



MUSE

Cross-border Cooperation
for Energy-Efficient
Sustainable University Mobility

GAP Analysis and Action Plan

Interreg



UNIONE EUROPEA
EVROPSKA UNIJA

ITALIA-SLOVENIJA



MUSE

Progetto standard co-finanziato dal Fondo europeo di sviluppo regionale
Standardni projekt sofinancira Evropski sklad za regionalni razvoj



Unione Territoriale Intercomunale del
Noncello

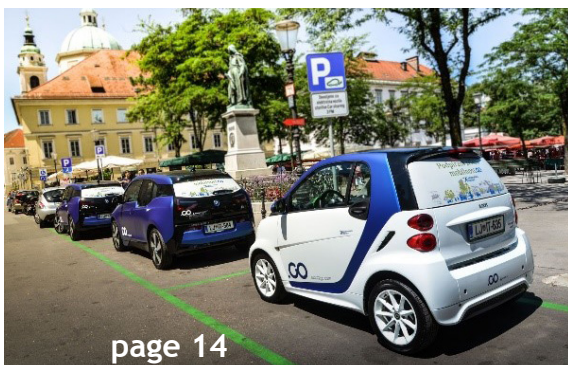
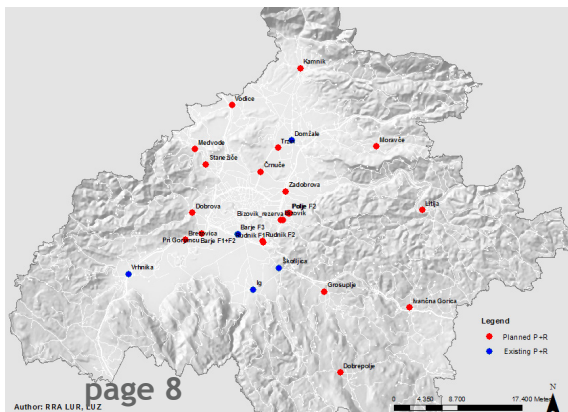
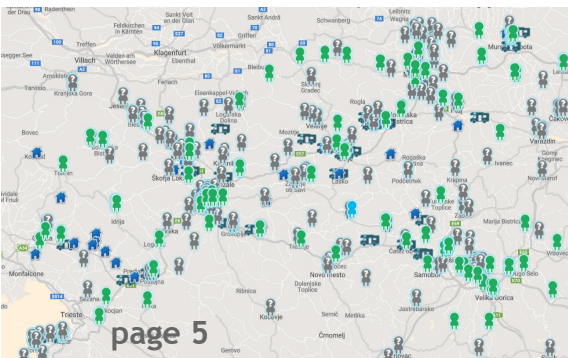


ULIO Univerza v Ljubljani



RRA severne Primorske
Regijska razvojna agencija d.o.o. Nova Gorica
Regional development agency of northern primorska L.t.d. Nova Gorica

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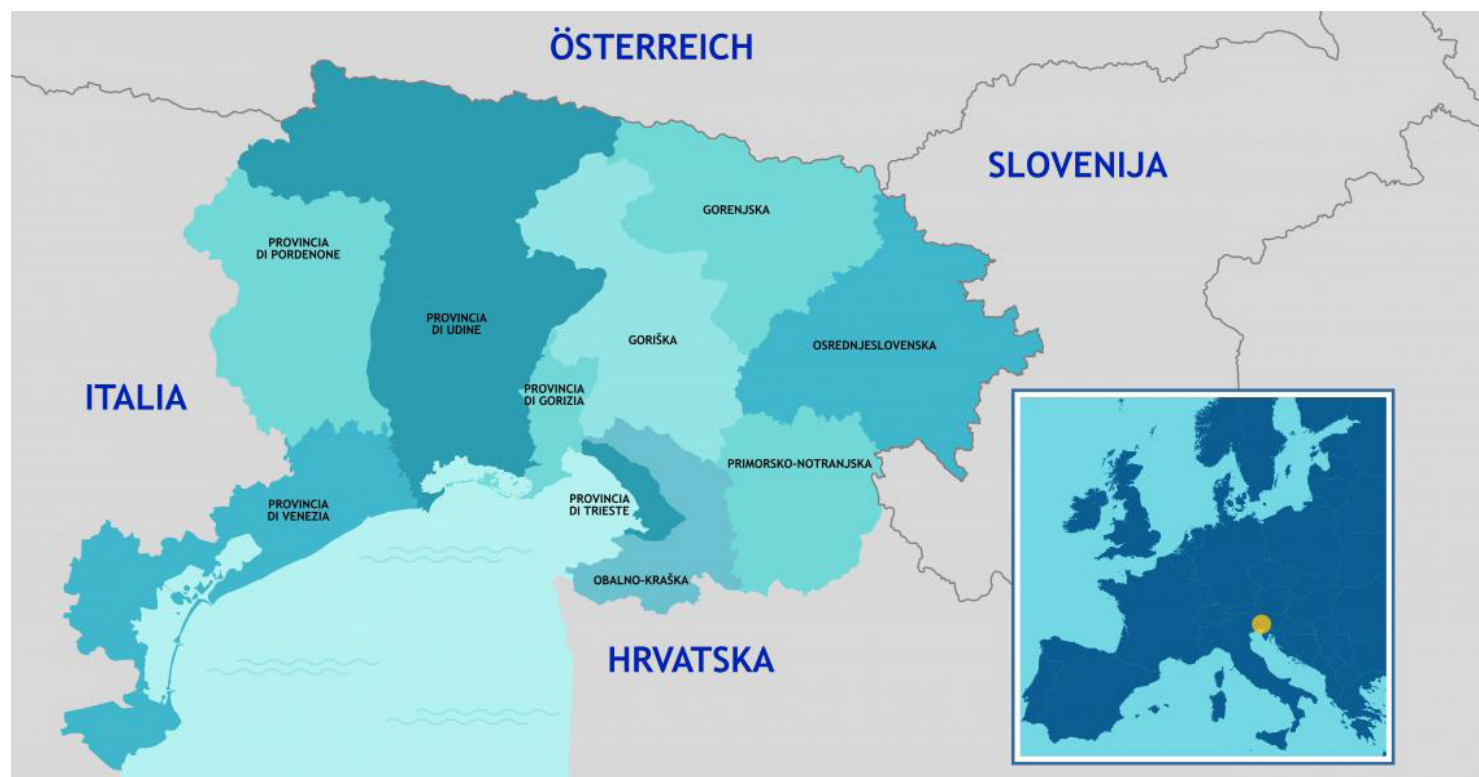
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INTERREG V-A ITALY-SLOVENIA - MUSE PROJECT

The INTERREG V-A Italy-Slovenia was approved and officially noticed by the European Commission in 2015. The Programme area extends over a total surface of 19,841 km² and has a total population of approximately 3 million inhabitants. The entire Programme area includes 5 Italian NUTS3 level regions (provinces of Venice, Udine, Pordenone, Gorizia and Trieste) and 5 Slovenian statistical regions (statistical regions of Primorsko-notranjska, Osrednjeslovenska, Gorenjska, Obalno-kraška and Goriška). Overall, on NUTS2 level on the Italian side, the regions involved are those of Veneto and Friuli Venezia Giulia, while for the Slovenian side, Vzhodna Slovenija and Zahodna Slovenija as highlighted in figure.



MUSE (CROSS-BORDER COLLABORATION FOR ENERGETICALLY EFFICIENT SUSTAINABLE UNIVERSITY MOBILITY) is one of the projects co-financed by INTERREG V-A Italy-Slovenia programme (2014-2020) under Priority 2 axis (cooperating for implementation of low carbon strategies and action plans). The MUSE project brings together 6 partners (3 Italian and 3 Slovenian), and 5 Associates (3 Italian and 2 Slovenian) in a close partnership. The project aims to integrate energy efficiency and a reduction of CO₂ emissions within the urban and extra-urban mobility strategies of the cross-border local authorities by testing innovative electric mobility services and by increasing the responsibility of the Public Bodies themselves, with the goal of ensuring the integrated planning of sustainable mobility.

The project's primary objective is to develop guidelines and an action plan for the local Public Bodies regarding the

integration of energy efficiency elements within the urban, extra-urban and cross-border mobility context. Thanks to the MUSE project, Public Administrations (PAs) will improve their ability to plan low environmental impact mobility services, while students and university employees will have more sustainable mobility services at their disposal during the implementation of the pilot measures.

In particular, during the course of the pilot measures, the project will implement and test energy efficient mobility solutions involving the use of electric vehicles (EVs) inserted within a micro-grid logic, the production of energy using renewable sources, and the use of smart systems for monitoring and managing the mobility services themselves, with the support of ICT. Universities and research centres will capitalise on the research and studies carried out in the fields of sustainable mobility, energy efficiency in terms of CO₂ reduction, and energy balances in the transport sector, while the

PAs will capitalise on the innovative initiatives envisaged by the project territories' SEAPs and SUMP. This collaboration will lead to increased knowledge and responsibility on the part of the public administrations.

The development of a Cross-Border Community that fosters dialogue and the exchange of experiences and information between PAs, Research Centres/Universities, and operators in the transport sector will ensure the durability of the project's

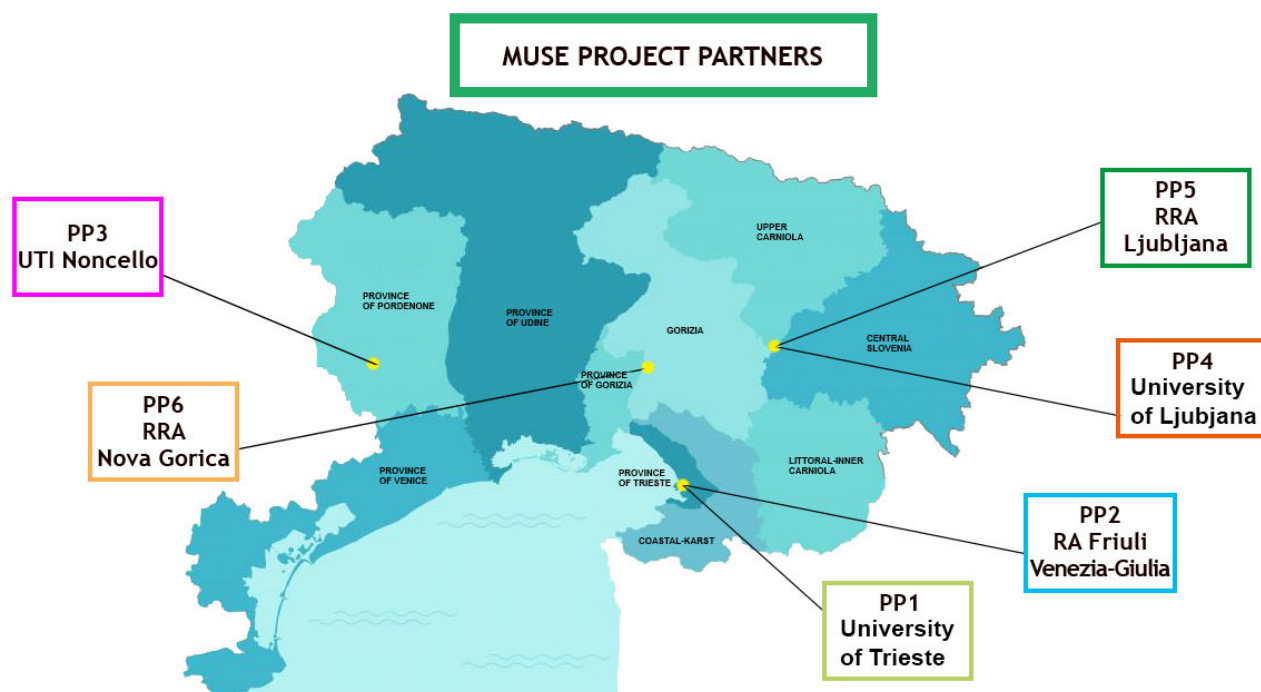
results, and will lead to greater awareness of eco-sustainable behaviour among citizens.

In fact, citizens will have the opportunity to adopt or reinforce their eco-sustainable urban, suburban, and cross-border mobility behaviour thanks to the low carbon mobility services implemented by the partnership and promoted by the Cross-border Community.

The ultimate objective of the INTERREG V-A Italy-Slovenia programme is to promote innovation, sustainability and cross-border governance to create a more competitive, cohesive and liveable area.

As part of WP 3.1, this report numbered 3.1.1 presents a guideline and useful information of sustainable and energy efficient mobility both in country and university level for PAs. It can be used by PA who are involved in introducing and / or improving new policies related to the sustainable and energy efficient mobility.

More detailed information regarding "Territorial and transport information of Italy and Slovenia", "Best Practices related to MUSE", "Accomplished projects by MUSE PPs", "PPs projects related to MUSE AF", and "National Energy Efficiency Action Plan Overview for Slovenia and Italy" can be accessed through Deliverable No. 3.1.1-1, 3.1.1-2, 3.1.1-3, 3.1.1-4, 3.1.1-5 respectively.



ITALIAN PARTNERS

LEAD PARTNER

Università degli Studi di Trieste - Dipartimento di Ingegneria e Architettura

Trieste- ITA



**UNIVERSITÀ
DEGLI STUDI DI TRIESTE**

The Department of Engineering and Architecture (DIA) of the University of Trieste, lead partner of the MUSE project, is paying particular attention to the quality of life of students and commuter employees by improving their mobility. The multidisciplinary team of researchers from the fields of transport economics, engineering, social sciences and geography, aims to create a database and a model capable of estimating the habits of use and charging of electric vehicles, useful to support the institutions in sustainable mobility planning. To achieve this goal, the academics involved in the project are also working to create a research center on the topic of Transport-Energy-Environment at the University, catalyst and pivot of a cross-border network.

www.units.it

PROJECT PARTNER 1

Regione Autonoma Friuli Venezia Giulia - Direzione Ambiente ed Energia - Servizio Energia

Trieste - ITA



**REGIONE AUTONOMA
FRIULI VENEZIA GIULIA**

RAFVG is implementing the measures established by the European Commission to promote the transition to a low-carbon economy, reducing urban pollution caused by internal combustion engines and increasing the production of energy from renewable sources, thus contributing to the achievement of the EU objectives for the protection of the environment and the fight against climate change set for 2020 and beyond. In the MUSE project, RAFVG will support the drafting

of guidelines relating to the integration of the Sustainable Energy Action Plan (SEAP) and the actions of the Sustainable Urban Mobility Plans on Energy Efficiency and Sustainable Mobility (SUMP) in the tools mobility planning, as well as the drafting of an action plan on cross-border mobility of university students and employees. RAFVG will also collaborate for the creation of the cross-border community to increase skills and awareness on mobility planning and the integration of energy efficiency thanks to the networking of universities and research centers, public administrations and private operators.

www.regione.fvg.it/rafvfg/cms/RAFVG/ambiente-territorio/

PROJECT PARTNER 2

Unione Territoriale Intercomunale del Noncello

Pordenone - ITA



The Noncello Inter-municipal Territorial Union is a local public body of Friuli Venezia Giulia, which brings together the Municipalities of Pordenone, Roveredo in Piano, Porcia, Zoppola, Fontanafredda. In the MUSE project, he is responsible for contributing to the development of a cross-border community between public administrations, organizing the exchange of good practices and personnel and coordinating the networking and development actions of the network of stakeholders through political and technical tables. It is also responsible for the implementation of the pilot project at the Municipality of Roveredo in Piano, which consists of two stations for charging electric vehicles (one for cars and one for bicycles), powered by electricity produced by a photovoltaic system installed at the Municipality itself.

www.Noncello.utifvg.it

SLOVENIAN PARTNERS

PROJECT PARTNER 3

**Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo
Prometnotehniški inštitut**

Osrednjeslovenska - SLO



The issue of sustainability is one of the most important global issues and is the greatest challenge for the future development of cities. Ljubljana is achieving very high environmental standards, setting ambitious goals for the further improvement of environmental conditions. With more than 40,000 students, the University of Ljubljana trains high-profile scientists, artists and skilled professionals to lead sustainable development, drawing inspiration from the European cultural heritage of the Enlightenment and Humanism. Thanks to the results of the studies for the MUSE project, the University wants to outline an environmentally friendly approach to daily commuting, contributing to environmental sustainability and reducing emissions, especially by promoting the use of bicycles.

www.uni-lj.si/

PROJECT PARTNER 4

RRA SEVERNE PRIMORSKE Regijska razvojna agencija d.o.o.
Nova Gorica

Goriška - SLO



RRA severne Primorske
Regijska razvojna agencija d.o.o. Nova Gorica

The Nova Gorica Regional Development Agency (RRA-SP) offers advice to Municipalities and other Public Administrations in the preparation, management and monitoring of local, regional, cross-border and international development projects thanks to its important role in the integration of interests and local and regional resources and specific skills in the sectors of economic development and mobility at regional level. In the MUSE project, RRA-SP acts as a regional development agency, promoting the improvement of cross-border cooperation in the sustainable development of the territory, in synergy with

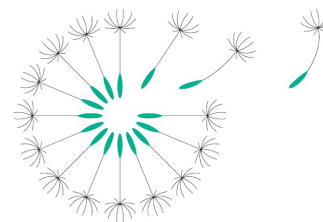
mobility systems and in particular with cycling. To achieve this goal, RRA-SP will coordinate the partners, divided into working groups, in the development of an educational package for the training of the staff of public bodies and professionals competent on the subject of energy and transport. The didactic material produced will represent the basis for the creation of a new cross-border experimental course of higher education, established thanks to the coordination between the Universities of the Program area.

www.rra-sp.si

PROJECT PARTNER 5

Regionalna razvojna agencija Ljubljanske urbane regije

Osrednjeslovenska - SLO



RRA LUR

regional development agency
of Ljubljana urban region

RRA-LUR is a public body competent for the preparation, coordination and implementation of the regional development programs of the 26 municipalities of the urban region of Ljubljana (LUR). As technical support to decision makers and regional advisory bodies, RRALUR is in charge of the balanced and inclusive development of the region through strategic planning, coordination and development of projects in the fields of economy, traffic, infrastructure, environment and rural and territorial development. In the MUSE RRA-LUR project it will share its experiences, studies, knowledge bases and action plans to support the drafting of an integrated strategy for transport, the integration of local energy concepts with sustainable mobility, the increase of skills of the main stakeholders of the region (municipalities, transport operators, policy planners), the implementation of a pilot project and the improvement of cooperation with universities and with Italian partners. RRA-LUR will also develop a document that will define the pilots development and coordination methodology, defining the criteria for monitoring progress and evaluating results to produce a final report.

www.rralur.si

1. GAP analysis

A THOROUGH UNDERSTANDING OF the existing measures/strategies, their implementation challenges, needs and limitations, helps decision makers to determine the actual gaps. In fact, a list of possible recommendations and suggestions for policy actions stems from the appropriate assessment of the gaps. To this end, a gap analysis related to MUSE project is done for both Slovenian and Italian territories. Three main categories should be considered during the gap analysis:

1.1 Business

IT IS CONCERNED with the adoption of the market for sustainable mobility from alternative sources and includes an assessment on charging infrastructures, fleets of electric vehicles, technology, incentives and advertising/awareness campaigns.

ITALIAN PROGRAMME AREA

- The coverage of the territory with charging stations is a very important point, the current situation already has a partial coverage of the territory, at the moment the greater density of the charging points is close to the main urban centers, while it is smaller in rural areas and mountains. The Region is therefore preparing a series of actions aimed at increasing the density of charging stations, helping to eliminate one of the obstacles typically indicated as a limit to the use of electric vehicles. An example is the PNIRE (Piano nazionale infrastrutturale per la ricarica dei veicoli alimentati ad energia elettrica) which is a ministerial plan aimed at financing interventions focused on resolving the most significant needs in urban areas with high traffic congestion through the development of infrastructure networks for charging electric vehicles. The Municipality of Udine, through the Region, participated in the tender for the project, and is expanding the number of recharging stations, and this recharging network will be combined with a car sharing service. Moreover, starting from March 2019, 16 electric car charging points are active parking lots of the intermodal pole of the Friuli Venezia Giulia airport. From this point of view, Slovenia seems to be ahead. Ljubljana, with the title of European green capital in 2016, has already implemented a series of actions, and the charging stations, clearly visible, are much more widespread.
- In the territory of UTI del Noncello (Pordenone, Roveredo in Piano, Porcia, Fontanafredda, Zoppola) in terms of charging stations, only Pordenone has 2 active charging stations for e-vehicles and is currently preparing a tender for the installation of 15 more. The Municipality of Roveredo in Piano has installed two charging stations (one for cars and one for bicycles) thanks to the MUSE project. Only the Municipality of Pordenone has electric vehicles in its fleet: more or less 20 cars and no bikes.
- At the level of Public Administration, there are already some realities set up with their own fleet of electric vehicles (such as the Municipality of Udine) for the use of employees. At the level of private sector companies, there is no knowledge of such actions. In addition to the aforementioned PNIRE project, there is also the NOEMIX financed project by the European Union under the Horizon 2020 scheme. The project aims at replacing part of the oldest conventional vehicles used by the public administration with new electric ones, proposing a very innovative scheme, a pilot project that could be replicated in other countries of the European Union. In particular, the project envisages the transition from the current vehicle fleet management model, based on the purchase of internal combustion vehicles, to another one based on a centralized “turnkey” electric mobility service managed by private operators. The latter includes not only the rental and/or car sharing of electric vehicles (EVs) and the developing/acquiring of a centralized software for managing and optimizing the mobility needs of Public Administrations, but also the installation of recharging infrastructures and the production/purchasing of energy from renewable sources.
- Regarding the technology, it is found that in the recent years there has been a significant improvement in the characteristics of electric cars and, especially in the capacity of the battery, with the result that their driving range has significantly increased. Yet, the price of the battery represents the largest cost component of an electric car whose market share in Italy and in Friuli Venezia Giulia is still very limited. Much will depend on future developments in the sector.

- In this respect it is worth considering that purchase subsidies are playing a non-negligible role in fostering EVs' uptake. Since April 9th, 2019, the Italian government has introduced an incentive labelled Ecobonus, a purchase subsidy which finances with up to €6,000 the acquisition of a new car whose CO2 emissions are lower than 20 grams/km. Specifically, purchasers are entitled to benefit from the maximum amount of the subsidy when the purchase of a new car, with a price lower than €50,000, is associated to the scrapping of an old one. More recently, the administration of the Friuli Venezia Giulia Region introduced an additional subsidy of up to €5,000 for the purchase of an electric car which can be cumulated with the one provided at the national level¹.
- There is instead more room for the deployment of resources for informational campaigns. This is something that is foreseen within the abovementioned PNIRE, but there is certainly need for more widespread actions at the local, municipal level. Efforts are also expected by private enterprises and car manufacturers that should tailor advertising campaigns on the basis of the specific market segments they wish to aim at, e.g. pro-environmentalists or car experts.
- Among global car producers in Slovenia that have long term sale plans and that have trained and equipped sales and maintenance network for selling and maintenance of EVs are currently present Renault-Nissan, BMW and Volkswagen. In lower extent there are also some other car producers, like Tesla Motors and Tazzari for example. In the same time those are the brand names that are part of broader industrial groups, which cooperate the most with the Slovenian (and European) supply network. Therefore, E-mobility already with this year uptake brings along broader macroeconomic advantages. Some of the brand names are present on the market passively. Also, the activities of the providers of car sharing and rent for businesses that include EVs in their offer can be detected. The Slovenian market is part of the broader European and global market, which means that individuals can buy the EV that is not on offered in Slovenia. Like for example Nissan and Tesla which started marketing EVs in Slovene market only recently.
- Looking at the fleets for electric mobility there are some examples already, e-car fleet is used by some of the big energy companies and utilities (e.g. Petrol, Elektro Ljubljana and Elektro Gorenjska) and city municipalities' administration. There are also some electric mobility services managed by private operators for rental/car sharing, e.g. Avant2Go with its network in some bigger cities in Slovenia and important locations (airport, BTC shopping centre), and others. Rent is possible also for longer time periods (year and more) and they offer services also for companies.

SLOVENIAN PROGRAMME AREA

- How many electric vehicles (BEV) were sold in Slovenia is hard to tell as the statistics is shown for electric vehicles (EV) in general; hybrids (HEV) and plug in hybrids (PHEV) included. All together these were 2123, which means around one percent of the sold cars. Number of the registered BEVs (spring 2019) is estimated to over 1,400. For the year 2017 the estimation was between 650 and 700, which means the number has doubled, but numbers are still low.
- Improved battery technologies have brought electric vehicles to Slovenian market that because of the available grants and low cost of charging (for the time being mostly free of charge) and maintenance offer now overall lower mobility costs and pay-off for their higher purchase costs in relatively short period of time to quite significant share of car users. EV still not being a universal solution, however to specific part of car users that are quite numerous in Slovenia already offer a number of advantages. New forms of mobility are linked to EVs, like car sharing that specially in bigger cities can contribute to significant decrease of cars in city centres.
- If the number of EVs in Slovenia is not meeting the GHG national goals the situation in the charging infrastructure on the other hand is much better. Slovenia is here in good position as in relation to the number of EVs and size of the country it has a relatively good coverage of the charging infrastructure. In particular, this is true with the core road TEN-T network (Trans-European Transport Network). At the end of the year 2015 a network of 26 fast charging stations was established on the Slovenian motorways (as part of the Central European Project Green Corridors, CEGC) that included technologies of combined charging system (CCS) and CHAdeMO of 50 kW DC and 43 kW AC installed by company SODO (national electricity distribution system operator). In 2016 another 6 fast charging stations were established on the TEN-T network. Apart from undisturbed use of EVs for Slovenian users the network allows also for the undisturbed circulation of EVs within EU. Slovenia has therefore already complied with this part

of the 2014/94/EU Directive.

There were 228 charging stations with 553 connectors at the end of 2016. Out of which 97 were of standard power, up to 3 kW, then there were 92 mid-power stations with charging power between 7 and 22 kW, which represents 40% of all charging stations. Fast charging stations with powers above 43 kW were 39, or 17%. Ratio between number of charging stations and EVs was about 1 to 3, the number of connections on the other hand was more or less the same as of the electric cars. The share of public charging stations is around 60%. Most of the privately-owned charging points is also open to the public, big majority of them are of low power ($\leq 3,7$ kW). Charging is therefore very slow (with the exception of Renault zoe and smart), they are however much cheaper for the investors.

- The number is growing steadily and in spring 2019 in Slovenia there were roughly 600 charging stations open for public. Out of which around 80 of DC and the rest with AC charging technology. DC charging stations are not exclusively linked to motorways, more and more are being installed also along regional roads and in towns. DC charging station have already at the first sight low power, for the most EVs, however, they are much faster than AC charging stations. In Vrankso one of such charging stations is going to become payable. The cost for 100 km range would be below 2 euros.
- Payable is now also the biggest network of charging stations of the utility company Elektro Ljubljana Gremo na elektriko (Let's go electric) with 119 charging stations and

237 connectors. There are around 3800 pre-paid users registered at the moment. The fee varies according to the charging power and time. For the power up to 7,99 kW the fee is 1 cent per minute and it raises to 3 if the time goes over 180 minutes. This in order to stimulate users to withdraw the car when charging is finished. For the power up to 14,99 kW the fee is 2 and 6 cents per minute respectively, and for up to 22,99 kW 3 and 9 cents. For every start of charging there is also a fee of 50 cents for registered users and of €1 for the non-registered. Purchase is done by use of a card and mobile application.

- When preparing to enter the Slovenian market experts of the leading global car manufactures made some testing and gave advice to the Slovenian experts on how to update the charging infrastructure. This is now in most of the cases in line with the most demanding standards for the most advanced electric vehicles. Beside the CEGC network Slovenia has also a network of super-fast charging stations for Tesla Motors vehicles. Satisfactory is also the network of rather fast charging stations equipped with 22kW three phase Type 2 connectors for cars.
- The fact that charging stations are not spread evenly across the country needs to be taken into account here. They are much more frequent in Ljubljana than in other towns for example. They are also quite good noticeable as many have found their place in shopping centres and city centre. Project Zelena Keltika (Green Celtic) has brought charging stations to the whole North Primorska region. In other regions there are no such systems established.



Figure 1. Carsharing Locations in Ljubljana Source: avant2go.com



Figure 2. Locations of charging stations in Slovenia Source: www.polni.si

1.2 Governance

Governance is concerned with the needs, requirements and policies to improve sustainable mobility.

ITALIAN PROGRAMME AREA

- Governance requires a uniformity of intent between the national level and the territorial of Regions and Municipalities. Within this broad group a reference to the legislation is due. At the national level in Italy, the reference plan is PNIRE, at the regional level the Electric Mobility Plan (PREME FVG) was adopted with Council Resolution 2674 of December 28, 2017. At the Municipal level, for example, the Municipality of Trieste adopted the PUMS (Piano urbano della mobilità sostenibile) which is a new important planning tool for organizing mobility and for improving the overall quality of life in the city.
- Furthermore, public transport should be strengthened and renewed, adapting it to the aforementioned policies, even if in the Friuli Venezia Giulia Region there are already some virtuous examples such as the municipality of Trieste which has the most modern public transport (buses) in Europe. We believe that the current efforts undertaken in the Friuli Venezia Giulia are remarkable, in the pioneering direction depicted by the NOEMIX project and by the aforementioned purchase incentives that can be cumulated with those at the national level. Yet, we believe that probably more could be done in terms of penalizing polluting emissions from old cars, but taking into consideration the welfare effect that this may also determine. There should be probably more stringent measures to deter the parking and more incentives to the park and ride and thus incentivize the use of multimodal means that combine the private car and a public transport.
- This aspect is strictly connected to the application of the abovementioned measures and, to the best of our knowledge, they have been successfully enforced at least at the national level with specific reference to the Ecobonus (the eco-tax on cars with carbon dioxide emissions exceeding 160 g/km exists). The Friuli Venezia Giulia Region has not only made cumulative regional and national incentives (reaching a total of €11,000 subsidy for the purchase of an electric car, as pointed out above), but it has also decided to make the subsidy even more extensive in terms of scrapping categories, extending them to all vehicles from Euro 0 to Euro 4, and providing the subsidy also when purchasing “green” used or Km0 cars. We think that on this aspect the Friuli Venezia Region is a virtuous

example for the whole country.

- Maybe, we could foresee ad hoc policies (and subsidies) only for electric vehicles, involving not only private citizens, but also the Public Administration (and the FVG is doing it with the Noemix project) and public services (the Region could follow the example of Florence that announced new taxi licenses but with the obligation to use electric vehicles).
- As the public transport is concerned, the Region is also moving towards promoting sustainable mobility, considering that new methane buses have been introduced and the average age of the urban fleet is much lower than the national average. Starting from September 2019, the FVG Region will provide for discounts on local public transport services for students by 50 per cent². This innovative action involves about 30,000 people. Even if it is part of the FVG policies for the family support and the right to education, we think it is a measure that will allow many students to leave their cars or motorbikes at home and use public transport more. Another interesting measure fostering the use of public transport is the “SmartBus” initiative³: it is a bus that supports the normal local public transport service (it moves on its lines and uses its stops). But unlike normal scheduled services, it travels only by reservation and along a route that, from time to time, is planned based on user requests. It therefore turns the traditional idea of local public transport upside down, where customers no longer have to adapt to the service but the service to dress customer demand. The initiative was developed within the European project INTERREG “Peripheral Access”, which enhances the need for local public transport where demand is weak or connects with the border.
- Awareness campaigns on sustainable mobility (e.g. European Mobility Week campaign which takes place from 16 to 22 September annually) must go hand in hand with cultural and educational development on the topics of sustainable mobility, energy saving and reduction of environmental impacts. The main actors of this educational path are schools and training institutions. Yet, there is still a lot to be done from the education point of view. This is strictly connected to the informational campaigns that the public administration and private companies should enact. We would say that there is a significant gap to be filled especially at the local level where public administrations should seek to engage the public more in the spread of information on sustainable mobility with initiatives that target not only the younger generations but also

those more mature.

- Incentives and campaigns must not only be developed/provided by those involved at the business level (car manufacturers, energy distributors and charging station manufacturers), but also government institutions (State, Regions and local authorities) can play a crucial role.
- In the territory of UTI del Noncello, only Pordenone and Roveredo in Piano have adopted PUMS that are regularly monitored. Pordenone also approved in 2019 the PUMS Detail Plan for the Old Town, aimed at progressively introducing new limited traffic areas and new 30 zones in the city centre, and to date has started the traffic analysis for the revision of the PUMS itself.
- Mobility planning has been followed by numerous implementation measures, with the introduction of 30 km/h zones, extension of restricted traffic zones, reduction of parking space in favour of pedestrians, reduction of traffic lights in favour of roundabouts for the fluidification of traffic on the main city arteries. There are incentives for the use of e-vehicles in terms of fare reduction in the Municipality of Pordenone: e-cars can park for free in the parking managed by the service provider GSM and hybrid cars can park with a reduction of 30%.
- Direct and effective campaigns of sensitization have not been performed from any of the Municipalities, with the exception of the Municipality of Pordenone, which launched the campaign to collect information on citizens' movements by filling an online questionnaire, has engaged the participation of the community in the modification of the mobility plan of two neighbourhoods (Torre and Rorai). It has also organised the following information and dissemination conferences to raise public awareness on sustainable mobility: 1) Pordenone Sustainable City, in cooperation with FIAB Pordenone, 19 September 2019; 2) Cycle paths and cycle paths to narrate territories, in collaboration with FAI giovani Pordenone, 12 June 2019; 3) From the master plan to the security of the territory and its citizens, Find dust, 28 March 2018
- Roveredo in Piano reports the variant of the building regulation as part of these campaigns, but probably the core problem is met in the statement of Zoppola, which says that as far as campaigns and incentives are concerned, the Municipality is still not taking actions individually, because a common policy on sustainable mobility should be envisaged in all UTI territory to make it more effective and extensive. To this regard, it is foreseen the publication of a call for proposal for the redaction of intermunicipal

mobility guidelines for UTI del Noncello territories.

- As noted at section 1.1, being all UTI's Municipalities very small and contiguous, only a joint effort to plan and act at inter-municipalities level can give interesting results in terms of pollution reduction. It is supposed that once the Noemix project will take operative steps in terms of renewing the fleet of the public administrations in the FVG Region, it will be an interesting signal both for the public administrations itself and for the citizens in terms of awareness raising and opportunities to be taken. Meanwhile, limit traffic with speed reduction, 30km/h zones, and especially more areas dedicated to pedestrians and bicycles inside and around the city centres, could be easy ways to induce a change of mentality, being so easy and fast the adaptation to this kind of mobility in such small cities.

SLOVENIAN PROGRAMME AREA

- In Slovenia 40 % of energy is consumed in transport hence it is an important sector in relation to GHG and other pollutants. Ministry of Infrastructure in 2017 prepared therefore a market development strategy of the adequate infrastructure for the alternative fuels implementation in transport sector. Within stands that Slovenia witnesses constant development. Battery technology is getting better and better, this brings bigger ranges for electric vehicles (EV), costs on the other hand are decreasing. All the leading car companies in Slovenia from 2015 onwards have also EVs in their offer. Sales however are still very far from the Norwegian dimensions, which if considering the general picture quite logical. Strategy sets a very ambitious goal of at least 200.000 EVs and the adequate number of other alternative fuels driven cars until 2030 with which the environment demands/goals of Slovenia would be met.
- According to the regional and state level studies of regional development agency of North Primorska (Slovenia), the state implemented several measures/strategies to support sustainable mobility which focus on promoting walking, cycling, the use of public transport and other alternative forms of sustainable mobility at the expense of limiting personal traffic. As a financial measure, for instance, the Ministry of Infrastructure has identified the key problems in the area of sustainable mobility and has come up with a plan to tackle this issue through cohesion funding. Therefore, the measures for sustainable mobility are included in the Operational Program for the Implementation of the European Cohesion Policy for the

period 2014-2020 under the priority axis for promoting low-carbon strategies for all types of areas, in particular for urban areas, including the promotion of sustainable multimodal urban mobility and appropriate facilitative adaptation measures. In the current programming period, the development of integrated transport strategies, the construction of pedestrian areas, cycling infrastructure, the P + R system (park and ride) and the arrangement of stops of public transport. These investments are envisaged to a lesser extent than complementing the gaps in existing infrastructure networks for sustainable mobility in urban settlements. In addition to the appropriate infrastructure conditions for sustainable mobility, appropriate mobility management measures will be developed and implemented, such as sustainable parking policy, the creation of mobility plans for institutions, green urban logistics and educational information activities on sustainable mobility.

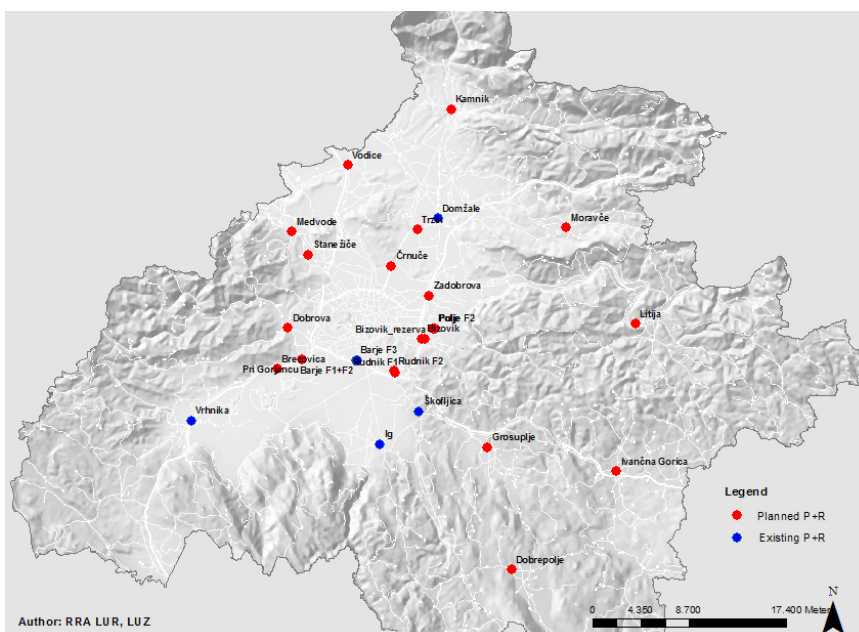


Figure 3. Existing (blue dot) and planned (red dot) P+R in Ljubljana urban region Source: RRA LUR, LUZ, 2018

- The Ministry of Infrastructure in Slovenia prepares the General Guidelines for the field of public passenger transport and sustainable mobility for the preparation of municipal spatial plans. Guidelines contain guidelines in the following areas: ensuring sustainable mobility from the perspective of the vision of population mobility and sustainable development; the development of an efficient public passenger transport system; ensuring the physical integration of transport subsystems for the more efficient implementation of the public utility service of public passenger transport; the need to reduce pollution from personal traffic.
- At regional level, the strategic documents of the municipalities in Goriška region and their professional bases have for several years now included the goals of sustainable

development of transport, while the latter documents rank among the priority development goals. Unfortunately, traffic has not been developing for decades, in line with the set goals. By linking and systematically changing the existing paradigm, basic definitions within the cross-border Gorizia region can be realized. Several weaknesses in the current mobility system in Nova Gorica were identified: the supply of public passenger transport is insufficient to meet the needs of the population; the mentality of potential passengers does not accept public passenger transport; urban infrastructure does not provide secure safe non-motorized traffic (walking and cycling); there is no bike sharing (classical or electric) and car sharing system implemented; spatial planning is subordinate to the needs of personal car transport; there is only a few electric car charging stations in the municipality.

- The mentioned weaknesses have to be compared with the informal vision of the sustainable mobility in the region.
- In Nova Gorica people will not depend on the car. All residents will be able to reach the destination on a Slovenian or Italian side of the border at any time by public transport. Driving will be frequent, fast and inexpensive with the use of alternative fuels. The city will be for people, not parking: cars will be small in the city, because people will be easier to get on foot, by bike or by public transport, so air in the city will be cleaner and the noise will be less. In Nova Gorica, the use of public transport, walking and cycling will be more prominent than driving a passenger car. The drive will be safe as the inhabitants of Nova Gorica will be responsible for using personal cars and protecting themselves and other road users, especially from the weaker populations.

Although these are small steps and still much needs to be done (for example more pedestrian areas, or areas with no access for polluting vehicles and free access to electric vehicles), shows the right direction of commitment to environmental issues.

1.3 Strategies for research and innovation

AT ACADEMIC (UNIVERSITY) LEVEL, it is useful to investigate possible new research in the economic and engineering field. In this regard, the academic research has achieved remarkable results for both the University of Trieste and the

University of Ljubljana, in both the field of engineering and economics. Therefore, it is possible to have an information exchange between the university staff and other partners to share their experiences gained from several cross-border projects. In other words, the academic research can be considered as a tool that in this project is able to provide elements of innovativeness that the public can transform into laws aimed at fostering sustainable mobility. This is not only the case of MUSE, but also of the abovementioned PNIRE, and of course, of other actions, such as the CROSSMOBY project, that allowed rail cross-border mobility between Trieste and Ljubljana, and vice versa.

For instance, during the staff exchange program that took place in Ljubljana, the engineering competences of the local scholars and how they could be connected to the work undertaken by policy makers was obvious. In a mirroring fashion, both universities with the Department of Economics and Department of Engineering and Architecture (UNI TS) on the one hand, and the Faculty of Civil and Geodetic Engineering (UNI LJ), on the other side, express excellent in their respective fields, a quality that allowed the establishment of a fruitful cooperation with the Regional Administration, in particular the Energy Division. Yet, we still believe that there is always room for improvement especially when it comes to ease bureaucratic practices and adopt a more flexible approach by individuals when dealing with a structure whose purpose is different from the one the individual belongs.

A judgement on strategic plan is hard to provide since from the University standpoint we believe that there is a strong commitment to pursue the abovementioned actions to support sustainable mobility. Yet, budget constraints related to public funding provided by the Ministry of Education may affect the consistency of such actions and, in this context, the relationship with private enterprises and local administrations proved to be fundamental to prepare a valid strategy in the short to the medium term.

Monitoring is fundamental to understand if the planned strategy is going along the selected trajectories at the right time. European projects help different partners in learning to stick to a schedule. Yet, we witnessed how there are diverse manners to approach and deal with a problem and solve it by individuals working for either the regional administration, academics and administrative staff of the Universities, and local policy makers. Efforts should be made to harmonize how deadlines and priorities are managed in different institutions, by taking into account to resort to ad hoc staff working on European projects. Regarding this last point, we interpreted

the monitoring not only as a form of supervision of the work of the partners during the project (supervising activities in progress to ensure they are on-course and on-schedule in meeting the objectives and performance targets), but also as an ex-post supervision of the suggested action plans.

Industry is the engine of innovation, one of the strands that is being developed is the production of new-generation batteries in terms of both capacity and speed of storage, and at the same time in order to reduce production costs which both affect the final price of the cars.

The use of new materials is being studied, such as graphene, aluminum ions and metal-air cells. It is fundamental to launch shared strategic plans in which there is full synergy between the parties involved: universities at the academic level, industries and the market, government administrations for political activities and defining guidelines to follow and incentives to propose.

In Slovenia there is a network of expert advisers called EnSVET that offers advice in energy questions to citizens free of charge. In principle the advisers should cover also e-mobility sector, however this is a new and very complex area. Individuals can therefore turn for advice also to the clubs of electric car users, as for example Društvo za električna vozila Slovenije (Association for EVs). As a very competent and capable of wholistic advice on EVs seems to be also a new section Sustainable Mobility at the Centre for energy efficient solutions in Ljubljana (CER). The section namely brings together all the stakeholders of e-mobility in Slovenia, which ensure the chain of knowledge from basic research and industrial competence, to supply of EVs, charging infrastructure know-how, energy providers with the help of measuring technology experts and top of the shelf components. The CER section Sustainable Mobility is therefore the right address when looking for answers in e-mobility. Their members from the science-academic world and Slovenian industry of automotive suppliers, which is neutral to specific drive technology, as it manufactures parts for all sorts of drive technology, are a guarantee for unbiased and neutral advice.

Slovenia has some excellent experts in area of e-mobility knowledge and know-how companies like Metron with Adrej Pečjak, who is one of the pioneers of e-mobility in Slovenia. In 2013 with his regular retrofitted car he won at the rally Monte Carlo de Energies Nouvelle and beat the Tesla Roadster. Two years later he set a world record in length on a single charge in every day traffic and draw from Berlin to Karlsruhe in Germany, 826 km that is. The company now offers retrofitting of the cars to electric drive and pass their knowledge

to others, also abroad. They also cooperate at the projects with some of the leading energy companies in Slovenia. Worth mentioning is also the company Elaphe that has developed its own solution for wheel hub electric drive and Chemical Institute of Slovenia with its long years' research of battery technologies. In the past they led a 12 million euro's European project and prepared a prototype with an energy density of 300 Wh/kg and cooperate with the Honda company. And more could be added. Data show that there is a lot of knowledge and know-how, and that in some of the solutions we are at the top level in the world but there is perhaps a lack of awareness about this fact among politics and decision makers. Hence

would use it if there would be a possibility to use electric supported bicycle. One of the main if not the main limiting factor of the e-bike use is its high purchase prize.

Majority of the e-bikes users in Europe and other countries as well tend to be over 50 years old. It means another important argument for the grants issue. Besides, it still brings considerable health benefits along in contrast to other forms of e-mobility for the user. Furthermore, charging is far less demanding than that for an e-car. On top of the accessibility of the e-bikes an important aspect is also the possibility for their safe storage.

Within the LIFE project Climate Path 2050, run by the Institute Josef Stefan a document Podnebno ogledalo 2019 (2019 Climate mirror) that comprises ten books has been prepared. It shows the main findings in following the measures for the reduction of GHG for the year 2018. The 2nd book deals with transport sector in general and the 7th with sustainable mobility issues. For the sustainable mobility area, the authors recommend:

- Demo projects for charging infrastructure installation for multi-family buildings.
- Charging infrastructure widespread also in other less equipped towns of Slovenia.
- Support measures for development of electric charging stations from the action plan for alternative fuels, as for example, unified user portal with information on all charging stations in Slovenia, unification of the plug-in standards, etc.
- For the enhancement of the e-mobility development is important to address a.s.a.p. also the barriers that show up at the technology use at the multi-family buildings. For overcoming this kind of obstacles and testing of various solutions demo projects seem to be the most appropriate way to go.
- It is important to inform the (potential) users on all the issues that may help them in purchase and use of EVs and that contribute to their decision of swapping to e-mobility.
- At the moment Statistic office is not gathering the information on electricity consumption in transport sector. On top of that there is also an insufficient statistic in biofuels. From the year 2017 ARSO does not collect these data anymore, with the year 2018 these data are gathered via reporting on biofuel use and electricity consumption at the public charging stations through the portal EPOS. In year 2019 data for 2018 are being gathered.

some of the opportunities for national development are not made use of. Development of e-mobility in relation to national goals (e. g. 200,000 EVs until 2030) is too slow. Experts therefore suggest some improvements.

One of the missing opportunities for more sustainable transport development is also not supporting the purchase of e-bikes or pedelecs, in opposition to the e-scooters and e-motorbikes. The somehow prevalent view of supporting laziness is wrong. Research shows that e-bike is more an alternative to car driving rather than to cycling. Many that find the trip to work too distant or physically demanding for the bike use

2. Cross-border Action Plan

2.1 Objectives

PRODUCED BY EACH REGION, the action plan is a document providing details on how the lessons learnt from the cooperation will be exploited in order to improve the policy instrument tackled within that region. It specifies the nature of the actions to be implemented. If the same policy instrument is addressed by several partners, only one action plan is required.

Main Objectives:

- 1. to capitalize experiences on sustainable urban mobility
- 2. to promote transnational exchange of good practices
- 3. to understand different aspects of mobility of universities' students
- 4. to increase the capacity of the PA in the management of university mobility systems, aimed at: integrate university infrastructure and service planning systems with transport systems and energy efficiency solutions
- 5. to favor the inter-relationship between the Public Administration and Universities for the harmonization of public transport and shared mobility solutions at urban, suburban and cross-border levels
- 6. facilitate communication between the University and its students and their change in behavior in travel

Below is the list of recommendations (30) identified in MUSE to respond to the gaps detected:

1. Incentives for the purchase of E-vehicles - free entry to the city center
2. Involvement of decision makers
3. Improvement of bike- and car-sharing, car-pooling.
4. Awareness campaigns (advantage of e-vehicles on the environment)
5. Capillary coverage of territory with charging station
6. Technological development (longer battery and better performances of e-cars)
7. Reinforcement of punishment of owners of polluting vehicles (the one with high or medium income)
8. Discourage car traffic (e.g. speed limit, increase speed control, more pedestrian areas, close city centre)
9. Cross-border train connection direct and fast Udine (or even better Venice)-Ljubljana would be key.
10. Incentives for the purchase of E-vehicles - free parking for e-vehicles
11. Incentives for the usage of removable (RENEWABLE) energy (e.g. photovoltaic)
12. Reduce of electricity (PRICES) for home charging of e-vehicles
13. Bureaucracy simplification
14. Radical political strategy based on best practices examples such as Norway
15. Public transport reinforcement

16. Impose involvement of policy maker in the planning activities
17. Methodology for storage and recycling of the batteries
18. Give priorities to mobility with public or private green vehicles, for example priority lanes for green vehicles or PuT
19. Incentives for the daily commuters using green vehicles
20. Cycle infrastructure: more and safer
21. Incentives for the purchase of E-vehicles - monetary
22. Incentives for the purchase of E-vehicles - involvement of car producers
23. Incentives for the regular PuT users
24. E-vehicles fleet to be used within urban area from commuters from rural area
25. Substitution of the fleets of PA with E-vehicles (to be an example - including buses and taxi)
26. Support usage of PuT by offering significant tariff reductions form modal split from car to bus
27. Improve electrical grid performances
28. Matching sustainable mobility (car-sharing, car-pooling) needs and offers with the instruments (e.g. app)
29. Study and follow the best practices (e.g. safe cycling path, e-cars)
30. Make our activities more clearly and frequently visible to policy makers

2.2 Prioritization using the AHP methodology

THE ANALYTIC HIERARCHY PROCESS (AHP) is a method developed to support multi-criteria decisions, where:

- Analytic indicates that the problem is broken down into its constitutive elements.
- Hierarchy indicates that a hierarchy of the constitutive elements is listed in relation to the main goal.
- Process indicates that data and judgments are processed to reach the final result.

The AHP methodology has been widely utilized in various fields: software selection problems, economic and management problem solving, supplier selection, evaluation of project termination or continuation, based on the benchmarking method, selection of the best alternative between different outsourcing contracts in terms of maintenance services, and so on.

The AHP is constituted by two phases:

- the hierarchy tree definition;
- the numerical evaluation of the tree.

The hierarchy tree definition starts from the determination of the proposed goal, then criteria and sub-criteria are defined using the experience of the experts; finally, the alternatives known a priori represent the leaves of the tree.

The evaluation phase is based on pair-wise comparison. The criteria on the same level of the hierarchy are compared to

kriterij	utež (povprečje)
prometna varnost (npr. zmanjšanje števila nesreč in smrti)	0,22
vpliv na okolje (npr. zmanjšanje CO2)	0,19
mobilitnost za vse (npr. starejši, invalidi)	0,18
Učinkovitost sistema (npr. manj zastojev)	0,15
Stroški implementacije	0,13
čas do implementacije	0,12

Table 1: AHP criteria weights

establish relative importance compared to the criterion of the father-level. This process permits to (i) obtain values that weigh criteria, and (ii) define a ranking of the alternatives. The evaluation is bottom-up: the decision-making process starts by comparing the alternatives with the criteria of the last level; the evaluation continues up to the criteria of the first level, which are then compared to the goal.

The results from evaluation using pairwise comparison of different criteria are shown in the table 1.

The obtained weights were used to prioritize different proposed actions, which were divided into different classes. The classes are colour-coded in the results table 4 according to the legend table 2.

The total effectiveness scores in the table 4 were calculated using a weighted sum of individual grading:

$$S = \sum_{i=0}^N w_i x_i$$

where S i score, w_i is weight and x_i is grade for each input estimate that are defined as shown in the table 3.

LEGEND :

coordination

educational

informative

infrastructural

planning

Table 2: Colour-code legend for results table.

Parameter	L	M	H
Strošek	5	3	1
Čas za vpeljavo	5	3	1
Učinkovitost	1	3	5
Vpliv na okolje	1	3	5
Mobilitnost za vse	5	3	1
Varnost	5	3	1

Table 3: Quantification of input parameters

Description	Cost:	Implement. time:	Efficiency Impact (less congestion):	Envir. Impact:	Mobility for All:	Safety:	Total effectiveness
	L(<E50k) M(<E200 k) H(>E200 k)	L(<1yr) M(<2yr) H(>2yr)	L, M, H	L, M, H	L, M, H	L, M, H	
Cross border coordination table	L	M	M	M	M	L	2,79
Coordination table between national, public and private entities	M	L	M	M	M	L	2,77
Winter school	L	L	M	M	L	L	2,67
Seminars on mobility and renewable energy	L	M	L	H	L	L	2,51
Microgrid technology overview and benefit analysis	L	L	M	M	M	L	3,03
University mobility survey results	L	M	L	M	M	L	2,49
Charging stations analysis and plan	M	L	L	M	M	L	2,47
EV share and forecasts	L	L	L	L	M	L	2,35
Financing of charging stations in FGV through regional mobility plan	H	L	M	H	H	L	3,25
Regulations for management of charging stations, use of e-cars	H	L	M	M	M	L	2,51
Purchase incentives for EVs and HEVs for private persons	H	H	L	H	H	L	2,47
Purchase incentives for EVs and HEVs for public bodies	H	H	L	H	H	L	2,47
Bike sharing docks at University of Trieste	M	M	M	M	L	L	2,17
Update of regional energy plan with MUSE guidelines	L	M	M	H	M	M	3,61
Update of regional mobility plan with MUSE guidelines	L	M	M	H	M	M	3,61
Trieste microgrid development programme	M	L	H	H	M	L	3,45
Manual for design and installation of charging stations	M	L	M	M	M	L	2,77
Role of university mobility in the SUMP and SEAP	L	L	M	L	M	L	2,65

Table 4: Actions effectiveness score obtained from AHP methodology.

3. Clustering action plan to objectives of 2021-2027 programming period

3.1 Future of e-mobility in Europe's

TECHNOLOGICAL ADVANCES AND CHANGES in society have led in the last years to a gradual evolution of mobility. Alongside other trends, such as digitalization, autonomous driving and shared mobility, electric mobility is also gaining Europe. We cannot fail to note that, the pandemic and shelter-in-place measures have had the very clear effect of shutting down most transportation – flying, using public transit, and commuting to work – temporarily. But it looks like the crisis could have a more unpredictable and longer-lasting impact on some forms of mobility and shared services. Electric mobility could again yet help the EU achieve its goals of reducing greenhouse gas emissions, air pollution, noise and dependence on oil especially now when is starting the new programming period

2021-2017. However, the extent of this aid will depend on a number of factors, such as mobility strategies and regulatory framework after pandemic crisis, the share of electric vehicles in the overall vehicle fleet and how environmentally friendly electric vehicles can remain throughout their life cycle, the technological innovations and the related financing support. Electric mobility remains one of the alternative transport technologies - especially in urban areas - that could help the EU to cut GHG emissions from transport if a certain number of conditions were met. It is hard to tell how the future of electric mobility will evolve, but it is clear that it holds a lot of potential to make mobility more sustainable and smarter and is quite probable that EU will support related actions.

The EU is encourages measures aimed at increasing resource efficiency and recycling, as well as measures to help breakthe

oil dependency, optimizes and improve the efficiency of the transport system, develop sustainable fuels, scale up the use of renewable electricity and remove obstacles to the electrification of transport. Often actions in support of electric mobility are part of wider measures taken with a view to developing a more sustainable transport system. In 2016, the Commission published a European strategy for low-emission mobility, in which it highlighted the importance of publicly available electric recharging points, the use of renewable electricity for transport and customer awareness of the advances made with regard to EVs (such as increased driving range and lower maintenance costs). The strategy also called on Member States to review their tax systems so as to introduce incentives for low-emissions vehicles and energy. While welcoming the Commission strategy, the European Parliament called in its 2017 resolution on the Commission to ‘adopt an ambitious action plan for the market uptake of electric vehicles and to issue Member States with guiding recommendations to encourage them to implement fiscal incentives for zero- and low-emission vehicles’. The Parliament also wanted to see a long-term European initiative for next-generation batteries as well as for the development of the necessary infrastructure. In May 2017, the Commission submitted Europe on the Move - a package of legislative and other mobility-related measures aimed at making Europe a leader in clean, competitive and connected mobility; these were introduced in three stages between 2017 and 2018. Some of these measures seek to limit CO₂ emissions from new cars and vans (including giving incentives for low and/or zero emission vehicles) and to stimulate the market uptake of clean vehicles (including vans and buses) in public procurement. The measures are at various stages of inter-institutional negotiations. In general, the European Parliament has called for more ambitious measures to reduce emissions in road transport and for a wider deployment of alternative fuel vehicles

on the European market. For example, in its position on the Commission proposal on the promotion of clean and energy-efficient road transport vehicles, the Parliament raised the 2025 and 2030 clean and energy-efficient vehicle procurement targets for light-duty vehicles.

The EU has also taken steps to improve the way emissions are measured during type-approval procedures of vehicles and their trailers, in order to reduce the gap between the emissions measured during tests and actual on-road emissions. Finally, the EU provides financial support to electric mobility, for instance, by making non reimbursable grants from the Connecting Europe Facility (CEF) and the structural and investments funds available for the development of charging infrastructure and the acquisition of electric buses. Projects focusing on research and innovation in electric mobility can obtain support from the EU’s Horizon 2020 programme or the European Investment Bank. Indicative of the level of support electric mobility currently enjoys is that over the 2018-2020 period, the Commission aims to invest €200 million in battery research and innovation under the Horizon 2020 programme (on top of the €150 million already allocated). Projects directly or indirectly dedicated to electric mobility are also financed by the structural funds both from the Regional Operational Plans and from the INTERREG Programs. As part of the next long-term (2021-2027) EU budget, in June 2018 the Commission proposed to spend 60 % of the CEF €42.3 billion budget on projects that contribute to achieving climate objectives, for instance, through the development of charging infrastructure for EVs. The Parliament and the Council are now negotiating on the proposal. In its negotiating position (adopted in December 2018), the Parliament voiced its support for allocating 60 % of the CEF budget to projects contributing to climate action, while also calling for an increase of the overall CEF budget by almost €6 billion compared to the Commission’s proposal.



Figure 4,5: Electric car sharing system, Ljubljana, Slovenia

3.2 Financing opportunities

1. Regional Development and Cohesion Policy beyond 2020

Discussions are ongoing about the future of the European Union cohesion policy after the year 2020 and after pandemic crisis. Following the publication of the multiannual financial framework for the period 2021-2027, on May 29th and 30th, 2018, the European Commission published the draft Regulations relating to the Cohesion Policy 2021-2027. **The negotiation process by the Member States with the European Commission is still ongoing, single Operational programs are working progress.**

On the ground of thematic concentration, the eleven thematic objectives used in 2014-2020 cohesion policy have been replaced by five policy objectives:



Smarter Europe, through innovation, digitization, economic transformation and support to small and medium-sized businesses;



a **Greener, carbon free Europe**, implementing the Paris Agreement and investing in energy transition, renewables and the fight against climate change;



a more **Connected Europe**, with strategic transport and digital networks;



a more **Social Europe**, delivering on the European Pillar of Social Rights and supporting quality employment, education, skills, social inclusion and equal access to healthcare;



a **Europe closer to citizens**, by supporting locally-led development strategies and sustainable urban development across the EU.

Moreover two Interreg-specific objectives are set out in the proposed regulation:

- better Interreg governance;
- a safer and more secure Europe.

With regard to the draft Regulations on the future of European Territorial Cooperation, the EC / Member States negotiation has been focusing on the main news of the regulations proposals (reduction of ERDF funds at national level, reduction of the co-financing rate; review of cooperation areas; methodology of fund allocation based on resident population within 25 km from the land border; reintroduction of expenditure target N + 2). Looking into the websites of Cross-border and Transnational programmes in which MUSE partners are involved Task forces with representatives of each partner state, drafting future Programmes, are working to help to build trust beyond borders and connected the dots in the fields of innovation, low carbon, natural and cultural heritage as well as transport and mobility and to take successful cooperation forward. Each of the policy objectives could contain investment priorities suitable to improve Electric mobility in Europe. The policy instruments will be improved through funding Programmes and subsequently new projects and/or an improved governance. Based on a preliminary assessments of the existing measures/strategies, their implementation challenges and needs, and limitations developed in MUSE Project WP 3.1.2 GAP Analysis, the measures proposed in the Action Plan, divided on the basis of action types, could be connected to policy objectives for the improvement of dedicated instruments.

Coordination actions listed in the MUSE project Action plan are part of this phase of territorial needs analysis and redefinition of the multi-level regulatory framework.

- Radical political strategy based on best practices examples such as Norway;
- Cross-border train connection direct and fast Udine (or even better Venice)-Ljubljana would be key.
- Public transport reinforcement and harmonization of public transport timetables;
- Support usage of PuT by offering significant tariff reductions from modal split from car to bus;
- Greater integration at cross-border level for the dissemination of information useful to travelers (for example, an adequate harmonization of the information on the distribution of charging stations is lacking);
- Bureaucracy simplification;
- Impose involvement of policy maker in the planning activities.



a **Greener, carbon free Europe**, implementing the Paris Agreement and investing in energy transition, renewables and the fight against climate change;

Lessons learned, information and analysis, educational actions could be a good starting point for designing strategic projects under single EU objectives.

- Cross border coordination table;
- Coordination table between national, public and private entities;
- Microgrid technology overview and benefit analysis;
- EV share and forecasts;
- University mobility survey results;
- Charging stations analysis and plan.



Smarter Europe, through innovation, digitization, economic transformation and support to small and medium-sized businesses;

Planning measures with an innovative character and with development potential also for the private sector and SMEs will be able to find application in the tools that will be designed in this priority.

- Improve electrical grid performances;
- Technological development (longer battery and better performances of e-cars);
- Microgrid technology overview and benefit analysis.

Planning and Infrastructure measures will be able to find adequate or partial financing through specific instruments within this priority and in the subsequent one.

- Improve electrical grid performances;
- Technological development (longer battery and better performances of e-cars);
- Cycle infrastructure: more and safer;
- A more important exposure of universities and research centers towards sustainable and energy efficient mobility: not only research, but more concrete investments in renewable energy and microgrids for charging purposes, e-car sharing, e-bike sharing;
- Improvement of bike- and car-sharing, car-pooling, car sharing;
- Give priorities to mobility with public or private green vehicles, for example priority lanes for green vehicles or PuT;
- Active involvement of mobility managers: constant monitoring of travel behaviour, transport demand and mobility needs, Evaluating effectiveness and efficiency of the adopted policies;

- Financing of charging stations in FVG and in other EU Partners area through National/regional mobility plans;
- Support harmonization of regulations for management of charging stations, use of e-cars;
- Purchase incentives for EVs and HEVs for private

persons;

- Purchase incentives for EVs and HEVs for public bodies;
- Bike sharing docks at Universities;
- Harmonize and Update of national/regional energy plans with MUSE guidelines;
- Harmonize and Update of national/regional mobility plans with MUSE guidelines;
- Support Microgrid development programmes;
- Implement common Manuals for design and installation of charging stations;
- Enhance synergies in the field of university mobility in the SUMP and SEAP.



a more **Connected Europe**, with strategic transport and digital networks;

Planning and Infrastructure measures will be able to find adequate or partial financing through specific instruments within this priority and in the previous one.

- Reduce of electricity (PRICES) for home charging of e-vehicles;
- Incentives for the daily commuters using green vehicles and for the usage of renewable (RENEWABLE) energy (e.g. photovoltaic);
- Discourage car traffic (e.g. speed limit, increase speed control, more pedestrian areas, eco-zone in city center);
- Cycle infrastructure: more and safer;

- improvement of bike- and car-sharing, car-pooling, car sharing;
- Active involvement of mobility managers: constant monitoring of travel behavior, transport demand and mobility needs, Evaluating effectiveness and efficiency of the adopted policies;

- Financing of charging stations in FVG and in other EU Partners area through National/regional mobility plans;
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- Harmonize and Update of national/regional energy plans with MUSE guidelines;
- Harmonize and Update of national/regional mobility plans with MUSE guidelines;
- Implement common Manuals for design and installation of charging stations;
- Enhance synergies in the field of university mobility in the SUMP and SEAP.



a more **Social Europe**, delivering on the European Pillar of Social Rights and supporting quality employment, education, skills, social inclusion and equal access to healthcare;



a Europe closer to citizens, by supporting locally-led development strategies and sustainable urban development across the EU.

Information measures will play a decisive role for a concrete change in society and in citizens day-by-day life.

- Capillary coverage of territory with charging station;
- Methodology for storage and recycling of the batteries;
- Matching sustainable mobility (car-sharing, car-pooling) demands and supplies with the instruments (e.g. app);
- Awareness campaigns (advantage of e-vehicles on the environment);
- Study and follow the best practices (e.g. safe cycling path, e-cars).

- Seminars on mobility and renewable energy;
- EV share and forecasts.

The EU especially through Regional Development and Cohesion Policy has an important role to play in supporting the transition to a more sustainable and smarter mobility. The more ambitious it is in its policies that drive vehicle technology improvements and encourage the use of renewable energy and smart electricity networks, the more impressive the uptake of EVs is likely to be.

The future of electric mobility will also be determined by other incentives European level (European commission and European Investment bank) and at the local, regional and national levels of governance integration EU measures.

2. Connecting Europe Facility (CEF) funds and other instruments of European Investment Bank

The Connecting Europe Facility (CEF) is a key EU funding instrument to promote growth, jobs and competitiveness through targeted infrastructure investment at European level.

It supports the development of high performing, sustainable and efficiently interconnected trans-European networks in the fields of transport, energy and digital services. CEF investments fill the missing links in Europe's energy, transport and digital backbone. The CEF is divided into three sectors, CEF Energy, CEF Telecom, CEF Transport with annual Work Programs and related call.

The management structure of Connecting Europe Facility is quite complex: strategic responsibility lies with 3 separate Directorates General of the European Commission, DG Transport, DG Energy and DG Connect (telecommunications and digital technologies). CEF's operational responsibility rests instead with the Innovation and Networks Executive Agency -INEA. The European Investment Bank manages the guarantee and financial support instruments mobilized as part of the program actions.

The actions promoted by the CEF integrate in a particularly complementary way with some of the interventions financed by the Structural Funds (in particular, the Cohesion Fund and the ERDF - European Regional Development Fund). Indeed, part of the financial resources allocated to CEF (transport axis) comes from a reallocation of the Structural Funds. **This programme match significantly with all the measures proposed in MUSE action Plan.** An example of a co-financed project is given by a a EUR 25 million loan facility for a period of 10 years signed in December 2019 with which The European Investment Bank (EIB) will support Be Charge, a leading Italian company engaged in the development of sustainable mobility, in expanding its charging infrastructure for electric mobility throughout Italy.

As part of the next long-term EU budget 2021-2027, the European Commission is proposing to renew also the

Connecting Europe Facility, with €42.3 billion to support investments in the European infrastructure networks for transport (€30.6 billion), energy (€8.7 billion) and digital (€3 billion). This represents a 47% increase compared to 2014-2020, showing the EU's commitment to a well-connected and integrated Union where citizens and businesses can fully benefit from free movement and the single market. For 2021-2027, the Commission is proposing to strengthen the environmental aspect of the Connecting Europe Facility, with a target of 60% of its budget contributing to climate objectives. This will help reinforce the Energy-Union, fulfil the EU's commitments under the Paris Agreement and consolidate Europe's global leadership in the fight against climate change.

The new Connecting Europe Facility will push for even greater synergies between the transport, energy and digital sectors to maximize the impact of the energy transition. Moreover, its increased budget and possible blending with other instruments will help Europe stay ahead of the curve globally on innovative projects such as smart grids and energy storage. The Commission's proposal aims to better integrate the transport, energy and digital sectors, in order to accelerate the decarbonization and digitalization of the EU's economy. Clean mobility solutions - such as electric mobility - for instance require a close integration between the transport and energy sectors. Other examples include autonomous mobility, energy storage and smart grid.

1. **Transport: safe, clean and connected mobility** - The Connecting Europe Facility will support smart, sustainable, inclusive, safe and secure mobility, in line with the 'Europe on the Move' proposals and the EU's transport infrastructure policy. It will for instance help with the decarbonization of transport by prioritizing environmentally friendly modes (such as rail transport) and the development of charging points for alternative fuels. A stronger emphasis on the modernization of the network is also proposed, notably to make it safer and more secure. As a concrete expression of European solidarity, part of the budget (€11.3 billion) will be reserved for Member States eligible to the cohesion fund.
2. **Energy: affordable, secure and sustainable** - In the energy sector, the new Connecting Europe Facility will enable the creation of a genuine Energy Union and support

the energy transition in line with the objectives of the Clean Energy for all Europeans proposals. To this end, a new strand of the budget will nurture Member State cooperation on cross-border renewable generation projects, in order to promote the strategic uptake of market-ready renewable energy technologies. The programme will also continue to back the key trans-European network infrastructures, allowing for further integration of the internal energy market, boosting interoperability of networks across borders and sectors, and facilitating decarbonization and guaranteeing security of energy supply.

3. **Digital: high-capacity broadband network** - The Connecting Europe Facility will support state-of-the-art digital infrastructure, which lays the foundation for a functioning Digital Single Market. The digitization of European industry and the modernization of sectors like transport, energy, healthcare and public administration depend on universal access to reliable, affordable, quality, high and very high capacity networks. With an ever-increasing demand for high-capacity networks and infrastructure in electronic communications, the new Connecting Europe Facility will devote more importance to digital connectivity infrastructure. An agreement on the next long-term budget in 2019 would provide for a seamless transition between the current long-term budget (2014-2020) and the new one and would ensure predictability and continuity of funding to the benefit of all.

All the infrastructures measures foretasted in MUSE action plans could be supported under CEF programme and other instruments of European Investment Bank.

3. Horizon Europe - the next research and innovation framework Programme

Preliminary structure of Horizon Europe is based on three pillars:

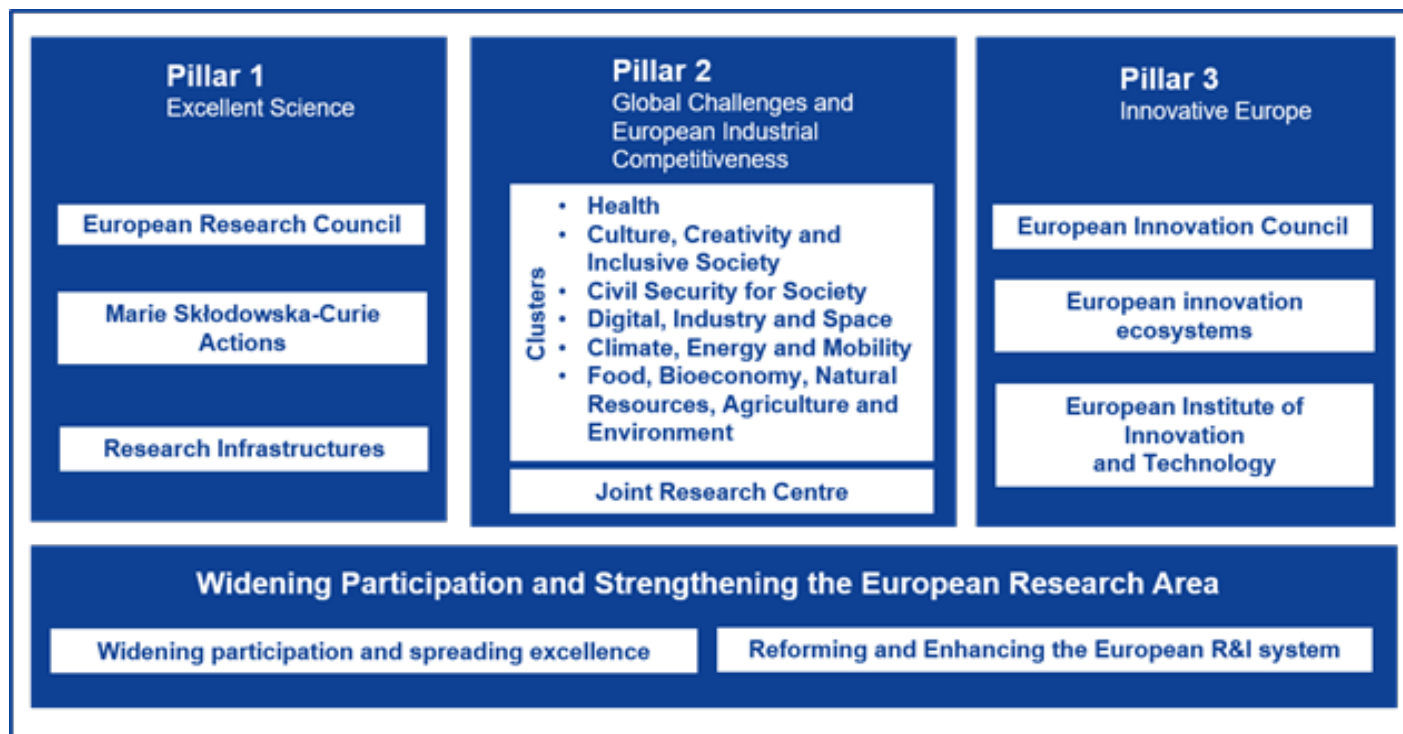


Table 5: the Horizon Europe structure

5 mission areas have been identified, each with a dedicated mission board and assembly. They will help specify, design and implement specific missions in Horizon Europe.

1. Mission area: Adaptation to climate change including societal transformation;
2. Mission area: Cancer
3. Mission area: Climate-neutral and smart cities
4. Mission area: Healthy oceans, seas, coastal and inland waters
5. Mission area: Soil health and food

Among 5 mission areas MUSE Action plan measures could be founded through specific projects under Mission area 1 a and 3.

4. Conclusions

IN THIS DOCUMENT, a gap analysis in the field of e-mobility was carried out for business, governance and research and innovation. Based on the analysis, several real actions were identified and proposed to assure sufficient impact of the project now and in the future. Afterwards the possible actions were identified and scored using the AHP methodology according to the cost, implementation time, impact on safety and mobility to obtain final quantized scores that are shown above. The scores indicate which actions will be most appropriate considering their impact and the resources needed to carry them out.

It was shown that the greatest impact of the project would result, by incorporating project results and experiences into mobility plans. Among educative actions a large impact was put on the winter school that was a successful event during this project.

Finally also action plan objectives were put into EU 2021-2027 programming period objectives to indicate, how individual proposed actions could be developed and financed in the future.

Sources

European Environmental Agency, Electric vehicles in Europe, November 2016.

European Parliament, Charging infrastructure for electric road vehicles, June 2018.

International Energy Agency, Global EV Outlook 2018, 2018.

Joint Research Centre, Electric vehicles in Europe from 2010 to 2017: is full-scale commercialisation, beginning, 2018.

EPRS European Parliamentary Research Service, Maria Niestadt with Amalie Bjørnåvold, Members' Research Service Electric road vehicles in the European Union Trends, impacts and policies, April 2019.

Notes on the text

1, page 4: www.regione.fvg.it/rafvfg/cms/RAFVG/ambiente-territorio/valutazione-ambientale-autorizzazioni-contributi/FOGLIA220/

2, page 6: www.regione.fvg.it/rafvfg/comunicati/comunicato.act?dir=/rafvfg/cms/RAFVG/notiziedallagiunta/&nm=20190614130118002

3, page 6: www.regione.fvg.it/rafvfg/comunicati/comunicato.act;jsessionid=35B8F3F05914F3130B12AC34CAA168AE?dir=&nm=20190624142156006

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