

EMOBICITY

Peer Review Report

RMNH

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1. Policy context and policy challenges encountered

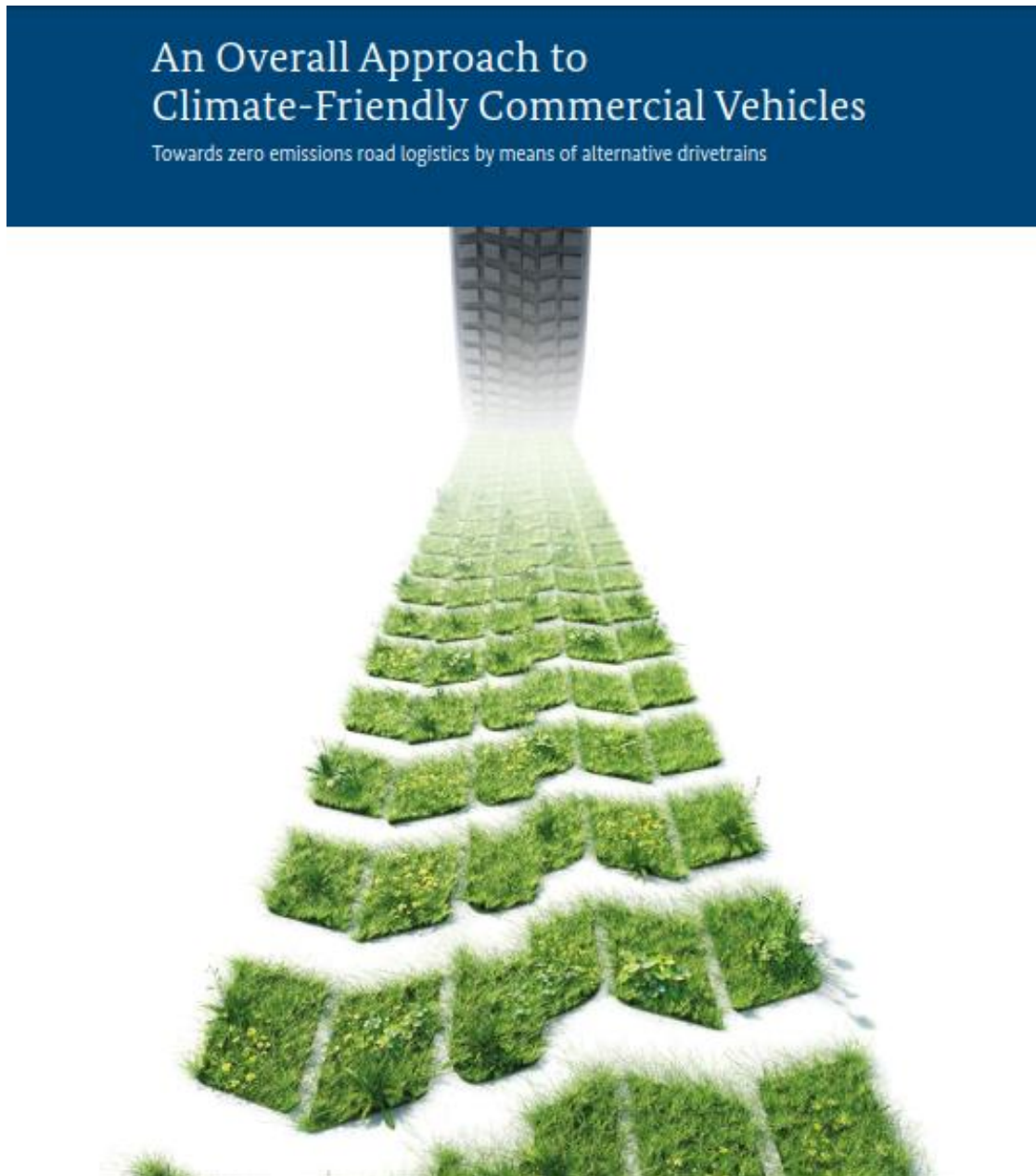
The policy instrument "Climate-Friendly Commercial Vehicles and Infrastructure" (Klimaschonende Nutzfahrzeuge und Infrastruktur - KsNI) addressed in the German Action Plan is supervised by the Federal Ministry for Traffic and Digital Infrastructure (BMDV). The KsNI is part of the "Overall Approach to 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 Overall Approach to Climate-Friendly Commercial Vehicles (Figure 2):

- addresses the key requirements of vehicle users and providers to be met by alternative drivetrains and the associated infrastructure for climate-friendly commercial vehicles.
- outlines the fleshing-out of the three core measures from the Federal Government's 2030 Climate Action Programme: and
- shows how the measures can be implemented in a targeted manner. To this end, the practical experience of all relevant stakeholders is to be incorporated. Because the only way to successfully progress along the road towards zero emission logistics is by taking concerted action.

Figure 1: Frontpage of the Overall Approach to Climate-Friendly Commercial Vehicles



The Overall Approach to Climate-Friendly Commercial Vehicles is supervised by the Federal Ministry for Traffic and Digital Infrastructure (BMDV). The concept is the basis for a variety of policy instruments, funding guidelines and other measures to promote climate-friendly commercial vehicles.

Figure 2: The ten key messages of the Overall Approach to Climate-Friendly Commercial Vehicles











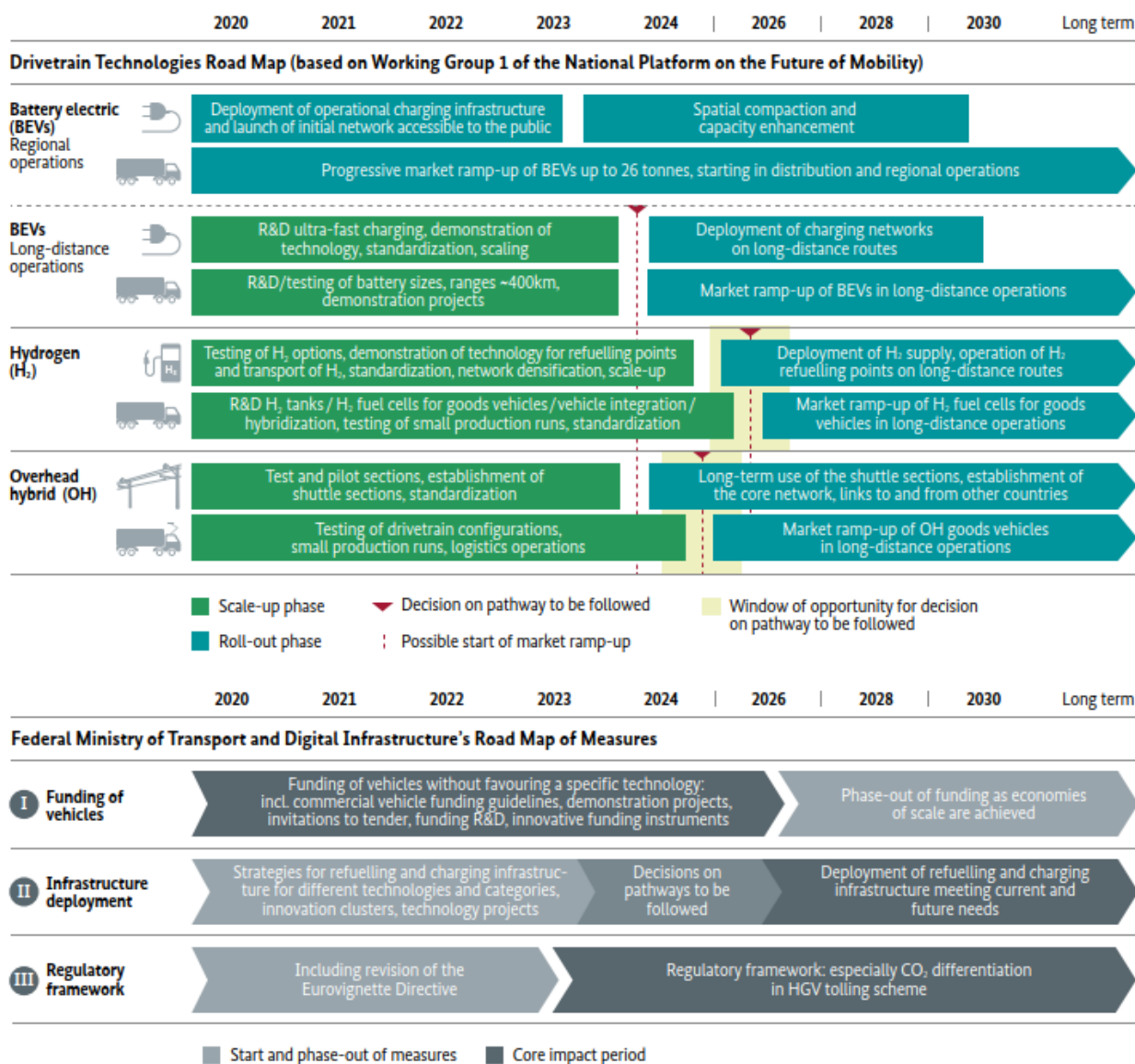
Objective of the 2030 Climate Action Programme	By 2030, vehicles powered by electricity or electricity-based fuels account for around one third of the mileage in heavy road haulage.		
General framework	A stringent pathway will reconcile the properties of alternative technologies with the requirements of users and providers.		
	Vehicle use	Technological properties	Vehicle manufacture and infrastructure provision
	<p>01 The use cases of the vehicles used in road haulage are many and varied. They result in different requirements to be met by the drivetrain technologies.</p> 	<p>03 The alternative drivetrain technologies have specific advantages and disadvantages. They should be deployed where they are most suited to the use cases.</p> 	<p>05 Alternative drivetrains will be an important component of the product portfolio. On the road towards economical production/provision, the existing significant market risks must be reduced and investment needs addressed.</p> 
	<p>02 The use of alternative drivetrain technologies must be competitive in terms of cost compared with conventionally powered vehicles.</p> 	<p>04 Decisions on scale-ups and pathways to be followed must be taken independently of the technological development steps, costs to the national economy and successful practical trials.</p> 	
	<p>➔ 06  The objective is achievable through a technology mix of drivetrains.</p>		
Measures	The Federal Ministry of Transport and Digital Infrastructure will guarantee the necessary planning and investment certainty through an integral package of measures .		
I Vehicle funding	<p>07  The Federal Ministry of Transport and Digital Infrastructure will fund the market ramp-up of commercial vehicles with climate-friendly alternative drivetrains without favouring any specific technology in order to meet the objective of making these vehicles economically competitive compared with conventional vehicles as quickly as possible.</p>		
II Infrastructure deployment	<p>08  The Federal Government will manage the deployment of refuelling and charging infrastructure geared to the vehicle ramp-up, thereby creating the necessary conditions for a market penetration of climate-friendly commercial vehicles.</p>		
III Regulatory framework	<p>09  The Federal Ministry of Transport and Digital Infrastructure will create a targeted regulatory environment ensuring that the products are competitive and that the players enjoy investment certainty. The regulatory core will be a differentiation of HGV tolls by CO₂ emissions from vehicles.</p>		
Implementation	Successful implementation of the Overall Approach will not be possible unless all stakeholders join forces and act in a targeted manner .		
	<p>➔ 10  The road haulage sector will not be able to leverage its potential for decarbonization unless all stakeholders make a joint commitment and take targeted action. The Federal Ministry of Transport and Digital Infrastructure is committed to dialogue and concerted action in the implementation of the Overall Approach.</p>		

Figure 3: Interaction between the Road Maps of Drivetrain Technologies and Measures



With the Overall Approach to Climate-Friendly Commercial Vehicles, the Federal Ministry of Transport and Digital Infrastructure is presenting an integrated package of measures with three elements: vehicle funding, infrastructure deployment and a regulatory framework. Timewise, the package is based on the forecast availability of the various alternative drivetrain technologies for commercial vehicles. In terms of substance, the package is based on the technological constraints that have to be taken into account for the various alternative

drivetrain technologies and their deployment. These technological constraints are set out in key messages 1 to 6. A concise summary of the most important technological steps can be found in the Drivetrain Technologies Roadmap. Figure 3 shows a scaled-down version of the Alternative Technologies Road Map, which was developed by Working Group 1 of the National Platform on the Future of Mobility.

2. Selected Policy Instrument

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.

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. Action Plan for the improvement of the selected Policy Instrument

As already described in the previous chapters, the aim is to get as many climate-friendly commercial vehicles as possible onto the market within the PI. An important area for our Actions Plan is the introduction of electric mobility in intra-logistics. Here we hope to gain new insights from practical implementation, which can then also be incorporated into future policy instruments.

3.1. Background for Designing the Action Plan

The content of the 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.

3.2. Action: Implementation of E-Trucks in North Hesse

3.2.1. 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.

3.2.2. 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.

3.2.3. 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
<ul style="list-style-type: none"> • SME members • Large companies • Research institutions • Other actors 	<p>63</p> <p>5</p> <p>4</p> <p>26</p>	<p>33</p> <p>9</p> <p>1</p> <p>2</p>	<p>38</p> <p>45</p> <p>15</p> <p>5</p>

3.2.4. 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. Peer Review meeting

The Peer Review meeting was organized by RMNH and was held digitally on Microsoft Teams on 12/07/22, 10:00 CET. The participants are listed below:

Nr.	Name	Surname	Institution
1	Beirão	Diogo	ADENE
2	Cardoso	Ana	ADENE
3	Dobler-Eggers	Christian	RMNH
4	Ivanov	Ioana	NWRDA - Civitta
5	Lopes	Nuno	AZORES
6	Ntaras	Nikos	CRES
7	Stadler	Reinhold	NWRDA - Civitta
8	Quinto	Miguel	AZORES
9	Židov	Bruno	EIHP

Christian Dobler-Eggers, as host of the meeting and representative of RMNH, warmly welcomed all participants and introduced the agenda. The meeting participants represent all regions involved in the EMOBICITY project.

Mr. Dobler-Eggers gives a presentation with detailed information on the Overall Approach to Climate-Friendly Commercial Vehicle by the German Ministry for Traffic and Digital Infrastructure, which is the underlying source for the validated action plan. The concept is the basis for a variety of policy instruments, funding guidelines and other measures to promote climate-friendly commercial vehicles. It is part of the German 2030 Climate Action Program with ambitious targets. Until 2030 one third of the mileage should be provided by electric trucks or trucks with climate-friendly drive systems. The general framework covers the vehicles use, technological properties and vehicle manufacture/infrastructure improvements.

In the second part of the presentation the background of the action plan was presented. Therefore, Mr Dobler-Eggers gave a brief overview of what RMNH has learned and has been inspired by its EMOBICITY partners to develop the action plan while taking regional needs into account. Furthermore, the action plan “Implementation of heavy e-trucks in North Hesse” is presented including the main research questions that allow detailed feedback to the Ministry in order to influence the corresponding Policy Instrument. In addition to the initial four-step approach for the introduction of e-truck, the timeframe for the entire process in phase 2 is also presented.

After the presentation, a discussion with all participants, project partners and peers takes place, including many helpful comments for further improvements of the Action Plan and the corresponding implementation.

Mr. Bruno Židov asks for more information on how the Policy Instrument is going to be influenced. Mr. Dobler-Eggers answers that the idea of the application-oriented action plan is mainly to positively influence new funding guidelines through the experiences from the concrete implementation of the project based on the EMOBICITY learning content. In practice, it should be checked where gaps still exist within the policy instrument KsNI, from the application phase to the follow-up phase. These could then be remedied through targeted feedback from RMNH to the Ministry and other relevant parties. Another example of how the policy instrument could be improved is a targeted design. This can be compared in practice with the EMOBICITY Good Practices in the North Hessian Action Plan.

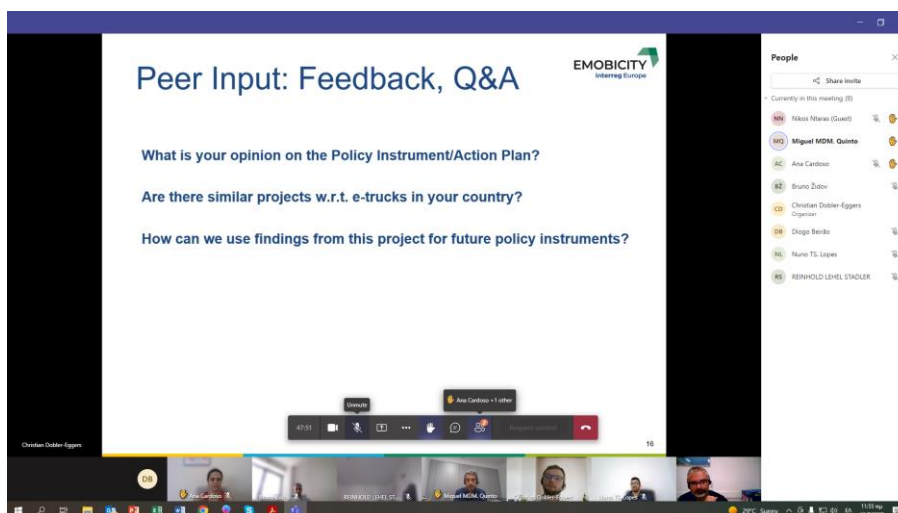
There are further concerns that the e-truck may not be delivered in the 2nd phase due to ongoing supply issues (Corona, war, etc...). Mr. Dobler-Eggers argues that this is a very valid comment. He was in contact with B. Braun. According to the manufacturer, delivery should take place by February 2023. If there are further delays, it would also be possible to gain a lot of knowledge in just a few weeks of practice, which means that even with a delivery in June, there is still enough time for implementation.

Mr. Nikos Ntaras provides some valuable information on the good practices addressed in the Action Plan and shows the potential for improvement of the policy instrument

based on them. North Hesse could learn from the conversion of the bus fleet in Cluj. In this regard, a bilateral exchange between Mr. Dobler-Eggers and Mr. Stadler will take place afterwards.

Mr. Miguel Quinto and Mr. Reinhold Stadler agree with the ideas of the North Hesse Action Plan and offer their help for further cooperation in the second project phase. The other participants also agree with the North Hesse approaches within the Action Plan and have no further questions. It is planned to invite all project partners to a practical demonstration of the e-truck in North Hesse.

Screenshots



5. Peer Review outcomes and final remarks

The following results were taken away from the peer review meeting:

- A quick acquisition of the e-trucks should prevent possible delays in the supply chain.
- RMNH and NWRDA will have another in-depth exchange on the good practices "Replacing urban public transport fleet in Cluj-Napoca City" and "Replacing the entire public transport fleet in Turda with electric buses".
- The implementation of heavy e-trucks offers a huge potential to test electric mobility for intra-logistical purposes, while monitoring the policy instrument at the same time.
- Close contact with the European project partners will be maintained throughout the implementation in phase 2. This has the advantage that any problems can be anticipated and improved directly in exchange with the partners. Direct exchange plays an important role in influencing the policy instrument.

The peer review process has proven to be an extremely useful tool. Through the detailed exchange, problems could be discussed in advance and possible solutions could already be thought of.

Annex

[Gesamtkonzept - Klimafreundliche Nutzfahrzeuge \(klimafreundliche-nutzfahrzeuge.de\)](https://www.klimafreundliche-nutzfahrzeuge.de)