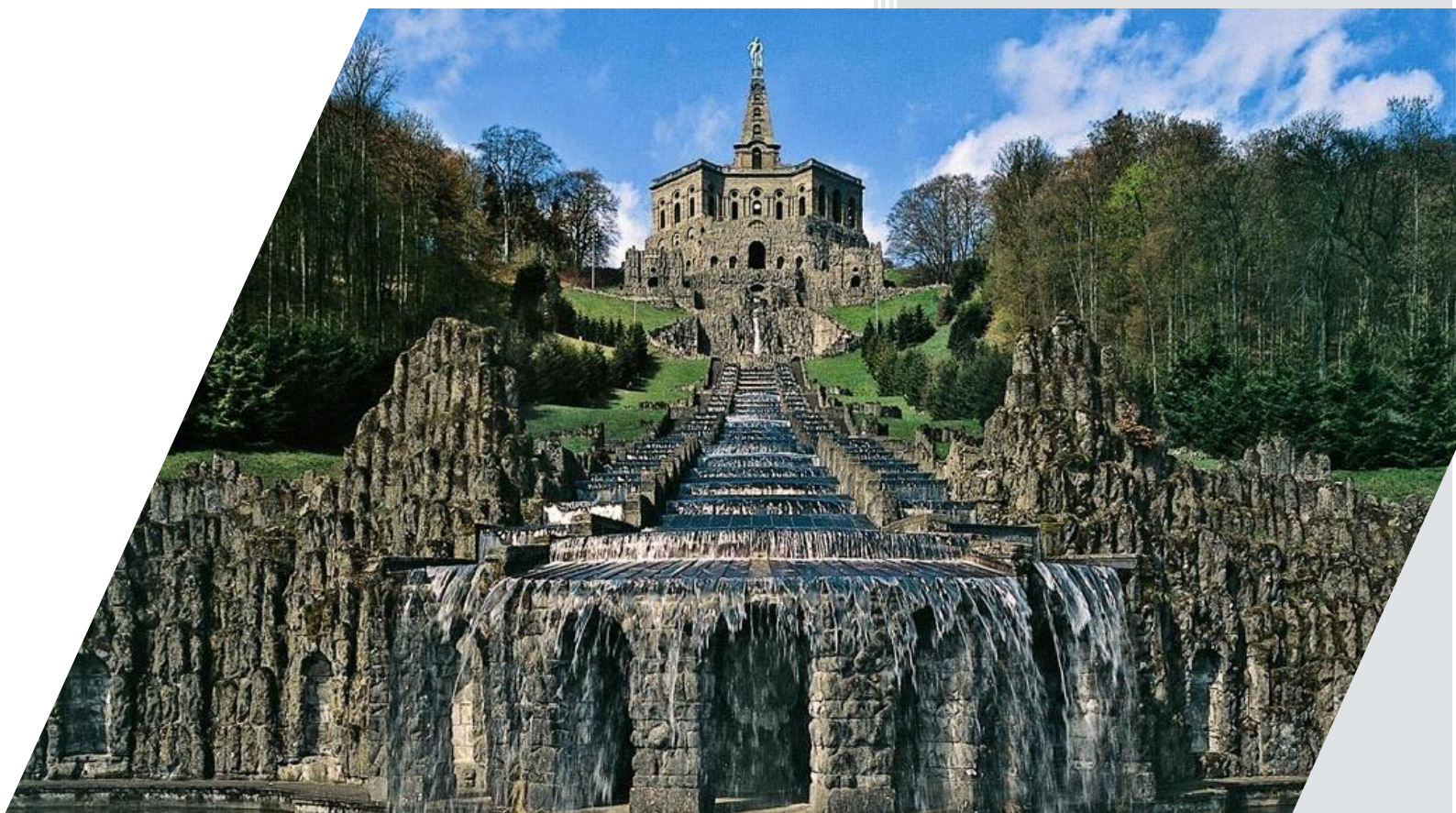


Action Plan Nordhessen



Regionalmanagement
NordHessen

Regionalmanagement Nordhessen GmbH

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1. General Information

Project: EMOBICITY

Partner organisation: Regionalmanagement Nordhessen GmbH

Other partner organisations involved (if relevant):

Country: Germany

NUTS2 region: Kassel (DE73)

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2. Policy Context

In the following, the policy context will be described: First, the policy instrument and its objectives will be addressed. After that, the purpose and intended policy changes will be summarized.

2.1. Policy Instrument: Priority axis and objectives

The policy instrument "Climate-Friendly Commercial Vehicles and Infrastructure" (Klimaschonende Nutzfahrzeuge und Infrastruktur - KsNI) addressed in this Action Plan is supervised by the Federal Ministry for Traffic and Digital Infrastructure (BMDV). The KsNI is part of the "Overall Approach to Climate-Friendly Commercial Vehicles" (OACCV) and is based on the Climate Protection Program 2030 adopted by the German government in the fall of 2019. In order to achieve the federal climate protection targets, around one third of the mileage in heavy road freight transport is to be covered by alternative drive systems by 2030. With the OACCV, the BMDV is setting the path towards this goal. The policy instrument KsNI is a vehicle funding program for commercial vehicles with climate-friendly alternative drivetrains.

European legislation provides the framework for national climate protection activities in the commercial vehicle sector: EU regulations (EU) 2019/1242 and (EU) 2019/631 set CO₂ fleet target values for new commercial vehicles. According to these, CO₂ emissions from heavy-duty vehicles are to be reduced by 15 percent by 2025 and by 30 percent by 2030, as well as by 31 percent for light-duty vehicles. The OACCV systematically coordinates various funding programs and funding guidelines relating to commercial vehicles.

The funding program "Climate-friendly commercial vehicles and infrastructure" (KsNI) is defined in the following guideline:

"Guideline on the promotion of light and heavy commercial vehicles with alternative, climate-friendly drive systems and associated refueling and charging infrastructure for electrically powered commercial vehicles (pure battery electric vehicles, externally chargeable hybrid electric vehicles and fuel cell vehicles)".

This policy became effective August 2, 2021 and will remain in effect until December 31, 2024.

The funding program serves to implement the Climate Protection Program 2030 adopted by the German government in the fall of 2019. Specifically, it refers to the field of action commercial vehicles with the bundles of measures "Putting low-CO2 trucks on the road" and "Expanding refueling and charging and overhead line infrastructure." The climate protection program formulates the goal that by 2030 about one third of the mileage in heavy road freight transport will be electric or based on electricity-based fuels. According to the amendment to the Climate Protection Act made in May 2021, a 48% reduction in greenhouse gas emissions in transport is required for the year 2030 compared to 1990. Greenhouse gas neutrality is envisaged across all sectors by 2045. The German government will develop concepts for the expansion of a needs-based refueling and charging infrastructure, taking into account the technologies mentioned in the Climate Protection Program 2030 - battery, hydrogen fuel cell and overhead line. By promoting commercial vehicles with climate-friendly drive systems, the directive is intended to contribute to the more rapid spread of alternative low-emission commercial vehicles and thus to the reduction of greenhouse gas emissions in this segment and to the achievement of the above-mentioned specific target in road freight transport. At the same time, the goals of the Clean Air Immediate Action Program to improve urban air quality and noise abatement will be supported.

Electric vehicles are based on new technologies and especially because of the still high production costs for Batteries, today still more expensive than conventional vehicles. To rise the attractiveness of the use of electric vehicles, the Federal Government and the Government of Hesse are promoting measures in a technology-open approach which aims at proofing everyday-usability. Core topics are to increase the number of battery-electric vehicles in fleets and the necessary charging infrastructure.

2.2. Purpose and intended policy changes

The Action Plan aims to impact:

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

The use of alternative drive systems and fuels in road-based freight transport is an important measure for reducing CO₂ and pollutants in the transport sector. In particular, the use of battery electric and hydrogen fuel cell vehicles as well as hybrid trolley trucks makes a significant contribution to decarbonization in the commercial vehicle segment. Today, vehicles with the aforementioned drive options are often still significantly more expensive to purchase than conventional vehicles. For this reason, the present guideline aims to reduce additional expenditure for the acquisition of vehicles with alternative drive systems and, as a result, to contribute to the market activation or market ramp-up for commercial vehicles with the drive options mentioned.

The funding program KsNI is intended to reduce greenhouse gas emissions through the use of alternative drive systems and fuels in road-based freight transport. The federal government grants subsidies for this purpose:

- to promote the acquisition of light and heavy commercial vehicles with alternative, climate-friendly drives (KsN),
- to promote the construction and expansion of the associated refueling and charging infrastructure (KsI),
- for the preparation of feasibility studies for the possible use of commercial vehicles as well as studies and analyses for the use of new and existing logistics locations for commercial vehicles or for the construction and expansion of corresponding infrastructure (MBS).

Specifically, the funding guideline comprises three elements as part of the implementation of the overall climate-friendly commercial vehicles concept:

- Funding for the purchase of new climate-friendly commercial vehicles in EC vehicle classes N1, N2 and N3, as well as commercial vehicles in EC vehicle classes N2 and N3 that have been converted to alternative drive systems, amounting to 80 percent of the additional capital expenditure compared with a conventional diesel vehicle,
- Funding of the refueling and charging infrastructure required for the operation of the climate-friendly commercial vehicles in the amount of 80 percent of the total eligible project-related expenditures,

- Funding for the preparation of feasibility studies on the possible use of climate-friendly commercial vehicles and the construction or expansion of the corresponding infrastructure amounting to 50 percent of the eligible project-related expenditure.

The conversion of the transportation system to battery and fuel cell-powered vehicles is a key factor in achieving environmental and climate targets. Hessen is a transit state and logistics location - mobility is one of the most important location factors. The goal of the Hessian state government is to make this mobility sustainable and fit for the future supported by the BMDV.

In order to create the necessary conditions for the market penetration of climate-friendly commercial vehicles, the BMDV is also managing the development of a refueling and charging infrastructure coordinated with the vehicle ramp-up. In the first step, the practical applicability of battery-electric drives, hydrogen fuel cell drives and hybrid overhead line drives in real logistics processes will be tested in a scaling phase up to 2023/2024, and concrete plans will be drawn up for the nationwide development of the necessary infrastructure. At the end of the scaling phase, path decisions on the use of the technologies will be made on the basis of the results obtained. In the subsequent roll-out phase, the coordinated nationwide development of the required energy supply infrastructures will take place by 2030.

The aim of the funding is to drive forward and accelerate the electrification of transport in Germany. Innovative technological approaches that lead to improved performance of the overall electric mobility system are intended to make it more attractive than conventional forms of propulsion. It is also intended to provide impetus for the demonstrative use of electrically powered vehicles in various economic sectors and areas of life. Funding is mainly provided for research and development projects involving innovations for electric mobility. The funding program is basically open to all topics and technologies that are important in the context of electric mobility - with battery and/or fuel cell.

The policy instrument KsNI shall be improved by developing a new additional focus to the program with new measures, targeting battery electric vehicles of the classes N1, N2 and N3. Through this new and additional focus, new projects shall be initiated and funded, which aim at practical testing and gathering experience with the respective vehicle classes, research and development regarding vehicle technology, the development of electric vehicle-based logistics concepts, the integration of renewable energies into respective logistics concepts and the further development as well as the installation of charging infrastructure. If there is a need in the future for further research in individual cases, the funding of research and development projects will continue to be possible within the scope of the existing programmes, such as the

National Hydrogen and Fuel Cell Technology Innovation Programme or the Electric Mobility Funding Guidelines. In addition, the Federal Ministry of Transport and Digital Infrastructure will also explore the use of new and innovative funding instruments (for instance tendering models) covering both vehicles and infrastructure.

For funding the purchase of commercial vehicles with alternative climate-friendly drivetrains, the Federal Ministry of Transport and Digital Infrastructure has 1.16 billion euros at its disposal over the period from 2021 to 2023. In the future, the funding will cover vehicles in EC vehicle categories N1, N2 and N3 and, if necessary, additionally the refuelling and charging infrastructure required for their use, for instance for charging at the depot. The planned financial assistance programme for electrically operated commercial vehicles (battery electric vehicles, hydrogen fuel cell vehicles and externally rechargeable hybrid electric vehicles) envisages a significantly enhanced aid intensity.

3. Background for Designing the Action Plan

The content of this action plan has been developed by using the following procedures:

- Learning between the EMOBICITY Partners through the Exchange of Good Practices, Study Visits and Peer Reviews
- Regional Context
- Regional Stakeholder Meetings

The regular exchange with the European EMOBICITY project partners formed the content-related basis for the idea and the implementation of the Action Plan. Furthermore, stakeholder meetings were held throughout the EMOBICITY project to exchange ideas on how to create the Action Plan. The following partner organizations regularly participated in stakeholder meetings.

The state of Hesse is geographically in the middle of Germany and in the middle of Europe, thus facing high traffic load and especially transit traffic. Hessen's roads are high-performance traffic routes. With an average daily traffic of 2 m. vehicles / 24 h on highways Hesse has the highest traffic congestion of all German federal states. After the Rhine-Main region, Northern Hesse is the second largest economic region in Hesse and has developed positively in economic and socio-structural terms from a very low level over the past ten years. The region is characterized by a strong tradition as a location for industry and commerce. It is not only large companies, but especially small and medium-sized enterprises that decisively shape the economy and are responsible for value creation and jobs in the region.

While in passenger traffic the motorized traffic throughout Germany increased between 2010 and 2030 by 3.8 percent to 103 billion, freight traffic is supposed to rise by 18 percent and the transport capacity by 38 percent. The pollutant emissions are enormous and half of Hesse's energy consumption flows into the Transport sector. Thus it is all the more important for the inhabitants, that the traffic will be as environmentally friendly as possible and quieter. The aim is to have the state of Hesse climate neutral by 2050, and the emissions shall be reduced by at least 90 percent compared to 1990.

To reach this aim, the road logistics traffic as a major pollutant needs to be decarbonized. While the long distance traffic cannot be covered by battery electric vehicles due to the limited range, the requirements of the inner city logistics offer perfect conditions for the use of battery electric vehicles and new logistics concepts. Thus projects need to be implemented where vehicles can be tested by logistic companies, further developed together with OEMs and being embedded in new concepts, developed with all relevant stakeholders like cities, public transport companies and universities.

| Stakeholder EMOBICITY | |
|------------------------------|--|
| No. | Company / Organisation |
| 1 | SMA Solar Technology AG |
| 2 | University of Kassel |
| 3 | Hessian Ministry of Economy, Energy, Transport and Housing |
| 4 | Kasseler VerkehrsGesellschaft AG |
| 5 | HA Hessen Agentur GmbH |
| 6 | EAM GmbH & Co. KG |
| 7 | DHL Freight GmbH |
| 8 | Rudolph Logistik |
| 9 | BOOXpress GmbH |
| 10 | Hübner GmbH |
| 11 | City of Kassel |
| 12 | Frankfurt University |
| 13 | Daimler AG |
| 14 | Stadtwerke Offenbach - Geschäftsstelle Elektromobilität |
| 15 | Städtische Werke AG |
| 16 | sera Compress |
| 17 | Volkswagen AG |
| 18 | Friedrich Zufall GmbH & Co. KG |
| 20 | Energie 2000 |

| | |
|----|--|
| 21 | Libri GmbH |
| 22 | Fraunhofer IEE |
| 23 | sera Compress |
| 24 | DACHSER SE |
| 25 | Hessen mobil - Straßen- und Verkehrsmanagement |
| 26 | Hessen Agentur |
| 27 | B. Braun Melsungen |
| 28 | EnergieNetz Mitte |
| 29 | Nordhessischer Verkehrsverbund |
| 30 | Schenker Deutschland AG |

4. Actions

4.1. Action 1: Implementation of E-Trucks in North Hesse

4.1.1. The background

Action 1 is based on good practices and outcome of workshops from EMOBICITY. The workshop “promotion of electric mobility in low integrated fields” has shown that it is possible to promote electric mobility in rural regions primarily through practical testing. As a rural logistics hub, North Hesse offers the best opportunities to transfer the EMOBICITY ideas from public transport to other logistics services. The good practice of NWRDA “Replacing urban public transport fleet in Cluj-Napoca City” provides a good basis for converting intralogistics to electric drives. The procedure for converting the bus fleets in Cluj can be taken as a good example here. Initially, only a small part will be converted in test operation. Gradually, further e-trucks can then be purchased, taking into account ecological and economic aspects. Action 1 is to be accompanied by further measures. In addition, the ecological training for e-buses successfully introduced by the Greek partners CRES could be transferred to e-trucks as a voluntary additional offer to the drivers that could be carried out outside of the main project. Based on the Good Practice “Ecodriving training for electric bus (trolley) drivers” of CRES, the idea is transferred to e-trucks. The experience from Greece has shown that Ecodriving can also work in North Hesse with a different class of vehicle without much effort. The main objective of this measure is to save resources through sustainable and safe driving. The underlying good practice “Ecodriving training for electric bus (trolley) drivers” was presented by CRES during our partner meetings and was further discussed during our study visits.

4.1.2. Action

E-mobility is already spreading more and more in the private sector. Based on the impressions of our EMOBICITY exchange, the question arises as to what potential electric mobility already has for converting the truck fleet. To this end, we want to work with our EMOBICITY stakeholders to test the extent to which conventional processes in intralogistics can already be carried out with an e-truck. Various questions can be connected to this. Does e-mobility influence the operational process? How reliable is the charging infrastructure? How does the vehicle prove itself over a longer period of time? How much CO₂ can be saved? What are the current obstacles to the spread of e-mobility in intralogistics? These questions can only be answered by practical testing.

Implementation of E-Trucks in North Hesse:

- The acquisition of e-trucks will be supported by Federal Ministry for Traffic and Digital Infrastructure (BMDV) through the policy instrument KsNI. For the grant application, B.Braun will work with Reimer Logistics, Renault and RMNH to successfully implement the application. Renault has already been selected as automobile manufacturer based on the specific requirements (battery, cargo space, price, delivery time etc.). The order for the e-truck is placed before the start of the project or within the first month in order not to cause a delay in the project process due to the delivery times incurred. Renault has already confirmed to be able to deliver until February 2023.
- The installation of a test track at a large logistics company in northern Hesse is based on the grant application by the consortium. B.Braun and Reimer Logistics will adapt the test track to meet company-specific requirements and set up the appropriate charging infrastructure. The installation of the test track is part of the planning phase and will take place within project months 1-5. (Planning of the project schedule, formation of the project team, acquisition of the e-truck, set-up of the test track, formulation of scientific questions.) During the test phase (project months 6-11), the e-truck will be integrated into B.Braun's regular operations.
- Monitoring, evaluation and dissemination of findings are accompanied by the project partners. For the evaluation of the field test, data will be collected, evaluated and interpreted by inhouse experts of Reimer Logistics, B.Braun and Renault. During phase 2 RMNH will disseminate the Action Plan idea and project progresses within 2 Stakeholder Meetings and 1 live demonstration of the e-truck in action. Furthermore, RMNH will inform their local networks via newsletter on a monthly basis. Monitoring and dissemination takes place from project month 1-12.
- Expansion of the fleet and extension to other companies. After a successful field test, the results will be disseminated to the public in the region. To this end, the introduction

of e-trucks in North Hesse will be publicized at events, trade fairs and lectures by RMNH. This measure is implemented from project month 11-12.

4.1.3. Players involved

The players involved are the clusters decentralized energy technologies (deENet), mobility (MoWiN.net) and ICT (IT-network) from the Regionalmanagement Nordhessen GmbH and members of the stakeholder group, who would like to use the policy instrument and form a project team based on the EMOBICITY Action Plan.

- Regionalmanagement Nordhessen GmbH will form and coordinate a project team consisting of regional players from politics, business and science.
- B. Braun Melsungen is to be the company in which conventional processes in intralogistics are converted to e-mobility. The company is one of the main EMOBICITY-Stakeholders.
- Reimer Logistics GmbH & Co KG is the logistics service provider of B. Braun Melsungen. The e-trucks are operated by Reimer. The drivers are provided by Reimer.
- Renault Trucks is accompanying the project as manufacturer and offers extensive technical support.
- The Federal Ministry for Digital and Transport (BMDV) accompanies the funding program and provides the corresponding funds.

The Regionalmanagement Nordhessen includes the 3 clusters below in which the North Hessian economy, science and politics are organized. Action 1 is not limited to the above-mentioned actors. In consultation with the Hessian authorities, further sub-projects can be carried out with different partners if there is sufficient interest.

| | deENet | ICT-Cluster/ IT-Network | MoWiN.net |
|---|------------------------|------------------------------------|------------------------------------|
| Legal form | Registered association | Non-profit, registered association | Non-profit, registered association |
| Total number of members or cluster actors | 98 | 44 | 103 |
| • SME members | 63 | 33 | 38 |
| • Large companies | 5 | 9 | 45 |
| • Research institutions | 4 | 1 | 15 |
| • Other actors | 26 | 2 | 5 |

4.1.4. Timeframe

The project duration is from 01.08.2022 - 31.07.2023.

Project months 1-5: Planning phase

- Planning of the project schedule, formation of the project team, acquisition of the e-truck, set-up of the test track, formulation of research questions.

Project months 5-11: Test phase

- Commissioning of the e-truck, testing of electric mobility under real conditions, testing of different route profiles at different times of the year and weather conditions, Adaptation and expansion of the test track.

Project months 11-12: Evaluation phase

- Evaluation of test results from a practical perspective, documentation of test results to ensure transferability.

4.1.5. Costs (if relevant)

To be determined in detail.

The estimated purchase price of the electric truck is approximately 350,000€. The subsidy program for the acquisition of an e-truck reimburses 80% of the additional investment costs compared to the acquisition costs of a conventional truck. The truck is to be leased for the duration of the project. The leasing rate is calculated based on acquisition cost and subsidy rate.

Apart from the subsidized purchase of the e-truck, personnel costs and travel costs for the administrative implementation of the field test of approximately 15,000-20,000€ over one year are estimated for all partner over the entire implementation period.

4.1.6. Funding sources (if relevant):

The funding source is the addressed policy instrument the “Klimaschonende Nutzfahrzeuge und Infrastruktur” funding program by the Federal Ministry for Digital and Transport (BMDV). The subsidy program for the acquisition of an e-truck reimburses 80% of the additional investment costs compared to the acquisition costs of a conventional truck.

Date: _____

Signature: _____

Stamp of the organisation (if available): _____