



E-Bike Charging & Marketing ACTION PLAN

Project LENA Pilot Sites

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1. Executive Summary

To ensure Slovenia stays competitive and will be able to respond to the increasing mobility needs of people and goods, there is a national emerging e-mobility strategy. To demonstrate active cooperation and to accompany the project e-MOTICON (Interreg Alpine Space) commitment signed on 4th April 2019 we launch the e-bike infrastructure and marketing action plan:

- The action plan is designed to be delivered in partnership with the six pilot municipalities.
- This action plan directly addresses the urgency of tackling poor air quality and climate change.

1.1 Why it is needed?

- The quality of life from birth to death has been so affected by the impact of climate change and to tackle this significant global shift towards a low-carbon, circular economy is necessary.
- Surveys across the EU have identified that the highest barrier to using an electrical vehicle is the lack of charging points.
- The six pilot municipalities' SUMP priorities the electrification of the surface transport network to be able to access all areas of the region and connect to our neighbours.

The plan for the Gorenjska region will show how variety of e-bike charging infrastructure will promote the growth of this 21st century mobility option into the future and that:

- E-bikes enable an inclusive, sustainable option to discourage motorised vehicle ownership;
- E-biking can offer benefits to the local economy;
- E-biking is part of a healthier lifestyle.

1.2 What is in the plan?

- Links to other strategic initiatives with examples of how synergies can be achieved.
- Demonstrate that investing in the efficiency of the transport system including digital technologies; smart pricing and facilitating access lower emission transport modes will lead to improvements in air quality, the reduction in noise levels, lower congestion levels and improved safety.
- The plan will demonstrate links to support jobs, growth, investment and innovation with suggestions of measures to promote links between different modes of e-transport, helping to create seamless logistics chains.

- It identifies key priorities, for example in research and innovation in low-emission mobility solutions, providing clarity for future investment decisions. Suggestions to improve the communication with key stakeholders so they will notice the benefits
- Identify the opportunities to take advantage of the EUR 6.4 billion available for low carbon mobility projects.

2. Introduction

2.1 Background

This action plan is being delivered as part of the Danube Transnational Programme, a financing instrument of the European Territorial Cooperation (ETC), better known as INTERREG. ETC is one of the goals of the European Union cohesion policy and provides a framework for the implementation of joint actions and policy exchanges between national, regional and local actors from different Member States. The project is called **LENA** – Local Economy and Nature Conservation in the Danube Region connecting nature and people for well-being and prosperity across 7 Danube countries and 11 protected areas. The projects strategic objective is to share know-how and experience for sustainable economic development in protected areas through enhancing the following:

- sustainable income generation from e-mobility and wild plants,
- fishing-based livelihoods,
- added value sustainable agriculture,
- regional tourism marketing,
- training Danube tourist guides across borders,
- policy measures to promote integrated approach in nature conservation and nature-based job creation.

In the Human Capital Actions work package, BSC, Business Support Centre Ltd, Kranj, Regional Development Agency of Gorenjska undertakes a pilot testing of the green mobility option – e-rickshaw, a multi-passenger electric bicycle – within protected areas of the Natura 2000, Triglav National Park and Kranj, the capital city of Gorenjska region. The goal is to improve the accessibility of protected territories with an e-bike, to prove that e-mobility is an opportunity to generate sustainable income when used to deliver tourism services and to show how smart mobility solutions can reduce costs and increase efficiency in delivering municipal or park manager services.



Figure 1: Hands-on demonstration of e-rickshaw to Mrs. Alenka Bratušek, Minister of Infrastructure, in frames of the European Mobility Week 2018 in Kranj

To provide a real testing environment five incoming tour packages were prepared and implemented combining identified e-bike “Nature Routes” that connect nature landmarks and enable access to local produce sites and touristic highlights.

E-mobility training sessions along with several learning interactions were held to appoint e-mobility managers to:

- develop strategies on how to improve e-mobility;
- evaluate and report about current types, numbers and locations of e-bike charging stations;
- propose and implement e-bike infrastructure network;
- investigate and develop “Nature Routes” in each of the project partners’ pilot areas.

Abovementioned pilot activities led to the elaboration of LENA e-mobility strategy containing a state of the art analysis with a set of recommendations on how to optimize e-mobility infrastructure in each region on the long run.

This action plan addresses the development of e-biking in protected areas of the Natura 2000 in Triglav National Park (TNP) (Gorenjska municipalities by the percentage of land in TNP: Bohinj 26.3%, Kranjska Gora 16.9%, Gorje 12,7%, Bled 1,8% and Jesenice (0.1%)) and in Kranj. It takes into account the baselines set out in the LENA e-mobility strategy and the regional e-bike infrastructure network proposal prepared by the e-mobility manager.

2.2 The E-bike Challenges

Current research advises focusing on the development of smart infrastructures and innovative solutions that will deliver electric vehicle (including e-bikes) integration in the road network systems while facilitating evolution in customer acceptance.

There is evidence across the EU that shows that demand for electric vehicles has increased exponentially over the last 5 years and is projected to expand rapidly over the next 30 years. It is important that there is sufficient and accessible charging infrastructure in place to support this transition to low emissions vehicles, whilst keeping abreast of emerging technologies and key developments surrounding charging infrastructure and sustainable transport.

Below sets out some of the national and regional strategic challenges that an improved EV charging infrastructure will contribute:

Climate change, particulate pollution, CO2 emissions

Making a switch from fossil fuels to a cleaner energy is a significant factor to mitigate for negative impacts.

As a target it is recommended that Slovenia aims to Europe's best current performer Norway where approximately a quarter of all cars are running on electricity and because 98% of the electricity generated in the country comes from hydropower, it's also one of the cleanest.

This plan will enable the Gorenjska region to help Slovenia achieve the target.

Social benefits of e-biking

Access to e-bikes provides a gateway to cycling to a wider demographic. Providing a network of charging for e-bikes allows physical and social activity related to cycling more inclusive and will have wellbeing benefits.

An example is social isolation of single citizens reaching retirement. Studies in UK and Japan have found that if a citizen retires or moves into sheltered housing and they have not identified a social and physical activity within a year they are more likely to withdraw into isolation and their health decline. E-biking facilities could prove a good option to tackle this issue.

Families who have members of differing mobility could access e-bikes to facilitate inclusive cycle activity.

Health benefits of e-biking

The health of vulnerable persons by poor air quality can be significantly improved by reducing vehicle emissions.

The University of Agder in Kristiansand, Norway, carried out a study on the aerobic benefits of e-biking. Participants were attached to portable oxygen analysers linked to a GPS as they rode both regular bikes and e-bikes. The rides were designed to simulate bike commuting to work. The researchers noted:

"Health officials recommend moderate or intensive activity at least 150 minutes per week. Moderate activity is defined as three times a person's resting metabolic rate, in other words three times as much as when we are lying still." (Source: ScienceNordic)

Their research showed that all of the cyclists were moderately active most of the time. The people on e-bikes were 8.5 times as active as when they were resting, while the people on regular bikes were 10.9 times as active. Those on e-bikes used an average of 51% of their lung capacity, while those on regular bikes used 58% on average.

This difference was smaller than the researchers expected, and certainly confirmed that the e-bikers were meeting the recommended levels of moderate exercise for promoting good health. Prof. Elling Bere stated:

“The conclusion is that e-cycling is a good form of physical activity and I think many will be surprised to hear it. At least I was. I expected a much greater difference between conventional and electricity assisted bicycling ... if more people stop driving cars and start using e-bikes to their jobs it would have a positive effect on public health.” (Source: ScienceNordic)

It appears that people who have electric bikes spend more time riding them, than do people who have regular bikes. For example, a study in Norway showed that e-bikes cause people to cycle longer and more often – especially woman. Aslak Fyhri at the Institute of Transport Economics summarized:

“People travel twice as much on the electric bike [as on a regular bike], both in terms of kilometres, amount of trips, and as part of the total transportation. The effect of having an electric bike was particularly strong among women. They did far more trips with their e-bikes than men did. Men, on the other hand, often went for longer trips once they were out cycling. ... In order to cycle to work every day you have to prepare, take care of logistics, and perhaps change and shower when you arrive. To many people, this is too much of a project. With an electric bike, you reach greater distances in less time, and you may wear your ordinary clothes or a suit jacket since you don’t sweat. Many of the shorter trips done by car today may potentially be done by e-bike.”

Local economy

E-charging can provide a location to consolidate last 5km servicing and delivery in an area. This saves costs for the local businesses and the e-delivery opportunity could facilitate employment opportunity to lower skilled people. This could reduce unemployment in the areas impacted.

E-cargo bikes provision close to businesses that include servicing and delivery could help consolidate this activity and reduce costs to participating businesses.

Single traders like plumbers, carpenters, decorators could also benefit from access to e-cargo bikes to reduce the need for motorised vehicles and therefore reduce business costs.

E-cargo bikes can also be branded by business to contribute to their marketing and promotion programmes.

Larger businesses activity in the e-bike programme could be considered part of their social responsibility charter.

Tourism

In 2015, almost 2 million overnight stays were generated in Gorenjska, of which 79% by foreign tourists.

The region had the highest number of beds in accommodation establishments (27,000). The largest share of GDP was invested in the environment protection (2% of regional GDP). The Triglav National Park with the Lake Bled and Lake Bohinj and the mountains offer hikers and cyclists (especially MTB-cycling) suitable open spaces with well-developed cycling infrastructure and accommodation facilities. Park is recognized as a cycling destination abroad, especially by neighbouring countries. On the other hand, visitor and mobility management is not yet at the desired level, especially at the most attractive locations such as lakes Bohinj and Bled. Lots of tourists and adrenaline bikers (MTB) descend off the beaten or registered roads and thus destroy protected flora and fauna. Park regulations are often not respected in this case.

Planning and management of e-biking

A significant improvement in the convenience and sustainability of e-mobility charging is required. In Slovenia there is a lack of infrastructure and the varying charging times of existing charging stations has not encouraged the significant growth.

The LENA project outputs are strongly linked to the e-MOTICON project to enhance the public administrations' interoperable infrastructure of electric charging stations (E-CS) for charging electric vehicles (EV). BSC, Ltd, Kranj, Regional development agency of Gorenjska, has produced a Regional Action Plan (RAP) 2019 - 2030 (to be revised end of 2021). As part of that, on April 4 2019, the five municipalities in the Triglav National Park and Kranj have signed the e-MOTICON memorandum of understanding and the letter of support for a collaborative deployment of e-charging infrastructure as a prerequisite for the further development of e-mobility in the Alps. Elektro Gorenjska Group, Tourism Bled and Bohinj joined the initiative too. This will help to establish the commitment of each municipality to fully engage with the e-bike charging action plan presented in this document irrelevant of their current involvement. On top of that, two pilot activities were accomplished – (1) e-HUB pilot¹ - an interactive on-line platform promoting e-mobility and a virtual help desk to support public administrations in spatial planning and management of e-charging infrastructure; (2) e-TRAIL pilot² – ten E-CS of Elektro Gorenjska Group have been connected to a network with a software programme to enable interoperability. This virtual back office allows monitoring the use of E-CS by location, number of charges, and charging times. Voltage can be adjusted to save energy. It is also the basis for establishing the related e-payment services.

Connectivity and mapping of cycling routes and the way the information is communicated between municipalities needs to be managed comprehensively. Integration of cycling with other modes of public transport is inconsistent.

¹ <http://e-mobilitygorenjska.si/en/>

² <http://e-mobilitygorenjska.si/en/e-trail/>

E-biking infrastructure planning is currently not coordinated on a regional level. Of the existing e-charging stations, few are optimised for e-bikes as they require connecting leads or do not have cycle parking in the vicinity (with the exception of Bled and Kranj.)

E-bikes currently managed by public authorities are disproportionately expensive to maintain due to limited repair workshops with knowledge on e-bikes.

In many cases, limited financial resources prevent municipalities to invest in e-biking infrastructure. Ensuring all stakeholders are aware of the financial benefits is very important for a change.

Working in partnership with the private sector will allow the network of e-bike charging to grow faster with less financial burden on the municipalities.

Connecting smart technology for a comfortable and efficient e-mobility system

It should be noted that cloud based services are on the rise like Cooperative Intelligent Transport Systems (C-ITS), integrating a variety of ITS sub-systems with Connected and Automated Vehicles (CAV) promises to significantly improve mobility, reduce congestion, and save lives by significantly reducing traffic incidents.³ In parallel, intelligent e-charging stations and e-Roaming open market models are being developed.⁴

The challenge is to establish a unified “user model”.

The infrastructure introduced needs to be flexible and future proof. There are constant improvements in this type of technology so keeping up to date with good practice is also important.

Options for the retrofitting of existing on street cycle parking to accommodate e-bike charging is emerging at the moment.

For example, connecting power from an existing street lamp column to plates installed underneath Sheffield style cycle parking can become wireless charging points.

This would be appropriate in residential areas and local shopping parades.

Vandalism

MM IBIS Ltd, a Slovenian company who takes care of maintenance and usage monitoring of the public bike sharing system in Kranj, “KRskolesom” reported that in 2018 almost 80% of the e-bike fleet was vandalized. They recognize lending parents’ user cards to their youngsters, who perceive e-bike as a moped, as the biggest problem. Situations that lead to an e-bike malfunction are beyond imagination: three persons riding an e-bike; street racing;

³ <https://www.swarco.com/solutions/connected-driving>

⁴ <https://www.hubject.com/en/about-us/eroaming/>

parking without the use of brakes; raising and lowering the rear wheel at the maximum speed, etc. Bled Green Ways system faced similar scenarios near the lakeshore.

This brings up the entire investment into the bike sharing systems and many municipalities around the globe have decided to shut it down.⁵

Fingerprint recognition access on phone apps could control this effectively.

Collection, recycling, treatment and disposal of e-bike batteries

Batteries may contain metals such as zinc, copper, manganese, lithium and nickel, which present a risk to the environment and human health if they are incorrectly disposed of. Directive 2006/66/EC of the European Commission, also known as the battery directive, therefore specifies laws and measures for the collection, recycling, treatment and disposal of batteries and accumulators. Bicycle manufacturers and importers do have an intake duty, but mostly don't have the network to collect and process these batteries safely and responsibly.

Annually more than 200,000 new electric bikes appear on Dutch roads. In 2014, a Dutch non-profit organization Stibat developed a collecting network to support retailers in collection and processing the batteries. Consumers can dispose of their used and no longer proper functioning e-bike batteries by bringing them back to their retailer. In the same year, Stibat reported to collect 87 tons of discarded e-bike batteries for recycling. This is already recognised as an effective model.⁶

Political challenges

Changing political priorities are very low because to not support climate change would be politically unpopular.

However, the financial risk is there because the longer the delivery programme the costs increase and therefore the risk to reduce number of installations is high – mitigation is to procure efficiently and work in partnership with the private sector.

2.3 General Information about Gorenjska Region

Gorenjska is the fourth largest Slovenian region by the number of residents and the sixth by the area. The area is 2,137 km². Gorenjska lies in the north-western part of Slovenia and borders with Austria (Carinthia) to the north, Italy (the Friuli-Venezia Giulia region) to the west, Goriška region on the south-west and in the south to south-east it opens towards the Central Slovenia region. Gorenjska is an Alpine region. The geomorphological dynamic

⁵ <https://www.treehugger.com/green-investments/can-lessons-be-learned-vandalism-dockless-bike-sharing-bicycles.html>

⁶ <https://electricbikereview.com/forum/threads/what-to-do-with-87-tons-of-e-bike-batteries-every-year.2486/>

surface is characterized by 70% of the mountain world, only 30% of the surface lies in the valley and flat part of central Slovenia.

In 2015 10% of Slovenia's population resided in the Gorenjska region:

1. Highest share of people aged 0–14 (15.8%)
2. Was among the highest growth (1.9 per 1,000 population), with net migration was negative (–2 per 1,000 population)
3. The unemployment rate (6.9%)
4. Average monthly net earnings of persons employed in the region were below the national average (EUR 1,011)
5. The share of people living below the at-risk-of-poverty threshold was lower in comparison with the other regions (13.3%)
6. The region had almost 19,000 enterprises with almost 69,000 persons employed. There were 57 high-growth enterprises
7. GDP per capita was EUR 16,437 and thus lower than the average in the country
8. The number of dwellings per 1,000 population (388) was lower than the national average (410), while the number of dwellings reserved for seasonal or secondary use in this region was the largest (3,367).

2.4 Key Regional E-mobility Initiatives

Table 1: Table summarising some of the key related regional programmes, plans and projects

Title	Stakeholders	Information
“Park & Experience Nature!”	Triglav National Park (Lead partner) Community of Bohinj Community of Kobarid Tourism Bohinj Centre for Sustainable Rural Development Kranj Soča Valley Development Centre Research Centre of the Slovenian Academy of Sciences and Arts Institute of Slovenian Ethnology <u>Implementation period:</u> 2015 – 2016 <u>Co-financing sources:</u> EEA Financial Mechanism 2009–2014 Government Office for Development and European Cohesion Policy (GODC)	Project introduced comprehensive environmentally friendly mobility management system for Bohinj to preserve natural resources of Triglav national park and on the other hand to enhance a genuine experience of nature for visitors. ⁷ This was accomplished by expanding sustainable tourism offer, adding the value to existing attractions, promotion of soft mobility modes (walking, biking, public transport) and raising awareness about the environmental impacts of motorized traffic on nature. Project outputs for a more sustainable transport system and a better accessibility of tourist attractions: <ul style="list-style-type: none"> • 6 upgraded car parks near the Lake Bohinj natural values (NVs) with the possibility to use the Intelligent Transportation System (ITS), information about the nature attractions and the options to use soft mobility modes; • Establishment of two rental stations with 14 trekking bikes and additional equipment (helmets, locks and child seats); • New car park near the Kuhinja pasture enabling organized and safe parking for up to 60 cars and space for buses to turn around; • Information point on the significance of sustainable mobility for nature preservation in the Lake Bohinj NVs, at the premises of the TNP Information Centre in Stara Fužina; • Testing the implementation of sustainable tourist packages for Bohinj Lake and

⁷ <https://www.bohinj.si/en/soft-mobility/park-enjoy-nature/>

		<p>Upper Soča Valley with optimum combination of various public transport modes (PT) (bus, railway, auto train, boat) with the existing and newly set up soft mobility modes (SM). After testing and improvements, selected solutions were put into regular use;</p> <ul style="list-style-type: none"> • 4 upgraded tourist programmes in all NVs in sense of improved interpretation and experience of the nature and by combining public transport and other modes of soft mobility; • Interactive map of soft mobility in Julian Alps⁸; • Research and communication plan for the optimal introduction of sustainable mobility to the selected NVs including the promotional video and informational leaflet for visitors⁹
<p>SUMMER AND WINTER MOBILITY CARDS and other sustainable transport and tourist promotions</p>	<p>Municipality of Bohinj</p>	<p>Free public transport, free parking, free admissions, attractive discounts, special family offers with Summer Mobility Card¹⁰ (1 April to 31 October). Bohinj Ski Bus¹¹. Free with BASIC or PREMIUM Winter Mobility Card¹² (1 November to 31 March).</p> <p>Leaflets available for visitors:</p> <ul style="list-style-type: none"> • Bohinj Summer Mobility Card Brochure¹³ • Winter Mobility Card Brochure¹⁴ • Basic Winter Mobility Card Booklet¹⁵ • Premium Winter Mobility Card Booklet¹⁶ <p>Best deal car parks free and payable (with the Easypark app) organised free transfers (with mobility cards).</p>

⁸ <https://mobility.julian-alps.eu/en/>

⁹ <https://www.bohinj.si/wp-content/uploads/2017/01/promet-bohinj-2016.pdf>

¹⁰ <https://www.bohinj.si/en/soft-mobility/julian-alps-card-bohinj/>

¹¹ <https://www.bohinj.si/en/soft-mobility/ski-bus/>

¹² <https://www.bohinj.si/en/soft-mobility/winter-mobility-card/>

¹³ <https://www.bohinj.si/wp-content/uploads/2017/01/kartica-mobilnosti-bohinj.pdf>

¹⁴ <https://www.bohinj.si/wp-content/uploads/2017/01/zimska-kartica-mobilnosti.pdf>

¹⁵ <https://www.bohinj.si/wp-content/uploads/2017/01/zimska-kartica-mobilnosti-basic.pdf>

¹⁶ <https://www.bohinj.si/wp-content/uploads/2017/01/zimska-kartica-mobilnosti-premium.pdf>

		<p>Leaflets about the most suitable transport options are provided also by seasons:</p> <ul style="list-style-type: none"> • Summer¹⁷ • Autumn¹⁸ • Winter¹⁹
Cycling infrastructure project Bled–Bohinj	<p>Municipalities of Bled and Bohinj</p> <p>Government Office for Development and European Cohesion Policy (GODC)</p>	<p>Construction of the national cycle route btw. Bled and Bohinjska Bistrica.</p> <p><u>Implementation period:</u> 2019 – 2023</p> <p><u>Co-financing sources:</u> 3,5 M EUR Slovenian Infrastructure Agency, Ministry of Infrastructure 2,0 M EUR Cohesion funding 0,5 M EUR Municipalities of Bled and Bohinj</p>
Extension of the “KRskOLESOM” – public bike sharing system	Municipality of Kranj	By the end of 2019 the system will be able to offer 27 E-CS for e-bikes, 74 e-bikes and 87 regular city bikes.
Gorenjska Cycling Network	<p>18 Gorenjska municipalities and six municipalities outside the area signed agreement 30/8/2018</p> <p>Entire project is currently financed by municipalities involved and by the Ministry of Infrastructure.</p>	<p>Outputs are planned to be delivered in the second half of 2019 by SORK (eng. Advisory board for the development of cycling in Gorenjska), and by an expert committee of the regional development council for the environment, space and infrastructure:</p> <ul style="list-style-type: none"> • Signposting of 400km of cycle routes attaching to local, regional and national road network (over 600 sign posts); • Mapping of tourist attractions and other points of interest (POI); • Bike friendly accommodation facilities, bike tour companies, rent-a-bike facilities, bike repair shops, public transportation lines and service providers; • Design and development of an on-line regional cycle network showing cycle

¹⁷ <https://issuu.com/bohinj/docs/casopis-mobility>

¹⁸ <https://issuu.com/bohinj/docs/casopis-jesen-v-bohinju>

¹⁹ <https://issuu.com/bohinj/docs/casopis-zima-v-bohinju>

		<p>routes, tourist attractions, POI (cca. 150), facilities and above mentioned services along the routes, including a smart phone app to plan your cycling route (like Bikemap);</p> <ul style="list-style-type: none"> • Definition of regional e-biking network, locations and type of EV charging stations for e-bikes, e- bike parking facilities and other infrastructure will be defined in cooperation with Elektro Gorenjska and Elektro Ljubljana; • Installation of charging stations for e-bikes, e-bike parking facilities and other infrastructure along the routes. <p>Activities may take longer, because an added value from EU projects will be needed in terms of good practices and expert knowledge.</p>
<p>"E-ASY ON THE BIKE"</p>	<p>Approved under LEADER/CLLD programme in October 2018. Five local action groups (LAGs), two from Gorenjska and three from the neighbouring regions, are involved in the operation lead by BSC Kranj. The goal is to achieve connectivity across regions. Implementation period: 1.3.2019 – 30.11.2020</p>	<p>Activities for Gorenjska:</p> <p>A1 – Purchase and installation of equipment*</p> <ul style="list-style-type: none"> • E-bike bicycle racks (16x) • E-Bike Repair Stands - casual (5x) and with e-bike charger (10x) • Universal e-bike charging station with an electricity supply from a network (2x) or with solar panels (1x). It is still not clear whether a combination of electricity supply from a network and solar panels is feasible or not from the technical point of view. • Rest stops for cyclists (1x) • Trekking e-bikes (10x) • Mountain e-bikes (22x) • City e-bikes (14x) <p>A2 – Trainings for potential providers of services for cyclists**</p> <ul style="list-style-type: none"> • Concept for standardization of »A cyclist-friendly provider«; • Proposal for labelling »cyclist-friendly providers« including a graphic design

		<p>of labels.</p> <p>A3 – Encourage cycling for different target groups***</p> <ul style="list-style-type: none"> • Update, re-design and printing of Gorenjska Cycling Network maps (4.000 pieces) <p>A4**** – Project promotion</p> <p>A5 – Exchange of knowledge and good practices btw. LAGs and implementation of knowledge in each of the LAGs areas*****</p> <ul style="list-style-type: none"> • Preparation of guidelines for catering providers with introduction of best practices and of »A cyclist-friendly provider« standardization concept.
CYCLECITIES	<p>BSC Kranj</p> <p><u>Implementation period:</u> 01. 01. 2012 – 31. 12. 2014</p> <p><u>Co-financing sources:</u> Interreg4C (85%) Ministry of Economic Development and Technology (10%)</p>	<p>Integrating cycling within sustainable urban mobility management schemes. Main outputs:</p> <ul style="list-style-type: none"> • Good practice guides (4) on land use planning, cities' mobility management strategies, citizens' participation practices and on cycling architectural infrastructure • Data on existing cycling infrastructures and bike-sharing systems • 7 regional implementation plans • Studies, reports and policy tools
e-MOPOLI²⁰		<p>Electro MObility is a driver to support POLicy Instruments for sustainable mobility. e-MOPOLI aims to contribute to an efficient diffusion of e-mobility and alternative fuels mobility with improvement of 9 policy instruments set, 6 of which directly linked to Structural Funds. Main working areas:</p> <ul style="list-style-type: none"> • Charging and tolling policies in favour of e-vehicles; • Development of charging infrastructure powered by alternative

²⁰ <https://www.interregeurope.eu/e-mopoli/>

		<p>sources;</p> <ul style="list-style-type: none"> • Integration of charging infrastructure and charging hubs in spatial planning, employment and purchase of alternative fuel vehicles in public transport; • Promotion of e-mobility in niche market fleets.
<p>Alpine Pearls Initiative²¹</p>		<p>In 2006, 17 member villages – “Pearls of the Alps”, established the Alpine Pearls. The Association was the result of two successive EU projects (Alps Mobility and Alps Mobility II). Both of these projects originated in an initiative by the Austrian Ministry of Agriculture, Forestry, Environment, and Water Management. The idea behind the Alpine Pearls was to create innovative tourist packages that protect the environment. The results of these EU projects were implemented by creating the transnational umbrella organization Alpine Pearls for the entire Alpine region. They invite guests to spend their vacation without their vehicles and by using the sustainable mobility options offered at every destination.</p> <p>From 2007 to 2016, new members were added, all of which support eco-tourism, climate protection, and sustainable holidays. Today, 25 Pearls of the Alps in five countries help you enjoy carefree holidays in one of the most spectacular regions of the world, while at the same time being mindful of the environment. Municipalities of Bohinj and Bled are the proud members.</p>

²¹ <https://www.alpine-pearls.com/en/>

2.5 LENA E-bike Infrastructure Network Proposal for Gorenjska

The regional e-bike infrastructure network proposal was prepared for the whole area of Gorenjska region based on the review of existing documentation and interviews with municipalities and development agencies.

Proposal contains two maps. The first one is a map of Gorenjska cycling network with 400 km of regional and national cycling routes covering around 2,500 km² in and outside Natura 2000.

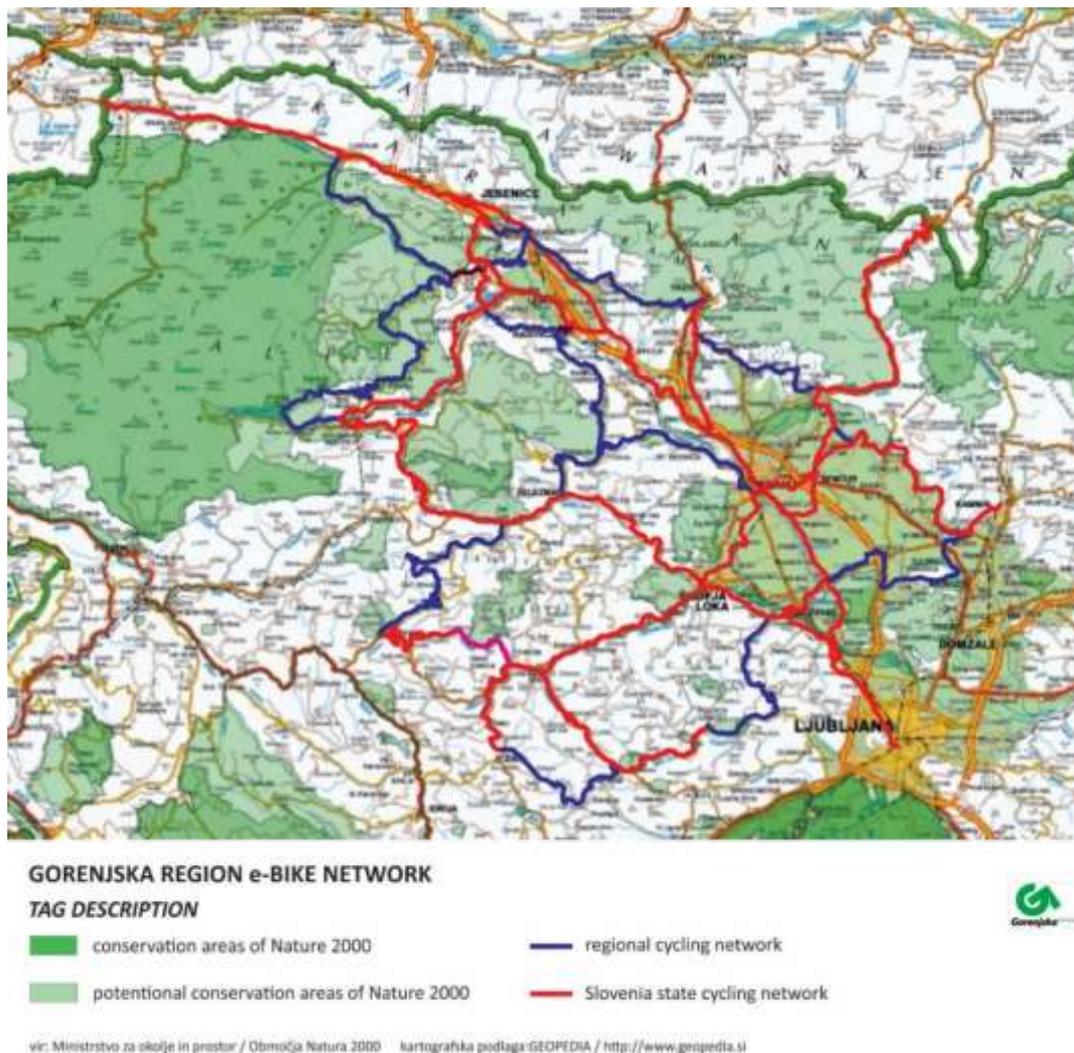


Figure 2: Gorenjska cycling network and Natura 2000

The second one displays selected nature routes and locations of e-bike charging stations. Connectivity to the electricity network, complexity of terrain and locations of e-bike rental service providers, tourist information centres, certificated “cyclists friendly providers” and a potential to develop e-bike related business activities were taken into consideration. Cities

of Kranjska Gora, Tržič, Gorenja vas and Žiri have a great potential for mountain e-biking tourism development.

Bled, Bohinj, and Kranj are the regional touristic and economic centres with big potential for city e-biking. Proposal takes into account conclusions from the European Cyclists' Federation study of the market for cycle tourism and model of demand for EuroVelo.²²

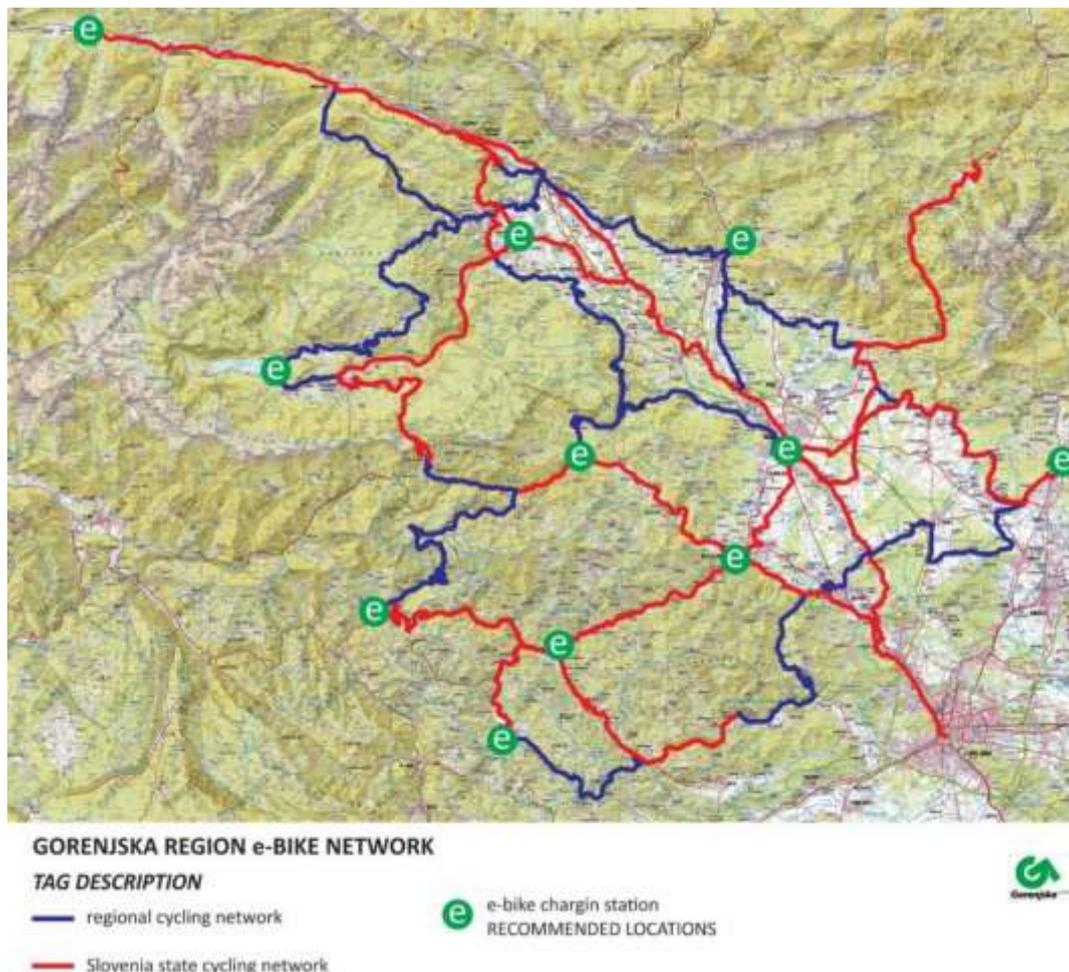


Figure 3: Gorenjska e-bike infrastructure network with nature routes and E-CS

²² <https://ecf.com/sites/ecf.com/files/EP%20study%20on%20EuroVelo%20network.pdf>

3. Policy Context

3.1 National

The National Alternative Fuels Strategy (Strategy) was adopted into Slovenian legislation in October 2017 based on European Directive 2014/94/EU.²³ It sets minimal standards for the deployment of electrical vehicle charging infrastructure, defines its technical specifications and provides requirements for informing the users. The public bodies involved in the preparation of strategy are:

- Ministry of Infrastructure with its Energy Directorate,
- Ministry of the Environment and Spatial Planning,
- Energy Agency of Slovenia,
- National Energy Chamber linked to the Chamber of Commerce and Industry.

The national ecosystem for electric mobility is well developed. In 2016, there were:

- 228 E-CS with 553 sockets,
- 449 e-cars and 111 plug-in hybrids made up of:
 - 97 E-CS \leq 3,7 kW,
 - 92 E-CS \leq 7,5-22 kW and
 - 39 E-CS \geq 43 kW.

More than 50% of the national E-CS operate as interoperable and 60% of E-CS are public. Most of the private E-CS are publicly accessible.

There are up to seven larger E-CS operators in the country.

In Slovenia, there is a range of financial incentives to encourage the take up of EVs including:

- Low-tax rate measures (0.5%) for motor vehicles with emissions of up to 110 g/km CO₂, which include electric vehicles.
- Electric vehicles are also exempt from the payment of annual vehicle licensing.
- E-charging is largely free of charge except on the highways.
- E-vehicle parking lots are also largely free.
- Within the framework of the Slovenian Environmental Fund (Eco Fund), there is a public financial fund to aid the purchase of energy-efficient vehicles.
- To purchase e-bikes or hybrid bikes there are loans available of up to 40.000 EUR at lower interest rates for significantly longer periods than commercial loans.

²³ <http://www.energetika-portal.si/dokumenti/strateski-razvojni-dokumenti/strategija-za-alternativna-goriva/>

By 2030, Slovenia has to increase the share of alternative fuels vehicles on establish the appropriate level of charging infrastructure in accordance with the goals of Directive 2014/94/EU, OP to reduce greenhouse emissions by 2020 (with an outlook by 2030) and in accordance with the European Strategy for low-emission mobility.

The most ambitious quantitative objectives are set in terms of E-CS and battery electrical vehicles (BEVs), although e-bikes are not covered in this context. Targets set by the Slovenian Government include:

- The installation of 1,200 E-CS throughout the country by 2020;
- 5,311 registered EVs by the same year.

The most important national regulations concerning the development of electric mobility are the following:

- Energy Act (2014),
- Decree on renewable energy sources (RES) in transport (2016),
- The Transport Development Strategy (2015),
- The Resolution on transport policy,
- The Spatial Development Strategy (2004).

The vision adopted for Slovenia is to become a green country in research, innovation, industry and transport. Transition to sustainable mobility is highlighted as the only permanent solution to beat the challenge of reducing 1/3 of country greenhouse emissions. Promotion of walking and cycling in rural areas is of key importance in reducing the negative environmental effects of traffic, as well as the promotion and raising competitiveness of the public passenger transport. It is planned to settle more than 1000km of cycling paths and pedestrian surfaces in urban areas and to connect them with rural areas. Nevertheless, it will be difficult to replace private with public passenger transport due to dispersed settlement.

In essence, Slovenia is going to limit the first registration of passenger cars and light-commercial vehicles of categories M1 and MG1 and N1, after 2025, which, according to the manufacturer's declaration, have CO₂ emissions above 100 g/km. Post 2030 this limit will drop to 50 g/km. This puts in the first row electrical and hybrid vehicles.

National AF Action Plan 2018–2020 proposes the following set of measures to establish an adequate e-mobility infrastructure:

- Promoting innovation and research for the development of new technologies and economy;
- Charging infrastructure co-financing;
- Financial incentives and the exemption of annual vehicle licensing / road tax;
- Amendment of legislation and elimination of administrative barriers;
- Alternative fuels in public transport;
- Promotional and educational activities for e-mobility;
- Recommendations to local communities.

Estimated value of the National AF Action Plan 2018–2020 e-mobility measures and co-financing sources²⁴:

- 2018 EUR 12.3 M (EUR 11.1 M of co-financing is guaranteed);
- 2019 EUR 34 M (EUR 20.2 M of co-financing is guaranteed);
- 2020 EUR 54 M (EUR 30.3 M of co-financing is guaranteed).

A detailed list of e-mobility measures with co-financing sources for their implementation is included in Appendix A.

3.2 Gorenjska Region

To meet the challenges of Gorenjska region, BSC, Ltd, Kranj, Regional development agency of Gorenjska, has produced a Regional Action Plan (RAP) 2019 – 2030 (to be revised end of 2021) within the e-MOTICON (Interreg Alpine Space) project. Based on the State-of-the-Art and the SWOT analysis, the following actions were identified:

- facilitate acquisition of financial incentives supporting municipal actions in diffusion of e-mobility;
- building knowledge capacity concerning E-CS infrastructure, operation and e-mobility;
- initiate and support installation of E-CS according to EU standards enabling interoperable connection;
- support and initiate actions creating interoperable networks;
- increase in number of E-CS on the public parking areas;
- increase number of E-CS for e-charging of e-vehicles for public passenger road transport (or on alternative fuel) and e-vehicles for business use;

²⁴ http://www.mzi.gov.si/si/medijsko_sredisce/novica/9130/

- reinforce the electricity grid by cooperation of local, national public and private stakeholders;
- utilize regional RDA of Gorenjska e-HUB platform for mapping;
- municipalities acting as promoters of e-mobility (informing users about novelties, promotion of usage) – utilization of e-HUB platform;
- support and initiate creation of national informational platform for e-charging infrastructure under the management and control of the national public body;
- facilitate contacts between PAs and stakeholders (companies, private investors, private citizens);
- transit of vehicles for public passenger road transport, public and private business fleets into electric ones or run on other alternative fuels;
- provision of infrastructure for public transport interchange, P&R systems, business zones, airport area.

Gorenjska Region has defined a two-step vision, according to the time line:

- By 2023 Gorenjska region will have 80% of Municipalities covered by E-CS interoperable network infrastructure supported by public administration financial incentives and policies, using the available resources and will have knowledge empowered public administration in regard to e-mobility;
- By 2030 Gorenjska region will have an extensive user-friendly e-mobile infrastructure and services according to the European standards, enabling a complete transition to electrical mobility and higher quality of life.

The vision and the identified area of intervention are prioritized into strategic objectives and specific actions. Actions and the relation with the prioritization index derived from a multi-criteria analysis are presented in the following table:

Priority Index	Action Title/Description*	PA ROLE
11	Municipality Bled Increase in number of E-CS on the public parking areas.	Investor, coordinator, owner
21	Municipality Kranjska Gora Increase in number of E-CS on the public parking areas.	Facilitator
21	Gorenjske elektrarne, BSC Kranj Support and initiate creation of national informational platform for e-charging infrastructure under the management and control of the national public body.	Facilitator

21	BSC Kranj Support and initiate actions creating interoperable networks.	Facilitator
31	Municipality Kranj Increase in number of E-CS on the public parking areas.	Facilitator
31	Municipality Bled Increase in number of E-CS on the public parking areas.	Facilitator, coordinator
31	Municipality Bled Increase in number of E-CS on the public parking areas.	Investor, coordinator, owner
31	Municipality Cerklje na Gorenjskem Municipalities acting as promoters of e-mobility, utilization of e-HUB platform.	Coordinator
31	Utilize regional RDA of Gorenjska Region e-HUB platform for mapping.	Facilitator
41	Municipality Žirovnica Increase in number of E-CS on the public parking areas.	Coordinator, owner
41	Municipality Bohinj Provision of infrastructure for public transport interchange, P&R systems, business zones, airport area.	Investor, coordinator
41	Municipality of Cerklje na Gorenjskem Provision of infrastructure for public transport interchange, P&R systems, business zones, airport area.	Coordinator
41	Municipality of Jesenice, and Bohinj Municipalities acting as promoters of e-mobility, utilization of e-HUB platform.	Coordinator
50	BSC Kranj Facilitate acquisition of financial incentives supporting municipal actions in diffusion of e-mobility.	Promotion, implementation
50	BSC Kranj Building knowledge capacity concerning E-CS infrastructure, operation and e-mobility - Building knowledge capacity concerning E-CS infrastructure, operation and e-mobility.	Promotion, implementation
50	Municipality Bohinj Increase in number of E-CS on the public parking areas.	Investor, coordinator
50	Municipality Cerklje na Gorenjskem	Coordinator

	Increase in number of E-CS on the public parking areas.	
50	Municipality Cerklje na Gorenjskem, Kranjska Gora Reinforce the electricity grid by cooperation of local, national public and private stakeholders.	Coordinator
50	Municipality Kranj Transit of vehicles for public passenger road transport, public and private business fleets into electric ones or run on other alternative fuels.	Facilitator
60	BSC Kranj Initiate and support installation of E-CS according to EU standards enabling interoperable connection.	Facilitator
70	Municipality Žiri Increase in number of E-CS on the public parking areas.	Investor, coordinator, owner

The e-MOTICON project enhances the public administrations' capabilities in building an interoperable infrastructure of electric charging stations (E-CS) for charging electric vehicles (EV). On the 4th of April 2019, managing director of Elektro Gorenjska and Gorenjska municipalities signed the e-MOTICON memorandum of understanding and the letter of support for a collaborative deployment of e-charging infrastructure as a prerequisite for the further development of e-mobility in the Alps. Regardless of the fact that within the Regional Action Plan (RAP) 2019 – 2030 focus is mainly on the e-cars and E-CS for e-cars, its general e-mobility framework has to be taken into account when planning and implementing e-biking actions.

This action plan has been developed to take into account that although e-mobility is a priority for the LENA pilot area municipalities and recognized in their respective Sustainable Urban Mobility Plans the focus is on e-cars, e-vehicles for businesses and public transport, with e-biking considered complementary. Therefore, e-bike charging measures are either subordinate to the ones set for e-cars or there are no specific measures and actions defined at all. This action plan purpose is to co-ordinate the delivery of e-biking infrastructure to ensure that e-biking is given the appropriate priority.

It should also be noted that Slovenia's national legislation and regulations for the promotion and the funding of e-biking has yet to be finalised.

4. Developing an E-Bike Charging Network in Natura 2000 Pilot Site Gorenjska

This chapter identifies the where (location), the who (the target groups for consideration), the what (a summary of the infrastructure options and considerations) and the how (engagement, incentives, marketing and promotion)

Where

4.1 The action plan area is located in municipalities with protected areas of the Natura 2000 in Triglav National Park (TNP) and Kranj. As the area has high numbers of visitors, there are some existing cycle hire companies that offer e-bikes:

	<i>Population(2016)²⁵</i>	<i>Annual Visitors (2017)</i>	<i>Cycle hire with e-bike options</i>
Bled	8.000	410.731	<p>BLED Green Ways automated public bike sharing system offers rental options at 4 docking stations with a total number of 24 bikes available. 8 of them are e-bikes available at the Tourist Information Centre (TIC) Bled. Average distance between the docking stations is 3,7km. 90% of rides is done with e-bikes. Information system monitors the number of rentals, renting times and availability of e-bikes. By the end of 2020, it is planned to set up 4 more stations and offer in total 32 e-bikes. System is maintained by the by the energy company Petrol.²⁶</p> <p>Tourist agency Helia, offers rent a bicycle and cycling tours. At their rental shop location in Bled, Scott e-sub active e-bikes can be rented.²⁷</p>
Bohinj	5.130	191.873	<p>Comfortable trekking bikes are available at two rent stations (helmet and lock included). Additionally there are e-bikes.</p> <p>Hike & Bike tourist agency offers hardtail e-bikes MTB at the lake Bohinj.²⁸</p> <p>New level, Proform3D, Ltd, situated in Bohinjska Bela</p>

²⁵ <https://www.stat.si/obcine/sl/2016/Region/Index/9>

²⁶ <http://www.bled.si/en/what-to-do/bled-green-ways> and <https://www.dnevnik.si/1042788019>

²⁷ <https://www.rentabike.si/bikes/electric>

²⁸ <https://www.hikeandbike.si/services/rent-a-bike-2/>

			offers guided e-mountain bike tour and self-guided daily package with e-mountain bike. ²⁹
Gorje	2.830	/	Connected to Bled.
Jesenice	20.710	/	“JeseNICE bikes” system at Tourist Information Center (TIC) Jesenice. ³⁰
Kranjska Gora	5.290	243.415	Tourist information centre (TIC) Kranjska Gora. KOFLER SPORT – Mojstrana (2 e-mountain bike for rent). SEDNJEK Ltd in Kranjska Gora offers e-bike rental and excursions. ³¹ Šport Bernik Ltd offers VIP e-bikes HAIBIKES. ³² ŠPORTNA TOČKA Ltd in Kranjska Gora offers Devinci’s ACs and DCs e-mountain bikes. ³³
Kranj	56.080	60.264	“KRskOLESOM” – public bike sharing system established in 2017. On the 9th August 2018, it has become the biggest e-bike sharing system in Slovenia with 16 E-CS for e-bikes, 32 e-bikes and 48 regular city bikes. Within this year (2018), there were app. 1200 users of the system with 28.000 rentals in one season (120 rentals per day). At the beginning of the 2019, the system has in total 25 E-CS with 58 e-bikes and 87 regular city bikes. System was established by the Municipality of Kranj and is maintained by the MM IBIS Ltd ³⁴

Sources for the annual visitors Bled, Bohinj and Kranjska Gora:

https://www.slovenia.info/uploads/dokumenti/tvs/tvs_turizem_v_stevilkah_2017.pdf

Sources for Kranj: <https://www.visitkranj.com/leto-2017-v-kranjskem-turizmu>

²⁹ <https://newlevel.si/e-bike/>

³⁰ <http://turizem.jesenice.si/en/activities/summer/cycling>

³¹ <http://www.julijana.info/en/activities/summer-activities/cycling>

³² <https://www.intersport-bernik.com/sl/poletna-sezona/izposoja-gorskih-koles>

³³ <https://www.bikerental.si/services/rent-mountain-e-bike/>

³⁴ <https://www.krskolesom.si/>

- 4.2 Situated in the heart of the Julian Alps, there is a range of cycle routes adequate for e-biking according to distance, elevation and time duration, including:
- An asphalt **Bohinj Cycling Route**³⁵ that runs along the Sava Bohinjka River from Bohinjska Bistrica to Stara Fužina and continues along the Ribnica Brook to Srednja vas. This well-marked route is ideal for recreational cycling in Bohinj. Resting places and 2 bike repair stands are located along the route. From Ribčev Laz the road leads to Ukanc and the entrance point for the Savica waterfall. Nevertheless, this road is not yet registered as a cycle route.
 - **From Bled through the surrounding villages**³⁶ – Cycle route through scattered villages around the centre of Bled with a rich cultural imprint and where a rustic life is still alive.
 - **Radovna Valley** – The cycleway runs along the Radovna valley, from Krnica near Zgornje Gorje to the Pocar Farm Museum at Zgornja Radovna. It is about 16 km long and can be cycled in 2,5 to 3,5 hours, stops at information boards included. Along the route 12 information boards providing visitors with descriptions of the valley and its points of interest.
 - **Rateče–Kranjska Gora–Jesenice** from Rateče, through Kranjska Gora, past Gozd Martuljek, and all the way to Mojstrana. The trail partly runs on abandoned railway tracks, across many bridges, and is entirely separated from motor traffic.
 - **The Mammoth Path** – starts at the Odems farm in Predoslje near Kranj and continues over the fields of well-known protocol estate Brdo with a forest rich in biodiversity. Circular trail leads right on the fence of the estate and reaches the Bobovek lakes, a group of three lakes that are due to the ornithological, paleontological and other peculiarities protected and declared a natural landmark. 15km route ends at the starting point – Odems farm (planned by the Studio Oreh Ltd in frames of the LENA e-rickshaw pilot project).
 - **Through the forest to Škofja Loka** – 16km route starts in Bitnje near Kranj, an area known as a habitat of amphibians, birds, dragonflies, beetles and butterflies. Past the village of Plevno to the medieval town of Škofja Loka (UNESCO) and back to Bitnje (planned by the Studio Oreh Ltd in frames of the LENA e-rickshaw pilot project).

Who

- 4.3 In this location, the target groups are largely interrelated. A significant percentage of the areas employment is directly or indirectly related to tourism and therefore the consideration of e-bike charging can benefit all.

³⁵ <https://www.bohinj.si/en/experiences/bohinj-cycling-route/>

³⁶ <http://www.bled.si/en/what-to-do/summer-sports/cycling/Cycling-routes>

- 4.4 A key issue is considering ownership and rental charging provision. Home charging is currently the most common option for charging for owners. To encourage that group to replace more of their car trips, because they are confident there is charging top up facilities to increase the kilometre per trip.
- 4.5 The regions businesses and workforces need to increase their sustainable modes of transport for:
- Commuting
 - Servicing and delivery
- The placement of public accessible e-bike charging points close to areas of high employment will encourage this. A network of e-cargo bikes could complement this.

What

- 4.6 The LENA project partner includes the City of Tuttlingen who have installed e-bike charging infrastructure in recent years and Appendix B includes the information leaflet for their chosen provider Stranger Elektrotechnik – project Bike Energy. They include an option to charge both e-bikes and EVs.
- 4.7 Appendix C includes the information of a locker charging system that would work well at locations where users would stop for 3 hours or more. The example is Thur Metall AG an Austrian company.
- 4.8 Smart Street Furniture³⁷ – In London a series of smart benches have introduced these are solar powered and designed to charge mobiles. The capability of this type of installation is advancing all the time. Therefore, it is worth considering whether certain routes like those identified in para 3.3 would benefit from a bench with charging abilities situated close to cycle parking.
- 4.9 Across the EU, some major cities have been promoting e-bikes with systems of grants for the acquisition (Paris) or public for-hire fleets (Madrid). Some users use a method called “guerrilla charging”: they plug-in at various locations where electricity is available outside (shops), by asking permission before.
- 4.10 Municipalities, researchers and companies are experimenting to achieve standardised e-bike parking guidance. Some universities have led the development of e-bike parking and charging stations, as they often internally have the skillset to test out solutions.
- 4.11 Solar powered stations are of interest as they solve the issue of the origin of electricity that could slightly shade the image of e-bikes as eco-friendly (even though e-bikes’ environmental impact is very low). Other experiments have taken place: as a standalone station in Eindhoven (NL) to research the impact by private companies.

³⁷ <https://strawberrie.com/product.html>

- 4.12 Wireless charging is widely researched. A French business school based in Lyon collaborated with a company to put in a charging hub for its students. Charging stations using the electric grid have also emerged, by various players.
- 4.13 Charging for hire e-bike schemes have developed across the whole of the EU: in Madrid, with the BiciMad scheme (2028 e-bikes to hire) or Paris with the relaunched Vélib' Métropole (30% of the fleet is electric bikes).
- 4.14 Some dockless e-bike private companies are also taking interest in charging stations. After acquiring the dockless electric bike company JUMP, Uber has started a partnership with Sacramento (US) to test the roll-out of charging stations across the city.
- 4.15 The Solar charging option would be worth considering in places where the existing power network does not currently reach.
- 4.16 The key missing information for all the emerging schemes is interoperability.
- 4.17 The charging network should be varied and include different types of charging infrastructure operating at different speeds. Considerations of the following are essential to making good choices for procurement.
- Product options
 - Cost
 - Safety
 - Environmental impact
 - Installation and maintenance
 - Which product for which location
 - Appearance / Aesthetics
 - Future proofing
- 4.18 Below is a set of questions that would be useful for procurement

Technical questions to ask the infrastructure provider

	<i>Question</i>	<i>E.g of evidence</i>
1	What is the range of E-bike charging options?	Company product literature.
2	Provide examples of previous installations and usage?	Evidence of: <ul style="list-style-type: none"> • Customer satisfaction • Municipality satisfaction • Business customer satisfaction; • Tourist industry satisfaction
3	Provide costs of each type of infrastructure?	Price list and discounts for multi purchasing.

4	Provide costs and methods of installation and connection to the power network?	Examples of recent contracts.
5	Provide costs for maintenance and replacement?	Examples of recent contracts including price testing.
6	Does the equipment meets current safety requirements?	Certification.
7	What is the procedure to ensure the infrastructure is maintained safety standards?	The company protocol.
8	What is the procedure to ensure the method for safe public use is clear?	The company user guide.
9	What is the procedure in the event of personal injury?	The company protocol on personal injury.
10	What is the procedure for property damage?	The company protocol on property damage.
11	What is the environment impact of production?	Ref EU Green Public Procurement Criteria.
12	What is the method for installation of each product option?	The company protocol on installation.
13	How will provider work with municipality, Power Network and landowners?	Examples of recent activity.
14	What product would be best at which location?	A draft plan to identify the companies assessment of which of their products would be best suited to which location and why.
15	Can the products aesthetic be adapted to be locally sensitive?	The area is of outstanding natural beauty and infrastructure should reflect this.
16	How adaptable are the products. Particularly wireless charging?	A statement of future proofing options.

How

- 4.19 In order to ensure good uptake a programme of engagement, incentives, marketing and promotion is essential. For a message to be effective, marketers must understand not only how to tailor a message to a particular culture balanced with stakeholders' personal knowledge.
- 4.20 Once the stakeholder groups to target have been identified research on the behaviour, attitudes and buying habits will help identify methods to use for marketing and promotion.
- 4.21 The business community in the area will be a vital component in the success of rolling out the e-bike charging network and so a bespoke programme will be necessary.
- 4.22 The tourist industry will provide a significant amount of users and links to their communication network, which is also vital.
- 4.23 The public is becoming more and more aware of the need to take personal responsibility to contribute to improving air quality and the environment and using e-bikes as part of this should be a key campaign message.
- 4.24 E-bikes and health benefits should be a key campaign message.
- 4.25 Each target group needs to be involved at different stages of the programme.
- 4.26 Suggested ideas for key stakeholders.

The Business Community

	Task	Key information
1	Create a list of business stakeholders and there likely level of involvement.	Research and rank businesses from 1-5 (1 likely to be very interested 5 not likely to be interested).
2	Send an email to the business stakeholder list with project information.	<ul style="list-style-type: none"> • Link to the website for feedback • Establish algorithm to assess level of involvement
3	Invite businesses identified as ranking 1 -3 to get involved.	Choose a sample to be involved in working group.
4	Work with businesses to design promotion and incentives packages.	Combine their logos into products. Utilise their in house resource where possible.
5	Invite businesses to sponsor launch events.	Invite national cycle sports representatives to attend.
6	Promote contributing businesses on the website.	This should be reviewed regularly to ensure standards are upheld.
7	Introduce the possibility of E-cargo bikes to help businesses with their servicing and delivery.	Invite demonstration models to present to businesses.
8	Introduce business incentive to encourage workforce to use e-bikes to commute.	Ensure all businesses are aware of the incentives offered identified in chapter 2.

The Tourist Industry

	Task	Key information
1	Create a list of hotels, tourist accommodation providers, restaurants, attractions and tour operators in the area.	Research which of these already provide cycle and e-bike opportunities.
2	Send an email to the tourist stakeholder list with project information.	<ul style="list-style-type: none"> • Link to the website for feedback • Establish algorithm to assess level of involvement
3	Invite tourist stakeholders identified as ranking 1-3 to get involved.	Choose a sample to be involved in working group.
4	Work with tourist stakeholders to design promotion and incentives packages.	Combine their logos into products. Utilise their in house resource where possible.
5	Invite tourist stakeholders to host launch events.	Invite national cycle sports representatives to attend.
6	Promote contributing tourist stakeholders on the website.	This should be reviewed regularly to ensure standards are upheld.
	Introduce the possibility of E-cargo bikes to help tourist businesses to transport luggage and to shop locally for catering requirements.	Invite demonstration models to present to tourist businesses.
8	Introduce tourist business incentive to encourage workforce to use e-bikes to commute.	Ensure all tourist businesses are aware of the incentives offered identified in chapter 2.

The General Public

	Task	Key information
1	Utilise municipality contact lists.	Look at demographics like: <ul style="list-style-type: none"> • Families • People with mobility issues • Older people • Existing cyclists • Environmental groups
2	Send an email to the contact list with project information.	<ul style="list-style-type: none"> • Link to the website for feedback • Establish algorithm to assess level of involvement
3	Invite stakeholders identified as ranking 1 -3 to get involved.	Choose a sample to be involved in working group.
4	Design a series of leaflets to promote different benefits to attract different demographics.	Link to the website and an interactive response.
5	Identify existing event programmes in each municipality.	Assess each event for possible promotion of e-bikes and chargers.
6	Identify a programme of incentives to encourage people to trial e-bikes.	Possible a loan scheme or vouchers to existing e-bike hire companies operating in the area.
7	Introduce the possibility of E- bikes and possibly E-cargo bikes to encourage shopping without a car.	Ask supermarkets to consider working with municipalities on this.
8	Consider a competition to improve health by e-biking.	<ul style="list-style-type: none"> • Starts and ends with a health check • Best performance gets a prize

5. Action Plan

The primary objective of this is to create a method to incrementally deliver a comprehensive e-bike charging network in the Natura 2000 pilot site in Gorenjska.

Improving air quality by reducing emissions from road traffic is a crucial priority in Slovenia. Pollution in the air we breathe has major health implications. Providing an accessible network of electric vehicle charging points is vital to achieve air quality improvements and to deliver the target for a zero-emission transport network before 2050.

There is already growth in e-bike ownership. Delivering this includes:

- Locating suitable sites;
- Surveying and designing new cycle parking layout at the chosen locations;
- Coordinating the various suppliers and general administration.

The next stage will be a public consultation to inform the region of the plan and its benefits.

The network will consist of complementary charging solutions:

- E-bike chargers for topping up at trip destinations;
- E-bike chargers managed by private enterprise for employees and cargo bikes;
- Charging lockers at hotels, guest houses, restaurants, museums;
- Working with existing cycle hire and bike sharing systems to increase the proportion of e-bikes they offer and the e-charging infrastructure requirements for this.

This will deliver a comprehensive, accessible and appropriate charging network for residents, business and visitors to Gorenjska. The ultimate aim of this project is to achieve full coverage in two phases by 2030. Timeframe is aligned with the e-MOTICON Regional Action Plan (RAP) 2019 – 2030. E-biking action plan is to be revised at end of 2021.



Preliminary plan

Task	Details		
<i>Prepare start to finish process plan with milestones</i>	Prepare a draft works programme including task list milestones.	Share plan with task stakeholders to agree in principle and identify resource requirements.	1
<i>Prepare stakeholder list</i>	List should include: <ul style="list-style-type: none"> • Political and municipality stakeholders • Cycle stakeholders • Tourism stakeholders • Local economic stakeholders (e.g. Chamber of Commerce) • Environmental interest groups • Health interest groups • Local residents 	A working group should be established using stakeholder representatives to have a watching brief of the life of the action plan (e.g. in frames of the SORK – Advisory board for the development of cycling in Gorenjska) A co-ordinator appointed (e.g. LENA e-mobility manager). Heads of terms drafted including responsibilities, quarterly meetings and locations planned for the duration of the plan.	2
<i>Develop plans which predicts where demand is expected to be highest this is then plotted into the whole regions and plotted along with the latest data</i>	Plan 1 will have: <ul style="list-style-type: none"> • Public transport interchanges • Hotels and other tourist accommodation • E-bike hire facilities • Points of interest • Car parks and rest stops • Existing e-charging infrastructure • 20km radii from the 5 key municipalities 	Plan 2 will have: As before but with colour key on 20km radii ranging poor to good coverage.	3
<i>Prepare estimated costs and quality control criteria</i>	Plan 1 will have: <ul style="list-style-type: none"> • Examples of each of the type of infrastructure and the cost per unit 	Plan 2 will have: Each infrastructure options will be assessed against a common set of criteria.	4

	<ul style="list-style-type: none"> • Installation cost per unit • Maintenance cost per unit • Usage cost per charge • Project management resource requirements 	As set out in Chapter 3.	
<i>Prepare marketing and communication plan</i>	Develop options to link to existing networks.	Refer to chapter 3.	5
<i>Prepare information on funding</i>	Budget breakdown and shortfall. Grants with terms and conditions Private sector involvement.	Table with measures on e-biking by the municipalities, estimated values for their implementation and co-financing sources (example: refer to Appendix A - National AF Action Plan 2018–2020 e-mobility measures and co-financing sources table).	6
<i>Prepare procurement options plan</i>	Draft procurement brief of requirements for infrastructure and marketing and promotion.	Vision Outcomes Outputs Budgets Timescales	7
<i>Develop a programme of complimentary measures to make it a success particularly for the tourism industry</i>	E- cargo bikes E-scooters E-skateboards E-Vehicles E-Boats (Lakes Bled and Bohinj)		8
<i>Consolidate tasks 3 – 8 the above into report to progress to next stages</i>	Present to working group.	Revise and circulate for sign off.	9

Project roll out

Task	Details		
Initiate working Group meeting	Central location Refreshments	Invite e-bike provider to bring examples for group to try.	10
Commence location surveys	Using preliminary stage data, to identify the most suitable locations for E bike chargers installations.	Start with area identified with poor coverage. Consideration of both technical requirements, (for example, close proximity to the good source of power and Wifi) and desirable requirements (for example, close proximity to local attractions such as stations, tourist attractions, retail and employment hubs).	11
Commence procurement	<ul style="list-style-type: none"> • Procure infrastructure contract • Procure installation contract • Or a combination contract. • Possible events and marketing contract • Possible tech connectivity contract. 	As this is phase delivery remember to advise locations to be agreed in each phase. Make sure risk mitigation and health and safety are of the highest quality. Make sure compatibility to wider network and adaption to wireless future has been considered.	12
Commence wider consultation	<ul style="list-style-type: none"> • Prepare information leaflet describing project • Establish a central on line communication hub using existing , new or linked 	Make hub interactive Quarterly newsletter responding "You said" "We Did" e.g (You said: Question received on the hub "can we have one in our shopping centre?"	13

		e.g (We Did Response): “We have spoken to the supermarket and they have agreed to install a facility.	
<i>Commence Marketing and Promotion Plan</i>	This should be to tell people: <ul style="list-style-type: none"> • When it is coming in their area • What benefits it will offer • Promote the success post introduction to encourage more users 	Link to the private sector to ensure widespread coverage.	14
<i>Commence Performance and Quality Monitoring</i>	Design on- line monitor Create an algorithm to analyse data to produce recommendations for next stage priorities.	To ensure the interest of the working group is maintained allow then to have some access to the on-line monitoring to feed suggestions and ask questions.	15

6. Key Targets and Performance

The following tables set out the areas to monitor performance during the project. It is recommended these are monitored on-line linked to an algorithm to identify under performance and recommend changes to the programme.

Target 1 – Number of public access charger sites

Year	E-Bike Chargers	Comments
Baseline 2018	*Detailed mapping of public e-bike charging facilities is to be established in the preliminary action stage.	*Information system to inform about and monitor the use of e-bike chargers is established only in Bled and Kranj. It is recommended to set up an online monitoring system linked to algorithm.to monitor E-CS on the regional level – all Gorenjska municipalities.
2020		
2022		
2024		
2026		
2028		
2030		

Target 2 – Number of private providers of charging facilities (not public access)

Year	E-Bike Chargers	Comments
Baseline 2018	*Detailed mapping of private e-bike charging facilities is to be established in the preliminary action stage.	*Information system to inform about and monitor the use of e-bike chargers is established only in Bled and Kranj. It is recommended to set up an online monitoring system linked to algorithm.to monitor E-CS on the regional level – all Gorenjska municipalities.
2020		
2022		
2024		

2026		
2028		
2030		

Target 3 – Average distance between charging facilities (based on a 20km radii)

Location

Bled	*To be measured in preliminary action stage after mapping of public and private e-bike charging facilities.				
Bohinj					
Gorje					
Jesenice					
Kranjska Gora					
Kranj					
Total area					

Target 4 – Usage by citizens and tourists and commercial use

Group	Baseline	2020	2022	2025
Citizens	*Monitoring system of e-bikes usage by target groups has to be established in preliminary action stage.			
Commercial				

employees				
Commercial servicing and delivery trips				
Tourists				
Total				

Target 5 – Promotion and marketing events

Type	2020	2022	2025
Leaflets			
On-line			
Public events			
Responses on interactive web			
Apps downloaded			
Third party articles published			

GLOSSARY

A	Ampere
AC	Alternating Current (charging)
AFID	Alternative Fuels Infrastructure Directive
C2ES	Centre for Climate and Energy Solutions
CNG	Compressed Natural Gas
CO2	Carbon Dioxide
DC	Direct Current (charging)
e-bike	Electric Bicycle
EAFO	European Alternative Fuels Observatory
EU	European Union
EUR	Euro
EV	Electric Vehicle, covers Fuel Cell Electric Vehicle, Plug-in Hybrid Electric Vehicles and Battery Electric Vehicles
GHG	Greenhouse Gas
ICCT	International Council on Clean Transportation
IEA	International Energy Agency
IT	Information Technology
Km	Kilometre
kW	Kilowatt
kWh	Kilowatt-hour
LNG	Liquified Natural Gas
Load management	A system to ensure that charge points in use do not exceed the admissible total output of a site.
MWh	Megawatt-hour
OCPP	Open Charge Point Protocol
OEM	Original Equipment Manufacturer
OLEV	Office for Low Emission Vehicles
ORCS	On-street Residential Chargepoint Scheme
Pedelec	Pedal electric cycle
PEV	Plug-in Electric Vehicle, not including Fuel Cell Electric Vehicles
PHEV	Plug-in Hybrid Electric Vehicle
RFID	Radio-Frequency Identification
TEN-E	Trans-European Networks for Energy
TEN-T	Trans-European Transport Network
TOU	Time-Of-Use
TRAN	European Parliament Committee on Transport and Tourism
V	Volt
VAT	Value-Added Tax
W	Watt

WCS	Workplace Charging Scheme
ZEV	Zero Emissions Vehicle

APPENDICES (CD)

A	National AF Action Plan 2018–2020 e-mobility measures and co-financing sources (Excel)
B	Stranger Elektrotechnik e-bike charging infrastructure with an option to charge both e-bikes and EVs – project Bike Energy (PDF and PPT)
C	Thur Metall AG locker charging system which would work well at locations where users would stop for 3 hours or more (PDF)