



Regional Council of Kainuu, eMopoli PP6

Kainuu region action plan



September 2021

Table 1 Kainuu action plan reference information

Project Acronym	e-MOPOLI
Project Title	Electro MObility as driver to support POLicy Instruments for sustainable mobility
Index Number	PGI05232
Activity	<i>Interregional Policy Learning</i>
Partner	Regional Council of Kainuu, PP6
Deliverable title	Action Plan on electric and alternative fuel mobility for the Kainuu Region
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Authors	Responsible: Jouni Ponnikas (Regional Council of Kainuu) Project team alphabetically: Henna Sormunen; Markus Leinonen, Ninetta Chaniotou (action plan co-author); Sanna Nikola – Määttä (action plan co-author).

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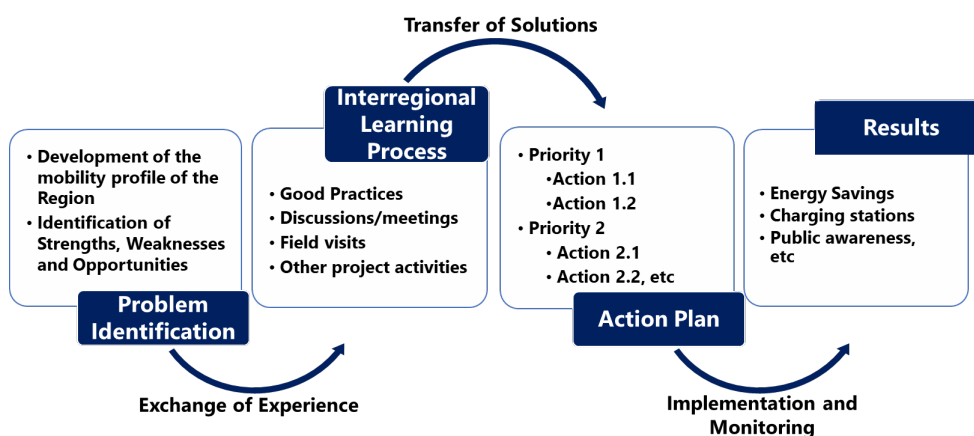
1 Introduction

The energy consumption and emissions production are exponentially increasing worldwide. Based on European Union (europa.eu), the transportation sector has the highest share in **energy consumption** (33,1% in 2016) and constitutes the second contributing factor in CO₂ emissions (28,5% in 2016). Specifically, the road transportation field is responsible for most CO₂ emissions (72,9% in 2016). The above presented high shares in European, reveal the need for the design and implementation of interventions and actions towards a more **sustainable mobility**. Within this framework, **electromobility** and **alternative fuels** are considered to be key - solutions towards a more environmentally friendly transportation system, having a direct effect on energy saving and emissions reduction. Based on the above, the e-MOPOLI (**Electro MOBility as driver to support POLicy Instruments for sustainable mobility**) project is a European research project financed by the European Regional Development Fund aiming at the diffusion of electromobility and the implementation of innovative strategies for reducing the carbon footprint of economic activities in urban and extra-urban areas.

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

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

Figure 1: Flow diagramme



After the identification of good practices and experience sharing among the project partners as well as the consultation with the regional stakeholders' group, each region will formulate, in the third step, an **action plan** which will contain the necessary actions that should be implemented in order to promote electromobility and use of alternative fuels. It should be mentioned that all actions should be categorized in respective priority axes.

Finally, the fourth step refers to the **implementation and monitoring** (in phase 2 of the project) of the actions that are established and presented in the action plan.

Consequently, the **objective** of the present report is to develop and present the action plan of Region of XXX which aims to promote electromobility and use of alternative fuels in the Region by specific actions.

The present document is structured into eight (8) parts as follows: [Part 1 Introduction](#), [Part 2 General information](#) (2.1 Region of Kainuu, 2.2 Contact details), [Part 3 Policy context](#) (3.1 Policy impact objectives, 3.2 Policy instrument addressed, 3.3 Improvement needs, 3.4 Self defined indicator), [Part 4 Background](#) (4.1 Current situation, 4.2 SWOT analysis, 4.3 Regional analysis, 4.4 Recommendations), [5 Feasibility study](#) (5.1 Objectives and process, 5.2 Findings, 5.3 Recommendations), [Part 6 Actions envisaged](#) (6.1 Prioritisation of activities, 6.2 Action plan concept, 6.3 Timetable), [Part 7 References](#), [Part 8 Declaration](#).

2 General Information

2.1 Region of Kainuu

Kainuu is one of the 19 regions of Finland. It has an area of 22,687 km², and 72 506 inhabitants (31.12.2019), 1,3 % of Finland. It is located 568km from Helsinki and 181 km from Oulu (<https://www.kainuunliitto.fi>). It is classified as a NUTS3 region, FI1D4. Kainuu's share of Finland's population is 1,3 %. Share of employees is a bit lower, 1,2 %. Share of GDP is 1,0 % (2,3 billion €, 2017)¹.

Kainuu borders the regions of North Ostrobothnia, North Savo and North Karelia. In the east, it also borders Russia. Boreal forest makes up most of the Kainuu, with forested area about 95% of the region. The region is administratively organised into eight (8) municipalities: Kajaani (capital area), Paltamo, Puolanka, Suomussalmi, Hyrynsalmi, Ristijärvi, Sotkamo and Kuhmo, **Figure 2**.

¹ Source for these inputs from the research made for the revision of the Kainuu RIS3, Spring 2020; inputs by Jari Kaivo-Ajo.

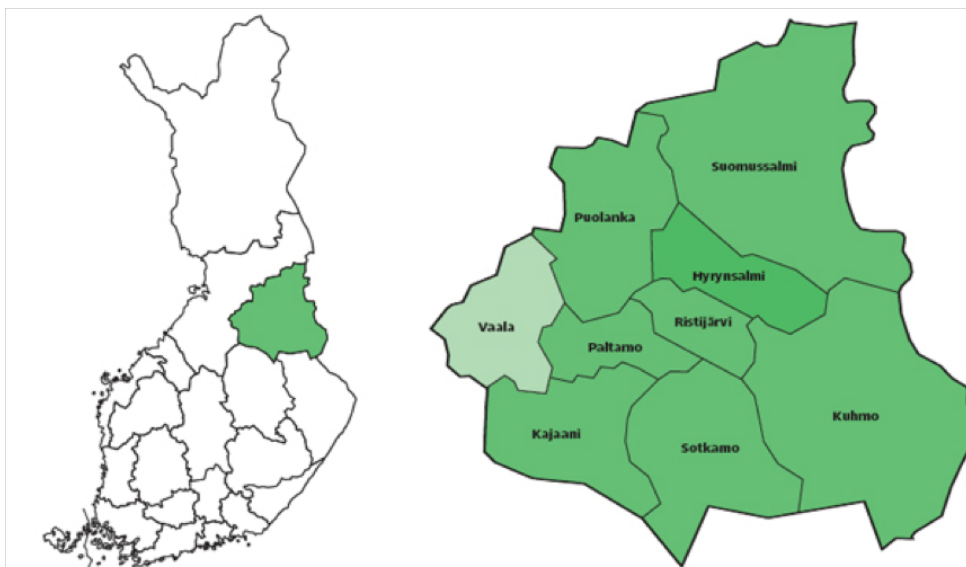


Figure 2 Kainuu in Finland and administrative structure. Source: <https://investinkainuu.com/working-with-us/about-kainuu/>

²Kainuu has 27 194 employees (31.12.2017) of which 8,9 % are employed in agriculture and mining (Finland 3,1 %), 15,5 % in processing (Finland 20,8 %) and 75 % in services in both areas. Processing is on average clearly more productive than services, but variety between industries is significant. Of all employed people in Kainuu 9,9 % are entrepreneurs, exact same number as in Finland on average. The highest level of entrepreneurs is in agriculture (half of employed are entrepreneurs), whereas in manufacturing industry only 5 % are entrepreneurs. In construction the share is 14 % and in services between 3-28 % (lowest in health and social services, highest in other services).

In 2017, the top 5 industries, according to 2018 Regional Council of Kainuu statistics were

1. Bio-economy (renewable natural resources) (502M €);
2. Mining (300.7M €)
3. Energy (226.9M €);
4. Forestry (193.6 M €)5. Metal (152.5M €).

According to these data, biomass is an important sidestream in Kainuu and biogas technologies and applications have been in focus for a while.

² Source for the economic inputs from the research made for the revision of the Kainuu RIS3, Spring 2020; inputs by Jari Kaivo-Ajo.

Growth of investments was during 2010-2017 125,1 % in Finland and 112,3 % in Kainuu nominally. Level of investments was 587 million € in 2017 and it was 1,1 % of Finland's investments, a bit lower than share of population.

GDP per capita was in 2017, 31 167 €. Nominal GDP per capita has grown in Finland 17 % during 2010-17 and in Kainuu 25 %. In this sense, Kainuu was catching up, since Kainuu per capita is considerably lower than in the rest of Finland, so the situation has gotten better during last decade

Kainuu has an important research and knowledge base relating to measurement technology, ICT, and data analytics. One of the eight European supercomputers is located in Kainuu.

2.2 Contact details

Table 2 Contact details

Project partner information	
Partner organization	Kainuu region
Country	Finland
NUTS2 region	FI 1D
Contact person	Jouni Ponnikas
Position	Department of Regional Development
E- mail	Jouni.ponnikas@kainuu.fi
Phone number	(+358) 40 5740804

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Phone number	(+358) 40 5740804

3 Policy context

3.1 Policy impact objectives

Table 3 The action plan aims to impact

Project partner information		
Investment for Growth and Jobs programme, name of policy instrument here		X
Type 1: Implementation of new projects	X	
Type 2: Change in the management of the policy instrument (improved governance)	X	
Type 3: Change in the strategic focus of the policy instrument (structural change)		
Other improvements not corresponding to types 1-3 (please comment)		
European Territorial Cooperation programme		
Other regional development policy instrument, name of policy instrument here	X	

3.2 Policy instrument addressed

There are two policy instruments addressed: the Structural Funds and the Regional Development Programme.

Structural Funds: e-MOPOLI is relevant to Kainuu's Structural Funds Thematic Objectives (TOs) TO1 and TO4. TO1: Investments promoting research and innovation activities; especially in growth companies and start-ups in chosen smart specialization fields; around 24% of programme is dedicated to TO1. TO4 Supporting the shift towards a low- carbon economy in all sectors (Investment priority 4f - Promoting research and innovation in, and adoption of, low-carbon technologies. Justification for selection: 1) The country-specific recommendation to increase the capacity to deliver innovative products, services and high-growth companies in a rapidly changing environment, 2) continue the diversification of industry, and 3) in line with Finland's national operational programme for emissions of sectors outside emission trade (-16% in 2020) and for renewable energies).

Regional development programme: The Kainuu eMOPOLI action plan will feed into the Kainuu Regional Development Programme, which is currently (Spring 2021) being formulated. In this way, the Kainuu eMOPOLI action plan is integrated into the overall enabling framework of the Kainuu region, and the legitimacy to announce associated calls for implementation is assured.

The implementation is ensured through calls issued by the Regional Council of Kainuu aligned with Structural Funds provisions. Funding is planned to come from the following sources:

- REACT EU funding the *Annual Kainuu prioritised types of projects (TOPSU)*³: This year, as a result of the COVID19, TOPSU projects will be funded by the REACT EU option. The 2021 – 2022 TOPSU were approved in

³ In Finland, the statutory tasks of regional councils include the formulation and implementation of the regional plan, the regional programme and the land-use plan. In Kainuu, the Regional Programme and the Regional Plan have been combined
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March 2021 by the North East Finland Cooperation Board (MYR). Among them, recommendations made by the eMOPOLI team have been integrated⁴.

- Just Transition Fund (JTF)⁵.

These options are concretely taken into account when implementing the Action plan, sections [6.1 Prioritisation of actions for the action plan](#) and [6.2 Action plan concept](#).

3.3 Improvement needs

The network of charging stations for electric cars needs to develop in Kainuu Region. For the future of tourism, it is crucial that Kainuu has a sufficient number of alternative energy charging stations, optimally located. Most of tourists coming to the region come by private cars and in the future major of them will use electric cars or biofuels. They will not come if the region does not have network of stations. Together with tourism companies project can attract fuel and electric operations to the Kainuu region.

However, the project implementation as a whole and the feasibility study in particular, opened up alternative mobility and what it means to Kainuu more comprehensively, also indicating innovation options. The list of needs, below, comes from the recommendations made by the approved feasibility study ([Section 5](#) in this document). These recommendations influenced, further, the [Self-defined indicator \(-s\) list](#).

1. Biogas.

- A project / projects to promote farm biogas plants and a big biogas plant in Kainuu.*
- A biogas station to be introduced to Kainuu in 2021, most probably in Kajaani.*
- It is important to ensure demand for biogas and for the station.* At least 25-30 heavy vehicles are required to commit to test biogas. The recommendation is to have a project to introduce a preliminary agreement between biogas end users, producers and suppliers. A project of 100 000 euro is sufficient to form commitment papers, collect commitments, collect co-operators and applicate the infra support (the writer's estimation).
- Farm biogas.* It is recommended to co-operate with the project of BiTool (1.10.2018–30.4.2021) organised by the University of Vaasa. The project scans farmers who want to produce biogas. The project would

into a joint document (Kainuu Programme) both. The Kainuu programme is implemented through annual specification of prioritised types of projects (TOPSU). <https://kainuunliitto.fi/elinkeinot-ja-aluekehitys/kainuu-ohjelma-topsu/> .

⁴ Ibid. above, Part 4.1, page 24 & 25: " (1) A comprehensive network of charging and refueling stations for electric cars and biogas cars, as well as various biofuels, needs to be developed in Kainuu. (2) Public sector organizations and companies operating large transport vehicles should be encouraged to purchase electric and biogas vehicles. This will create a stable demand for sustainable transport energy solutions. (3) Electric and biogas cars need to be increased in the use of the public sector, and public sector procurement criteria and know-how need to be developed so that the green transition of transport can be supported through public procurement. (4) RDI activities and international co-operation supporting the green transition of transport must be strengthened and the utilization of Kainuu's areas of smart specialization expertise in RDI co-operation must be increased". Approval by the Cooperation Board 3.3.2021,

<https://kainuunliitto.oncloudos.com/cgi/DREQUEST.PHP?page=meeting&id=20212189> .

⁵ Alueellista oikeudenmukaista siirtymää koskeva suunnitelma (Territorial Fair Transition Plan), submitted to the Finnish Ministry of Economy & Employment on 12.3.2021.

organize the system where a refinery truck drives around farms and biogas would be refined to traffic biomethane. The BiTool project II in Kainuu could be as same as BiTool budget (~200 000 euro).

- v. *Update of the original 2015 investigation* of the biogas plant in Ekokymppi. Update of the original investigation could be less than the project of 30 000 euro (the writer's estimation).
- vi. *Suppliers commitment for the Ekokymppi plant.* While the investigation of the biogas plant is updated, different commitments must be collected. Producers of raw material like Ekokymppi commit their materials available to the biogas plant in Kainuu in 2025 and on the other hand, a biogas producer commits to found the biogas plant if there is sufficient raw material available depending on commitments. A project of 50 000 euro is enough to form commitment papers and collect commitments.

2. Electricity.

- i. Tourist entrepreneurs must be supported *to install charging points by local projects.* Actually, this plan is implemented in the project called Carbon neutral Kainuu and Koillismaa. The project presents carbon neutral and energy savings solutions in every sector in Kainuu and in Koillismaa and it starts at the beginning of March in 2020.
- ii. *Public/semipublic institutions and municipalities have a very important role to produce experiences of electric cars,* which means they must buy electric cars. Increasing number of electric cars brings experiences and removes myth of electric cars, and more private people buy a new electric car in Kainuu along 2020s. Actually, the clean vehicle directive will demand municipalities to invest electric vehicles (cars, school buses, city buses) after 2020.⁽¹⁹⁾ The directive touches SOTE and KAO too.

3. Hydrogen.

Research projects, especially on aspects of applications, even transformation of existing technologies to new types of mobility solutions as well as innovative ways for hydrogen storage and associated research aspects (e.g. see power-paste example announced by the Fraunhofer Institute⁶).

⁶ <https://www.fraunhofer.de/en/press/research-news/2021/february-2021/hydrogen-powered-drives-for-e-scooters.html>.

Hydrogen is prioritised by the EC^{7,8} and by the Finnish Sustainable Development Strategy⁹.

4. Synthetic fuel.

Project on synthetic fuel (research project). The project would focus on identifying the best sources for generation of synthetic fuel in Kainuu. Synthetic fuel is a plausible, innovative, probable development path as it combines biomethane from carbon dioxide of smoke gas and hydrogen. The synthetic fuel technology has a competitive advantage in the sense that the present vehicle technology replacement costs is compatible with the utilisation of synthetic gas. It is an eligible innovative technology development under Horizon 2020 and Horizon EUROPE programmes. Synergies of this project could be with the processes of the company Q Power Oy producing synthetic fuel (biomethane) from carbon dioxide of smoke gas and hydrogen. They have registered 50 patents on the matter

⁷ Hydrogen Strategy (COM (2020) 301 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0301&from=EN>). Summarised in https://knowledge4policy.ec.europa.eu/publication/communication-com2020301-hydrogen-strategy-climate-neutral-europe_en : "In an integrated energy system, hydrogen can support the decarbonisation of industry, transport, power generation and buildings across Europe. The EU Hydrogen Strategy addresses how to transform this potential into reality, through investments, regulation, market creation and research and innovation. Hydrogen can power sectors that are not suitable for electrification and provide storage to balance variable renewable energy flows. The priority is to develop renewable hydrogen, produced using mainly wind and solar energy. However, in the short and medium term other forms of low-carbon hydrogen are needed to rapidly reduce emissions and support the development of a viable market. This gradual transition will require a phased approach:

- From 2020 to 2024, we will support the installation of at least **6 gigawatts** of renewable hydrogen electrolyzers in the EU, and the production of up to **one million tonnes of renewable hydrogen**.
- From 2025 to 2030, hydrogen needs to become an intrinsic part of our integrated energy system, with at least **40 gigawatts** of renewable hydrogen electrolyzers and the production of up to **ten million tonnes of renewable hydrogen** in the EU.
- From 2030 to 2050, renewable hydrogen technologies should reach maturity and be deployed at **large scale** across all hard-to-decarbonise sectors."

⁸ EU Energy System Integration Strategy (COM (2020) 299 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0299&from=EN>). The strategy sets out 38 actions to create a more integrated energy system. There are three main pillars to this strategy:

- First, a more 'circular' energy system, with energy efficiency at its core. The Renovation Wave will be an important part of these reforms.
- Second, a greater direct electrification of end-use sectors. As the power sector has the highest share of renewables, we should increasingly use electricity where possible: for example for heat pumps in buildings, electric vehicles in transport or electric furnaces in certain industries. A network of one million electric vehicle charging points will be among the visible results, along with the expansion of solar and wind power.
- For those sectors where electrification is difficult, the strategy promotes clean fuels, including renewable hydrogen and sustainable biofuels and biogas. The Commission will propose a new classification and certification system for renewable and low-carbon fuels."

⁹ Suomen kestävän kasvun ohjelma – alustava elpymis- ja palautumissuunnitelma, Valtioneuvosto Helsinki 2021. Example on page 51, Investments "The funding will support investments in the commercial scaling of clean hydrogen production and storage technologies".

around the world. It implies that there is direct spill-over potential. Finally, the new potential project would have synergies with the Horizon 2020 project *CirdEnergy*¹⁰ focusing on CO2 utilisation from steel manufacturing.

3.4 Self-defined indicator

The initial self-defined indicator for the Kainuu action plan has been reinforced through the findings of the feasibility study, and more indicators have been adopted. These indicators will be added accordingly to the Interreg EUROPE reporting system, Policy instrument section, relating to PP6.

Therefore, the updated self-defined indicators list includes:

1. *% increase for charging tourists' vehicles* fulfilled by charging infrastructure including also renewable sources (i.e. biogas).
2. Number of bio-gas filling stations in Kainuu. End-user, producer and supplier preliminary agreements (commitments) towards the production and consumption of biogas.
3. *Number of mobilisation initiatives* encouraging Kainuu municipalities to include electrical mobility in public procurements
4. *Innovation integration*: number of projects contributing to innovative energy domains, such as the synthetic fuels innovative domain, hydrogen applications and storage technologies.

4 Background

4.1 Current Situation

The possibility to carry out a feasibility study within the project has been discussed at the regional stakeholder group, to map out the real obstacles and bottlenecks in detail, e.g. in decision making, why electric cars and the use of biogas in traffic do not increase in Kainuu.

The amount of electric car charging points has increased in Kainuu region with speed during the latest years. Now there are altogether 45 plugs on the various web services. In the near future, some more will inevitably appear, but a larger growth will require increase of electric cars.

In the light of statistics related to both the amount of electric cars and charging stations in Kainuu, the problem related to e-vehicles seems not to be in the amount of charging stations anymore, but more in the lack of users for

¹⁰ CirdEnergy project (<https://cordis.europa.eu/project/id/848757>, SME-2, SME Instrument Phase 2). Carbon Recycling International has been awarded an EUR 1.8 million grant under the EU Horizon 2020 Research Programme to increase the scale of its CO2-to-methanol technology, marketed under the trademark Emissions-to-Liquids (ETL). The grant will allow CRI to accelerate efforts to commercialize large scale production plants, expanding the market for ETL technology and use of renewable methanol in Europe.

those ([see the article published in Summer 2019](#) for further information). The situation has changed compared to the time the project application was submitted.

The critical mass of vehicles using natural gas as energy source is also known problem, hindering the fuelling network investments at the moment. There was a study related to production and distribution of bio methane (Liikennebiometaanin tuotanto ja jakelu Kainuussa -selvitys, loppuraportti) in Kainuu in 2015. See also the abbreviation of current [Finnish article by Petri Österberg](#) for more information, also published in summer 2019).

The challenge for Kainuu is that there should be enough basic use for a gas refueling station to be profitable to set up. It is more an issue of developing systemically economically sustainable demand and supply for i.e. usage of gas cars or heavy gas vehicles on the one hand and in parallel gas-based refuelling stations.

E-vehicles aren't going to be the answer related to developing sustainable mobility in Kainuu alone. The actors in Kainuu region should therefore discuss, who would be willing to commit to purchasing gas fuelled vehicles, if there was a re-fuelling station built e.g. within two years.

4.2 SWOT Analysis

The Kainuu SWOT analysis is a summary from the detailed report elaborated for the purpose of the eMopoli project objectives¹¹. The Kainuu SWOT analysis revealed, that:

Strengths in respect to alternative fuels include: the attitude towards alternative energy at individual, regional and national levels. Biogas has been a priority of national policy for example for a while, while electrical mobility was also added to the programme issued by the government earlier in 2019¹². Furthermore, projects dealing with hydrogen-based alternative mobility and other applications are also on going. National, regional and EU policies form a coherent push towards alternative energy production and utilisation. In Kainuu, a network of e-vehicle charging points has developed since the time eMopoli project was planned in 2017. In parallel, the mining industry, one of the growth drivers of Kainuu is starting to manufacture battery chemicals and increases R&D spending and activity in the region for this purpose. A yet unexplored opportunity is the selling of alternative vehicles across the border (Russian Federation).

Weaknesses, on the other hand, relate more to structural aspects of the region than to issues peculiar to alternative energy. Such aspects include, for example, the very low population density and the large distances within the region making costly the introduction of generalised mobility innovations. The e-charging stations network while strong, it is spatially bounded to the more touristic areas. An overall ageing population minimises

¹¹ <https://www.interregeurope.eu/e-mopoli/> : "Alternative fuel and e-mobility represent an excellent opportunity to reduce the carbon footprint of economic activities in urban and extra-urban areas. **e-MOPOLI aims to contribute to an efficient diffusion of e-mobility and alternative fuels mobility**".

¹² <https://www.interregeurope.eu/e-mopoli/> : "Alternative fuel and e-mobility represent an excellent opportunity to reduce the carbon footprint of economic activities in urban and extra-urban areas. **e-MOPOLI aims to contribute to an efficient diffusion of e-mobility and alternative fuels mobility**".

demand for mobility innovations. In addition, electrical vehicles are more understood as -still- hybrids, rather than mature products, and in general, knowledge of electrical vehicles needs to be reinforced. Last but not least, while electrical cars are much more expensive than usual ones, their overall marginal utility to consumers is not clear yet. All this explains the overall low demand for electrical vehicle in Kainuu.

Opportunities for strengthening e-mobility in Kainuu lie, ultimately, with the private sector (consumer demands since the regional context analysis (section III.3 below) shows that for about 73 061 inhabitants there are 44 843 cars in the region. It implies that the most important, for the development of the e-mobility in Kainuu, is to have improved and reliable and less expensive electrical vehicles.

In the meantime, however, public sector and policy-based rather than strictly market-based initiatives, are very important. Public sector, through well planned initiatives of public transport for example, could test & study electrical mobility, raise awareness and evaluate the cost effectiveness and results of the whole experience. Moreover, a systematic and comprehensive awareness raising campaign could be undertaken, increasing knowledge of national tax benefits, economic benefits for various types of vehicles (using gas cars in heavy traffic: like bus, municipalities garbage trucks), education (Increasing e-mobility & biogas education in Kajaani University of Applied Sciences) and technological aspects (changing cars from fuel to biofuel is easy and can be done step by step).

Threats, i.e. barriers to progressively adopting alternative fuels vehicles include: (i) costs (financial instruments, cost of development, cost of deployment and maintenance, legislation, complexity of communication between stakeholders, political impacts etc.) and cost of individual cars; (ii) the technology reliability of such vehicles which needs to be evident to consumers; (iii) recycling challenges of e-vehicles/battery chemicals; and (iv) attitudes.

4.3 Regional Analysis

The regional context analysis provided here is a summary of the more detailed report¹³. The report documents, inter alia, the low population density and the considerable environmental awareness that have been introduced already in section III.2 above. Data come from Statistics Finland, 2018/ 2017/ 2016 unless otherwise indicated in the below table. No special environmental benefits have been recorded.

Table 4 Kainuu regional context, a summary

Project partner information	
Area	22 688 klm2
Population	73 061
Population density	3,6 inhabitants per klm2
Environmental awareness	64,7% (2016 EUROSTAT)

¹³ Jordi Broos and Lieselot Vanhaverbeke (2019). Regional context analysis. Pages 27-29. ecoRIS3 deliverable, August 2019.

Project partner information	
Gross Regional Product (€ in millions)	2.441
GRP per capita (€)	28.596,3
Average income (€ per year)	18 993
Unemployment rate	11.5%
Gross Regional Product (€ in millions)	2.441
GRP per capita (€)	28.596,3
Average income (€ per year)	18 993
Average temperature (°C)	1.5
Average windspeed (m/s)	4
Sunshine (hours/year)	1600
CO2 emission per source	42,1% electricity and heat production; 7,6% other energy; 17,2% manufacturing industries and construction; 28,5% transport; 2,5% residential; 2,1% commercial
CO2 emission per transport mode	58% passenger cars 37% vans and lorries 5% other Data refer to Finland as a total
Number of vehicles	53.131
Transportation mix	84% passenger cars
Vehicle mix	84.4% passenger cars 12.3 vans 3% lorries 0.2% buses
Number of cars in household	53.131 cars / 36 734 (year 2019), number of households, approximately 1,5 cars/household.
Number of Electric Vehicles	28 (EV's and PHEV's) Data from Huusko presentation 7th of Nov 2018 in e-MOPOLI Kajaani meeting.
Electric Vehicle Sales (last year)	18
Available Charging Infrastructure	13 Public charging places Data from Huusko presentation 7th of Nov 2018 in e-MOPOLI Kajaani meeting.
Total streets distance (km)	4.460 Excluding streets inside cities and municipalities. (Data come from the Kainuu Transport System 2018).
Street Mix	8% highways 7% small roads 85% other common roads Excluding streets inside cities and municipalities (Data come from the Kainuu Transport System 2018).

4.4 Recommendations¹⁴

Table 5 Action plan recommendations by the advisory partner

Thematic project areas	Current situation
Business Market take-up of sustainable mobility from alternative fuels	B1. The sustainable (= economically feasible) uptake of 'alternative vehicles' solutions requires a market, both a supply and a demand market. The demand market is still weak in Kainuu (and Finland). The market uptake of alternative fuels cars is not yet self-evident especially as the cars are much more expensive and as their charging seems to be required at too short distances -for Finnish context- and Finland is a big country.
Governance Needs, requirements and policies to enhance sustainable mobility from e-mobility and alternative fuels	G1. There is no feasible pilot in the region being updated about what it works and what not in terms of up taking alternative fuel vehicles. G2. Finland's new government announced on 4.6.2019 that the country will aim to cut its carbon emissions completely by 2035. It will obligate Finland to reduce its carbon emissions to below the amount that can be absorbed by forests, wetlands and new technologies. The new target will require an update of the existing Climate Act, which currently pegs climate neutrality in 2045. Lawmakers also want to change the law so that Finland becomes a carbon negative country by at least 2050. Norway wants to achieve the same goal by 2030 but Finland's differs in that it will not rely on buying international carbon credits and offsets like its Nordic neighbour (Finland pledges carbon neutrality on eve of EU presidency – EURACTIV.com). A full review of the plan is already scheduled for 2025. This commitment will impact also the innovation, business and educational policies and priorities, at national and regional levels. It will not cancel the innovation investments that have already been in process (example: Finnish good practices introduced in the kick-off meeting, VTT, Vaasa and so on), however it will focus them more and emphasize quantifiable results, more effectiveness. Alternative fuels will be a strong priority -as they have been for a while now, in both Finland and Kainuu. Uptake of solutions valorising alternative fuels will be part of the priorities.

¹⁴ Foteini Orfanou, Panagiotis Papantoniou, Eleni Vlahogianni, George Yannis, Mary Miska, Iouliani Theona, (2019). eMopoli recommendations, 31.7.2019. Page 31.

Thematic project areas	Current situation
RIS3 e-mobility in relation to RIS3 Smart Specialization Strategy documents.	R1. Kainuu RIS3 is emphasizing on alternative fuels and circular economy. This will be reinforced. Electrical mobility is not part of the RIS3. Kainuu RIS3 is aligned with national priorities as well. The Kainuu RIS3 will be revised till the end of 2019.

5 Feasibility Study¹⁵

5.1 Objectives and process

The purpose of the feasibility study was to reach insights and make recommendations about optimal options promoting the utilisation of electrical and in general alternative mobility in Kainuu. These recommendations were intended to be included into the eMopoli Kainuu action plan, following exchange and agreement with the regional stakeholder group (RSG). The objectives of the feasibility study were to:

- (1) Identify optimal solutions for planning a cost-efficient network of alternative fuels service stations, differentiating between through traffic and internal road networks, in view of integrating the alternative fuels network into the regional land-use guidelines.
- (2) Identify optimal solutions for promoting electrical and other types of alternative fuels vehicles in the public and private sectors.
- (3) Discuss the environmental benefits and CO2 emissions savings from the utilisation of projected local and tourism-based alternative fuels.
- (4) Understand the bottlenecks of Kainuu based actors to acquire and / or modify their current vehicles to utilise alternative fuels vehicles (electricity or bio-gas).

Besides its usefulness as an input to the action plan the eMopoli feasibility study was very useful also as an update of the state of play of alternative mobility (vehicles and fuels) in Kainuu and how it could be promoted. A previous report on the same subject was drawn five years earlier, i.e., a long time for a fast-changing sector. theme was already five (5) had bene drawn. All types of alternative fuels vehicles were included into the feasibility study (biodiesel, bioethanol, biogas, electricity and hydrogen), with the main focus being on biogas and electricity.

¹⁵ The feasibility study was made by Tuomas Niskanen, University of Oulu.

5.2 Findings

5.2.1 Legislation

The overarching legislative framework is the Revised Clean Vehicles directive (EU) 2019/1161, which amended the initial 2009/33/EC (*the promotion of clean and energy-efficient road transport vehicles*; shortly *the clean vehicle directive*). The updated directive sets out mandatory minimum procurement targets in each Member State for clean light-duty vehicles, trucks and buses in periods of 2021-2025 and 2026- 2030¹⁶.

- It applies to public procurement of passenger vehicles and transport services and only to new contracts and purchases that exceed the national thresholds.

- Directive 2019/1161 does not apply to long distance or charter buses; agricultural or forestry equipment; two or three wheelers. Moreover, Member States (MS) can exclude vehicles in the national legislation, for example emergency, military and construction vehicles.

In principle, the directive touches every municipality in Finland. If a municipality buys a passenger car, it must be a plug-in hybrid or an electric car, and only electric cars or hydrogen cars are allowed after 2025. If a municipality buys city buses before 2025, 41 % of buses must use 100 % alternative fuels and half of them must be electric buses. The percent is 59 % after 2025 and the demands are the same. If a municipality buys trucks before 2025, 9 % of trucks must use 100 % alternative fuels and the same number is 15 % after 2025. There are also similar targets for refuse trucks but the targets of refuse trucks are not known yet.

The Finnish Government (in 2019) set new targets in traffic:

1. Sustainable biogas is accepted as biofuel in the biofuel commitment.
2. Housing companies must install a charging point of electric car while they have a large renovation in the building/buildings.
3. Whoever the resident of housing company or rental apartment demands a charging point, the company must install the charging point.
4. Refilling stations must install a certain number of charging points.
5. A biogas tractor can be registered as a traffic tractor.
6. Air traffic tries to achieve 30 % biofuel commitment by 2030.

5.2.2 Kainuu, alternative mobility state of play

There were not any "green vehicles" in Kainuu in 2019. There are over 80 plug-in hybrid electric vehicles (PHEV), 40 ethanol vehicles and 30 electric vehicles in Kainuu in 2020. That is only 0,23 % of vehicles in Kainuu. Kainuu does not have a new climate strategy after 2020. Could traffic play more remarkable role in the next of climate strategy of Kainuu?

¹⁶ VTT (2020). What do the new EU regulations for public transport mean to the Cities? 28/01/2020.

Kainuu is “a backrunner” of alternative fuels. Kainuu would be the forerunner if there were over 150 biogas cars and over 400 electric cars. The mobility strategy of Kainuu is under preparation by the Regional Council of Kainuu (eMOPOLI PP6).

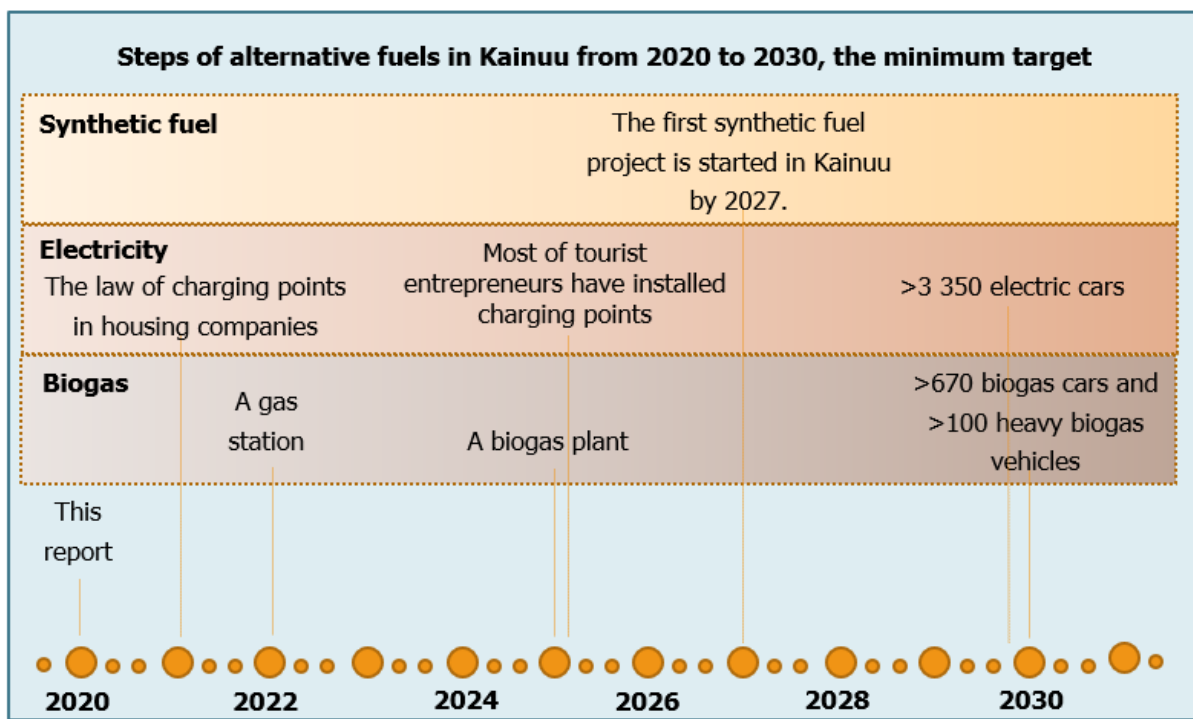


Figure 3. The timeline of alternative fuels in Kainuu from 2020 to 2030¹⁷.

5.2.2.1 Bioethanol vehicles in Kainuu

Bioethanol is the most important biofuel in the Europe and in the world. Most of bioethanol is produced from corn, however, there is innovative bioethanol (RE85) in Finland, which is biowaste-based or even wood-based. The situation is changing in Europe now because EU's directive discourages food-based bioethanol. This causes a new market potential in the bioethanol production and it might speed up the extension of Kajaani's bioethanol plant. Earlier bioethanol has only been used in light vehicles but now it can also be used in trucks. ED95 bioethanol fuel can be used in trucks and the ethanol content is 92 %.

5.2.2.2 Biogas vehicles in Kainuu.

Biogas is a big potential in passenger cars. According to Helsingin Sanomat, theoretical maximum is 900 000 passenger cars and realistic number of cars is 270 000 or 10 % of cars in Finland. Biogas is a big chance for the Finnish economy, it is not only ethically sustainable, it is also a national resource, and functions in a niche that does not face undue competition.

¹⁷ Source: Feasibility study, page 12.

Biogas is a big potential also in passenger cars. At least 10 % of passenger cars could be driven by biogas in Finland. Biogas-based mobility has also some challenges:

- One challenge in biogas-based mobility, is the relatively short driving range of between 300 to 500km.
- The life cycle of gas buses and gas trucks is more expensive than the life cycle of diesel buses.
- Refilling of heavy vehicles does not always happen quickly. For example, the gas buses might take overnight to be refilled.

5.3 Recommendations

5.3.1 Biogas.

- i. A project / projects to promote farm biogas plants and a big biogas plant in Kainuu.
- ii. A biogas station to be introduced to Kainuu in 2021, most probably in Kajaani.
- iii. It is important to ensure demand for biogas and for the station. At least 25-30 heavy vehicles are required to commit to test biogas. The recommendation is to have a project to introduce a preliminary agreement between biogas end users, producers and suppliers. A project of 100 000 euro is sufficient to form commitment papers, collect commitments, collect co-operators and applicate the infra support (the writer's estimation).
- iv. Farm biogas. It is recommended to co-operate with the project of BiTool (1.10.2018–30.4.2021) organised by the University of Vaasa. The project scans farmers who want to produce biogas. The project would organize the system where a refinery truck drives around farms and biogas would be refined to traffic biomethane. The BiTool project II in Kainuu could be as same as BiTool budget (~200 000 euro).
- v. Update of the original 2015 investigation of the biogas plant in Ekokymppi. Update of the original investigation could be less than the project of 30 000 euro (the writer's estimation).
- vi. Suppliers commitment for the Ekokymppi plant. While the investigation of the biogas plant is updated, different commitments must be collected. Producers of raw material like Ekokymppi commit their materials available to the biogas plant in Kainuu in 2025 and on the other hand, a biogas producer commits to found the biogas plant if there is sufficient raw material available depending on commitments. A project of 50 000 euro is enough to form commitment papers and collect commitments.

5.3.2 Electricity.

- i. Tourist entrepreneurs must be supported *to install charging points by local projects*. Actually, this plan is implemented in the project called Carbon neutral Kainuu and Koillismaa. The project presents carbon neutral and energy savings solutions in every sector in Kainuu and in Koillismaa and it starts at the beginning of March in 2020.
- ii. *Public/semipublic institutions and municipalities have a very important role to produce experiences of electric cars*, which means they must buy electric cars. Increasing number of electric cars brings experiences and removes myth of electric cars, and more private people buy a new electric car in Kainuu along 2020s. Actually, the clean vehicle directive will demand municipalities to invest electric vehicles (cars, school buses, city buses) after 2020.(19) The directive touches SOTE and KAO too.

5.3.3 Hydrogen.

- i. *This report does not recommend any hydrogen action* because the writer see synthetic fuel as advanced hydrogen which is easier and cheaper to be implanted into present infra than hydrogen solutions.

5.3.4 Synthetic fuel.

- i. *Project on synthetic fuel (research project).* The project would focus on identifying the best sources for generation of synthetic fuel in Kainuu. Synthetic fuel is a plausible, innovative, probable development path as it combines biomethane from carbon dioxide of smoke gas and hydrogen. The synthetic fuel technology has a competitive advantage in the sense that the present vehicle technology replacement costs is compatible with the utilisation of synthetic gas. It is an eligible innovative technology development under Horizon 2020 and Horizon EUROPE programmes. Synergies of this project could be with the processes of the company Q Power Oy producing synthetic fuel (biomethane) from carbon dioxide of smoke gas and hydrogen. They have registered 50 patents on the matter around the world. It implies that there is direct spill-over potential. Finally, the new potential project would have synergies with the Horizon 2020 project *CirclEnergy*¹⁸ focusing on CO2 utilisation from steel manufacturing.

Figure 4. Summary of the feasibility study recommendations¹⁹.



6 Actions envisaged

6.1 Prioritisation of actions for the action plan

The feasibility study was finalised on 6.3.2020. It was discussed during regional stakeholder group meetings as well as between the expert and PP6. A regional stakeholder group meeting and learning event was organised on May 6th 2020, on line. The three action lines were accepted (i.e. biogas, electrical mobility as implementing EU & national policy) and synthetic fuels). In addition, planned and on going projects, funded by the Structural Funds, but not

¹⁸ CirclEnergy project (<https://cordis.europa.eu/project/id/848757>, SME-2, SME Instrument Phase 2). Carbon Recycling International has been awarded an EUR 1.8 million grant under the EU Horizon 2020 Research Programme to increase the scale of its CO₂-to-methanol technology, marketed under the trademark Emissions-to-Liquids (ETL). The grant will allow CRI to accelerate efforts to commercialize large scale production plants, expanding the market for ETL technology and use of renewable methanol in Europe.

¹⁹ Source: Tuomas Niskanen Feasibility study presentation discussed during the 6.5.2020 RSG & learning event.

ERDF²⁰, testing the approach to programme commitments between biogas end users with biogas producers & suppliers were introduced. REMAC project will contribute valuable information to the implementation of *Action 2b Biogas programme commitments* of the action plan.

The feasibility study proposed a comprehensive approach, prioritising biogas, as per EU directives and research actions on synthetic biofuel. However, between the time the FS was elaborated and approved (2109- early 2020) and the time the action plan was formulated and will be implemented. (2021 onwards), there have been new major developments that need to be taken into account. The overall enabling context changed considerably as a result of actions taken to address the impact of COVID19, the Green Deal policy has been introduced at EU level, Hydrogen-based energy has become a mainstream issue (especially storage and energy generation options), the Circular Economy strategy has been in force, national legislation has been adjusted and regional strategies (Kainuu Climate Strategy²¹) have also been developed. In particular, a few of the Kainuu Climate Strategy recommendations have been taken into account²². Funding is secured through the REACT EU and the Kainuu Just Transition Plan, as already discussed in section [3.2 Policy instrument addressed](#).

As a result of the above inputs and updates of the overall enabling context, the feasibility study recommendations have been updated to reflect new realities, already reflected in the section [Improvement needs](#) and the updated [Self-defined indicators](#). Thus, the action plan builds around the following three types of activities and reflecting the updated self-defined indicators:

1. *Number of bio-gas (and other alternative mobility) filling stations in Kainuu.* End-user, producer and supplier preliminary agreements (commitments) towards the production and consumption of biogas. National law, currently processed, relates to charging points. It distinguishes between regular and reinforced charging points. Funding comes from the Kainuu REACT EU plan (JTF), 1 project, approximately 350 000€ for 2 years.
2. *Number of mobilisation initiatives* encouraging Kainuu municipalities to include electrical and in general alternative mobility in public procurements. Two workshops; cost about 20 000€.
3. *Innovation integration:* number of projects contributing to innovative energy domains, such as the synthetic fuels innovative domain, hydrogen applications and storage solutions. Funding comes from the Kainuu REACT EU plan (JTF) or the forthcoming ERDF, 2 projects, 3 years each, 350 000 each.

6.2 Action plan concept

The action plan concept is summarised in [Figure 5](#). Its objectives address demand, regional supply issues associating to regional potential for alternative fuels, infrastructure needs, and links to the demand-led approach through research integration projects, and they ensure the planned Type 1 (new projects) and Type 2 (governance

²⁰ REMAC project, Kajaani University of Applied Sciences; co-funded by the European Social Fund (ESF).

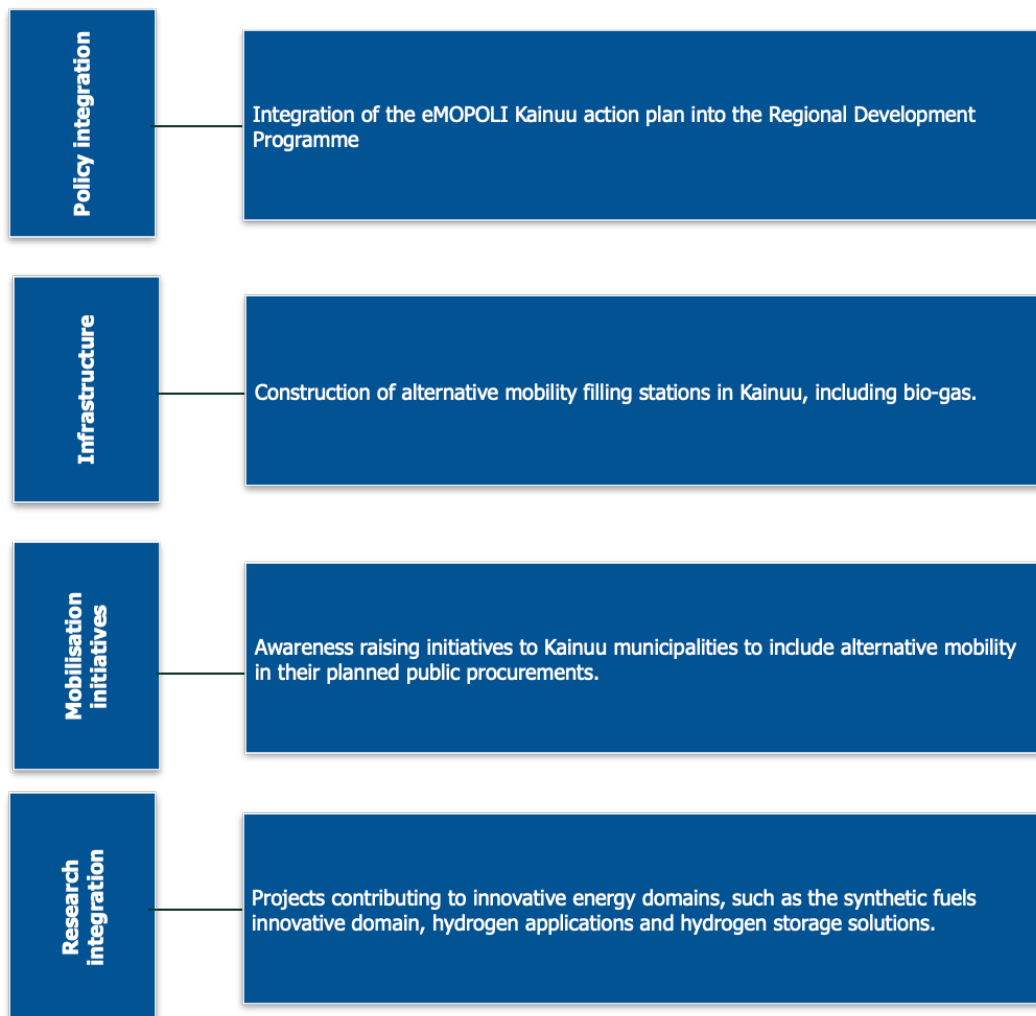
²¹ Kainuu Climate Strategy (Ilmasto- ja ympäristövastuullinen Kainuu, 2020); coordinated by Heidi Karppinen.

²² Kainuu Climate Strategy recommendations, Ramboll, page 61 "Invest in eco-efficient options in all domains. Invest in renewable energy possibilities in the region and adopt relevant indicators (mainstream eco efficiency indicators into the regional development programme"; page 62: "Promote Energy Efficiency Agreements for different sectors across the region"

improvement) impacts. The aim is to improve, as much as possible, the alternative mobility context & practices in the region as a whole. These objectives led to planning activities along four actions:

- [1]. Action 1 Policy integration
- [2]. Action 2 Infrastructure
- [3]. Action 3 Mobilisation initiatives
- [4]. Action 4 Research integration.

Figure 5 Kainuu action plan: typology of actions envisaged



6.2.1.- Policy integration

Table 6 eMOPOLI Kainuu action plan, Action 1 Policy integration

Action parametres	Description
Action title	Mainstreaming the eMOPOLI Kainuu action plan into the Regional Development Programme
Background	Within the e-MOPOLI project, the Regional Context Analysis, the recommendations report by the advisory partner National Technical University of Athens (NTUA)²³, and the regional stakeholder group analyses as well as the PP6 RCK internal meetings relating to the good practices identified on the base of the project-output Sourcebook of Good Practices (GPs), resulted in the selection of two good practices to be transferred: - GP 16 Regional Strategy and Guidelines for Electric Mobility; with focus on integration of charging infrastructure and charging hubs in spatial planning, from Lombardy, Italy. - GP 18 Regional and provincial guidelines for electric charging infrastructure; with focus on integration of charging infrastructure and charging hubs in spatial planning, from Brescia, Italy. RECOMMENDATIONS: Ensure relevant enabling conditions of the pilot, for example. To offer the regional charging network, or better prices for charging; regular collection of data regarding evidence-based decision making.
Objective	To integrate the eMOPOLI Kainuu action plan objectives into the Regional Development Programme. This process achieves Type 2 (governance improvement) type of impact.
Policy Change	The current Regional Development Programme does not include any reference to alternative mobility. Integrating the eMOPOLI Kainuu action plan objectives into the Regional Development Programme, implies a structural improvement.
Activities	A joint team has been set up bringing together the Regional Development Programme team, the Kainuu Climate Strategy and the eMOPOLI teams, ensuring multilateral flow of information and participation in joint meetings, leading to integration of the action plan priorities into the Regional Development Programme.
Bottleneck	Improving the enabling conditions for carrying out the pilot as well as setting the conditions for long term uptake of alternative fuels for mobility.
Stakeholders involved	the Regional Council of Kainuu and eMopoli stakeholders; the Regional Council of Kainuu and environment funds; alignment with national level the Regional Council of Kainuu and designated ministries; municipalities, experts, transport associations, research and education.
Timeframe	1.3.2020 – 31.12.2021
Milestones	Milestone 1 Joint team set up, including the Kainuu regional development programme (KRDP), the Kainuu Climate Strategy, and eMOPOLI. Autumn 2020. Milestone 2 Project pipeline on alternative mobility is prepared. Autumn 2021. Milestone 3 The KRDP is finalised and alternative mobility is included. Winter 2021.

²³ NTUA, 2019. e-MOPOLI Recommendations. Project output, page 29.

Action parametres	Description
Indicative Costs and funding sources	Staff & administration costs - Regional Council of Kainuu own costs - eMOPOLI, Phase 1 costs from the Regional Council of Kainuu, PP6 budget, approximately 57 500€
Expected Impact - economic - environmental - territorial - on e-mobility	- Strategic tool and funding options promoting alternative mobility to Kainuu is ensured.
Monitoring	Internal meetings in the Regional Council of Kainuu. Presentation of the Regional Development Programme to the Kainuu board. Approval of the Kainuu target – projects (TOPSU:s) by the Joint Monitoring Group (MYR)
Transferability	The action is transferable to any region provided there is funding.

6.2.2.- Infrastructure

Table 7 eMOPOLI Kainuu action plan, Action 2 Infrastructure

Action parametres	Description
Action title	Infrastructure
Background	Within the e-MOPOLI project, the Regional Context Analysis, the recommendations report by the advisory partner National Technical University of Athens (NTUA)²⁴, and the regional stakeholder group analyses as well as the PP6 RCK internal meetings relating to the good practices identified on the base of the project-output Sourcebook of Good Practices (GPs), resulted in the selection of one good practice to be transferred: GP 24 Demo project of three battery buses, from Rogaland, Norway.
Objective	To improve access to alternative mobility refuelling & charging points for private, public, and commercial transport; to encourage an equilibrium between demand and supply sides. Action 2 is Type 1 (new projects) type of impact.
Policy Change	Such projects have not been usual to-date. This is Type 1 policy impact, new projects.
Activities	Open call for projects establishing alternative mobility refuelling & charging points in the region, targeted to those municipalities that need such installations. It is supported by end-user, producer and supplier preliminary agreements (commitments) towards the production and consumption of biogas.
Bottleneck	(1) Certain municipalities in Kainuu do not have alternative mobility refuelling & charging points.

²⁴ NTUA, 2019. e-MOPOLI Recommendations. Project output, page 29.

Action parametres	Description
	(2) Effort to ensure localised supply and demand by including as a precondition into the project end-user, producer and supplier preliminary agreements (commitments) towards the production and consumption of biogas.
Stakeholders involved	Regional Council of Kainuu; Kainuu municipalities, public & private transport associations, citizens as end users; eMOPOLI regional stakeholder group.
Timeframe	2021 - 2024
Milestones	Milestone 1. Criteria for open call for projects promoting alternative mobility charging stations are formulated and call is announced. Spring 2022.
	Milestone 2. Selection of project following the open call. Summer 2022.
	Milestone 3. 1 st regional steering group meeting of the selected project. Confirmation of objectives, approach and timeplan. Autumn 2022.
	Milestone 4. Last regional steering group meeting, evaluation of results. Autumn 2024.
Indicative Costs and funding sources	- 1 project, approximately 350 000€ for 2 years. - REACT EU - ERDF from the forthcoming Structural Funds.
Expected Impact - economic - environmental - territorial - on e-mobility	Improvement of alternative mobility multi-refuelling points infrastructure in Kainuu.
Monitoring	Project steering group meetings, 1 meeting every 3 months, for the duration of the project.
Transferability	The action is transferable to any region provided there is funding.

6.2.3.- Mobilisation initiatives

Table 8 eMOPOLI Kainuu action plan, Action 3 Mobilisation initiatives

Action parametres	Description
Action title	Mobilisation initiatives
Background	Within the e-MOPOLI project, the Regional Context Analysis, the recommendations report by the advisory partner National Technical University of Athens (NTUA)²⁵, and the regional stakeholder group analyses as well as the PP6 RCK internal meetings relating to the good practices identified on the base of the project-output Sourcebook of Good Practices (GPs), resulted in the selection of one good practice to be transferred: GP 24 Demo project of three battery buses, from Rogaland, Norway. The Regional Council of Kainuu is not making direct procurements of public transport, but it will coordinate the awareness raising about electrical mobility to the Kainuu municipalities and will facilitate deeper understanding and implementation of the new procurement provisions.

²⁵ NTUA, 2019. e-MOPOLI Recommendations. Project output, page 29.

Action parametres	Description
Objective	To increase the use of electrical mobility in Kainuu, as per the self defined indicators (Number of mobilisation initiatives encouraging Kainuu municipalities to include electrical mobility in public procurements; Number of e-, biogas and other alternative sustainable fuel vehicles in Kainuu). To support the diffusion of electrical mobility in the Kainuu municipalities, in view of the Revised Clean Vehicles directive (EU) 2019/1161, setting out mandatory minimum procurement targets in each Member State for clean light-duty vehicles, trucks and buses in periods of 2021-2025 and 2026- 2030²⁶ and Finland's results of the preparation of the "procurement legislation for clean vehicles and transport services", expected to be issued at the end of August 2020²⁷.
Policy Change	Type 1 policy impact, new projects.
Activities	One project, internal to the Regional Council of Kainuu. Exploratory meetings with the municipalities. Awareness raising sessions. Facilitation relating to the electrical mobility procurement provisions. Two workshops.
Bottleneck	Insufficient awareness of alternative mobility options and benefits as well as strategic policy priorities by the Kainuu municipalities.
Stakeholders involved	Regional Council of Kainuu; Kainuu municipalities, public & private transport associations, citizens as end users; eMOPOLI regional stakeholder group; experts
Timeframe	2021 - 2024
Milestones	Milestone 1. Set up of internal project for implementing awareness raising. 20.8.2021
	Milestone 2: Webinar with municipalities to introduce the issue of reinforcing e-mobility. 24.8.2021
	Milestone 3. Review of national policy developments, plan for organising comprehensive awareness raising event. 20.9.2021
	Milestone 4. Organisation of comprehensive awareness raising event addressed to municipalities, and including national level experts and policy makers. Winter 2022.
Indicative Costs and funding sources	20 000€ for two workshops, including experts and travel costs (post COVID 19)

²⁶ The Directive applies to the purchase and rental of motor vehicles for road transport, public service contracts for passenger transport by road and certain transport services (for example collection of waste and postal transport). The requirements will only apply to new procurement and service contracts that exceed the thresholds laid down in the procurement legislation. The Directive does not apply to buses and coaches used in long-distance transport or charter services or, for example, to vehicles used in agriculture and forestry, or to two or three-wheel vehicles. In addition, a Member State may exempt certain vehicles from the requirements laid down in the Directive. These include emergency vehicles and vehicles used by the armed forces or on construction sites.

²⁷ Presently there is a working group dealing with this issue. The working group's term is from 8 November 2019 to 31 August 2020. The task of the working group is to introduce the changes required by the Directive into Finnish legislation. The working group will assess different options for drafting the national legislation, taking into account geographical differences and cost-effectiveness. <https://www.lvm.fi/en/-/preparation-of-procurement-legislation-for-clean-vehicles-and-transport-services-is-starting-1022557>

Action parametres	Description
Expected Impact - economic - environmental - territorial - on e-mobility	Increase of the use of electrical mobility in Kainuu, as per the self defined indicators (Number of mobilisation initiatives encouraging Kainuu municipalities to include electrical mobility in public procurements; Number of e-, biogas and other alternative sustainable fuel vehicles in Kainuu).
Monitoring	Project steering group meetings, 1 meeting every 3 months, for the duration of the project.
Transferability	The action is transferable to any region provided there is funding.

6.2.4.- Research integration

Table 9 eMOPOLI Kainuu action plan, Action 4 Research integration

Action parametres	Description
Action title	Research integration
Background	Addressing mainstream alternative mobility domains that emerged / became strongly mainstream during the eMOPOLI project, i.e. they could not have been anticipated. It is not corresponding to any eMOPOLI GPs, however, it would not have been identified without the eMOPOLI exchange, the Recommendations made by NTUA (RIS3: e-mobility in relation to RIS3 Smart Specialization Strategy documents. R1: Kainuu RIS3 is emphasizing on alternative fuels and circular economy. This will be reinforced. Electrical mobility is not part of the RIS3. Kainuu RIS3 is aligned with national priorities as well. The Kainuu RIS3 will be revised till the end of 2019), and the feasibility study. So we decided to mention it here, even if it is not reflecting a GP transfer. Action 4 improves types of projects, i.e. it is Type 1 policy impact.
Objective	The purpose of Action 4 is to support innovation in alternative fuels as revealed by the feasibility study and as foreseen in the Revised Clean Vehicles directive (EU) 2019/1161) and the national legislation, including the Finnish National Sustainable Development Strategy. The objective is to implement two research projects, one on synthetic fuels innovative domain, and one on hydrogen applications and storage solutions.
Policy Change	These are R&D projects, implemented through open call of the revised Kainuu RIS3, and monitored by the Regional Council of Kainuu. They correspond to Theme 1 Research & Innovation and the cross-cutting theme 5 Green Deal/ II.1. Supplying clean, affordable, and secure energy. Type 1 types of projects, not currently foreseen.
Activities	Formulation of funding calls. Submission, evaluation, selection, implementation and monitoring of selected research projects.
Bottleneck	Gaps in the research base of Kainuu, linking regional capacities to mainstream alternative mobility domains.
Stakeholders involved	Regional Council of Kainuu; regional and national specialised research units; alternative mobility operators (depending on the TRL-target of the projects)
Timeframe	2021-2025
	Milestone 1. Internal team is set up and reviews alternative mobility developments. Spring 2022.

Action parametres	Description
Milestones	Milestone 2. Criteria of open call are agreed and open call is announced. Spring 2022.
	Milestone 3. Two projects are selected. Autumn 2022.
	Milestone 4. 1 st regional steering group meetings of the selected projects. Confirmation of objectives, approach and timeplan. Winter 2023.
	Milestone 5. Last regional steering group meetings of the selected projects, evaluation of results. Autumn 2025.
Indicative Costs and funding sources	Two projects, 2021 -2024, 350 000€ each.
Expected Impact - economic - environmental - territorial - on e-mobility	The research base of Kainuu, is strengthened, through contirbutions to linking regional capacities to mainstream alternative mobility domains.
Monitoring	Project steering group meetings, 1 meeting every 3 months, for the duration of the project.
Transferability	The action is transferable to any region provided there is funding.

6.3 Timetable

Action plan	Year Semester	2020		2021		2022		2023		2024	
		1	2	1	2	1	2	1	2	1	2
Action 1 Policy integration											
Action 2 Infrastructure											
Action 3 Mobilisation initiatives											
Action 4 Research integration											

7 References

- Elvire Fabry (2019). Pour une politique commerciale plus verte et plus inclusive. Institut Jaues Delors, Berlin, 2.9.2019. Retrieved on 14-9-2019, <https://institutdelors.eu/wp-content/uploads/2019/09/3-COMMERCE-Fabry-FR.pdf>.
- EU Energy System Integration Strategy (COM (2020) 299 final <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0299&from=EN>.
- Hydrogen Strategy (COM (2020) 301 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0301&from=EN>.
- Kainuu Climate Strategy (Ilmasto- ja ympäristövastuullinen Kainuu, 2020); coordinated by Heidi Karppinen. (For more information: <https://kainuunliitto.fi/yhteisty/hankkeet/ilmasto-ja-ymparistovastuullinen-kainuu-2040/>)
- Revised Clean Vehicles directive (EU) 2019/1161), <https://eur-lex.europa.eu/eli/dir/2019/1161/oj>
- Suomen kestävän kasvun ohjelma – alustava elpymis- ja palautumissuunnitelma, Valtioneuvosto Helsinki 2021. <https://julkaisut.valtioneuvosto.fi/handle/10024/162935> .
- Thomas Pellerin-Carlin, Emille Magdalinski, Jean-Arnold Vinois (2019). Le “Green deal” pour l’ Europe commence par la transition énergétique. Institut Jaues Delors, Berlin, 2.9.2019. Retrieved on 14-9-2019, <https://institutdelors.eu/publications/a-greener-and-more-inclusive-trade-policy/>.

8 Declaration

The Regional Council of Kainuu agrees to support and promote the implementation (and where appropriate implement) the plan detailed above.

Pentti Malinen

Position: Regional Mayor

Signature  _____

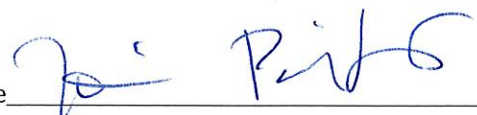
date: 4.10.2021

Stamp of the Organisation



Jouni Ponnikas

Position: Regional Development Director

Signature  _____

date: 4.10.2021

Stamp of the Organisation

