e-MOPOLI
Interreg Europe

European Union
European Regional
Development Fund

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

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

Regional Action Plan for Rogaland

Rogaland County Council

April 2021

Rogaland County Council

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Project partners

Low-carbon economy

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1. Introduction

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.

1.1 The e-MOPOLI Project

E-MOPOLI is an Interreg Europe project with 9 partners from 8 different countries. The project started on 01.06.2018 and lasts for 4 years. Phase one lasts for 30 months and phase 2 for 24 months. The project's end date is 30.11.2022.

The e-MOPOLI project aims to contribute to an efficient diffusion of e-mobility and alternative fuels mobility with improvement of 9 policy instruments set (documents), 6 of which directly linked to Structural Funds, in Italy, Slovenia, Greece, Belgium, Finland, Norway, Romania and Latvia. The policy instruments selected by 9 partners will be improved mainly through new projects and enhanced governance. The Regional and interregional learning process will actively involve project partners, their institutions and their stakeholders groups.

Partners commit to concentrate on several main working areas: charging and tolling policies in favour of e-vehicles; development of charging infrastructure powered by alternative sources; integration of charging infrastructure and charging hubs in spatial planning, deployment and purchase of alternative fuel vehicles in public transport; promotion of e-mobility in niche market fleets.

The policy instruments selected by 9 partners will be improved mainly through new projects and enhanced governance. The Regional and interregional learning process will actively involve project partners, their institutions and their stakeholders groups. The project, in order to effectively reach its goal, will be soundly structured on following steps:

- e-MOPOLI methodology;
- Partners' local and regional territorial context analysis;
- Good Practices selected for exchange of experience and transfer of lesson learnt;
- 9 Regional Action plans;
- Monitoring of 9 Action Plans through e-MOPOLI webtool;
- e-MOPOLI recommendations on business, governance and RIS3 level for Regional and Local Authorities.

Besides reaching e-MOPOLI outputs and results, partnership will transfer them to a wider audience, through carefully planned communication activities, which will include regional and interregional events such as conferences, workshops, dissemination events, Policy learning platform and Programme events.

The total budget of the e-MOPOLI project is € 1,792,053.00. **The budget planned for Rogaland is Euro 217.443,-.**

1.2 The Action Plan

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

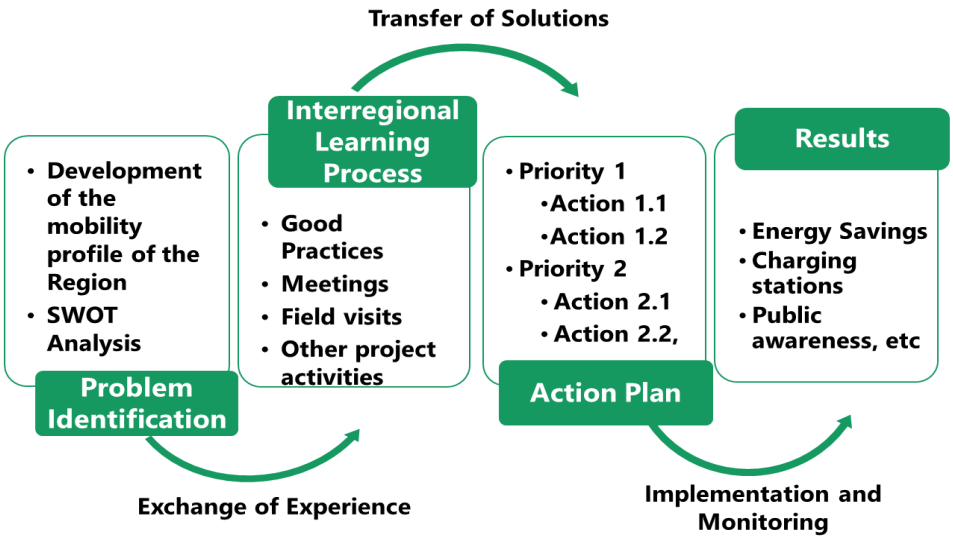


Fig. 1 Flow Diagramm

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.

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 Rogaland which aims to promote electromobility and use of alternative fuels in the Region by specific actions.

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

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

2. General Information

2.1 Region of Rogaland (Norway)

Rogaland is located on the southwest coast of Norway and is one of 11 counties in the country. The region has an area of 9 374 km² and 475 654 inhabitants. Stavanger and Sandnes are the two largest municipalities/cities in the county and half of the population in Rogaland lives there. Together with Sola municipality and Randaberg municipality, they form the third largest urban area in Norway. In total, Rogaland consists of 23 municipalities. Rogaland has its own elected mayor and regional council as well as its own administration and economic independence.

2.2 Contact Details

Region Information	
Partner organization	Rogaland County Council
Country	Norway
NUTS2 region	Agder and Rogaland
Contact person	Gottfried Heinzerling
Position	Head of the Department of Transport, Rogaland County Council
E- mail	gottfried.heinzerling@rogfk.no
Phone number	+47 482 07 228

3. Policy Context

The Action Plan aims to impact:

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

Name of the policy instrument addressed: Rogaland's Regional Public Transport Strategy

In the e-MOPOLI project Rogaland County Council's (RCC) addressed policy instrument is called The Regional Public Transport Strategy 2018-2029. This strategy is a binding document for the public transport sector and county roads in Rogaland, approved by the county politicians. The strategy is developed by Rogaland County Council's transport department but is in line with the National Transport Plan's goals and actions to reach these goals. Rogaland's Regional Public Transport Strategy provides a thorough overview of Rogaland county and provides strategies for the county roads, public transport, walking, cycling, freight transport and car use in the different parts of the county but the Regional Public Transport Strategy lacks specific targets when it comes to implementing fossil free and zero emission fuels in the public transport sector (buses, boats and ferries).

The objective of this action plan is to develop and implement a strategy that focuses on environmentally friendly fuel in public transport. The strategy is intended to

increase the focus on environmentally friendly procurements in Rogaland and and will also be an important support document when it comes to updating the policy instrument.

Rogaland's self-defined performance indicator in the e-MOPOLI project is to Increase (%) of charging infrastructure for e-buses and e-vans in the Region throughout the project period.

4. Background

4.1 Current Situation

Norway is one of the leading countries in Europe when it comes to e-mobility. The national government plays an important role in the diffusion of electric vehicles in Norway.

The number of electric vehicles in Rogaland has grown a lot over the past years. **Errore. L'origine riferimento non è stata trovata.** shows the number of private cars in Rogaland from 2016-2019, categorized by type of fuel. By the end of 2019 there were 236 835 cars in Rogaland, according to Statistics Norway. 11,24 % (26 620) of these were battery electric (Plug-in hybrids are not included in this number). The number of hybrids, both chargeable and non-chargeable has also increased over the past few years. Due to lack of hydrogen refuelling stations in Rogaland, there are no hydrogen cars in the county.

Table 1 Fuel types for private cars in Rogaland 2016-2019.

	Private cars			
	2016	**2017**	**2018**	**2019**
Rogaland				
Petrol	108 036	102 678	96 071	92 375
Diesel	105 835	106 936	105 465	103 970
Paraffin	0	0	0	0
Gas	31	44	44	40
Electricity	8 855	12 599	19 866	26 620
Hydrogen	0	0	0	0
Petrol hybrid, chargeable	1 865	3 517	4 745	5 953
Petrol hybrid, non-chargeable	4 201	5 471	6 368	7 500
Diesel hybrid, chargeable	71	157	196	281
Diesel hybrid, non-chargeable	55	63	67	93
Other fuel	3	3	3	3

(Statistics Norway - Registered vehicles by region, type of fuel, contents and year, s.a.)

Rogaland County Council is the owner of Kolumbus, the public transport authority in Rogaland. In the public transport sector, a transition towards a greener fleet has begun. There are now 22 electric buses in Rogaland. From the summer of 2020 all of Kolumbus' buses will have Euro VI standard at a minimum. Rogaland County Council is also the project owner of a new BRT-system (Bus Rapid Transit –system) that is currently being built in the Stavanger/Sandnes area. The opening of the first line is planned to take place in 2023. There is a political decision that the BRT buses will be battery electric buses if the technology

is ready and the right agreements and guarantees can be offered by the opening of the BRT system.

Rogaland County Council/Kolumbus, is responsible for several of the boat and ferry routes in the county. Kolumbus already has a high-speed passenger hybrid boat (battery + diesel) that was put in operation in 2019 and a battery electric car ferry will be put in traffic from 2022. Rogaland County Council and Kolumbus are working on achieving further reduction of emissions from their ferry and boat traffic, e.g. as the lead partner in a Horizon 2020 project called TrAM. In the TrAM project a fully electric passenger ferry will be developed and built, and this will be put in operation in a boat route in the Stavanger area in Rogaland from 2022. The Norwegian Public Roads Administration also has a zero emission ferry project in Rogaland, a pilot project where a hydrogen-electric car ferry will be put into traffic in 2021 (The Norwegian Public Roads Administration (Statens vegvesen), 2019).

4.2 SWOT Analysis

Related to the work on the Recommendations document (e-MOPOLI delivery), a SWOT analysis was performed to reveal strengths, weaknesses, opportunities, and threats in the region of Rogaland with regards to electromobility. The strengths, weaknesses, threats and opportunities were discussed in a workshop with regional stakeholders that Rogaland County Council held in Stavanger in September 2019.

One of the strengths that were identified is that Rogaland and Norway already have come a long way when it comes to electrifying and greening the transport sector, especially private cars. The governmental support for electromobility is strong, and several effective incentives favoring e-vehicles has had good results. It is also a strength that Norway has clean and affordable electricity (mainly hydropower) for charging the electric vehicles.

Some of the weaknesses are the lack of hydrogen infrastructure in Rogaland, a need for more charging infrastructure for longer trips and in rural areas, home charging is not always possible, and zero emission technology in public transport can cause an increase in investment costs for public transport.

One of the opportunities identified related to e-mobility in Rogaland is that the growing demand for green technologies can contribute to an increase in new jobs and competence in the region. Some examples are the few ongoing boat and ferry projects in the region (a hydrogen ferry and a battery electric passenger ferry) in the region and development of smart charging solutions for electric vehicles. The introduction of more environmentally friendly means of transportation may also lead to better public health in the region due to reduction of emissions and noise levels in the city areas.

Some threats related to e-mobility were also identified in the SWOT analysis. Investing in zero emission technology may lead to increased costs for the public transport authority, at least in the beginning. As long as zero emission cars pay reduced tolls and fares on toll roads and ferries, there will be a lack of income from zero emission vehicles compared to the income from fossil fueled vehicles. Another threat is that electric vehicles may cause congestion on the roads. As zero emission vehicles take up just as much space on the roads as fossil fueled cars, an increase of zero emission vehicles may lead to an increase of congestion on the roads, especially because of their exemption/reduction from toll fares, ferry rates etc. There is also the risk of too much focus on a single technology, on single path of development for example specific types of charging infrastructure.

4.3 Regional Analysis

Within the framework of the e-MOPOLI project, a Regional Context Analysis was conducted formulating each partner region's profile based on various indicators (Broos, J. and Vanhaverbeke, L., 2019) **Errore. L'origine riferimento non è stata trovata.** shows some of the most important e-mobility relevant indicators for the region of Rogaland. The data shows that the transport sector is responsible for 38 % of the CO_2 emissions, but that a high share of the car sales is zero emission vehicles, with 55,7 % of the car sale in Rogaland in 2020 being battery electric cars (PHEVs not included in this number).

Table 2 Regional indicators for the region of Rogaland

Natural, physical and geographical characteristics			
		Year	***Source***
Region Size (km²)	9.363	2016	Eurostat
CO2 emission per source	1,8 % electricity, 34 % other energy, 17 % manufacturing, 38 % transport, 3 % residential, 2 % commercial	2017	IEA
CO2 emission per transport mode	29,60 % cars; 8,39 % light duty vehicles; 16,82 % heavy duty vehicles; 0,78 % motorcycles and mopeds; 0,31 % railway; 7,94 % domestic aviation; 18,67 coastal navigation; 17,48 % motorized equipment	2017	(Statistics Norway - Registered vehicles by region, type of fuel, contents and year, s.a.)
Demographic Data			
		Year	***Source***
Population (inhabitants)	473.525	2018	Eurostat
Population density (inhabitants per km²)	53,5	2017	Eurostat
Age structure	20,00;12,88;14,13;14,10;13,59;11,03;8,29;4,16;1,81	2017	Eurostat
Education mix	18,20%;42%;39,80%	2017	Eurostat
Energy Indicators			
		Year	***Source***
Electricity mix	0,26;38,72;49,19;0;6,51;5,32	2016	Eurostat
Renewable energy mix	90,78;1,34;0;0;6,27;0,21;0;1,4	2016	Eurostat
Electricity price (€ per kWh)	0,099	2019	(Statistics Norway - Registered vehicles by region, type of fuel, contents and year, s.a.)
Fuel price (€ per litre)	1,54	2019	(Statistics Norway - Registered vehicles by region, type of fuel, contents and year, s.a.)
Mobility indicators			
		Year	***Source***
Transportation mix	24 % walking; 8 % bicycle; 1 % motorcycle/moped; 49 % car (driver); 8 % car (passenger); 9 % public transport; 1 % other	2014	(Institute Transport Economics, 2014)
Number of vehicles	264.038	2017	(Statistics Norway - Registered vehicles by region, type of

			fuel, contents and year, s.a.)
Number of cars in household	1,3	2017	(Statistics Norway - Registered vehicles by region, type of fuel, contents and year, s.a.)
Number of Electric Vehicles	26.620 (in 2019)	2021	(Statistics Norway - Registered vehicles by region, type of fuel, contents and year, s.a.)
Electric Vehicle Sales (last year)	55,7 % (in Rogaland in 2020)	2021	(Norsk elbilforening (Norwegian el.car association), 2021)
Available Charging Infrastructure	1212	2021	(NOBIL, 2021)

Financial Benefits	✔
Non-financial benefits	✔
Low emission zone	✗

(Broos, J. and Vanhaverbeke, L., 2019)

4.4 Recommendations

The main recommendations for Rogaland are formulated in **Errore. L'origine riferimento non è stata trovata.** and are classified in the thematic areas business and governance. Rogaland does not yet have Research and Innovation Strategies for Smart Specializations (RIS3) but there is an ongoing process of developing one.

Table 3 Recommendations for the region of Rogaland

Business
B1. Support the increase of environmentally friendly transport through incentives for alternative fuels and electromobility.
Governance
G1. The current transport strategy describes the county council's strategy for 2018 to 2029. A new and updated strategy will cover the years 2022 to 2033 and will have more focus on environmentally friendly transport. The new strategy is also intended to be more detailed and describe possible measures. The results of e-MOPOLI will give valuable input for Rogaland County Council's revised public transport strategy.
G2. There is a potential for reducing emission from the transport sector. The county needs a strategy for environmentally friendly transport, public as well as private.

5. Actions envisaged

5.1 General Information

Rogaland County Council's action plan was drafted by the Council's Department of Transport. The action was chosen as a response to a need for a strategy for the implementation of environmentally friendly fuels in the region, especially in the public transport sector. Rogaland County Council's stakeholders were involved in the process through regional stakeholder workshops. Kolumbus, the public transport authority in the region, also played an important role in the implementing process, as they organize the public transport in the county on Rogaland County Council's behalf.

The e-mopoli regional stakeholder meetings took place 25.01.19 (WRSG1) and 11.09.19 (WRSG2). The third will be held in spring 2021.

5.2 Actions for Region of Rogaland

Rogaland County Council's action is categorized under the priority axis "Governance", and is to make a regional environmental strategy for implementing alternative fuels in the public transport.

Both the priorities as well as the specific actions are presented and are analyzed below.

5.2.1 Priority 1: Governance

Action 1	**Regional environmental strategy for implementing alternative fuels in the public transport sector.**
Background	*Rogaland was the first county in Norway to test battery electric buses, three of them through the Horizon 2020-project "Triangulum" (see e-MOPOLI Good Practice: Demo project of three battery electric buses.) However, the Regional Public Transport Strategy does not have any specific targets when it comes to implementing fossil free and zero emission fuels in the public transport sector (buses, boats and ferries).* *During the e-MOPOLI project several activities have focussed on greening the public transport fleet. Some examples are the field visit in Flanders, where the project participants travelled with one of Flanders' battery electric buses. Other examples of learning experiences from the e-MOPOLI project that focused on*

	public transport are various presentations about the transition towards greener public transport in different interregional learning workshops. RCC also attended the staff exchange in Flanders, which was particularly relevant to this action plan, as we visited a company called New Drive that focussed a lot on zero emission buses in their work. The company had a lot of competence on procurements of battery electric buses and supporting governments with their e-mobility competence. We also learnt about public transport planning, development of battery technologies, procurement models and charging infrastructure.
Objective	*The objective of Rogaland County Council's action plan is to develop and implement a strategy that focuses on environmentally friendly fuel in public transport. The strategy will be used as a guideline for public transport procurements in Rogaland and will also be important when it comes to updating our policy instrument addressed in the e-MOPOLI project (the Regional Public Transport Strategy), which is Rogaland County Council's main policy instrument for public transport.*
Relevance	*As described in the Objective above, the action is to develop and implement a strategy that can be used to update the policy instrument. This instrument will thus give Rogaland County Councel a chapter in our most important strategy for how we shall implement environmentally friendly fuel in public transport. This will be approved by the politicians and contribute to spread the knowledge about different technologies, and maybe change the strategic focus in the choice between these technologies.*
Activities	1. *Develop an environmental strategy for the public transport in Rogaland.* 2. *Present the strategy to the county politicians for approval.* 3. *Implementation of the environmental strategy: After the approval, the strategy will work as a guideline for public transport procurements.*
Bottleneck	*New technology is expensive and is still being developed. The development is rapid and new technology emerges continuously.*
Stakeholders involved	*Kolumbus, the regional public transport authority and mobility provider in Rogaland, is responsible for the public transport in Rogaland on behalf of Rogaland County Council.*
Timeframe	*The environmental strategy for public transport has a timeframe frame 2019 – 2023.*
Indicative Funding Sources	*The action will be financed through Rogaland County Council's budget and contributions from the state.*
Indicative Costs	*Costs related to the implementation of the action is staff costs.*
Expected Impact	*It is expected that the environmental strategy will contribute to the implementation of more environmentally friendly public transport in Rogaland the following years and an increased share of zero emission vehicles. This will lead to a reduction of emissions from the transport sector.*
Transferability	*The potential of transferability to other regions will probably be big. Rogaland County Council focuses on reduction of emissions from the transport sector, which is a topic that is highly relevant also in the other partner regions.*

5.2.2 Who does what and when

Develop an environmental strategy for the public transport in Rogaland.
The environmental strategy was finished in 2019. It was written by the administration in Rogaland County Council (Ingrid Time and Line Frøsland).

Present the strategy to the county politicians for approval.
The strategy was presented to the politicians in 2019, and was also approved. It was presented by the same persons who wrote it.

Implementation of the environmental strategy: After the approval, the strategy will work as a guideline for public transport procurements.

The implementation of the strategy has been ongoing since 2019. It is used mostly by the main stakeholder Kolumbus, and by the administration of the county council. With the strategy Kolumbus knows exactly what the county councils official opinion are regarding use of alternative fuel. They use this knowledge when they by or enter into agreements of busses, boats etc. There are no exact date for this, it is an ongoing process that will continue after the strategy is renewed in 2023.

Following of the emopoliproject to the end

In Rogaland County council there are three (four) persons that follow the project from start to the end:

Wenche Myrland has the responsibility of the financially part of the project.

Line Frøsland is the project leader. She is in maternity leave in 2021.

Eva H. Kragset is the project leader in 2021.

Eilin T. Gundersen has the responsibility of the communication part of the project.

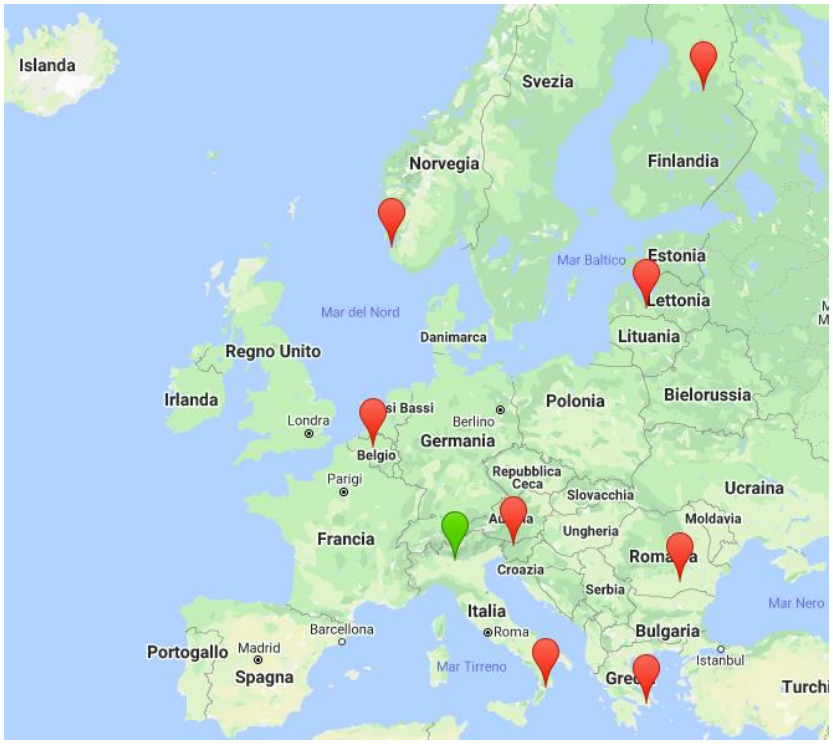
6. Monitoring

The first part of Rogaland's action plan was to develop an environmental strategy for public transport that provided guidelines for fossil free technology for public transport on sea and land. It was important to do this as an early step, in order to have the guidelines ready for as many public transport procurements as possible. Because of this the development of the environmental strategy was done during phase one of the e-MOPOLI project, parallel to the learning process. After the county politicians approved the environmental strategy, it is now used as a guideline for public transport procurements in Rogaland. In the following years Rogaland County Council, through the public transport authority Kolumbus, will perform several bus procurements. The new BRT-system will open in 2023 and following this there will be a procurement for the remaining buses in the Sandnes/Stavanger-area (Nord-Jæren). Rogaland County Council is also responsible for several ferries and passenger ferries, and the environmental strategy will apply for ferry procurements as well as buses.

The development of an environmental strategy is only the beginning of the work related to the action plan. The implementation of the environmental strategy is the next big step. The strategy will also be an important guideline for the revision of the Regional Public Transport Strategy, which is Rogaland's main policy instrument for public transport.

Rogaland County Council will continue to acquire relevant knowledge about technology developments and alternative fuels. Changes may happen rapidly, both with regards to costs and technology, so it is important to stay updated to be able to make the best possible decisions in the future. The two main bus lines in the city of Haugesund in Rogaland were electrified in the summer of 2020 when 17 new battery electric buses were put into traffic. Valuable learning experience from operating these battery electric buses will be important when planning for future bus procurements. Exchange of experience, participation in relevant projects, events and seminars are ways of staying updated on technological developments. The strategy will be updated when needed and put into use in future public transport procurements.

To monitor the effect of the instrument set, the environmental strategy, and the action plan, we will look at the increase (%) of charging infrastructure for e-buses and e-vans in the Region. The goal is 150 % increase.



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

€1,792,053.00

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

Low carbon economy

9 partners
IT - SI - EL - BE - FI
NO - RO - LV

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8. Declaration

The Head of the Transport Department of Rogaland County Council agrees to support and promote the implementation (and where appropriate implement) the plan detailed above.

Name, Surname LISA GARPE

Position Head of transportation in Rogaland county

Signature Li Garpe date: 15th sept. 2021

Stamp of the Organisation