e-MOPOLI
Interreg Europe

European Union
European Regional
Development Fund

https://www.interregeurope.eu/e-mopoli

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 Province of Brescia - May 2021*

PROVINCIA DI BRESCIA

Regione Lombardia

**Responsible partner**

Province of Brescia Lead Partner in cooperation with Lombardy Region


**Author(s)**

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**Project partners**

ZEMGALE PLANNING REGION · REGIONE CALABRIA · Kainuun liitto · PROVINCIA DI BRESCIA · HELLENIC REPUBLIC REGION OF ATTICA · Rogaland County Council · BSC Poslovno podporni center Kranj Regionalna razvojna agencija Gorenjske · Flanders State of the Art · ADR Agenția pentru Dezvoltare Regională București - Ilfov

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 CO2 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 MObility as driver to support POLicy 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 in promoting 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 (**E**lectro **MO**bility as driver to support **POL**icy **I**nstruments 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 exchange 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 stakeholders 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 and research sector.

e-MOPOLI intends to contribute to the Europe 2020 strategy, by promoting mobility patterns, transport systems, infrastructure and sustainable low $CO_2$ 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: 1 june 2018 – 30 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 in promoting electromobility and alternative fuels in the region of each project partners. 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. As already mentioned above, the overall methodological process that will be used is illustrated in Figure 1 and explained below.

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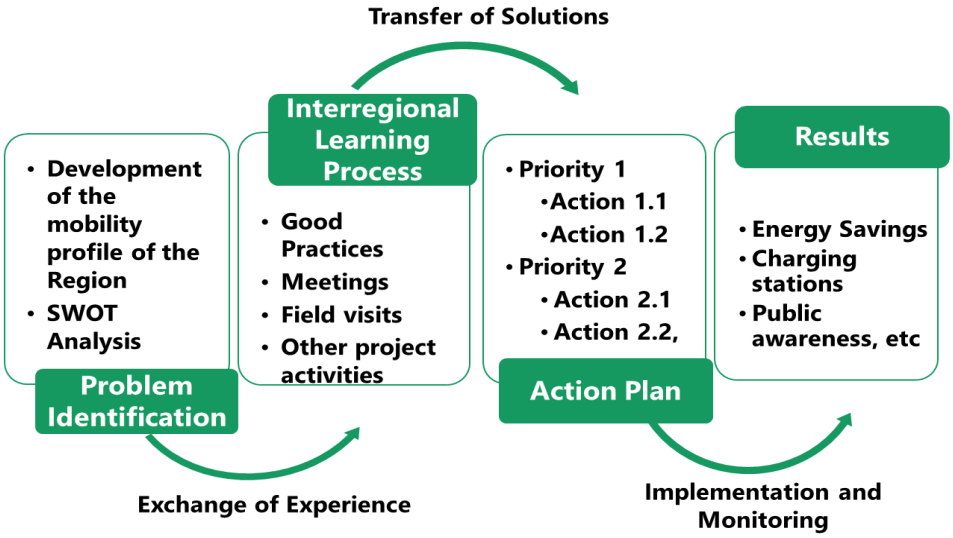


*Fig. 1 Flow Diagram*

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, the 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 Province of Brescia, in cooperation with Lombardy Region, which aims to promote electromobility and use of alternative fuels in the Province 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 Lombardy Region

Lombardy Region, one of the eight administrative Regions (NUTS = 2) of northern Italy, has a territorial extension of 23.863,65 km² with a population of 10,027,602 inhabitants (Eurostat 2020). It is the first Region in Italy for number of municipalities, 1516, and population. It has 11 Provinces and 1 Metropolitan city, Milan, the regional capital.

Lombardy is almost equally divided between the flat land – Po Valley (which represents about 47% of the territory) and the mountainous areas (which represent 41%). The remaining 12% of the region is hilly. From a morphological point of view, the region is divided into four areas: one strictly alpine, one mountain or hilly, one flat divided into the Upper and Lower flat land and finally the south area of the Po river. The region is crossed by dozens of rivers (including the Po, the longest river in Italy) and by hundreds of natural and artificial lakes.

### 2.1.1 Focus on Province of Brescia

The province of Brescia is an Italian province of Lombardy Region of 1 247 583 inhabitants [ISTAT – Dec 2020], with Municipality of Brescia as its capital. It is the largest province in Lombardy, with an area of 4,784.36 km² and a population density of about 264 inhabitants per km², and it includes 205 municipalities. It is the second Province in terms of number of inhabitants in the region and fifth in Italy (first, if the metropolitan cities are excluded). The province includes three main lakes, Lake Garda, Lake Iseo and Lake Idro, and numerous other minor mountain lakes; three valleys, Val Camonica, Valtrompia and Valle Sabbia, plus other minor valleys, as well as a large flat area south of the city, known as the Bassa Bresciana, and various hilly areas that surround the city landscape and extend east towards the Veronese and west towards Franciacorta. Thanks to the altitudinal and morphological variety, as well as the presence of large lakes, the province of Brescia includes all types of biomes in Europe: from something similar to the Mediterranean scrub to the perennial snows of Adamello (with the largest glacier in the Italian Alps). There are 45 watercourses that cross the territory of the Brescia province, almost all of a torrential nature and therefore of very limited length. The only rivers that can be defined as proper rivers are 3, namely the Oglio river, the Chiese river and the Mella river flowing through the three main valleys.

## 2.2 Contact Details

| **Region Information** | |
|---|---|
| **Partner organization** | Province of Brescia |
| **Country** | Italy |
| **NUTS2 region** | ITC4 Lombardy Region |
| **Contact person** | Sabrina Medaglia – project Manager of the Lead partner |
| **Position** | Organizational Position of the European Projects Office, Sustainable Development, Tourism and Statistics of Tourism Sector, Libraries and URP |
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| **Phone number** | (+39) 030 3749990 |

# 3. Policy Context

## 3.1 The action plan aims to impact (from regional to local):

- **Investment for Growth and Jobs programme**
  - European Territorial Cooperation programme
  - Other regional development policy instrument

**Other policy instruments – Provincial Level:**

- **Provincial Guidelines for e-mobility**
- **PTCP – Piano Territoriale di Coordinamento Provinciale (Provincial Territorial Plan)**

### 3.1.1 Policy instrument addressed on regional level

**LOMBARDY REGIONAL OPERATIONAL PROGRAMME (ROP) EUROPEAN REGIONAL DEVELOPMENT FUND (ERDF) 2014-2020, PRIORITY AXIS 4**

*Priority Axis 4: - Support the transition to a low-carbon economy in all sectors*

*Investment Priority 4e - Promote low carbon emission strategies for all types of territory, particularly for urban areas, including the promotion of sustainable multimodal urban mobility and measures of adaptation aimed at mitigating emissions.*

*Expected result 4.6 - Increase sustainable mobility in urban areas*

*Following ROP ERDF 2014-2020 re-programming (occurred in Summer 2020) and following Covid-19 Pandemic situation, the Action IV.4.e.1.1 ("Development of necessary infrastructures for vehicles with low environmental impacts also by promoting initiatives of charging hub") was excerpted from the ROP and no initiatives or projects have never been implemented through this action and related funds.*

**Structure of the 2014-2020 ERDF ROP**

As a general framework, The Lombardy Region's 2014-2020 Regional Operational Programme (ROP) under the European Regional Development Fund (ERDF) provides investment funds of nearly one billion euros (€970,474,516) with the priority objectives of the Region's economic growth and social development as well as the enhancement of its productive capabilities.

The ERDF ROP promotes a **smart, sustainable and inclusive growth** model in line with the objectives identified in the "Europe 2020" strategy and with the regional government's development policies promoting the productivity and competitiveness of its businesses and the entire economy of the Region.

**Main challenges to be tackled**

The ERDF ROP strategy supports a model of growth which emphasizes research and innovation (not least through the spread of new technology) and promotes an intelligent use of the Region's resources and a balanced management of its natural and cultural heritage. The vision of development adopted in the ERDF ROP also entails the deployment of measures to prevent social exclusion of the economically, socially or culturally weaker groups within the population, for instance by implementing various forms of support to promote inclusion in the matter of housing.

**Sustainable development**

Concerning **sustainable development**, the ERDF ROP strategy lays emphasis on building an economy which uses resources efficiently, guides the development of new technologies and processes, and underpins Lombardy companies' competitive advantages by making use of EU-wide networks, in line with the flagship initiative entitled "A resource-efficient Europe". With this in mind, and in keeping with the provisions of the Regional Plan for Energy and the Environment (PEAR) and the Regional Plan of Action on Air Quality (PRIA), measures to be taken under the ERDF ROP have the following aims:

- to reduce the energy consumed in public buildings and by public lighting
- **to promote sustainable transport in urban and metropolitan areas**

### Structure of the 2014-2020 ERDF ROP

The strategic articulation of the ERDF ROP concentrates on seven main mutually consistent and integrated priority axes. Each of these has one or more specific targets (STs), with the outcomes expected for each ST, and the actions to be co-financed by the Programme are related to these STs. The degree to which the specific targets are attained, and the corresponding actions implemented is measured using a set of output and result indicators.

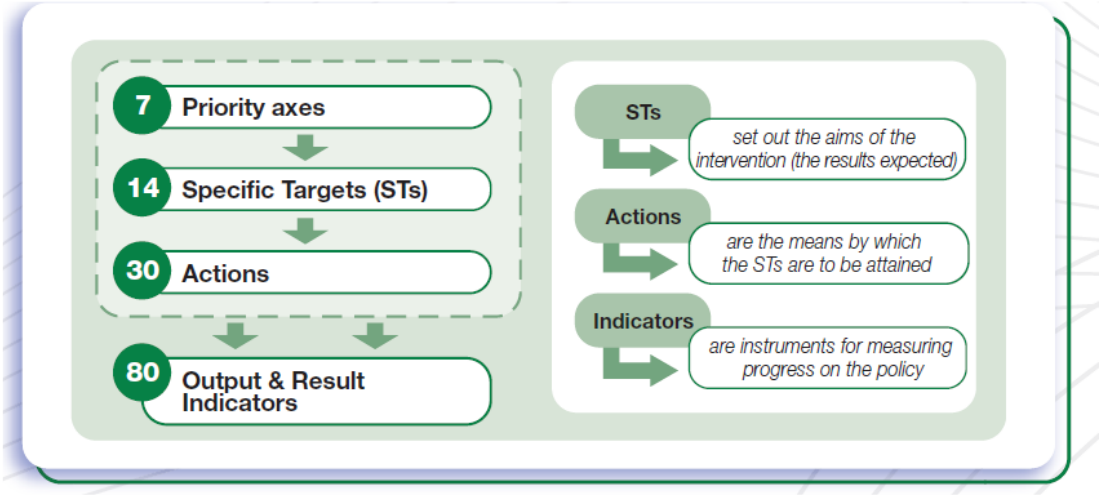


*Figure 2 - Structure of the 2014-2020 ERDF ROP*

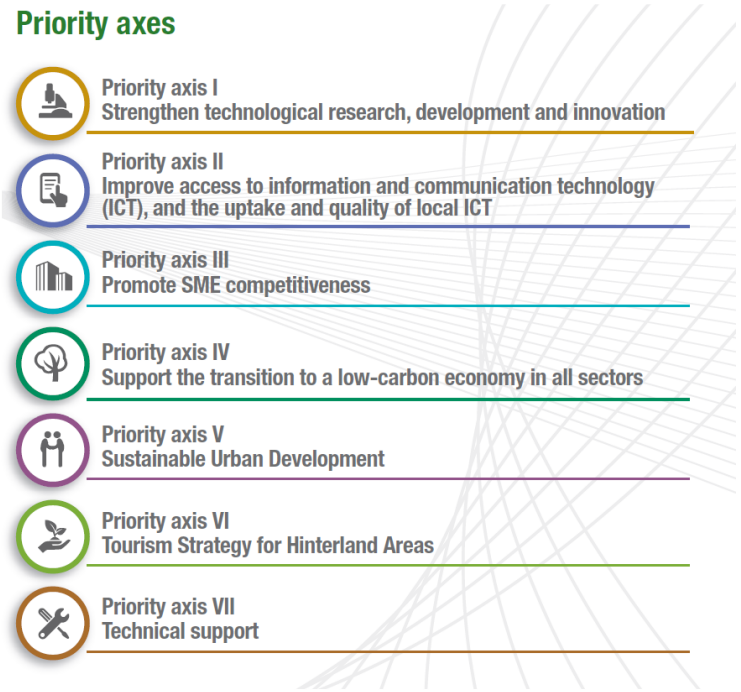


*Figure 3 – Priority Axis of the 2014-2020 ERDF ROP*

e-MOPOLI project approaches the **Priority Axis 4: - Support the transition to a low-carbon economy in all sectors.**

In e-MOPOLI project, the improvement of the policy instrument will consider the integration between the electricity distribution grid and charging infrastructure and also the lack of transfer of knowledge and implementation of Regional Mobility plans into the local level (provincial authorities and municipalities). Moreover, Lombardy Region thanks to the Province of Brescia contribution, will experiment new approaches and measures favouring public-private partnerships, implementing the policy instrument at the local level and involving key stakeholders of the sector.

**State of Play of ROP ERDF 2014-2020 In Lombardy Region in Relation to e-Mobility**

ROP ERDF 2014-2020 in Lombardy Region is in the closing phase and the Managing Authority of the Region is already working for the new Programming period 2021-2027 that will act in continuation of the current one. In this regard, on 8th February 2021, the Regional Council approved, with resolution no. 4275/2021, the Document "Main challenges and priorities for the use of the European Regional Development Fund (ERDF) 2021-2027" and the Document "Main challenges and priorities for the use of the European Social Fund plus (ESF+) 2021-2027" and, at the same time, launched the negotiations on the European Structural and Investment Funds for the period 2021-2027.

The two aforementioned documents lay the foundations of the regional planning framework for the use of the ERDF and ESF+ European structural and investment funds in order to initiate the negotiations with the European Commission and the Italian State necessary to achieve the future approval of the 2021-2027 ERDF and ESF+ ROPs of the Lombardy Region, in line with the contents of the Partnership Agreement and National Operational Programmes.Axis IV of ROP ERDF 2014-2020, focused on the same topics of e-MOPOLI project, such as "Reduction of CO2 in all sectors" and "Increasing sustainable mobility in urban areas" for action 4.6.4 had a financial allocation of € 194,6 million that has been reduced to 95,6 million € due to the reprogramming of Sept 28th 2020 in response to CRII and CRII+.

Concerning sustainable mobility, three main areas of intervention are planned:

1. Greater diffusion of electric mobility.
2. Strengthening of cycling mobility.
3. Purchase of new rolling stock.

Concerning electric mobility, e-MOPOLI project Action Plan put its basis in a in propitious moment in 2019-2020 since the Lombardy Region was in the process of interacting with the European Commission drafting the reprogramming proposal at an early stage. The proposal, that could count on 3.750.000,00 € of funding resources, was calibrated on the expectations of the emerging market: funding grant to finance charging stations for Public Bodies and Companies electric fleets, with the following examples of potential Beneficiaries: residential condominiums; small logistics; fruit and vegetable markets; paid garages and private parking lots; taxi cooperatives; shopping malls, public service car parking lots (municipal police, civil protection, fire brigade, parks, etc.). The constraints of beneficiaries were defined as follow: Capital Municipalities, Municipalities with a population greater than 30,000 inhabitants and metropolitan areas. In this scenario, the Province of Brescia, only the Municipality of Brescia would have been a potential beneficiary.

Unfortunately, due to the pandemic, the approval of ROP ERDF 2014-2020 reprogramming proposal, occurred on 11/09/2020 by the European Commission and with the transposition on regional level on 28/09/2020, excised the aforementioned proposal since the funds of the ROP on this action were destinated to face the COVID emergency.

**Current and future initiatives of Lombardy Region**

Here below a list of project and initiatives, promoted by Lombardy Region from 2019. It is necessary to underline that some or all initiatives could be affected, and changed accordingly, by Covid-19 pandemic emergencies.

- Training / information initiatives on electric mobility; Elaboration of training courses (project Life Prepair).
- Identification of "electric corridors" (update of the regional strategy and guidelines).
- Set-up of a regional web-based platform containing information on regional charging infrastructure, following national guidelines.
- Contributions/incentives for the replacement of polluting vehicles with low environmental impact vehicles in favour of micro, small and medium enterprises.
- incentives for the replacement of polluting vehicles with low environmental impact vehicles for passenger's transport for private resident in Lombardy.

- Incentives (financial endowment 2M€ on ROP 2014-2020 ERDF) for Lombardy Region SMEs in the field of innovations and test of pilot activities and to promote the acquisition of new patents, resulting from innovation and research.

**OTHER REGIONAL POLICY INSTRUMENTS RELEVANT FOR THE ACTION PLAN:**

**Lombardy Region - Vademecum of electric mobility 2018**

The Vademecum of electric mobility is a technical document directly addressed to citizens-users that aims at answering the main questions and issues concerning e-mobility. In particular, the document explains what an electric car looks like, how to recharge it, what are the recharging times and costs, what is the difference between public and domestic recharging and why e-mobility is promoted. The Vademecum also compares data on both electric and petrol-powered vehicles in order to offer the citizen the most complete picture possible. Moreover, it provides an overview of the regulations currently in force (as of 2018) to support electric mobility, such as the Infrastructure Decree No. 257 and the Decree of 3 August 2017.

**Lombardy Region - Guidelines for electric vehicle recharging infrastructure**

The Lombardy Regional Council, by resolution no. X/4593 of 17/12/2015, approved the document "Guidelines for electric vehicles recharging infrastructure" for the implementation of actions for the development of electric mobility. With these guidelines, the Lombardy Region, in line with the European, national and regional regulatory framework, proposed to provide precise indications concerning the methodology and priorities to be considered in the construction of the charging infrastructure and the technical requirements to be met. The aim of the Lombardy Region was to promote the development of a recharging network that supports the circulation of electric and plug-in hybrids vehicles. In this sense, the document illustrates the general principles useful for the design of infrastructure networks for local electric mobility, as well as the technical choices to be pursued depending on the type of installation. The lines of development are articulated in order to support both public and private access recharging (see the definition in Directive 94/2014/EU), in a framework as synergic and functional as possible.

What is defined in the Guidelines meets the following general criteria, which are considered to be the basis of an efficient and rapidly implementable infrastructure process:

- identify the areas of intervention according to a priority scheme.
- enable as many services as possible with the same infrastructure.
- reduce barriers to entry for potential users.
- optimize costs.
- ensure access to all potential users, even if they are occasional users.
- promote integration with other forms of transport, both public and private (intermodality).
- maintain compliance with national and European legislation.

**Smart Mobility & Artificial Intelligence – Project and Strategy for the Lombardy Region Mobility Innovation System. DGR n. XI/3924, 30 November 2020.**

By resolution of the Regional Council no. XII/3924 of 30 November 2020, Lombardy Region approved the document "Smart Mobility & Artificial Intelligence - Strategy and projects for the innovation of the mobility system of Lombardy Region".

The document was drawn up following the Regional Council's approval of the Three-Year Strategic Programme for Research, Innovation and Technology Transfer of Lombardy Region on 19 March 2019, which identified eight reference ecosystems on which to base future strategies for innovation in the region. Among the ecosystems deemed strategic for the future is that relating to Smart Mobility and Architecture, which responds to people's need to move and be welcomed in urban and suburban spaces, but also to ensure the transfer of resources and goods, as well as the connection between territories. The management of public and private urban space is strongly linked to the management of mobility, which implies a joint vision for the two areas in a single ecosystem, within cities and urban areas. In the document "SMART MOBILITY & ARTIFICIAL INTELLIGENCE: Strategy and projects for the innovation of the mobility system of the Lombardy Region", elaborated starting from the overall guidelines developed in the Programme, the Lombardy Region Directorate General for Research, Innovation, University, Export and Internationalisation has defined the contents of a set of projects aimed at promoting and accelerating the

development of Smart Mobility in the Lombardy Region in the time Horizon 2020-2030. These projects will benefit from ERDF/ESF 2021-2027 European funds.

### 3.1.2 Policy instruments addressed on provincial level

**Province of Brescia - PTCP - Provincial Territorial Plan**

The Provincial Territorial Coordination Plan (PTCP) defines the general objectives relating to the planning and protection of the provincial territory connected to interests of provincial or supra-municipal level or constituting the implementation of regional planning. The PTCP is an act of guidance for the socio-economic planning of the province and has landscape-environmental effects. It defines the knowledge framework of its territory as a result of the transformations that have taken place. In particular, as far as mobility and e-mobility is concerned, the PTCP defines criteria for the organization, sizing, realization and environmental and landscape integration of infrastructures concerning the mobility system. It also establishes, in accordance with regional planning, the general program of mobility infrastructures and the main lines of communication.

**Province of Brescia - Guidelines for planning the development of electric mobility in the Province of Brescia**

The objective of this document is to promote the development of a recharging network that supports the circulation of electric and plug-in hybrid vehicles, in accordance with international, national and regional regulations. The province of Brescia, capitalizing on the experience and analyses already carried out in the area through the "energy in motion" pilot project developed as part of the European project AlpStore - Alpine Space 2007-2013, the "100% Urban Green Mobility" project of the GardaUno consortium and the "E-moving" pilot project developed by A2A in agreement with the municipalities of Milan and Brescia, has developed its own guidelines which implement the planning and technological guidelines of the European Alternative Fuels Infrastructure Directive (AFID Directive), the National Infrastructure Plan for the recharging of electric vehicles (PNIRE) and the Lombardy Region's " Guidelines for electric vehicle recharging infrastructure".

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.

The indicator in the case of Province of Brescia policy instruments (see Action 1 of Action Plan) is the **% of population in the Province living in Municipalities implementing spatial planning instruments including e-mobility policies. Target: 60**

**This Indicator is from e-MOPOLI Application Form and it is still valid for Province of Brescia Policy instruments improvement.**

The indicator in the case of Lombardy Region policy instrument (see Action 1 of Action Plan) is the **number of Province of Brescia activities and initiatives to promote Regional call for funding for research and innovation activities in the field of alternative fuel mobility. Target: 3**

This is an additional indicator that will be added in the iOLF system.

# 4. Background

## 4.1 Current Situation

E-mobility and charging infrastructure are quite diffused in the Region. In the following paragraphs are reported few data concerning the state of art of e-mobility in the Region with a focus on the Province of Brescia.

Number of electric circulation vehicle in the area

In the Lombardy Region a total of 16,115 electric vehicles are registered in 2020. The number has grown exponentially considering that in 2019 electric vehicles in the region were less than half, i.e. 7247 and only 4639 in 20218. It should be noted that data refers to the total number of vehicles registered until December 2017 (ACI 2020). Moreover, in the first few months of 2021 there was a significant increase in the sales of electric vehicles in Italy, and consequently the number of electric vehicles registered both in Italy and in Lombardy is expected to reach an unprecedented level this year (Motus-E 2021).

Number of Electric Charging Station (E-CS): where, how many, type operators

According to Motus-E database, in Lombardy Region there are n. 3326 charging spots.

Charging infrastructure operators in the Regions are:

- A2A – 25%
- Tesla – 22%
- EVbility – 11%
- Enel – 9%
- FNM Group – 6%
- Hera Comm – 4%
- Garda Uno – 4%
- TEA Rete Luce – 2%
- FCS Mobility – 1%
- Other Private Operators – 13%
- Other Public Operators – 3%

Among these operators 43% are Public companies, 34% are private and 22% is covered by Tesla.

E-CS maps (Normal Power High Power)

Lombardy Region has estimated a 10% of High Power and 90% of Normal Power e-CSs on its territory. These percentages are the result of the high costs and investments to install high power columns, the lack of business case and a consequent diffusion of normal power e-CS for home EV charging.

Nowadays Interoperability level of the e-CSs

The interoperability is guaranteed by several aspects, as connectors, roaming, method of payments and supported communication protocols to exchange data from e-CS and the central system.

It is very difficult to define the level of interoperability in Lombardy Region, since in the Region, and also at National level, there is not an official living database that collect all info of each operators and e-CS installed in the territory. To analyse every aspect of the charging infrastructure, it is necessary to analyse every single charging column and data provided by on-line platforms and portals. Unfortunately, it is not possible to access to all data (i.e. back end) and it is not possible to extract from these portals aggregated data.

### 4.1.1 State of art of e-mobility in Province of Brescia

To date, the estimated E-Vehicles in the Province are about one hundred units. The growth scenarios for 2020 and 2030 shows a significant increase of EV in the Province considering some relevant factors:

- Evolution of the EV market (decrease in cost, increase in vehicle autonomy);
- Growth of awareness by administrations and citizens of the benefits of electric mobility on the environment.
- Dissemination of charging infrastructures that decreases the risk of remaining without charging and therefore allows planning more trips with electric vehicles.

In late 2017, charging spots with public access already installed in the Province, were about 50. The majority are in Brescia Municipality (thanks to the "e-moving" project of A2A - Renault with the city of Milan and Brescia) and along the Garda Lake (thanks to the 100% Urban Green Project Mobility of Garda Uno Spa). In late 2017, were counted about 80 charging spots in the Province among public and private access.

## 4.2 SWOT Analysis

### 4.2.1 Strengths

The SWOT analysis showed that the e-mobility in Lombardy Region presents considerable strengths but also several criticalities. As regard the former, the first strength concerns the already existing national infrastructure plans for charging of electric vehicles which define the criteria for the construction of a national electric vehicle charging network (PNIRE), in line with e-MOPOLI objectives. Secondly, in Lombardy Region several studies and researches are carried out and constantly updated, analyzing electric mobility in its various forms (charging infrastructure, motor vehicles, etc.). It is also important to underline that PAs, operators and SMEs of Lombardy Region show an increasing awareness in relation to e-mobility issues and planning. Indeed, many local energy operators are investing in innovation and, precisely, in the field of electric mobility. Even as regards freight transport several transport and logistic operators are very interested in the use new e-mobility opportunities and PAs gave impulse to constant discussion with relevant stakeholders in order to include the tourism sector in the sustainable mobility strategies. Finally, as concern planning instruments, the Regional Guidelines on charging infrastructure, the Regional Strategy on electric mobility and the related implementation documents has been approved. More in detail, the Province of Brescia counts two SUMPs, one for the Municipality of Brescia (approved) and one for Municipality of Chiari (under preparation). A greater diffusion of SUMPs in the majority of the municipalities of the Province represents a good opportunity for sustainable mobility.

### 4.2.2 Weaknesses

The first weakness the SWOT analysis has identified concerns the lack of transnational coordination at EU level (i.e. different standards) which does not guarantee transnational corridors for electric vehicles. In addition, even at national and local level the fragmentation of charging network planning and strategy does not facilitate the diffusion of e-mobility and charging infrastructures which are concentrated in few locations where the offer is often oversized. Moreover, the lack of knowledge in the PAs in relation of every aspect of sustainable mobility (not only e-mobility), of a strong coordination scheme from the Ministry of Infrastructure, of real involvement and sensitization of local authorities in rural areas and small villages and the long procedures and bureaucracy characterizing the PAs do not contribute to the diffusion of e-mobility. As far as public transport in concerned, e-vehicles are not very common manly due to the absence of charging infrastructure specifically dedicated to public transport, the significantly higher acquisition costs of e-vehicles and the high charging infrastructure installation costs. In addition, the SWOT analysis shows that the scarce diffusion of e-vehicles in freight transport is due to the lack of involvement of logistic and freight transport sector in e-mobility issues, sufficient awareness of all stakeholders on air quality problems and objective (Co2 reduction) to be reached in few years and knowledge of stakeholders on new technical opportunities in relation of e-mobility. Finally, as far as the lack of e-vehicles in Public Administrations fleets is concerned, the analysis shows that even this depends on the lack of homogeneous diffusion of charging spots and the high cost of e-vehicles.

### 4.2.3 Opportunities

The SWOT analysis also identified several opportunities to foster the uptake of e-mobility. First of all, a greater legislative and technical harmonization on European, national and local level, a major commitment of Public Authorities to develop and approve SUMPs in the next few years and a greater involvement of SMEs of the region in e-mobility issues represent great opportunities to further develop e-mobility. In addition, the creation of synergies between public administrations and public transport operators for the provision of charging services for commuter cars and the development of integrated policies of electric car sharing close to the main railway stations or most important locations for Municipalities (i.e. city hall, hospital, etc.) can certainly contribute to a better diffusion of e-mobility. As regard the public transport, an opportunity to foster e-mobility is the gradual and total conversion of the fleet of buses and taxis with e-vehicles; this will lead at the same time to a consistent reduction of fine dust emissions. It is also possible to involve local companies (automotive industries, Distribution System Operator-DSOs, fuel distributors,

prosumers etc.) in e-mobility promotion such as through private partnership promoting the cultural change in favour of the electric mobility, through the incentivization to install charging spots in service station or by aligning objectives of Regional Policies with e-mobility operators' interests. Moreover, the installation of charging infrastructure in the most isolated and peripheral areas to guarantee a homogeneous territorial coverage, the application of the circular economy concept to the freight transport sector, the identification of electrical routes and "electric corridors" also to resolve the market failure areas (small villages) and the creation of common virtual Cloud among stakeholders in order to have real–time information and to not duplicates e-mobility information and products constitute effective measures to foster e-mobility. Finally, the tourism sector is strategic for the diffusion of e-mobility.

New opportunities are nowadays offered not only from e-mobility but also from Hydrogen, as a competitive alternative fuel, both on railways and local public transports (inland water navigation -lake and rivers- and sustainable tourism - cfr. Feasibility). Province of Brescia, together with local and regional stakeholders are working strictly on this new opportunity. Please refer to Feasibility Study of Action Plan to see complete SWOT analysis.

### 4.2.4 Threats

On the other hand, e-mobility diffusion is threatened by several issues. A first threat is represented by local and regional automotive industry lobbies against e-mobility which promote aggressive sales campaigns for traditional vehicles, also in the field of public transport. As a matter of fact, Italian automotive sector is currently not promoting e-vehicles and e-mobility. Secondly, e-vehicles high costs certainly discourage their purchase. The same as regard charging infrastructure, the high costs of which discourage PAs to invest on them considering also the almost near to zero revenues. Moreover, the frequent political turnover and the administrative fragmentation makes it difficult to pursue a specific project vision with coherency and in the medium-term period, also considering the long authorization procedures and project approval. In addition, the lack of interest towards e-mobility and charging infrastructure, of standardization and thus interoperability of charging networks and of a Unique National Platform (PUN) for e-mobility, all these issues represents a threat to the spread of e-mobility.

## 4.3 Regional Analysis

Within the framework of the e-MOPOLI project, a Regional Context Analysis was conducted formulating each **partner region's profile** based on various indicators (Broos and Vanhaverbeke, 2019). Table 1 shows the most important and e-mobility relevant indicators concerning Lombardy Region.

Lombardy Region has a territorial extension of 23.863,65 km² with a population of 10,027,602 inhabitants (Eurostat 2020). The Gross Regional Product (GRP) is about € 398,779.09 million (the second highest in the EU-27 after the Île de France[1]) while the GRP per capita is about € 39,500 (Eurostat 2019). The regional unemployment rate is equal to 5.6% of the population between 15 and 74 years old (Eurostat 2019), among the lowest in Italy. The annual average income is €36,101 (Istat 2018).

As concern energy indicators, due to the COVID-19 pandemic in the first half of 2020 (latest data available), 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 Italy 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%) and geothermal (5.3%) (GSE 2018).

In Lombardy $CO_2$ emissions are mainly produced by the industrial (27.6%) and road transport (27.6%) sectors, followed by housing (24.1%), energy production (22%), productive processes (4.5%), agriculture (4.5%), other transport modes (2.2%) and waste sector (1%) (INEMAR ARPA 2017). Focusing on the transport sector, $CO_2$ emissions are primarily caused by heavy vehicles (51.6%), light vehicles (20%), cars (14.1%), motorcycles >50cm$^3$ (8.6%) and motorcycles <50cm$^3$ (5.73%) (INEMAR ARPA 2014). Moreover, fuels most commonly used by vehicles are still petrol (54.63%) and diesel (37.1%) while electric (BEV) or hybrid vehicles (PHEV) amount only for 1.49% (ACI 2019). In light of this, considering that in Lombardy Region 63.8% of the daily systematic travels are made by private car, 14.1% by TPL, 9.5% on foot, 5.1% by train, 3.8% by bike and 3.2% by motorbike, a greater diffusion of e-mobility can undoubtedly have a

[1] Even if the data is considered in Purchasing Power Standard.

very positive impact on the reduction of $CO_2$ emissions in the region. In this regard, it is important to underline that Lombardy is the Italian region where e-mobility is more widespread even if, looking at the EU level, the gap with other European regions remains considerable. More in depth, in the face of a total number of vehicles equal to 6,212,479 in the region, 100,61 are electric (BEV or PHEV) (ACI 2019). In 2020 in Italy 36,967 e-cars has been sold, 7.306 of which only in Lombardy (+ 183,5% compared to 2019 sales). This encouraging growth of e-vehicles sales makes evident the need of more and more charging infrastructure in the region, which are currently around 1,547 charging stations with a total of 3,326 charging points (Motus-E 2020).

*Table 1: Regional indicators for the Lombardy Region*

| **Energy Indicators** | | | |
|---|---|---|---|
| | | **Year** | **Source** |
| **Electricity mix** | 40.8% renewables<br>12.3% coal<br>39.2% natural gas<br>0.5% oil products<br>4.1% nuclear<br>3% other | 2018 | GSE |
| **Renewable energy mix** | 42.6% hydraulic<br>15.5% wind<br>19.8% solar<br>5.3% geothermal<br>16.7% bioenergy | 2018 | GSE |
| **Electricity price (€ per kWh)** | 0.2226 | 2020 | Eurostat |
| **Fuel price (€ per litre)** | 1.43 | 2020 | Ministry of Transport |
| **Mobility indicators** | | | |
| | | **Year** | **Source** |
| **Transportation mix** | - 63.8% by private car<br>- 5.1% train<br>- 14.1% TPL<br>- 3.2% motorbike<br>- 3.8% bike<br>- 9.5% foot<br>- 0.5% other | 2016 | Regional Programme for Mobility Transport |
| **Vehicle mix** | - Petrol 54.63%<br>- Petrol&liquidgas 5.46%<br>- Petrol&methane 1.18%<br>- Electric (BEV) 0,06%<br>- Diesel 37.1%<br>- Hybrid Petrol 1.49%<br>- Hybrid Diesel 0.06%<br>- Other 0.007% | 2019 | ACI |
| **Number of vehicles** | 6.212.479 | 2019 | ACI[2] |
| **Number of cars in household** | 2.25 | 2019 | ACI |

[2] http://www.opv.aci.it/WEBDMCircolante/

| | | | |
|---|---|---|---|
| **Number of Electric Vehicles** | 16.115 Up to 162.917 if considering hybrid vehicles too. | 2020 | ACI |
| **Electric Vehicle Sales (last year)** | - 36.967 (Italy)<br>- 7.306 (+ 183,5% compared to 2019 sales) | 2020 | Motus-E[3] |
| **Available Charging Infrastructure** | 1547 (3326 charging spots) | 2020 | Motus-E |
| | | **Year** | **Source** |
| **Total streets distance (km)** | 553 | 2016 | Regional Programme for Mobility Transport |
| **Street Mix** | 0.01 motorway; 0.14 provincial; 0.01 national roads; 0.83 municipal road | 2017 | Regional Programme for Mobility Transport |

[3] Febbraio 2021 - Rincorsa delle PHEV, tempo di agire sulle infrastrutture - MOTUS-E (motus-e.org)

## 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 promoting electromobility in the region. Recommendations are classified in three main thematic areas: Business, Governance and Research and Innovation Strategies for Smart Specialization (RIS3). Moreover, the recommendations from the various round tables organised during the project are also reported. Anyway, more and detailed recommendations can be found in the Project Output entitled “e-MOPOLI Recommendations” (Orfanou et al., 2019). Moreover, some recommendations have surfaced also from the round table.

A first recommendation in the Business thematic area is to adopt an interactive map on the location of charging stations in order to spread the diffusion of e-mobility among territories and citizens. Indeed, it is It is necessary to overcome the lack of information, in aggregate and single form, related to the charging networks and services. Even with a focus on building a network of public charging stations, local companies who are not interested in building a public charging station should be included in the regional plans and information campaigns as they can provide valuable extensions to the network because they reduce the number of necessary public charging spots and are an important point of contact to reach commuters who are one main target group for first adoption of electric vehicles. They can also serve as examples and stimulate others to invest and start into an era of e-mobility. A second recommendation in the Business thematic area is to leverage on private/public touristic sector to increase end-user’s acceptance of e-mobility and to facilitate the e-mobility market take-up. Finally, to spread the diffusion of electric vehicles in Local Public Transport (LPT) it is necessary to elaborate a detailed cost-benefit analysis.

As far as the Governance is concerned, first of all the continuous coordination among different level of public authorities and a constant dialogue with representative associations are strongly recommended. Moreover, to promote and guarantee the diffusion of e-mobility, contributions from the public and private research sector are necessary as well as the organization of initiatives such as information campaigns on social media and distribution of brochures in order to increase awareness of citizens and end-users. Moreover, new technologies and Apps that facilitate the use of new mobility systems are more accessible to new generations and thus can foster the use of e-mobility solutions. As regard legislation, it is fundamental to constantly update regional and local regulations and legislations in the field of e-mobility and e-charging infrastructure to follow technologies improvement and market evolutions. Conformation of regulation and planning infrastructure from the national to the local level and reduction of bureaucratic burdens are necessary too. In addition, it is recommended the adoption of policies for the diffusion of the charging spots by the PA towards private actors (i.e. the obligation for all Shopping Centres to install electric charging stations). Neighbouring municipalities should coordinate with each other in order to homogeneously diffuse e-charging infrastructure and should also discuss the interoperability and management of e-charging infrastructure to protect their and users’ interest. Moreover, it is recommended the extension of the SUMPs to all Municipalities and the use of e-vehicles in PA fleets. Finally, as far as public transport is concerned, it is necessary to think of it also in relation to intermodality, for example with bicycles and not just thinking about LPT on the long distance but also in the “last mile” distance. With regard to “electric corridors” promoted by the regional Authority, it is fundamental to plan them also in relation to the electric and traditional cycling mobility. Moreover, new opportunities and services in the field of inland water navigation together with tourism sector and private mobility should be investigated because it could be a good chance to spread the e-mobility.

In the RIS3 thematic area the increasing alignment among different strategies and governance of Public sector with private sectors and research centres and the putting into practice of “theoretical” RIS3 strategies and actions can be very useful to spread e-mobility. In this regard the Regional Council of the Lombardy Region has approved with resolution no. XI/4155 of 30/12/2020 the Smart Specialisation Strategy for Research and Innovation - RIS3 for the period 2021-2027. In particular, as far as sustainable and electric mobility is concerned, the Lombardy Region new RIS3 identifies the need to build a Smart Region model, intended as a smart city spread across a territory, by launching experiments on major projects such as, and above all, sustainable mobility. Indeed, among the priorities identified is the development of increasingly 'smart', sustainable and safe mobility, with

particular reference to the development of new electrification and vehicle lightening systems, vehicle-infrastructure interaction, frontier ICT technologies, cyber security technologies, infrastructural integration of urban air mobility with urban mobility - Urban Air Mobility (UAM), smart mobility infrastructures, smart roads and connected and automatic driving to improve user use, safety and resilience of infrastructure and vehicles. Lombardy is the world leader in the application of alternative fuels for traction (methane and biomethane, the latter being very important for CO2 reduction).
Even from the Round Tables that was organized in Brescia in April 2021 some recommendations emerged for a better diffusion of e-mobility. First of all, it is recommended the adoption of the so-called quadruple helix (Public Administrations, Industry, Accademia and citizens) approach and cooperation to overcome local and single disparities and interests for the diffusion of electric and alternative fuels mobility in all transport sectors. As well as it is important to invite relevant stakeholders and bring them together on regular basis for discussion and agreements. Moreover, the setting up of national and regional platforms to combine all information and data related to e-mobility (infrastructure and e-vehicles) to overcome the lack of information, in aggregate and single form, is a priority. As regard Regional Operational Programme (ROP) funds related to sustainable mobility priorities, they should be more and more focused on structural charging infrastructure not only for private vehicles (such as e-cars) but also for Local Public Transports and the logistic sector. Furthermore, national and regional policies and funds should take into consideration also the fact that tourism sector combined with digitalization and sustainable mobility offers great opportunities for the diffusion of electric and alternative fuels mobility. Another recommended measure is to include and promote e-mobility in a package of services (i.e. unique ticket for multiple services, multimodality etc.) and across multiple sectors (mobility, tourism, energy etc.). Moreover, campaigns across all broadcast media about the benefits of electrical mobility to increase end-user's awareness on e-mobility opportunities should be implemented together with the sensitization of students at all levels. Finally, the adoption of an holistic approach (energy, mobility, spatial planning, air quality and environment) both at national, regional and local level and increasing investments in R&I in order to find solutions to reduce the prices of batteries and charging infrastructures, and in general alternative fuel infrastructures, are actions that can undoubtedly contribute to spread electric and alternative fuel mobility. Lastly, in relation to the contingent Pandemic situation, due to COVID-19, tourism sector combined with sustainable mobility, above all in Local Public transport sector, offers great opportunities for the diffusion of electric and alternative fuels mobility. National and Regional policies and funds should take into consideration these opportunities also for the next Programming period (2021-27).

# 5. Feasibility Study

Province of Brescia has developed a Feasibility Study preparatory to the identification of one or more actions to be included in the present document. The study focused on the development of mobility with alternative energies and RES integration (electric and hydrogen, local RES production for charging infrastructure for mobility), with particular reference to local public transport (by land and lake) and consequently the promotion of sustainable tourism at the provincial level. The identified strategies, actions and recommendations on possible options for electric mobility in public transport in inland waters of the Province of Brescia aim also to complement regional (Lombardy Region) and European policies.

The Feasibility Study firstly analyses the State of the Art of inland water and local public transport focusing on other EU countries' best practices in the field (for e-MOPOLI see 5.1), and identifying the related development strategies pursued in the most innovative realities. It then examines whether the identified best practices could also be replicated on the Iseo and Idro Lakes (both located in the Province of Brescia). Finally, from the critical analysis of the collected data and the dialogue with local stakeholders, possible scenarios and strategies (long and mid-term scenarios) have been formulated to propose actions and recommendations to the decision makers in alignment with the e-MOPOLI project (short-term scenarios). The Study aimed also to contribute to better integrate local and regional policies and initiatives in the field of sustainable mobility by capitalising on best practices at European level.

In order to understand the needs and outline possible scenarios, the dialogue with local, regional and European stakeholders has been intense and fundamental to draft the study. The major stakeholders participated to real interviews (reported in the Feasibility Study), providing valuable and accurate inputs in the elaboration of insights and recommendations.

In particular, five hypothetic scenarios have been identified:

1. Zero Emission (E0+) lake navigation based on integrated photovoltaics between the vessels and the ports with energy balance from renewable sources.
2. The development of Local Renewable Energy Communities through port infrastructures and local energy networks, in a smart grid logic and the so-called Hydrogen Valley.
3. The application of a River Information Service (RIS) type system to lake navigation to make it safer and integrate information flows to users and tourists.
4. The development of navigation services with e-boats supported by Autonomous Guide technology.
5. The integration of lake and river navigation through the systematisation of new and old services, infrastructures and means of transport.

Once these scenarios have been illustrated, for each of them the feasibility study identifies a number of actions that could be implemented and monitored within the timeframe of the e-MOPOLI project Action Plan (short-term scenarios). In the framework of the first scenario Zero Emission (E0+) lake navigation the actions envisaged that could be realised within the e-MOPOLI project are: (1) project and energetic and environmental cost-benefit analysis for the renovation of a fleet boat and a port of the Iseo Lake, (2) the consequent requalification of a fleet boat, (3) a feasibility study for requalification interventions of marinas and related energy balance and cost-benefit analysis and (4) the experimentation of a pilot project in a marina on the Iseo and/or Idro Lake. As regard the second scenario Smart Grid and Local Renewable Energy Community in the Lakes, the proposed actions are: (1) the realization of a Local Renewable Energy Community project for a port on Lake Iseo and (2) a smart grid pilot project which provides for the integration of renewables and energy production systems, networking existing ones, e.g. on Lake Iseo. While the action envisaged by the third scenario Improving navigation safety is (1) the development of a RIS system applied to Lakes navigation. The fourth scenario Self-drive boat for the lakes provides for (1) the development of the initial phase of a research project to realise a prototype of an autonomously guided boat, building on existing experiments. Finally, the action of the last scenario Tourist offer of the lakes integrated with the territories of the connected rivers consists on the (1) realisation of a project to integrate existing tourism and alternative fuel transport services into a single network and offer, both on Lake Iseo and/or Idro and neighbouring territories and rivers.

Some of the actions just mentioned above are under discussion with the Managing Authority to be chosen to be implemented within the e-MOPOLI project. They are illustrated more in detail in the next section of the present document.

## 5.1 Capitalisation of the e-MOPOLI exchange of experiences

In the framework of the e-MOPOLI project, several interesting experiences have been identified at European level concerning the promotion of electric mobility for public transport in both inland waters and ports. These experiences will be taken as a reference for the drafting of actions in the Province of Brescia's Action Plan. The first experience represents an example of tourism promotion through the use of small and medium-sized electric boats for the navigation of Lake Bled in Slovenia. The second experience comes from the Norwegian project partner, Rogaland County Council, and refers to the electrification of the port of Stavanger (NO) to reduce $CO_2$ emissions. The third experience, even this one coming from the Norwegian partner Rogaland County Council, concerns the world's first high-speed and fully electric ferry that will be developed within the pilot project of the European project TrAM (Horizon 2020). The fourth experience, from the Romanian partner, regards the commissioning of hybrid buses (electric and diesel) with a view to interoperability of the public service with a sustainable mobility offer in favour of alternative fuels. In the field of road transport, Latvian partners have provided further experience with self-driving electric buses. The Latvian partners also provided the last and sixth experience, namely the commissioning of a small full-electric tourist boat.

### 5.1.1 Lake Bled, Slovenia (exchange of experience June 2019)

Bled is a location with optimal characteristics for the development of sustainable mobility and technologies for e-cars, e-bikes, e-boats as rental services and electric charging, due to the limited size of the area and its environmental characteristics. Simon Kulovec, Director of the Research and Development department of the Podkrižnik Group presented a programme for the development of e-boats, in particular a drive system for small electric boats, i.e. speedboats, E'DYN. The Municipality of Bled is also involved in limiting the use of fossil fuel powered vehicles in inland waters, such as in Lake Bled and Bohinj, where rowing boats and electric vehicles only are allowed to transit. Since 2018, an electric cleaner has been installed on the surface of Lake Bled. Rivers, on the other hand, are not protected by regulations against the most polluting vehicles.

### 5.1.2 Energy company Lyse and the Port of Stavanger, Norway (exchange of experience March 2019)

With reference to the project to electrify the Port of Stavanger (NO) to reduce $CO_2$ emissions reported by e-MOPOLI partner Rogaland County Council, the energy company Lyse and the Port of Stavanger are collaborating on the creation of charging facilities for passenger ferries, cruise ships and other large vessels. The goal is a zero-emission port. Port of Stavanger Director Merete Eik specifies that the energy company Lyse and the port have broader perspectives for implementing low-emission solutions, thanks to the great experience in the implementation of electrification infrastructure and other energy solutions. In September 2020, the results of a preliminary study on the electrification of the Stavanger port areas will be ready. In the preliminary study, the two companies will assess which technical solutions and business models will be most suitable in relation to the charging systems and mobility services offered. The approach envisaged is to create a new co-owned company, which will own the new facilities, while the construction and, possibly, the management of the infrastructure will be put out to tender. Finally, Lyse's executive chairman specifies that the first steps to be taken in the preliminary study will be to assess the different technical solutions, the positioning of the charging stations, costs, benefits and most favourable business models. The two companies will possibly co-own the new services. In general, the initial conditions seem to be optimal to take the project forward.

### 5.1.3 TrAM project, Norway (Exchange of Experience March 2019)

Rogaland County Council is also project leader, together with the public transport company Kolumbus, of the TrAM project funded by the EU Horizon 2020 programme. The project will develop a set of tools and methods to be used to design and build land and waterborne vehicles and to make the design more efficient and cost-effective (23, 24). The aim is to draw up guidelines and technical knowledge gained from the pilot project in order to replicate it in other European countries. The Urban Water shuttle is a high-speed full-electric vehicle developed by NCE Maritime CleanTech, which will operate between Stavanger

and Hommersak, Norway. The vessel will be built with lightweight and sustainable materials such as aluminum, ensuring low maintenance and a long-life span. 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 capitalized and replicated in other European countries, with two similar projects being developed in London for Thames navigation and in Brussels for waterways. New production methods will help reduce production costs by 25% and engineering costs by 70%. 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. Finally, ports will be provided with automatic berths for immediate battery recharging. This means that the shuttles will be able to remain charged for a long time (33).

### 5.1.4 Hybrid buses for urban transport in Bucharest, Romania

Developed specifically for regular transport needs in urban areas, the Citaro Hybrid bus represents contemporary mobility combined with low fuel consumption and the perfect link between economy and sustainability. The compact hybrid system (diesel and electric) makes this bus model an economical and environmentally friendly multi-purpose vehicle. According to the data sheet provided by Mercedes, in addition to the classic diesel drive, the hybrid technology introduces an electric motor which is integrated between the internal combustion engine and the automatic transmission. It functions, among other things, as a generator, producing electricity when the vehicle is decelerating or braking. The power produced is stored in the battery system, which has an output of 180 kW and weighs less than 350 kg, including the cooling unit. The batteries are charged not only by the diesel engine, but also by fuel-saving energy recovery during braking and deceleration. During the boost phase, the electric motor assists the diesel unit. The application was submitted in October 2018 and the financing agreement was signed in December of the same year. The purchase was made with the contribution of the European Regional Development Fund (ERDF) through the Regional Operational Programme (ROP 2014-2020) with non-repayable funds worth 70 Million Euros that constituted 80% of the total value, the rest was provided by the local budget.

### 5.1.5 Self-driving electric bus (driverless), Latvia

For the first time in Latvia, a driverless bus will be put into operation in the cities of Jelgava and Aizkraukle thanks to the participation of Zemgale Planning Region within the framework of the Interreg Baltic Sea Region project "Sohjoa Baltic". In the city of Jelgava, the driverless electric bus was inaugurated on 14 August 2020, with a route running from the entrance to the Pasta Island neighbourhood to the new Pasta Island recreation area, while in the city of Aizkraukle the bus was inaugurated on 9 September 2020 with a route running from the Aizkraukle Museum of History and Art to Lāčplēša Street. In both cities the bus was tested for about two weeks. The autonomous bus has six seats and has two stops on Pasta Island - "Tea House" and "Swimming place" and in Aizkraukle - "Museum" and "Church". The autonomous electric bus is programmed according to the route it has to follow and is equipped with various sensors that detect the surroundings and knows when to slow down or stop completely if an obstacle is present. However, everyone is advised to be careful, not to create obstacles, stand in front of the bus or otherwise interfere with the operation of the vehicle both during programming and during operation. It should be noted that there will be a constant assistant on the bus who can take control if necessary.

### 5.1.6 BBQ electric boat in Jelgava, Latvia

In Latvia, in the city of Jelgava, a modern and environmentally sustainable electric boat has been implemented, offered by Migo City, a tourism service provider. The boat, built by the company Dole Marine and named BBQ electric boat, is electric and relies on two batteries that do not work at the same time: the second battery is activated when the first is discharged. In total, both batteries can be used for eight hours, which has not yet been tested as the boat is currently tested for an average of two hours a day. The boat has also a charger so that it can be charged more efficiently (25). In addition, the boat, which is circular in size with a diameter of 2.55 m, can be used by up to eight people at a time, is equipped with an integrated gas grill, table, music, LED lighting, parasol and navigation lighting.

If demand for the service is stable throughout the tourist season, the Migo City company will consider purchasing another, larger electric boat. As there are already many boats in Jelgava, this one could be considered as an alternative option, as it does not need a captain and can be driven by any user even without a licence. In addition, the service is affordable if used by a group of several people (25.00 €/h). The company "Migo City" started its activity at the end of last summer (2019), when two friends (Mārtiņš Gedominskis and Ivars Oškalns) noticed that there was an unexplored niche in Jelgava tourism: that of electric mobility and in particular there were no electric scooters available. When they started the company, they were positively surprised by the high demand from users and tourists for this new possibility of renting electric scooters. Following this success, the company was expanded in 2020 to include electric cars for children and a boat (the BBQ electric boat).

# 6. Actions envisaged

## 6.1 General Information

The following Action Plan is the result of the collaboration among the Province of Brescia with Lombardy Region Managing Authority and different Departments (DG Infrastructure, Transports) and all the local and international stakeholders, such as Local Public transport authorities, SMEs, Enterprises, Universities and Research Centers in the field of alternative fuel mobility, with a special focus on e-mobility. Province of Brescia, with its technical support, drafted the Action Plan together with the Managing Authority of Lombardy Region POR and constantly presented and discussed the action proposals to the stakeholder group. The stakeholder group participated to interregional experience and, through the Regional workshop, had the chance to analyse the Good Practices and experiences of different e-MOPOLI partners. Additional knowledge and good practices used to define our e-MOPOLI actions were derived from exchange of experience (staff exchanges, site visit, workshops, PPs meetings with the e-MOPOLI members) and the sourcebook of good practices.
During pandemic period all stakeholders were invited to check e-MOPOLI news where all PPs describe the innovative experiences all over the Europe in the field of Alternative Fuel. Despite Pandemic, Province of Brescia very appreciated the on-line/hybrid exchange of experiences of meeting in Calabria (September/October 2020) and in Athens (March 2021).
Here below the short list of stakeholders and meetings involved in the Province of Brescia Action Plan (stakeholder group, always updated and implemented during Project lifetime)
3 main Regional Workshops with Regional Stakeholders and the n.9 Exchange of Experience in Province of Brescia (April 2021).

| **Workshop of regional stakeholder group – 1st WRSG – Province of Brescia** |
|---|
| **Venue: Province of Brescia – Via Milano 13 - Brescia** |
| **Date: 05/02/2019** |
| **13 Participants: Regional Authority** (Lombardy Region); **Local Authorities** (Province of Brescia, Municipality of Gardone Val Trompia and Valcamonica Mountain Community); **Association on Tourism, Mobility and promotion of local culture and products** (Strada del Franciacorta, Cluster Lombardo della Mobilità, Consorzio Garda Lombardia); **Research centers** (RSE S.p.a).<br><br>Topics covered:<br>○ Projects and initiatives of Province of Brescia in the field of sustainable mobility, e-mobility and on charging infrastructure planning<br>○ European Projects promoted by Province of Brescia:<br>○ Interreg Alpine Space 2014-2020 “e-MOTICON - e-MObility Transnational strategy for an Interoperable COmmunity and Networking in the Alpine Space.”<br>○ Interreg Europe 2014-2020 “e-MOPOLI - Electro MObility as driver to support POLicy Instruments for sustainable mobility”<br>○ Cluster Lombardo della Mobilità: Initiatives in the field of electric mobility<br>○ From PNire regulation to the 2018 Program Agreement: the obligations concerning public and private access of charging on infrastructure and the actions of the Lombardy Region to support electric mobility<br>○ Public and private electric mobility scenarios |
| **Workshop of Regional Stakeholder Group - 2nd WRSG – Province of Brescia** |
| **Venue: Brescia, Palazzo Broletto Provincia di Brescia** |
| **Date: 10/09/2019** |
| **17 participants,** part of Province of Brescia stakeholder group representing the following sectors/groups: **Regional Authorities** (Lombardy Region Managing Authority POR FESR 2014-2020, Lombardy Region D.G. Research, Innovation, University, Export and Internationalization and Lombardy Region D.G. Infrastructure, Transport and Sustainable Mobility**), Local Authorities** (Province of Brescia, Municipality of Brescia and Municipality of Chiari), **Research centers and Universities** (RSE S.p.A. and University of Brescia) **Mobility and e-mobility Service providers** (Garda Uno SpA, FNM Group/E-VAI and Concessioni Autostradali Lombarde SpA), **SMEs** (Scame Parre and Bepooler), **Public Transport Agencies (**Agenzia TPL Brescia, Brescia Mobilità SpA and Società di Navigazione Lago di |

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| Iseo) **and Associations** (Cluster Lombardo per la Mobilità and A.I.I.T Associazione Italiana per l'ingegneria del traffico).<br>Topics covered:<br>○ e-MOPOLI Project general presentation and first results<br>○ Presentation of regional and provincial strategies and initiatives in the field of electric mobility<br>○ Experiences, need and expectations from stakeholder concerning e-mobility at the regional and provincial level<br>○ Round Table for the definition of common intents and synergies in support of the e-MOPOLI Action Plan<br>○ Summary of Regional Analysis and Good Practices at European level<br>○ Contributions and feedbacks from stakeholders to SWOT & Gap analysis and recommendations<br>Definition of a first list of priorities and actions supporting the Action Plan |
| **Workshop of regional stakeholder group – 3rd WRSG – Province of Brescia** |
| **Venue: Iseo, Oldofredi Palace and online (zoom platform)** |
| **Date: 17/02/2021** |
| 26 participants, from the stakeholder group of the Province of Brescia, representatives of the following sectors: **Regional Authorities** (Lombardy Region's Managing Authority ROP ERDF 2014-2020 and Lombardy Region D.G. Research, Innovation, University, Export and Internationalization), **Local Authorities** (Province of Brescia, Municipality of Brescia, Municipality of Concesio, Municipality of Iseo, Municipality of Lovere, Municipality of Marone, Municipality of Pisogne, Mountain Community of Trompia Valley, Mountain Community of the Sebino Bresciano, G16), **Research Centers and Universities** (RSE S.p.A.), **Service mobility and e-mobility providers** (Garda Uno SpA, FNM Group/E-VAI, Centro Padane Srl), **Public Transport Agencies** (Agenzia TPL Brescia, Brescia Mobilità SpA and Società di Navigazione Lago di Iseo) and **Agencies for tourism** (Visit Lake Iseo).<br>Topics covered:<br>○ Status quo of the e-MOPOLI project and First results of the project<br>○ Future scenarios for Lombardy Region<br>○ ROP ERDF 2014-2020: status quo, scenarios and investments<br>○ Presentation of the Feasibility Study propaedeutic to the Project Action Plan, possible strategies and actions<br>○ Round table - Interaction with participants and local stakeholders: comments and possible shared scenarios in light of the feasibility study. |
| **9° Learning events in Province of Brescia: ILW9, RT 9, IFV9, SE6** |
| **Venue: different locations in Province of Brescia** |
| **Date: from 13/04/2021 to 15/04/2021** |
| **60 participants**, from the stakeholder group of the Province of Brescia and International Stakeholders and partners, representatives of the following sectors: **All e-MOPOLI partners institutions and colleagues**; **National Authorities** (Greek Ministry of Infrastructure,Romanian Ministry of Economy (ministerul economiei); **Regional Authorities** (Lombardy Region's Managing Authority ROP ERDF 2014-2020 – D.G. Research, Innovation, University, Export e Internationalisation); **Local Authorities (**Municipalities of Province of Brescia, Mountain Communities, Province of Brescia (partner), Province of Mantova, G16 - Association of 16 Municipalities on lake Iseo); **Research Centres and Universities** (RSE S.p.A., National Technical University of Athens, Latvia University of Life Sciences and Technologies, University of Brescia); **e-mobility and energy (service) providers** (A2A, FNM S.p.A., E-Vai, Garda Uno SpA, FRIEM); **SMEs** (Centro Padane Srl, Robby Moto Engineering srl, Metasystem, SCAME PARRE Spa); **Public Transport** (APIA,NCDIE ICPE-CA,FNM Group/E-VAI, Agenzia TPL Brescia, Gruppo Brescia Mobilità SpA, Società di Navigazione Lago di Iseo); **Agencies for tourism and mobility (**Visit Lake Iseo, Consorzio Lago di Garda Lombardia, Gardapromoter, Lombardy Mobility Cluster) |

***Topics and sessions***

*ILW9*

- *Lombardy Region - Regional Operational Programme Current And Future Scenarios*
- *Feasibility Study And Regional Action Plan For Province Of Brescia*
- *Governance, Policies And Initiatives On Sustainable Mobility And Alternative Fuel*

*RT9*

- *Interregional Round Table: Discussion among stakeholders on three levels: Policy and Governance, Market take-up and Innovation Strategies*

*IFV9*

- *FNM Group - Alternative fuels and shared mobility:*
  - *Presentation of the Hydrogen Valley project in Valle Camonica - 1st hydrogen valley in Italy*
  - *I-SharE LIFE Project: Alternative fuels and intermodality (train and e-car-sharing) in Lombardy Region*
- *Navigazione Lago Iseo:*
  - *Project electric boats in Iseo.*

*SE6*

- *GardaUno Spa (electric mobility, RES integration and multimodality)*
  - *GardaUno's electric mobility services. RES integration in GardaUno's headquarters: photovoltaic systems integrated with charging stations for electric cars*
  - *Eway station in Desenzano - intermodal sharing service: train and electric cars/scooters*
- *A2A (Multi-utility & Energy Provider)*
  - *the e-MOVING Project*
- *SCAME PARRE Spa (products and projects for electric mobility)*
  - *Overview of products in the field of charging infrastructures*
  - *Visit to the Show room of SCAME PARRE SPA*
  - *Presentation of the LOAD BALANCING SYSTEM project - Innovative recharging system*
- *ROBBY MOTO ENGINEERING SRL (components for electric vehicles)*
  - *"Range Extender system" to be applied to electric vehicles to increase their range (vs range anxiety)*
  - *"Energy on demand" project: mobile energy station service in fast charging mode. Integrated stations with biofuel*

Moreover, during the first phase of the project, 9 learning events were organized to allow the exchange of good practices, experiences and knowledge, useful for the drafting of this action plan:

**9 Learning events (Interregional Learning Workshops, Interregional Round Tables and Interregional Field Visits)**

**Dates and venues:**

1. 07/11/2018 – Kajanii (Finland)
2. 12/12/2018 – Brussels (Belgium)
3. 19/03/2019 – Stavanger (Norway)
4. 12/06/2019 and 13/06/2019 – Bled and Gorizia (Slovenia)
5. 17/09/2019 – Bucharest (Romania)
6. 04/12/2019 and 05/12/2019 – Jelgava (Latvia)
7. 30/09/2020, 1/10/2020 and 2/10/2020 – Catanzaro (Italy) and online (Italy)
8. 22/03/2021, 23/03/2021 and 24/03/2021 – Attica Region (Greece) and online
9. 13/04/2021, 14/04/2021 and 15/04/2021 – Brescia (Italy) and online

**Overview of participants:**

1. Finland - 19 participants, representatives of National, Regional and Local Authorities and Universities.
2. Belgium - 22 participants, representatives of National, Regional and Local Authorities, Universities and Organizations.
3. Norway - around 30 participants, representatives of National, Regional and Local Authorities, SMEs, Public Transport Agencies and Universities.
4. Slovenia - 36 participants, representatives of National, Regional and Local Authorities, SMEs, Public Transport Agencies and Universities.
5. Romania – 64 participants, representatives of National, Regional and Local Authorities, Research Centres, SMEs, Associations, Universities, Public Transport Agencies, Enterprises, Service mobility and e-mobility providers.
6. Latvia – 35 participants, representatives of representatives of National, Regional and Local Authorities, Research Centres, SMEs, Associations, Universities, Public Transport Agencies, Enterprises, Service mobility and e-mobility providers.
7. Italy, Calabria Region - … participants representatives of National, Regional and Local Authorities, SMEs, Associations, Universities, Public Transport Agencies.
8. Greece - around 50 participants, representatives of representatives of National, Regional and Local Authorities, Research Centres, SMEs, Associations, Universities, Public Transport Agencies, Enterprises.
9. Italy, Province of Brescia – 63 participants representatives of representatives of National, Regional and Local Authorities, Research Centres, SMEs, Associations, Universities, Public Transport Agencies, Enterprises, Service mobility and e-mobility providers.

Topics covered:

During these events, each regional or local authority presented and had the opportunity to bring to the European level the good practices of its territory, inviting to participate in the different sessions of the events stakeholders of its territory working especially in the field of electric and sustainable mobility. These were occasions for different European realities to meet and collaborate together, stimulating the exchange of ideas, opinions and knowledge on the topic of electric and sustainable mobility. The organised events also allowed to introduce the e-MOPOLI project to different stakeholders, who could be directly involved in the second phase of the project. Moreover, these events also allowed the e-MOPOLI partners to keep each other constantly updated on their progress and on the status of the project.

Furthermore, the province of Brescia participated in 6 staff exchanges which enabled its staff to acquire new skills, knowledge and competences useful for the drafting of this action plan:

**6 Staff Exchanges**

**Dates and venues:**

1. 18/09/2019 and 19/09/2019 – Bucharest (Romania)
2. 13/11/2019 and 14/11/2019 – Brussels and Antwerp (Belgium)
3. 02/12/2019, 03/12/2019 and 05/12/2019 – Jelgava (Latvia)
4. 30/09/2020 – Catanzaro and Cosenza (Italy)
5. 22/03/2021 and 24/03/2021 – Attica Region and online (Greece)
6. 14/04/2021 and 15/04/2021 – Padenghe, Desenzano del Garda, Parre, Casalmaggiore and online (Italy)

**Overview of participants:**

During the course of the project all e-MOPOLI partners and interregional stakeholders participated in staff exchanges which were organised (six in total), most of the time also during the covid-19 pandemic, at the premises of local stakeholders in the different regions of the partners (in these cases the partners participated online via live streaming)

Topics covered:
The staff exchanges provided an opportunity for intensive exchange of knowledge, skills and good practice. The aim was precisely to enable the partners to learn as much as possible from each other through active and physical participation (before the Covid-19 pandemic) at the premises of local stakeholders in the partners' different regions. It was extremely interesting to learn how different European realities apply the concept of electric and sustainable mobility in different ways, adapting it to the peculiar characteristics of their own territory.

Finally, multiple bilateral meetings among Province of Brescia and representatives of Lombardy Region took place (here below the most important meetings). More specifically, meetings with the Province were attended by the Lombardy Region Managing Authority ROP ERDF 2014-2020 and by representatives of DG Research, Innovation, University, Export and Internationalization and DG Infrastructures, Transport and Sustainable Mobility. Here below a list of the most important meetings:

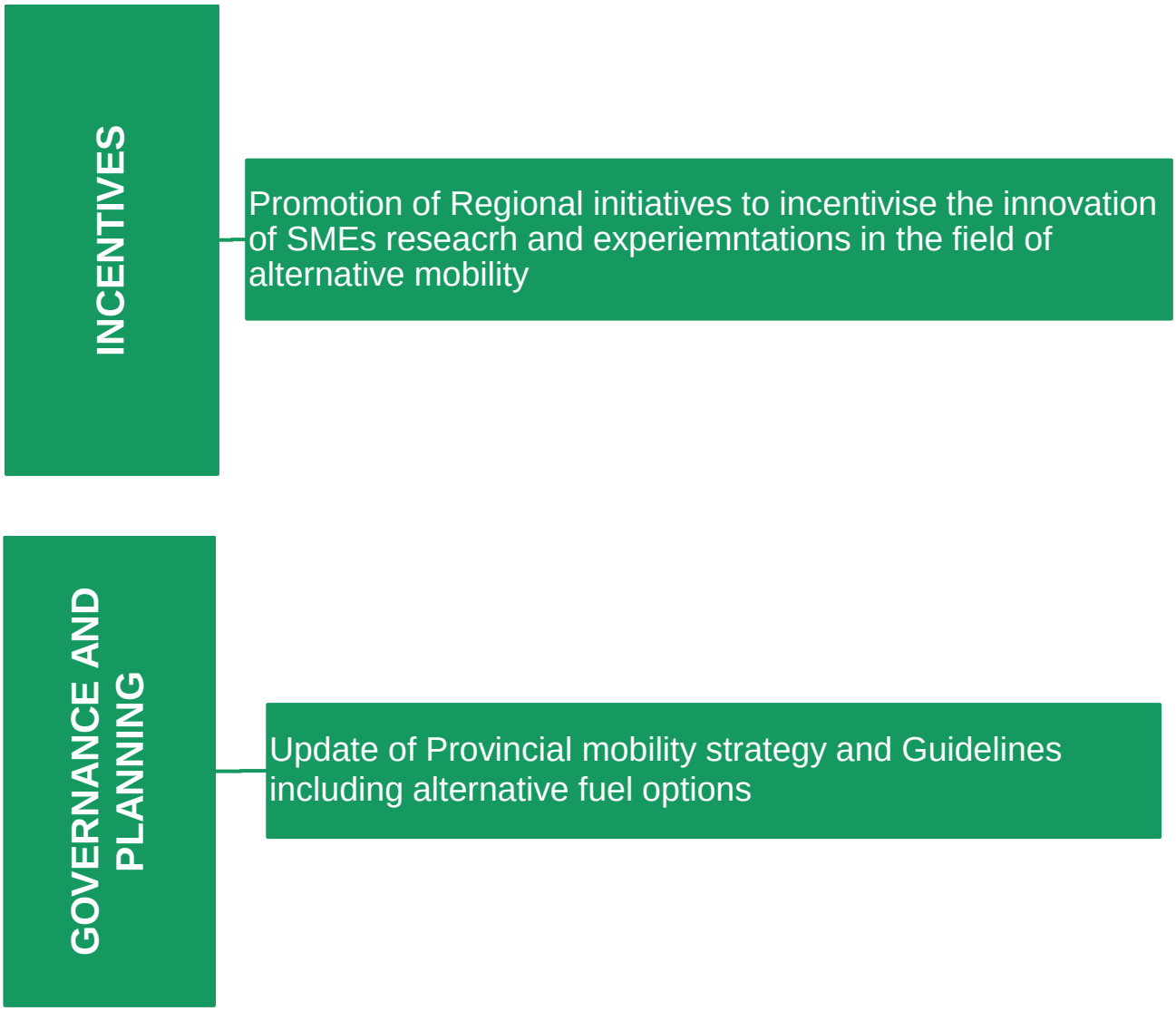
- 05/09/2019 – in Milan - Lombardy Region headquarter
- 01/04/2020 – on line
- 27/05/2020– on line
- 23/06/2020 – on line
- 22/12/2020 – on line

## 6.2 Actions for Province of Brescia and Lombardy Region

The Actions that are included in the Action Plan of Province of Brescia supported by Lombardy Region are divided in two main priority axes as follows:

- **Priority 1 - INCENTIVES**
- **Priority 2 - GOVERNANCE AND PLANNING**

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



### 6.2.1 Priority 1: Incentives

| Action 1 | Promotion of regional initiatives to incentivise the innovation of SMEs research and experimentations in the field of alternative mobility |
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| ***Background*** | Some good practices shared thanks to the e-MOPOLI project have inspired this this action:<br>**PP2 – Calabria Region (IT)**<br>- Vehicle to grid in the energy communities (Source Book of GP and e-MOPOLI website) and Electrical Retrofit of a Minicar: involvement of University of Calabria, its spin-off Consortium called "CRETA" and local SMEs for the experimentation of new/innovative prototypes, new education and training of technical experts, development of new business models, local and employment development, the promotion of environmental protection measures. This approach will be capitalized in the promotion of call for funding on the Provincial level.<br>**PP3 – BSC Regional development Agency Ltd. Kranj (SI)**<br>- e-botas on Lake Bled, Slovenia (exchange of experience June 2019)<br>- different e-vehicles solutions and services (exchange of experience June 2019).<br>These technical solutions could be inspiring for local stakeholders that want to participate to the call for proposal on provincial level.<br>**PP4 – Attica Region (GR)**<br>- Installation of 4 Veh.icle-2-Grid EV charging stations in Meltemi, Greece (SHAR-Q project) (Source Book of GP and e-MOPOLI website)<br>- Development, construction and operation of the first standalone Solar EV Charging Station in Greece (Source Book of GP and e-MOPOLI website).<br>These solutions could be inspiring as innovative solutions for local stakeholders that want to participate to the call for proposal on provincial level.<br>**PP5 - Flemish Government (BE)**<br>- Zero-emission transition through project funding (Source Book of GP and e-MOPOLI website). In 2015, the Flemish Region adopted a comprehensive action program 'clean power for transport' to facilitate the transition towards zero-emission transport. One of the measures defined in the action program was project funding. Through a yearly call for proposals Flemish Region invited public and private parties to submit project proposals on yearly defined topics (electrification of buses, taxi's, government/business fleets, electric car sharing initiatives, light electric vehicles projects). Projects run for two years and have to be reported on a regular base. Each project is followed up by a representative of Flemish Government Departments. This approach of call for proposal and monitoring related results inspired our action since it is an efficient methodology to promote on Provincial level funding for sustainable mobility innovation.<br>**PP8 – Bucharest- Ilfov Regional Development Agency (RO)**<br>- Hybrid buses for urban transport in Bucharest (see feasibility chapter). The link with our action is in the methodology of the public open auction promoted by Bucharest City Hall for the acquisition of hybrid Buses since it promotes technological innovation in the transport sector. In particular, for the acquisition of hybrid buses an evaluation methodology was developed in order to designate the contract suplier. It stipulates two main categories of awarding points in correlation with the application of the evaluation factors system, namely: the price – with a maximum score of 60 points for the lowest price and the quality of the products, divided into several subcategories, among which |

we mention: the specific installed power of the electric group (generator, batteries, electric motor) – 4 points, the total number of passengers that can be transported – 7 points, average diesel consumption – 8 points, the warranty and their service procedure, indoor and outdoor noise level – 2 points, the thermal comfort offered by the air conditioning installation both in summer and in the cold season – 2 points and also the capacity to deliver the products according to the established schedule – 6 points. The evaluation of the offers is made by awarding, for each one, a score resulting from the assignment of the established calculation algorithm. The ranking of the offers is established by the descending order of the scores. The offer declared the winner is the one that obtained the highest score. In addition, in the documentation for initiating the procurement process are specified a series of mandatory technical conditions that must be respected in order for the submitted offer to be valid, among which are mentioned:

1) general conditions regarding the description of hybrid traction without external charging, operation of the rechargeable energy storage system, ensuring the air conditioning installation both in the cold season and during summer, ensuring the necessary approvals for traffic on public roads and ensuring compliance with European regulations;
2) the need for the engine to be diesel - Euro 6 mounted in the rear console and electronically controlled, the floor to be lowered over the entire surface available for passengers, to be provided for access for disabled people, the minimum capacity of at least 90 people, of which 24 on seats, the existence of electronic braking and traction systems, display systems with audio-video equipment and travel counting equipment. At the same time, the characteristics that describe the driver's area were set out, as well as the terms of granting the full waranty - both for buses and for subassemblies;
3) technical quality conditions have also been set, including construction specifications, material requirements, general construction dimensions of the bus, characteristics and functional specifications for dynamic performance, reliability indicators, as well as corrosion protection or painting.

Regarding the environmental indicators, the acquisition was made in accordance with a law implemented in 2018 on the promotion of ecological transport, which requires companies that provide local and metropolitan public transport services to purchase means of transport powered by electric motors and green technologies, in a proportion of at least 30% of the necessary future acquisitions. According to the project, hybrid buses have an *emission rate of 6.2 kTone CO2 / year*, with a reduction of 4.2 kTone CO2 / year compared to Euro 6 diesel buses.

**PP9 – Zemgale Planning Region (LT)**

- Self-driving electric bus (driverless). Zemgale Planning Region together with partners from Sweden, Norway, Finland, Germany, Estonia and Poland has completed the project “Sohjoa Baltic”, during which an autonomous bus ran in Zemgale for a month. In total, on Zemgale routes the autonomous bus has covered 1,050 kilometres with 5,694 passengers.
- Bus Park in Zemgale, the first bus park in Latvia that uses compressed natural gas vehicles for passenger transport
- “Mosphera” electric scooter. It has been developed, designed, and manufactured in Latvia, focusing on the wide world market. The military scooter will also be available for personal use, production will begin in January 2021, and the first models will reach customers in April 2021.The project idea was created in cooperation with the Liepaja Smart and Green Technology Cluster, creating the first prototype for civilian needs.

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| | All these experiences inspired our action as innovation technology solutions applied to transport sector to be experimented by Province of Brescia SMEs and research centres.<br><br>**8° and 9° exchange of Experience in Attica Region and Province of Brescia.**<br><br>Province of Brescia will draw inspiration from these two Exchange of experiences for what concerns the approach and involvement of local stakeholders of private sectors, such as charging infrastructures and innovative services providers (e-mobility and hydrogen) and technical universities in the field of experimentation of new porotypes. |
| ***Objective*** | The action aims to promote on the provincial level two calls for funding of Lombardy Region, grouping provincial private actors involved in innovative alternative fuel mobility researches and disseminating the regional initiatives through workshops and communication activities.<br><br>In particular, the first one called “TECH FAST LOMBARDIA” aims to intercept technological development projects that have reached a certain degree of technical and scientific maturity (e.g. development of prototypes, creation of pilot products, testing and validation of new or improved products, processes or services), possibly combined with process innovation activities, in order to implement virtuous mechanisms of acceleration of technological and digital innovation of production processes of Lombardy SMEs - through the design, testing and adoption of innovative solutions in strategic areas of the Lombardy Region - able to facilitate a competitive repositioning through the achievement of a higher potential in terms of productivity and attractiveness.<br><br>The second one called “BREVETTI 2021” aims to support micro, small and medium-sized enterprises (MSMEs) in Lombardy or self-employed persons in obtaining new European and international patents or patent extensions at European or international level for industrial inventions.<br><br>In order to promote these two calls for funding among regional and provincial stakeholders involved in the field of alternative fuel mobility, Province of Brescia intends to organize no. 3 promotional activities. In particular, no. 2 workshops to disseminate the calls and no. 1 newsletter which will include references to the call to be shared through Province of Brescia’s institutional websites and the Provincial e-mobility portal. Lastly, Province of Brescia will monitor each 3 months the participation of local stakeholders to the calls.<br><br>It’s important to underline that the dissemination events which will be organized will address in particular the business clusters that Lombardy Region has identified as one of the main tools to promote the S3 strategy, i.e. to support the affirmation process of emerging industries. Indeed, business clusters represents favorable environments for the birth and growth of emerging industries. Moreover, clusters will of course also be involved in communication and dissemination activities related to the two calls, such as the newsletter. |
| ***Relevance*** | “Type 1: implementation of new projects”<br><br>It is significant to stress that this action constitutes a clear thread between the present Action Plan and the ROP ERDF 2014-2020. In particular, this action is strongly related to two implementing measures under Axis I of the ROP, since the funds and incentives offered by Regional calls for funding are under these measures which are:<br><br>- I.1.B.1.1 - support for the purchase of services for the technological, strategic, organisational and commercial innovation of enterprises.<br>- I.1.B.1.2 - support for the economic exploitation of innovation through experimentation and the adoption of innovative solutions in processes, |

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| | products and organisational formulas, as well as through the financing of the industrialisation of research results.<br><br>Moreover, it is important to emphasise once again that following ROP ERDF 2014-2020 re-programming (occurred in Summer 2020) and following Covid-19 Pandemic situation, the Action IV.4.E.1.1 ("Development of necessary infrastructures for vehicles with low environmental impacts also by promoting initiatives of charging hub") was excerpted from the ROP and no initiatives or projects could be implemented through this action and related funds. Therefore, Province of Brescia Action Plan moved from Axis IV to Axis I.<br><br>Finally, is possible to underline that e-MOPOLI project and action plan of Province of Brescia will influence a part of the total amount of 20M€ of Axis I of the ROP ERDF 2014-2020 (see self-performance indicator, pag.11). The effectiveness of this influence will be evaluated during monitoring phase of the action plan. |
| ***Activities*** | Here below a list of indicative sub-activities of the action. The related timelines are better identified in Chapter 7.<br><br>Province of Brescia will promote the two calls for funding "TECH FAST LOMBARDIA" and "BREVETTI 2021" with the following actions:<br><br>1. Organization at least of no.2 workshops to disseminate the calls;<br>2. Inclusion of the call in at least no.1 newsletter and on Province of Brescia's Institutional websites and provincial e-mobility portal;<br>3. Continues update and cooperation with the regional Managing Authority;<br>4. Monitoring of the participation of local stakeholders to the call. |
| ***Target*** | Micro, small and medium-sized enterprises and self-employed persons and research centers in the territory of Lombardy Region. |
| ***Bottleneck*** | No bottleneck. |
| ***Stakeholders involved*** | **Regional Authorities:** Lombardy Region's Managing Authority ROP ERDF 2014-2020 – D.G. Research, Innovation, University, Export e Internationalisation. Role: endorsement to this Action Plan and support to Province of Brescia activities also in relation to new Programming period 2021-2027. Role: main sponsor of the action.<br>**Local Authorities:** Municipalities of Province of Brescia, Mountain Communities, Province of Brescia (partner), Province of Mantua, G16 - Association of 16 Municipalities on Lake Iseo). Role: cooperation with Province of Brescia to promote the regional initiatives.<br>**Research Centres and Universities:** RSE S.p.A., University of Brescia. Role: cooperation with micro, small and medium-sized enterprises and self-employed persons to participate to the call.<br>**e-mobility and energy (service) providers:** A2A, FNM SpA., E-Vai, Garda Uno SpA, FRIEM SpA. Role: beneficiaries or partner of beneficiaries of the call.<br>**SMEs:** Centro Padane Srl, Robby Moto Engineering Srl, Metasystem, SCAME PARRE SpA. Role: relevant actors for the participations to the call.<br>**Public Transport:** APIA, NCDIE ICPE-CA, FNM Group (including E-VAI), Agenzia TPL Brescia, Gruppo Brescia Mobilità SpA, Società di Navigazione Lago di Iseo. Role: low involvement, partner of beneficiaries of the call.<br>**Agencies for tourism and mobility:** Visit Lake Iseo, Consorzio Lago di Garda Lombardia, Gardapromoter, Lombardy Mobility Cluster. Role: low involvement, partner of beneficiaries of the call. |
| ***Timeframe*** | Duration of the action: 1 year (May 2021 - May 2022) for the activities planned on provincial level. Promotion of call for funding through communication activities (newsletters, workshops).<br><br>"TECH FAST LOMBARDIA"<br>Projects must be implemented within 12 months of the date of publication of the decree granting the aid unless a reasoned extension of a maximum of three months |

<table>
<tr><td></td><td>is granted. In any case, projects must be completed no later than 31 May 2023. Eligible activities: experimental development and process innovation projects or experimental development projects only, related to Smart Specialization Strategy (S3).<br><br>“BREVETTI 2021”<br>The projects must be implemented and accounted for within the peremptory deadline of 18 months from the date of publication of the granting decree in the BURL (Official institutional Communication Tool of Lombardy Region administration), and in any case the accounts must be submitted no later than 30 June 2023. Eligible activities: activities functional to the filing of a new patent application for an industrial invention or its extension at European or international level.</td></tr>
<tr><td>Indicative Funding Sources</td><td>For the implementation of the action on provincial level, Province of Brescia will use its internal budget.<br><br>“TECH FAST LOMBARDIA”<br>19 million euros on Axis I of ROP ERDF 2014-2020. The subsidy is granted based on a nominal percentage of eligible expenses equal to 50% and in any case may not exceed €250,000.00 per beneficiary.<br><br>“BREVETTI 2021”<br>1 million euro on Axis I of POR FESR 2014-2020. The subsidy is granted and disbursed in the form of a non-repayable contribution within the limits of the measure's budget. The non-repayable grant is broken down as follows:
<table>
<tr><td>Type of patent</td><td>Costs on a flat-rate basis</td><td>Fixed amount of grant equal to 80% of lump sum costs</td></tr>
<tr><td>New European patent</td><td rowspan="2">7.100,000 €</td><td rowspan="2">5.680,000 €</td></tr>
<tr><td>Extension of a European patent</td></tr>
<tr><td>New international patent</td><td rowspan="2">9.000,000 €</td><td rowspan="2">7.200,000 €</td></tr>
<tr><td>Extension of an international patent</td></tr>
</table></td></tr>
<tr><td>Indicative Costs</td><td>Costs related to the implementation of the action:<br>Staff costs – Provincial Staff costs – 1 FTE for 1 year (technical position).</td></tr>
<tr><td>Expected Impact<br>- economic<br>- environmental<br>- territorial<br>- on e-mobility</td><td>Economic: positive effects for beneficiaries of the call for funding that are supported in R&I activities.<br>Environmental: the diffusion of alternative fuel mobility technologies will have positive impacts on the provincial and regional levels, also in terms of $NO_x$ and $CO_2$, reductions.<br>Territorial RIS 3 promotion on territorial level.<br>e-mobility: this action will promote e-mobility itself.</td></tr>
<tr><td>Transferability</td><td>High transferability of the practice itself with a huge impact on costs. All EU local and regional PAs could follow the Province of Brescia experience, promoting on local level, regional call for funding. However, this action entirely depends on regional resources available for the promotion of Research and Innovation projects in the field of alternative fuel mobility.</td></tr>
</table>

### 6.2.2 Priority 2: Governance and Planning

| Action 2 | Update of provincial level mobility strategy and Guidelines including alternative fuel options (e-mobility and hydrogen) |
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| ***Background*** | Some good practices shared thanks to the e-MOPOLI project have inspired both the Feasibility Study and this action:<br>**PP3 – BSC Regional development Agency Ltd. Kranj (SI)**<br>- e-botas on Lake Bled, Slovenia (exchange of experience June 2019);<br>- different e-vehicles solutions and services (exchange of experience June 2019);<br>- Slovenia – National Platform for charging infrastructure, funded by Ministry of Infrastructure (exchange of experience during project lifetime).<br>**PP5 - Flemish Government (BE)**<br>- Zero-emission transition through project funding (Source Book of GP);<br>- Deployment of public charging infrastructure in Flanders Region (Source Book of GP).<br>**PP7 – Rogaland County Council**<br>- Energy company Lyse and the Port of Stavanger, Norway - electrification of Port (see feasibility chapter);<br>- e-bike sharing in Stavanger port;<br>- TrAM project, Norway (Exchange of Experience March 2019) – e-buses (see feasibility chapter);<br>- Elnett21 project that aims to facilitate an emission-free and electric transportation system and contribute to the optimal use of existing grids through local production, storage, and management of energy.<br>**PP8 – Bucharest- Ilfov Regional Deveolpment Agency (RO)**<br>- Hybrid buses for urban transport in Bucharest (see feasibility chapter).<br>**PP9 – Zemgale Planning Region (LT)**<br>- Self-driving electric bus (driverless) (see feasibility chapter);<br>- BBQ electric boat in Jelgava (see feasibility chapter).<br>All these practices inspired firstly our Feasibility Study in order to explore, investigate and understand best and innovative solutions on EU level about alternative fuel mobility, energy communities and RES exploitation for sustainable mobility applied to inland water navigation and traditional Local Public Transports. Secondly, they will be included in the Provincial Guidelines to be possibly experimented and adopted on the provincial level in the field of Alternative fuel mobility solutions. |
| ***Objective*** | The objective is to elaborate recommendations in order to update and integrate existing provincial territorial, energy and mobility plans and Guidelines in relation to:<br>- State of the art of alternative fuel in the Province, with a special focus on e-mobility, hydrogen and biomass;<br>- New mobility options for residents and tourists of the Province offered by alternative fuel mobility;<br>- Existing and planned Renewable Energy (RES) production systems, in a smart grid logic;<br>- Integration of RES into lake ports mobility for powering both boats (motor ships, private boats) and ground vehicles (charging systems for bicycles, cars);<br>- Integration of public transport services with new modes of transport (e.g. electric sharing mobility, new hydrogen valley in the Province);<br>- Promotion of sustainable tourism in the Province (services, new mobility opportunities, integration of lakes and river systems); |

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| | - The increase of awareness about RIS (River Service System) and autonomous driving systems for lake navigation. |
| ***Relevance*** | "Type 2: change in the management of the policy instrument (improved governance)".<br><br>Province of Brescia, in coordination with Regional Strategies and Programs will update its policy and planning tools in relation to:<br><br>- e-MOPOLI Feasibility study results;<br>- e-MOPOLI Regional Analysis, Recommendations and exchange of learning results;<br>- ROP ERDF 2021-2027 and consequent commitment of the ROP ERDF funds;<br>- Regional energy plans (e.g. PEAR);<br>- The Regional Smart Specialisation Strategy for Research and Innovation - RIS3 for the period 2021-2027 (no. XI/4155 of 30/12/2020);<br>- Smart Mobility & Artificial Intelligence – Project and Strategy for Lombardy Region Mobility System Innovation (DGR n. XI/3924, 30 November 2020);<br>- Inclusion of new paragraphs on alternative fuels mobility options and services (e-mobility, hydrogen, biomass);<br>- Communication Plan and dissemination among stakeholders including final users.<br><br>Province of Brescia will update the following policy instruments:<br>**Province of Brescia - PTCP - Provincial Territorial Plan**<br><br>The PTC will be integrated with an appendix focused on Alternative mobility infrastructure and planning, derived from e-MOPOLI exchange of learning on regional and provincial level, and Province of Brescia Feasibility Study.<br><br>**Province of Brescia - Guidelines for planning the development of electric mobility in Province of Brescia.**<br><br>The guidelines, as a living document, in the current validated version (2017) is focused only on e-mobility. Thanks to e-MOPOLI Action Plan will be implemented with:<br><br>- Updated data on electric mobility, thanks to e-MOPOLI Regional Analysis and Recommendations;<br>- All alternative fuel options analysed and studied thanks to e-MOPOLI project and exchange of learning that could be transferred on the provincial level;<br>- Description of new options for e-mobility offered by inland-water navigation, resulting from analysis of Feasibility Study;<br>- 1 chapter dedicated to sustainable tourism related to new alternative fuel options also considering Covid-19 Pandemic;<br>- updated section related to Communication Plan;<br>- updated section related to e-Mobility and Digital Agenda of the Province. |
| ***Activities*** | Here below a list of indicative sub-activities of the action. The related timelines are better identified in Chapter 7.<br><br>1. Recognition of all provincial and regional initiatives, policies and recommendations, such as e-HUB virtual and physical helpdesk, sustainable tourism strategy, regional RIS3, etc., to be included in the updated version of the Provincial Guidelines;<br>2. Update of Province of Brescia Feasibility Study to be included in the PTCP appendix;<br>3. Elaboration of the updated version of the Provincial Guidelines on alternative fuel mobility;<br>4. Validation and approval of the Guidelines by Province Council;<br>5. Dissemination activities among stakeholders including final users. At least n.2 (bimestrial) workshop and n.1 Guideline review of the document. |

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| | *Additional activities planned (feasibility to be confirmed):*<br>- cost-benefit analysis for the renovation of a fleet boat and a port of the Iseo Lake;<br>- Feasibility study for requalification interventions of marinas and related energy balance and cost-benefit analysis;<br>- Program of integration of existing tourism and alternative fuel transports services into a single network and offer, both on Lake Iseo and/or Idro and neighbouring territories and rivers. |
| ***Target*** | The final target of this action are the end-users of the mobility services, in particular the residents of the Province and regional and international tourists. |
| ***Bottleneck*** | e-MOPOLI project and all activities related to it, exchange of learning and feasibility study included, received a great support from a political and technical point of view from Regional and provincial private and public stakeholders.<br>However, a possible bottleneck related to this action could be the change of some policy strategies and Governance in Province of Brescia and Lombardy Region. Indeed, due to the Covid-19 pandemic and the consequent new policy strategies elaborated to address the health emergency, current policy instruments related to sustainable mobility may be subject to changes again, including the ROP ERDF, as already happening in last months of 2020. In any case, all Authorities from local to regional level are cooperating strictly and are aligned on the overall objectives to promote a sustainable and alternative fuel mobility at all levels of transports. |
| ***Stakeholders involved*** | **Regional Authorities:** Lombardy Region's Managing Authority ROP ERDF 2014-2020 – D.G. Research, Innovation, University, Export e Internationalisation. Role: endorsement to this Action Plan and support to Province of Brescia activities also in relation to new Programming period 2021-2027.<br>**Local Authorities:** Municipalities of Province of Brescia, Mountain Communities, Province of Brescia (partner), Province of Mantua, G16 - Association of 16 Municipalities on lake Iseo). Role: endorsement to this Action Plan and support to Province of Brescia activities in the implementation phase of the actions.<br>**Research Centres and Universities:** RSE S.p.A., University of Brescia. Role: review of documents and participation to Province disseminations events.<br>**e-mobility and energy (service) providers:** A2A, FNM SpA., E-Vai, Garda Uno SpA, FRIEM SpA. Role: review of documents and participation to Province disseminations events.<br>**SMEs:** Centro Padane Srl, Robby Moto Engineering Srl, Metasystem, SCAME PARRE SpA. Role: review of documents and participation to Province disseminations events.<br>**Public Transport:** APIA, NCDIE ICPE-CA, FNM Group (including E-VAI), Agenzia TPL Brescia, Gruppo Brescia Mobilità SpA, Società di Navigazione Lago di Iseo. Role: implementation of Provincial policies in their own policy instruments, review of documents and participation to Province disseminations events.<br>**Agencies for tourism and mobility:** Visit Lake Iseo, Consorzio Lago di Garda Lombardia, Gardapromoter, Lombardy Mobility Cluster. Role: implementation of Provincial policies in their own policy instruments, review of documents and participation to Province disseminations events. |
| ***Timeframe*** | Duration of the action: 1 year (2022) to include in provincial instruments all revisions.<br>- May 2021 – validation of Action Plan on the local and interregional level;<br>- December 2021 – first draft of Guideline;<br>- January 2022 – first draft of annex to be included in PTCP;<br>- March 2022 – final draft and resolution of Provincial Council to approve the documents;<br>- May 2022 – presentation of the document to all stakeholders and publication on institutional website of the Province; |

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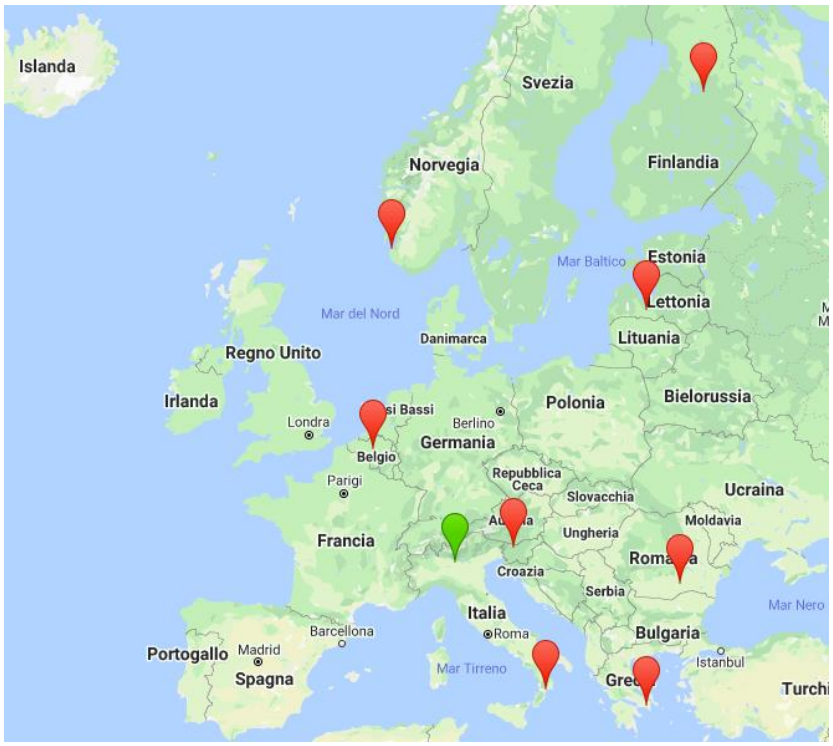
| | Moreover, from May 2021 to May 2022 – at least 2 meetings and n.1 Guidelines review with the involvement of the stakeholders. |
| ***Indicative Funding Sources*** | Internal Province of Brescia budget. |
| ***Indicative Costs*** | Costs related to the implementation of the action:<br>Staff costs – Provincial Staff costs – 2 FTE for 1 year (1 responsible + 1 technical position). |
| ***Expected Impact***<br>***- economic***<br>***- environmental***<br>***- territorial***<br>***- on e-mobility*** | Economic: since the update of Province of Brescia policy instrument will be based on the collaboration with all stakeholders, private sector will benefit from these documents since they will be the results of constant engagement and involvement.<br>Environmental: the diffusion of alternative fuel mobility in the Province thanks to strategies and Guidelines have surely positive impacts from the environmental point of view, even if not quantifiable on $CO_2$ reductions. However, the role of the Province is to promote from policy level new options and services related to low impacts mobility and also to "guide" the private sector investments.<br>Territorial: the integrated approach of the Province in the update its instruments in relation to mobility, but also energy, environment and sustainable tourism will have positive impacts on the overall territorial planning of the Province.<br>e-mobility: this action will promote e-mobility as such. |
| ***Transferability*** | High transferability of the practice with a low impact of costs. All EU and local PAs could follow the Province of Brescia experience, updating own policy instruments in relation to alternative fuel mobility new options and services. |

# 7. Monitoring

*Details of the monitoring of the actions, e.g. individual activities and timeplan – Gantt Diagramm*

| LP Province of Brescia<br>PTCP - Provincial Territorial Plan Guidelines for planning the development of electric mobility in the Province of Brescia.<br>LOMBARDY REGION - POR FESR 2014-2021 AXIS I | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Priority** | **Actions** | **sub-activities** | apr-21 | mag-21 | giu-21 | lug-21 | ago-21 | set-21 | ott-21 | nov-21 | dic-21 | gen-22 | feb-22 | mar-22 | apr-22 | mag-22 |
| **Priority 1: Incentives** | | | | | | | | | | | | | | | | |
| | **Promotion of Regional initiatives to incentivise the innovation of SMEs research and experimentations in the field of alternative mobility** | | | | | | | | | | | | | | | |
| | | 1. Organization at least of n.2 workshops to disseminate the calls | | | | | | | | | | | | | | |
| | | 2. Inclusion of the call in at least n.1 newsletter and on Province of Brescia Institutional websites and provincial e-mobility portal. | | | | | | | | | | | | | | |
| | | 3. Continues update and cooperation of regional Managing Authority | | | | | | | | | | | | | | |
| | | 4. Monitoring of the participation of local stakeholders to the calls. (each 3 months) | | | | | | | | | | | | | | |
| **Priority 1: Governance and Planning** | | | | | | | | | | | | | | | | |
| | **Update of Provincial level mobility strategy and Guidelines including alternative fuel options (e-mobility and hydrogen)** | | | | | | | | | | | | | | | |
| | | 1. Validation of Action Plan on local and interregional level | | | | | | | | | | | | | | |
| | | 2. first draft of Guideline | | | | | | | | | | | | | | |
| | | 3. First draft of annex to be included in PTCP | | | | | | | | | | | | | | |
| | | 4. Final draft and resolution of Provincial Council to approve the documents | | | | | | | | | | | | | | |
| | | 5. Presentation of the document to all stakeholders and publication on institutional website of the Province. | | | | | | | | | | | | | | |
| | | 6. at least 2 meetings and n.1 Guideline review with stakeholders. | | | | | | | | | | | | | | |




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

€1,792,053.00

from **1 Jun 2018** to **30 Nov 2022**

**Low carbon economy**

**9 partners**
IT - SI - EL - BE - FI
NO - RO - LV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# 9. Declaration

The Managing Authority of the ROP ERDF 2014-2020, here below represented by Mr. Dario Sciunnach - General Dept. (D.G.) Istruzione, Università, Ricerca, Innovazione e Semplificazione – Autorità di Gestione POR FESR 2014-20 of the Lombardy Region

agrees to support and promote the implementation (and where appropriate implement) the plan detailed above.

Name and Surname: Dario Sciunnach

Position: Managing Authority of the ROP ERDF 2014-2020

Signature Il dirigente Dr. Dario Sciunnach date: July 21ST, 2021

Stamp of the Organisation GIUNTA REGIONALE REGIONE LOMBARDIA