuses have greatly contributed to the decision to implement this action.</p> <p>Moreover, it is specified that Calabria Region will take into consideration the way in which the City of Bucharest carried out the tender for the purchase of electric buses. In particular, City of Bucharest organized the procedure and the award of the acquisition contract by conducting a public open auction, in compliance with national and European legislation, where economic operators in this field were able to submit offers - in accordance with requirements, norms and detailed technical characteristics listed in the tender documentation.</p>
Objective	<p>The aim of the action is to support Calabrian municipalities with tourist importance in the promotion of marine and mountain tourist itineraries with sustainable mobility measures. Indeed, the action will reduce CO₂ emissions produced by public transport and promote electric mobility in public transport, while expanding the number of vehicles in circulation in order to ensure a greater offer to tourists. The action will support above all those municipalities that register significant tourist flows and that have been awarded Blue Flag, Orange Flag, Most Beautiful Village in Italy, and that have therefore demonstrated a vocation for the protection and enhancement of their territory.</p>
Relevance	<p>Action 2 is consistent with some of the objectives identified by three policy instruments: the ROP 2014-2020, the Regional Transport Plan (RTP) adopted in 2016 and the Regional Sustainable Tourism Development Plan (PRSTS) adopted in 2019. More specifically, as regards the ROP, the action is developed in line with the objectives pursued by Axis IV (Energy efficiency and sustainable mobility) and financed by Axis VI (Protection and enhancement of environmental and cultural heritage). The intervention is also consistent with the RTP. First of all, as far as measure 4.8 is concerned, which provides for the introduction of transport services to support Calabria's hydrothermal heritage and agricultural and food and wine tourist itineraries. The action is also consistent with measure 8.2 of the RTP, which aims at:</p> <ul style="list-style-type: none"> - the elaboration of a sector plan for electric mobility in Calabria (based on regional, Italian and European best practices); - the adoption of measures to encourage the use of innovative and sustainable fuels and propulsion systems with green and energy efficiency characteristics;

	<ul style="list-style-type: none"> - the elaboration of a study and the implementation of redevelopment actions leading to the enhancement of mobility systems with low environmental impact and functional to tourism and leading to the enhancement of local economic and cultural systems. <p>On the other hand, as far as PRSTS is concerned, action 1 is coherent with the specific objectives A.1, which aims at enhancing the attractiveness of resources linked to current and potential tourism products, and A.5, which intends to contribute to the improvement of accessibility and the use of sustainable mobility. According to the classification of the Interreg EU Programme - this type of action is no.1, i.e. - "Type 1: implementation of new projects".</p>
Activities	<p>The action envisages the purchase and putting into circulation of about 40 electric minibuses (2 per each municipality involved) with 9-12 seats, to be used for the transport of people in support of tourist itineraries in some Calabrian municipalities (i.e. priority will be given to those municipalities that register significant tourist flows and have been awarded Blue Flag, Orange Flag and/or Most Beautiful Village in Italy). Moreover, about 20 recharging stations (1 per each municipality involved) and the dedicated photovoltaic system so that the batteries can be recharged with energy from a renewable source. The action also envisages that this public transport service will be complemented by a bike sharing system, with pedal-assisted (i.e. electric) bicycles.</p> <p>A call for expressions of interest for the supply of electric minibuses, a photovoltaic system with accumulation for recharging and recharging stations is currently being defined.</p> <p>Below are the sub-activities:</p> <ul style="list-style-type: none"> - List of municipalities to be involved in the action. - Finding financial resources. - Calabria Region commits to update existing planning instruments on alternative source mobility by the end of the e-MOPOLI project.
Target (optional)	<p>The final target of this action are the users of the alternative source mobility services offered by the new electric minibuses, i.e. the citizens of the Calabrian municipalities involved and the local and international tourists who will circulate on the regional territory. Both in the design phase and in the commissioning phase of these minibuses, it will be possible to define reference targets for the reduction of CO₂ and NO_x of these new mobility systems, compared to traditional systems.</p>
Bottleneck	<p>The public transport system in Calabria is rather poor and therefore little used compared to the national average. This means that the tourism sector also suffers, with preference being given only to those regional destinations that are more accessible or even destinations outside the region that are easier to reach thanks to a more efficient public transport service, to the detriment of those tourist destinations that are more difficult to access. In addition, this lack of public transport means that tourists are often forced to use private transport, as there are no alternatives for sustainable tourism, which is increasingly sought after.</p>
Stakeholders involved	<p>In the first instance, the Action will involve those Calabrian municipalities that register significant tourist flows and that have been awarded Blue Flag, Orange Flag, Most Beautiful Village in Italy, and that have therefore already demonstrated a vocation for the protection and enhancement of their territory.</p> <p>Therefore, a list of municipalities in the Region that fall into these categories will be drawn up.</p>
Timeframe	<ul style="list-style-type: none"> - By August 2022 the following activities will be implemented, contributing to the overall achievement of the action: List of municipalities to be involved in the action – by July/August 2021;

	<ul style="list-style-type: none"> - Finding and defining through appropriate administrative acts the financial sources of funding, as provided for in the Regional Council resolution no. 207 of 23/07/2021. - by the end of December 2021; - Update of existing planning instruments on alternative source mobility – by August 2022.
Indicative Funding Sources	<p>By resolution no. 207 of 23/07/2020, the Regional Council gave direction to the Department of Infrastructure, Public Works and Mobility for the definition of the <i>Implementation Programme for the Use of Electric Vehicles in Urban Areas, to be carried out with specific resources allocated by Calabria Region and aimed at achieving the best targets defined at global, European, national and regional level with the implementation of sustainable mobility interventions</i>, in implementation of measures 4.8 and 8.2 of the RTP. The resolution allocates to this objective the maximum amount of € 6,000,000. In addition, with resolution no. 207, the Regional Council specifies that the origin of the financial resources (which, as written above, must be equal to a maximum of € 6,000,000) will have to be identified by means of appropriate subsequent administrative acts, evaluating the possibility of using the 2014-2020 ERDF ESF ROP, the 2007-2013 PAC, the 2014-2020 PAC and the FSC (Fund for Development and Cohesion) as sources of funding.</p> <p>In the light of this, through the Implementation Programme of measures 4.8 and 8.2 of the RTP entitled "Use of electric vehicles in urban areas for tourism" of August 2020, Calabria Region has identified the present action as a concrete opportunity to implement the provisions of measures 4.8 and 8.2 of the RTP. In the Implementation Plan it is also specified that the present action results from the exchange of good practices with the partners of the e-MOPOLI project.</p> <p>Therefore, Calabria Region intends to use the funding opportunity offered by the above mentioned resolution no. 207 to purchase the object of the present action: e-vehicles, of the 9-12 seat minibus type, and recharging facilities, to be used for the transport of people in support of tourist itineraries in Calabrian municipalities.</p>
Indicative Costs	max € 6.000.000.
Expected Impact - economic - environmental - territorial - on e-mobility	<p>One of the main impacts expected is that the Action, by introducing new means of transport, will have a positive impact on the economy of the Region, thanks to an increase in tourist flows resulting from the improved accessibility of some territories. Moreover, from an economic point of view, the Action is expected to be a first step to attract sustainable tourism users to the Region. An increase in tourist flows will inevitably have a positive economic impact in the whole region, but especially in the municipalities most affected by the Action.</p> <p>As far as the landscape is concerned, the action will have no significant impact.</p> <p>On the other hand, its impact on the territory will be significant since the territory will be more connected thanks to the introduction of additional public transport. The latter will help to reduce the use of private cars by tourists wishing to visit the region, thus also reducing polluting emissions.</p> <p>Finally, the introduction of electric minibuses and electric bicycles will help to promote the use of these "green" means of transport among both tourists and inhabitants of the Region and to raise awareness of the potential and (especially environmental) advantages of electric vehicles.</p>
Transferability	The action is characterised by a high level of transferability as it can represent good practice for other regions or territories aiming to make their public transport service more sustainable and to increase it.

5.2.2 Priority 2: Public Transport Services

2. *Strengthening of regional public transport services through: People Mover project, an electrometric public transport system (automatic and with its own route) linking Lamezia airport with Lamezia central railway station, financed by Axis VII but fully consistent with the objectives of Axis IV.*

Action 3	People mover project, an electrometric powered public transport system, (automatic and with its own path), that connect the Lamezia airport with the Lamezia railway central station
Background	<p>The Proposed Action has been inspired by several good practices that have been shared among the partners through the e-MOPOLI project and which will be presented below. They represent good practices since, like the proposed Action, they aim at improving the public transport service offered while favouring environmentally sustainable solutions with low or zero CO₂ emissions.</p> <p>One of the main projects inspiring the Action is the one implemented in the Cities of Jelgava and Aizkraukle (Latvia) where a driverless electric bus was inaugurated on 14 August and 9 September 2020 respectively. The autonomous electric bus is programmed according to the route it has to take and is equipped with various sensors that can detect any obstacles in the surrounding environment, thus knowing when to slow down or stop completely in the presence of an obstacle.</p> <p>The TrAM Project promoted by Rogaland County Council (Norway) and funded by the Horizon 2020 programme also contributed to the design of the proposed action. It involves the development of a set of tools and methods to be used in industry to design and build land and waterborne vehicles and to make the design more efficient and cost-effective. One of the results of the studies will be the Urban Water Shuttle, a high-speed full-electric vehicle being developed by NCE Maritime CleanTech that will operate between the Norwegian cities of Stavanger and Hommersak. The vessel will be built with lightweight and sustainable materials such as aluminium, ensuring low maintenance and long life. The shuttle will operate a multi-stop commuter route to the city of Stavanger in Rogaland Province. When the ferry is completed in 2022, it will be the first of its kind. The processes and results of the pilot project will be capitalised on and replicated in other European countries. The project is revolutionary in terms of both zero-emission technology and production methods and will help make electrically powered high-speed vessels competitive in terms of both cost and environmental emissions.</p> <p>The People Mover that Calabria Region will build has in common with the two above mentioned good practices the fact that it is autonomously guided transport system too. The knowledge that other regions have invested in a self-driving transport system has helped and encouraged the Region to overcome its initial scepticism about this feature of the vehicle and therefore to decide to invest on it.</p>
Objective	The objective of the Action is to connect, through a sustainable public transport system, the airport of Lamezia to the Central Station of Lamezia. The achievement of this objective will contribute to the overall project that foresees the realisation of the Multimodal Link Lamezia Terme Airport - Lamezia Terme Centrale Station - Germaneto - Catanzaro Lido.
Relevance	Action 3 is consistent with the objectives pursued by axes IV and VII of the ROP 2014-2020, which provide, respectively, the promotion of energy efficiency and sustainable mobility measures and the development of sustainable mobility networks. The Action is also consistent with the measure 7.5 of the Regional

	<p>Transport Plan, which aims at the creation of linear infrastructures of urban and local interest.</p> <p>According to the classification of the Interreg EU Programme - this type of action is n.1, i.e. - "Type 1: implementation of new projects".</p>
Activities	<p>The Action provides for the purchase of a public transport system of the People Mover type to be used for the Lamezia Airport - Lamezia Central Station connection and is part of the project for the realisation of the Multimodal Link Lamezia Terme Airport - Lamezia Terme Central Station - Germaneto - Catanzaro Lido. The People Mover is an electrically powered, automatic, hectometric public transport system with its own seat, so the route is completely separate from other transport systems and traffic. It is usually used for point-to-point services to connect, for example, airport terminals or other infrastructures. As a whole, the realisation of the People Mover connection between the railway station and the airport will allow the achievement of several advantages: increased frequency (8 minutes instead of 30 minutes), reduced travel time (4 minutes instead of 5 minutes) with a modal exchange close to the airport and the railway station, safe connection, increased comfort for passengers, accessibility to several car parks with adjacent stops and respect for the environment.</p> <p>The main sub-activities are:</p> <ul style="list-style-type: none"> - Approval of technical-economic feasibility design. - Final and executive design. - Calabria Region commits to update existing planning instruments on alternative source mobility by the end of the e-MOPOLI project.
Target (optional)	<p>The final target of this action is the users of the alternative source mobility services offered by the new public transport systems, i.e. local and international citizens and tourists who will circulate on the regional territory. Both in the design phase and in the commissioning phase of the services, it will be possible to define reference targets for the reduction of CO₂ and NO_x of these new mobility systems, compared to traditional systems.</p>
Bottleneck	<p>Currently, the airport and the railway station of Lamezia are connected by a road shuttle service which runs every 30 minutes and takes 5 minutes. Since the area is close to both a railway station and an airport, the traffic is often congested, increasing the shuttle's travel time and thus offering passengers a less efficient service. The construction of a People Mover link (with a dedicated lane for electric shuttles) would eliminate the problem of traffic congestion and guarantee a service frequency of every 8 minutes (compared to 30 minutes for road shuttles) and also a slight reduction in journey times between the airport and the station, by 4 minutes.</p>
Stakeholders involved	<p>The electric buses will be owned by the Region of Calabria, while the service will be managed either publicly (Lamezia Municipality) or privately (SACAL).</p>
Timeframe	<p>By August 2022 the following activities will be implemented, contributing to the overall achievement of the action:</p> <ul style="list-style-type: none"> - Approval of technical and economic feasibility design - by 31/10/2021; - Final and executive design - by 30/11/2022; - Update of existing planning instruments on alternative source mobility - by August 2022.
Indicative Funding Sources	<p>The Action will be financed through Axis VII (Development of sustainable mobility networks) of the ROP ERDF and ESF 2014-2020 as provided by the Regional Transport Plan.</p>
Indicative Costs	<p>15/25 M€ from the ROP ERDF 2014-2020.</p>

<p>Expected Impact</p> <ul style="list-style-type: none"> - economic - environmental - territorial - on e-mobility 	<p>The Proposed Action will have a significant economic impact on the Region since, by allowing an easy connection between the airport and the railway station of Lamezia, it will contribute to make the area an important tri-modal pole, attractive for tourists and workers.</p> <p>The realisation of the action will certainly require a structural intervention that will inevitably have an impact from the landscape point of view, especially if the action for which it will be opted will be the realisation of the independent route for the electric shuttles inside the built-up area of Lamezia.</p> <p>The expected impact on the territory will be positive since the People Mover link will contribute to decongesting the traffic between the airport and the Lamezia station and will therefore also have a positive impact on the environment by reducing polluting emissions.</p> <p>Finally, the Action constitutes a significant incentive for electric mobility since the People Mover connection will be carried out by means of electric buses.</p>
<p>Transferability</p>	<p>The action is characterised by a high level of transferability as it can represent good practice for other regions or territories aiming to make their public transport service more sustainable and to increase it.</p>

Monitoring

(Details of the monitoring of the actions, e.g. individual activities and time plan – Gantt Diagram)

PP2 - CALABRIA REGION - ROP ERDF 2014-2021 AXES IV, VI, VII REGIONAL TRANSPORT PLAN - YEAR 2016																											
Priority 1: Vehicles and Infrastructures	Actions	Sub-Activities	Timeplan																								
Priority 1: Vehicles and Infrastructures	Actions	Sub-Activities	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22		
ACTION 1: Promotion and financing of vehicles and infrastructure for sustainable public transport and alternative fuels, through:	1. Purchase of 'Blues' hybrid trains, equipped with diesel engines for non-electrified lines, with pantographs for electrified lines and with batteries for full electric.	1.1 Finalization of financing procedures																									
		1.2 Updating existing planning instruments on alternative source mobility																									
		2.1 List of municipalities to be involved in the action																									
		2.2 Finding of financial resources																									
ACTION 2: Promotion and financing of vehicles and infrastructure for sustainable public transport and alternative fuels, through:	2. Purchase of electric minibuses for passenger transport for tourist itineraries in the municipalities of Calabria, integrated with an e-fuels, through:	2.3 Expression of interest for the supply of electric vehicles, charging stations and computerised management and control system for the parking area to support tourism																									
		2.4 Updating existing planning instruments on alternative source mobility																									
		3.1 Approval of technical and economic																									
		3.2 Final and executive design																									
Priority 2: Public Transport	3. Strengthening of regional public transport services through: People Mover project, an electromotive public transport system (automatic and with its own route) connecting Lamezia airport with the central railway station in Lamezia.	3.3 Updating existing planning instruments on alternative source mobility																									



e-MOPOLI: Electro MObility as driver to support POLicy Instruments for sustainable mobility



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Il Dirigente Generale
(Antonio Nicolini)



7. Declaration

The Managing Authority of Calabria Region agrees to support and promote the implementation (and where appropriate implement) the plan detailed above.

Name, Surname **Il Dirigente Generale**
(Maurizio Nicolat)

Position _____

Signature



date: 04.08.2021

Stamp of the Organisation

