

Guide for Proposers

Zero Emission Mobility

2021 Programme

A funding initiative of the Climate and Energy Fund in support of implementing the Integrated National Energy and Climate Plan for Austria and achieving climate neutrality by 2040



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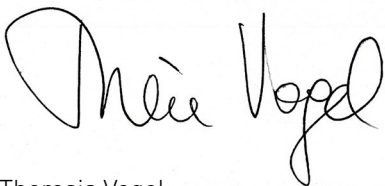
Preface

Austria has set itself the goal of achieving climate neutrality by 2040. The scale of this challenge, particularly for the mobility sector, should not be underestimated. In response, a whole series of public support measures have been made available. A key instrument in this respect is the Zero Emission Mobility programme, which provides the research and innovation framework for implementing the Austrian Federal Government's e-mobility initiative. The programme thus constitutes a vital support for Austria's automotive sector in its transformation efforts to achieve climate neutrality by 2040.

Zero emission technologies are extremely important to the Austrian economy. For that reason, the programme focuses on involving small and medium-sized enterprises, actively encouraging the integration of start-ups and the establishment of new businesses. The 4th Call focuses on the target of 100% electrification (batteries, fuel cells, high-performance capacitors) for vehicles, the development and testing of intelligent charging infrastructure as well as zero emission logistics and zero emission mobility solutions. The Call places a focus on systemic solutions with clear prospects of relatively rapid implementation but also provides funding for more research-oriented projects. All near-market projects must therefore include both a research and a demonstration phase.

The topics cover both vehicles, addressing all classes of vehicles as well as new vehicle concepts, and infrastructure, with a particular emphasis on sector coupling. A further focus is zero emission freight logistics, as well as electrified, public access mobility solutions for both urban and rural transport. Furthermore, the Call includes two R&D services focusing on the potential to convert commercial vehicles to zero emission drive systems and a quantity structure and recommended actions for establishing zero emission road traffic infrastructure.

We cordially invite you to submit your innovative project proposal and would be delighted if it serves the further development of electric mobility, bringing it closer to the market and thus strengthening Austria as a technology hub.



Theresia Vogel
Managing Director Climate and Energy Fund



Ingmar Höbarth
Managing Director Climate and Energy Fund

1.0 Key Items at a Glance

Zero emission technologies offer the opportunity to substantially reduce greenhouse gas emissions from transport, and to create a sustainable, interoperable mobility system. The Climate and Energy Fund supports technology and implementation-oriented electric mobility projects designed to integrate components, systems and services into a comprehensive mobility system.

The present call is embedded in a long-term strategy of the funding programme (see Chapter 2).

An amount of EUR 8 million in funding is available for the 4th Zero Emission Mobility Call.

These funds are intended to support flagship projects and cooperative R&D projects. The projects should promote 100 % electrification of vehicles and enable the development and testing of intelligent e-mobility and hydrogen infrastructure and their integration into publicly accessible mobility systems and logistics solutions. The use of hydrogen in combustion engines is not eligible for funding under this programme.

The call additionally includes two R&D services: one is designed to explore the potential to convert commercial vehicles to zero emission drive systems and the other focuses on a quantity structure and recommended actions for establishing zero emission road traffic infrastructure. Both R&D services must be aimed at achieving climate neutrality by 2040.

The project proposals must be submitted via [eCall](#) by the submission deadline of **15 October 2021, 12:00**.

Zero Emission Mobility is a funding initiative of the Climate and Energy Fund in support of implementing the Integrated National Energy and Climate Plan for Austria and achieving climate neutrality by 2040.

PLEASE NOTE:

If the application does not meet the formal requirements for project submissions in accordance with the conditions and criteria of the relevant funding instrument and the call, and if the deficiencies are not rectifiable, the application will be excluded from the further procedure and will be formally rejected without exception in accordance with the principle of equal treatment of applications. The FFG's eCall system provides support in this respect, but the ultimate responsibility for compliance with the formal requirements still rests with the applicants. A detailed check list specifying the conditions and criteria of the relevant funding instrument and the call can be found at the beginning of the relevant application forms (Project Description).

Funding may only be granted if it has an incentive effect. The new RTI Guidelines (Thematic RTI Guideline), therefore, require all project partners to declare via eCall whether the funding leads to a change in their behaviour.

Projects that fall exclusively into the research category "Industrial Research" are not eligible for funding under the Funding Guidelines for Environmental Assistance in Austria (UFI).

Call overview – topics and instruments

Topics and financing instrument	Flagship Project Large-scale research and demonstration project	Kooperative F&E-Projekte Cooperative research and development project	F&E-Dienstleistung Specified R&D content
Topic 1: Zero Emission Vehicles	Applicable	Applicable	Not applicable
Topic 2: Zero Emission Infrastructure	Applicable	Applicable	Not applicable
Topic 3: Zero Emission Logistics and Zero Emission Mobility Solutions	Applicable	Applicable	Not applicable
R&D Services	Not applicable	Not applicable	Applicable

Instruments

Information	Flagship Project Large-scale research and demonstration project	Cooperative R&D Project Cooperative research and development project	R&D Service Specified R&D content
Research category	Industrial Research and/or Experimental Development Both research categories can be included in one project; Industrial Research must not exceed 30 % of overall project costs. If both research categories are included, the individual Work Packages (WP) must be assigned to the corresponding research categories. If this assignment is not provided, funding will only be granted for Experimental Development.	Industrial Research or Experimental Development	Not relevant
Min. funding amount requested for R&D part of the project	EUR 2 million	None	None
Max. funding amount for R&D part of the project	None	EUR 1 million	EUR 60,000 / 150,000 plus VAT
Funding rate	Max. 85 %, depending on research category and type of organisation. For details, see Technical Guidelines.	Max. 85 %, depending on research category and type of organisation. For details, see Technical Guidelines.	No funding rate.
Project duration	100 % financing	1 to 3 years	max. 8 months / 12 months
Cooperation required	Yes	Yes	No

Budget, deadlines, contacts and further information

Further information	Details
Available call budget	EUR 8 million
Obligatory preliminary meeting	A preliminary meeting until 17 September 2021 is obligatory for flagship projects and voluntary for cooperative R&D projects (see Chapter 4.2).
Submission deadline	15 October 2021, 12:00
Language	English
Contact	DI Dagmar Weigel, MSc Telephone: +43 5 7755-5045 Email: dagmar.weigel@ffg.at
Information on the Web	FFG Zero Emission Mobility website

2.0 The Funding Programme

2.1 Long-term orientation 2018–2022

Previous calls and the predecessor programme, Austrian Electric Mobility Flagship Projects, have already provided funding for numerous innovative projects resulting in the successful development of future-oriented solutions (see [Zero Emission Mobility Brochure](#)).

In line with the #mission2030 Climate and Energy Strategy, the programme focus was adjusted in 2018 with the aim of enabling **long-term projectability** for funding recipients. The Zero Emission Mobility programme forms the research core for implementing the e-mobility initiative and makes an important contribution to the national integrated energy and climate plan.

The clear focus of the programme is thus on **zero emission mobility** in road transport with a special emphasis on near-market research consortium projects with integrated demonstration and a clear implementation perspective. The calls are mission-oriented and technology neutral and focus on the three pillars, **vehicle – infrastructure – user**. These three thematic pillars will be addressed in the next few years. The concrete call topics will be defined annually to account for current technology trends and the changing environment, which in turn interacts with the zero emission technology system.

The research programme takes a **systemic perspective** – projects should not primarily focus on individual aspects but address the **system integration** of the technologies developed or entire value chains. They should also demonstrate Austrian technology expertise and innovative system design strengths in the field of electric mobility by drawing on the expertise of complementary partners.

The perspective of the R&D services included in the calls may extend beyond road transport to include other means of transport as well as new technologies and economic aspects..

2.2 Strategic goals of the programme

In Austria, zero emission technologies are embedded in an **intermodal mobility system** made up of trains, electric utility vehicles, buses and cars as well as electric scooters and (e-)bikes on the basis of smart grids and the necessary fuelling and charging infrastructures. The Zero Emission Mobility programme aims to support the development of solutions for the creation of an affordable, environmentally-friendly and efficient mobility system. Relevant project results include both innovative technology developments and integrated mobility solutions offering perspectives of short-term implementation and value creation for Austria.

The aim is to contribute to the goals specified in the Government Programme 2020-2024 such as achieving climate neutrality by 2040 and associated decarbonisation of road transport.

In order to achieve sustainable development, framework conditions must be established for a mobility transition which creates a decarbonised, service-oriented transport system. In line with ensuring the Climate and Energy Fund's policy of achieving greatest possible relevance in terms of climate protection, the programme follows the decarbonisation pathway by setting a **technology neutral** focus on locally emission-free vehicles (BEV, FCEV¹). The drive energy must be produced in a climate-neutral manner in accordance with the zero emission principle. Operational demonstration must be based exclusively on electricity and/or hydrogen from renewable resources. The use of hydrogen in combustion engines is not eligible for funding.

¹ BEV = Battery electric vehicle, FCEV = Fuel cell electric vehicle

Zero emission technologies are also of high economic relevance for Austria. Electric mobility alone has the potential to increase value added by around 19 % and the number of jobs by around 21% until 2030². Realising this potential requires a fast and targeted transformation of the (automotive supply) industry. The most effective way to do this is to coordinate with international suppliers and clients. Another focus of the programme is therefore on the **international relevance** and **exploitation potential** of the technologies developed. With Austria's economic structure in mind, the programme places strong emphasis on the involvement of **small and medium-sized enterprises and actively promotes the integration of start-ups and the establishment of new businesses.**

2.3 Interaction with other funding programmes

Distinction from thematically relevant programmes

Funding for research and development projects involving components and parts of conventional vehicles is granted under the General Programmes of the Austrian Research Promotion Agency (FFG).

The "Mobility of the Future" programme (research theme "Vehicle Technologies") supports the development of components for alternative drive systems, lightweight components and vehicles as well as automotive electronics and connected/automated vehicles, but the focus is not on e-mobility infrastructure or demonstration projects.

Relationship to the calls "Smart Cities Initiative", the "Energy Research Programme 2021 of the Climate and Energy Fund" and the "Electric Mobility Initiative"

- The Smart Cities Initiative supports practical solutions for sustainable urban development. Innovative products, services and processes are demonstrated in real-life urban environments and subsequently rolled out on a broad scale in order to create local added value and a positive climate impact on Austrian cities and communities.

- The Energy Research Programme 2021 of the Climate and Energy Fund focuses on materials research.
- The Electric Mobility Initiative 2021 sponsored by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) in cooperation with the automobile and two-wheeler importers and the sports retail sector seeks to accelerate the market introduction of electric mobility in Austria. Infrastructure and vehicles which are not part of research and development should primarily receive funding under the Electric Mobility Initiative. Applications are to be submitted directly to Kommunalkredit Public Consulting (KPC). An exception are demonstration facilities (according to Environmental Assistance in Austria – UFI). These demonstration facilities can be submitted to the present call provided that they are directly related to research and development activities (for more information, see Chapter 4.4).
- The Sustainable Mobility in Practice programme supports projects which make a relevant contribution to overcoming the obstacles and barriers to the broad implementation of sustainable forms of mobility as effectively, efficiently and quickly as possible. The focus is on market-oriented and easily replicable projects.
- The Zero Emission Mobility Implementation programme is aimed at implementing larger scale system solutions at TRL 7–9. It represents the next link in the innovation chain following the Zero Emission Mobility programme. A new call is planned for autumn 2021 subject to the availability of funds.
- The Logistics Funding Programme 2019–2023 sponsored by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) focuses on the (pilot) implementation of innovative logistics concepts for all modes of transport. The funding programme is designed to increase the competitiveness of the Austrian freight transport and logistics sector, to enhance Austria's attractiveness as a business location and to safeguard social and ecological sustainability. Funding is provided for implementation studies, demonstrators and pilot projects which are carried out in close cooperation of (logistics) companies, public authorities and other stakeholders (more information on logistics funding can be found on the [SCHIG Website](#)).

Potential applicants are encouraged to examine the programmes and initiatives listed above and to organise a meeting with the relevant project managers in good time.

² [Study on value creation and employment potentials of electric mobility](#)

2.4 Sustainability

Future-oriented research and development seeks to achieve the current global, European, national and regional goals that are designed to put us on a path to a sustainable future. The integration of sustainability aspects in research and development projects generates new knowledge which is essential for supporting ecological, social and economic transformation processes. Responsible research funding therefore supports social adaptation, learning and decision-making processes that are of relevance for industry and science and promote their sustainable development.

This call requires applicants to address the key sustainability goals to which the proposed project makes a concrete positive contribution. The planned sustainability effects must be described in the application and taken into account in the research design.

What are the underlying sustainability initiatives and measures?

The call makes reference to the global Sustainable Development Goals of the United Nations (SDGs) and the European elements of the EU Green Deal. This is supplemented by additional national goals specified in the Government Programme 2020, including climate neutrality, efficient use of resources and implementation of a clean circular economy.

More detailed information can be found in the Technical Guidelines and on the [FFG Website](#).

PLEASE NOTE: Applicants should cite only those sustainability goals and aspects to which the project makes a substantial contribution and which are relevant for the content, implementation and exploitation of the project. Citing a large number of sustainability goals will not necessarily lead to a better assessment of the project.

3.0 The Call

3.1 Call objectives for research projects

The 4th Zero Emission Mobility Call focuses on 100 % electrification (batteries, fuel cells, high-performance capacitors, no combustion engines) of vehicles and the development and testing of intelligent charging infrastructure. A focus is on the integration of electrified, automated public access mobility services in urban and rural transport as well as solutions for zero emission logistics. Another focus is placed on sector integration, experimental spaces and the testing of new structures, business fields and solutions.

The projects are also designed to focus on innovative technologies, business models and solutions which, although they cannot be implemented within the current legal framework, could be tested within potential future experimental spaces. However, the overall success of the project must not depend on such special permissions being granted.

Relevant project results include both innovative systemic technology developments and integrated mobility solutions providing value creation perspectives for Austria. Special emphasis is placed on the scalability of solutions and the integration of existing components into novel zero emission developments.

The call focuses on 3 thematic areas to obtain these results:

- a. Zero Emission Vehicles
- b. Zero Emission Infrastructure
- c. Zero Emission Logistics & Mobility Solutions

In order to achieve high practical relevance and fast implementation of research results on the market, **partners from industry should be encouraged to participate in the consortia.** A further objective of the call is to involve small and medium-sized enterprises (SMEs) or start-ups in the projects as well as including international partners and/or networking with major existing initiatives and projects, where feasible (see also Chapter 2.3).

Project proposals must present

- a thorough analysis of the international state of the art,
- a clear, quantified starting basis for the planned developments, based on the international state of knowledge and technology (indicators on current technologies, costs, emission levels, technology readiness levels etc.) and
- clear, quantified project goals (planned technology indicators, costs, emission levels, technology readiness levels etc.) including a market introduction strategy.

3.2 Call topics for research projects

Project proposals must address at least one of the following topics and may include a **combination of several topics. It is recommended that cooperative R&D projects should focus on only one topic.** The applications must fulfil the requirements described below.

3.2.1 CALL TOPIC 1: Zero Emission Vehicles

While zero emission technologies are penetrating the passenger car market at increasing speed, many other vehicle classes and areas of application still offer potential for development. In principle, this includes all vehicles specified in Sec. 3 of the Motor Vehicles Act (§ 3 KFG), such as vehicles used in:

- the logistics sector
 - road-based passenger transport including new needs-based mobility services
 - the agriculture and the tourism sector
 - the municipal sector
 - airports and railway stations
 - the industrial sector
- and selected vehicles not covered by § 3 KFG, including special-purpose vehicles and vehicles for special applications in the construction, mining or tourism industries or similar.

The development of new vehicle concepts and e-bikes, for example offering particularly attractive pricing or for a specific use, is also eligible for funding.

This thematic area, therefore, calls for the submission of projects which (further) develop locally emission-free vehicles that are fully electrically powered by batteries, fuel cells or high-performance capacitors. Projects must consider the vehicle as a whole and, where necessary, take account of special fuelling or charging infrastructure (in combination with topic 3.2.2 – Zero Emission Infrastructure). Flagship projects and cooperative R&D projects of the research category “Experimental Development” must include a demonstration phase in order to prepare a successful market launch and to demonstrate operational capability within the overall system of vehicles and infrastructure.

(Further) development should focus in particular on the potential to reduce costs and increase the efficiency of the system as a whole. Project proposals may also address production aspects in preparation for serial production of batteries and other components in order to enable the efficient and cost-effective scaling up of production.

Operational demonstration must be based exclusively on electricity and/or hydrogen from renewable resources. The use of hydrogen in combustion engines is not eligible for funding.

3.2.2 CALL TOPIC 2: Zero Emission Infrastructure

The availability of suitable fuelling and charging infrastructure is a key prerequisite for the spread of zero emission technologies. In addition to the availability of appropriate charging capacity, the focus is primarily on cost-efficient installation, intelligent integration into the energy system and operation of the infrastructure.

Consequently, this thematic area calls for project proposals which either develop novel infrastructure systems or enhance existing solutions to integrate them in comprehensive infrastructure systems. The focus should be on the development of hardware solutions, but may also include associated software aspects. The feasibility and scalability of the solutions developed must be demonstrated in practical operation (for flagship projects and cooperative R&D projects of the research category “Experimental Development”).

Particular attention is paid to **sector integration**, i.e. intelligently combining mobility-related aspects with other sectors such as energy production, storage and distribution. This integration is essential for developing the most economically efficient solutions. In addition to the development and testing of technical solutions the call encourages the **integration of organisational issues and new business models**.

Planning and implementation must, therefore, take into account the availability of the required energy (including hydrogen, stationary storage, second-life and vehicle-to-grid applications) as well as considering potential scalability at a later stage. Integration into an overall system including operational demonstration (e.g. with photovoltaics, storage system, charging solutions and/or hydrogen and vehicle-to-grid applications) is welcomed. The economic sustainability of the development, and potential transition to regular operations must be demonstrated at the end of the project period.³

The involvement of grid operators is desired, e.g. in order to be able to simulate or test charging management systems and grid-friendly charging under real-world conditions.

³ Publicly accessible charging infrastructure must meet the requirements of the Federal Act establishing uniform standards for the deployment of alternative fuels infrastructure.

3.2.3 CALL-TOPIC 3: Zero Emission Logistics and Zero Emission Mobility Solutions

Sub-Topic 1: Zero Emission Logistics

The logistics sector accounts for a significant proportion of emissions in road transport. In addition, with increasingly strict international regulations on greenhouse gas, pollutant and noise emissions, zero emission technologies are particularly suited to applications in the logistics sector. Potential project ideas may be designed for both urban and rural areas.

Funding is available for the development and demonstration of zero emission freight logistics scenarios, including the use of zero emission vehicles and integration of appropriate fuelling and charging infrastructure solutions. Operational demonstration is crucial in this context (for flagship projects and cooperative R&D projects of the research category “Experimental Development”). The economic sustainability of the development and potential transition to regular operations must be demonstrated at the end of the project period.

Sub-Topic 2: Zero Emission Mobility Solutions

Incorporating zero emission technologies into an integrated mobility system, which subsequently enables a range of purposeful and targeted services (e.g. micro public transport or e-car sharing) to be developed, is a significant challenge. A core element in this process lies in extending the range of ecomobility offerings through the addition of various clean, public access mobility solutions. Meeting this demand requires the development and integration of precisely planned and coordinated infrastructures, vehicles suited to a variety of uses (e.g. zero emission busses), modular service components, and diversified business models.

The implementation of social and organisational innovations is relevant, while a technical innovation component must also be included. Applicants are required to ensure a strong involvement of partners from practice and describe and substantiate the implementation perspective of the planned innovations in the proposal.

The integration of connected and automated vehicles in the form of scalable, needs-oriented and shared fleet solutions which function as integrative components in future “Mobility as a Service” approaches (“MaaS made in Austria”) is also relevant, especially in areas adjacent to urban centres and in rural areas.

Such fleet solutions rely on actively promoting open interfaces (APIs) and linking zero emission services. Furthermore, new mobility options will have to be analysed in terms of their environmental impact and user acceptance, enabling the new mobility options to be scaled up and embedded into a future mode mix, especially in peripheral areas.

The project can be connected across the transport network or to one or more mobility hubs (bus stops, railway stations, airports etc.). The development, integration and testing of suitable fuelling and charging infrastructure solutions as well as operational demonstration are also crucial for flagship projects and cooperative R&D projects of the research category “Experimental Development”.

The economic sustainability of the development, and the option to transfer to regular operations, must be demonstrated at the end of the project period.

The involvement of public transport providers or mobility services is welcomed.

3.3 General requirements for research projects

The proposal must specify the measurable and quantifiable targets to be met by the end of the project.

In addition, **ecodesign principles** must be applied when further developing vehicle and/or infrastructure components. The environmental impacts must be taken into account across the entire product life cycle (from design and use through to recycling, reuse, disposal etc.) and minimised as far as possible. This approach must be applied to the main components of the cooperative R&D projects and flagship projects submitted.

If the project focuses on the further development of battery concepts, the aims of the European Commission's current Battery Regulation proposal (Proposal for a regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020) should be taken into account, in particular:

- declaration of the carbon footprint of the battery
- at least partial use of recycled materials (e.g. lithium and cobalt)
- compliance with the OECD Due Diligence Guidance for raw material extraction and risk assessment of potential negative environmental effects (Art. 39)
- the concept should include measures that enable a high recycling rate or second life use.

The cooperative R&D projects of the research category "Experimental Development" and flagship projects submitted are required to complement the research and development work with a **demonstration component**. The project developments (prototypes, systems, etc.) must be tested under real-world operating conditions during a demonstration phase running over a period of at least **6 months**. Operational demonstration must be based exclusively on electricity and/or hydrogen from renewable resources. A monitoring system must be established to determine whether the prototypes achieve the target values and to identify areas offering potential for further improvement. The potential transition to regular operations should also be presented.

The fuelling and charging infrastructure installed should, as far as possible, be made accessible to other transport infrastructure users during the demonstration phase.

SMEs should be included in the project consortium in order to involve them as potential technology providers. Therefore, project proposals should demonstrate the inclusion of innovative SMEs or start-ups, to an extent over and above the formal requirements of the funding instruments (indicators: number of SMEs, SME share in project costs, knowledge transfer to SMEs).

3.4 R&D services

3.4.1 Potential to convert commercial vehicles to zero emission drive systems as a contribution to achieving climate neutrality by 2040

Objectives

The Austrian Federal Government has set itself the target of achieving climate neutrality by 2040. This requires the transport sector to progressively decarbonise, so that it is in a position to operate without the use of fossil fuels by 2040.

In the drive technology sector, this depends upon a shift to zero emission drive systems, in particular electric vehicles and hydrogen/fuel cell vehicles. The electricity and hydrogen needed to power these vehicles should be sourced from renewables.

With respect to **new vehicle registrations**, several mechanisms are available to bring more zero emission vehicles to the market, including:

- CO₂ fleet targets for manufacturers of passenger cars and light commercial vehicles (EU 2019/631): the regulation specifies a reduction in average CO₂ emissions for passenger cars of around 37.5% by 2030 (compared to 2021), and of around 31% for light commercial vehicles. It has been announced that under the EU Green Deal these targets will be raised further.

- CO₂ fleet targets for manufacturers of heavy-duty vehicles (EU 2019/1242): the regulation specifies a reduction of around 30% in average CO₂ emissions by 2030. Again, this target is expected to be raised under the terms of the EU Green Deal.
- Under the Clean Vehicle Directive (EU 2019/1161), ambitious targets have been set for public procurement, especially for buses, so that between 2026 and 2030 the proportion of clean bus purchases should increase to 65 %, and half of these new buses must be zero emission.

While several initiatives and mechanisms focus on zero emission vehicles for new vehicle purchases, the question arises of how to manage those vehicles already operating in today's Austrian vehicle fleets. Statistical analyses indicate that a considerable proportion of these vehicles will remain on Austria's roads for the next 15 years or more.

Consequently, if climate neutrality is to be achieved by 2040, **solutions are needed for existing vehicles** which are powered by combustion engines. This study should therefore ascertain the potential for converting such vehicles to zero emission drive systems.

From an energy and lifecycle perspective, it would make sense to extend the operating lifetime of all vehicles currently on the roads. Focusing on this new and interesting area of business at an early stage may represent an opportunity for the Austrian automotive industry to add value and create jobs. This also applies to Austrian vehicle repair shops, which would need the appropriate know-how and a trained workforce to carry out the necessary vehicle conversions.

In 2021 the German Federal Ministry of Transport and Digital Infrastructure established a task force to draw up minimum standards for retrofitting conventionally powered commercial vehicles with alternative, climate-friendly drive systems.

Expected results

- Conducting a market analysis: which conversion options are already offered in the EU, how do they work, what are their advantages and disadvantages?
- Are there similar initiatives in other markets, in particular the USA, China and Japan?
- Outlook: what conversion options are currently being developed?
- Vehicle lifespans: to what extent can vehicle lifespans be extended, and what are the limitations, e.g., as the result of material fatigue in the chassis?
- Impact on OEM warranty and guarantee commitments
- Type approval requirements for retrofitted vehicles
- Possible legal initiatives needed at European level
- Assessment of lifecycle advantages (GHG and cumulative energy input)
- What are the conversion costs, how are they broken down, and how can they potentially be reduced?
- Economic potential created by producing conversion solutions in Austria, including demand for a trained workforce
- Economic potential created by retrofitting vehicles in Austrian repair shops, including demand for a trained workforce
- Estimated potential for retrofitting further vehicle categories, in particular passenger cars and tractors

Focus of the work

The study will ascertain the economic and climate-relevant potential created by converting commercial vehicles with combustion engines, especially classes N2, N3, M2 and M3, to electric (including overhead lines) and fuel cell/hydrogen drive systems.

The study does not cover the use of alternative or synthetic fuels.

Dissemination

The results must be published on the relevant platforms and trade events after consultation with the client.

Project duration

max. 8 months

Project costs

max. EUR 60,000 plus VAT (if applicable)

3.4.2 Quantity structure and recommended actions for establishing zero emission road traffic infrastructure to achieve climate neutrality by 2040

Objectives

The Federal Government has set itself the target of achieving climate neutrality by 2040 at the latest, and seeks to establish Austria as a pioneer in European climate protection. This objective is particularly challenging for the mobility sector.

For reasons of speed, the analyses and forecasts for a zero emission infrastructure needed to achieve the climate-neutrality target should be conducted in parallel with the development and rollout of the various drive technologies and vehicle types.

The tendered study should build on previous Zero Emission Mobility Programme projects (e.g. quantity structures for a CO₂-neutral transport sector in 2050 – “Pathways to a Zero Carbon Transport Sector”, electrification of road freight transport on Austria’s motorway and expressway network by 2040 – “Energy Roads”, and technological options and economic framework conditions for carbon neutral freight transport in 2050 – “CLEARER – Climate neutral freight transport”) to develop a quantity structure for zero emission infrastructure for all forms of road traffic and drive types. It should examine the vehicle types and drive systems described below, while focusing on charging facilities for battery electric vehicles.

Furthermore, it should also investigate the general framework conditions which must be considered when developing the infrastructure; the accompanying programmes and regulatory changes this development requires; and the associated costs. In addition, these findings should be used to draw up recommended actions for the public authorities in order to further expand zero emission infrastructure. The study should also examine the impact on demand for trained employees to develop the infrastructure.

Building on the findings of the “Pathways to a Zero Carbon Transport Sector” study, the primary focus for **passenger cars, class L vehicles and light commercial vehicles** should be on charging infrastructure for battery electric vehicles, indicating which types of charging infrastructure should be available in public or semi-public areas (e.g., next to supermarkets, parking garages, etc.), on private grounds or at places of employment. For **heavy-duty vehicles and buses**, hydrogen fuel cell applications and vehicles using overhead lines (or hybrid systems) should be considered in addition to pure battery electric systems. The findings and interim results of the current “Energy Roads” study should be referenced when considering the infrastructure needed for overhead lines, and close cooperation with the consortium behind this study is expected. Likewise, potential synergies such as shared use of zero emission infrastructure by different vehicle types should be investigated. Energy issues relating to zero emission infrastructure should also be considered and may include the overall energy efficiency of the system, and options for energy generation, distribution and storage. Where possible, opportunities for further synergies, e.g., to avoid peak loads at fast charging stations (HPC), should be highlighted.

This study does not cover the zero emission infrastructure required for water and air transport as well as for off-road and agricultural applications. The use of alternative and synthetic fuels will not be investigated either.

Expected results

- Based on the target of climate neutrality by 2040, quantity structures must be drawn up with a focus on the energy efficiency of the overall system. Scenarios should be developed for building the infrastructure for the drive technologies used by the different vehicle types, and the associated costs calculated and analysed for the periods to 2025, 2030, 2035 and 2040. Most importantly, answers to the following issues regarding the different vehicle and drive technologies should be provided:
- How many public, semi-public and private/workplace charging points are needed for passenger cars, commercial vehicles, buses, and for class L vehicles? What ratio of public/semi-public to private/workplace charging points for the different categories are expected within each specified timeframe?
- What ratio of zero emission vehicles to public charging points is expected within each specified timeframe, and what ratio will be needed in future? What is this ratio for hydrogen filling stations? How many H2 vehicles (e.g., trucks, buses) can one H2 filling station supply?
- Where should the development focus be placed, and what possible difficulties or bottlenecks should be considered? What regulatory changes are needed to ensure that the zero emission infrastructure can be developed at the necessary speed?
- With reference to the findings from current studies, projects and developments, what recommendations can be made for developing zero emission infrastructure for heavy-duty vehicles and buses? What is the current status of drive technology development for these vehicle categories? (cooperation and exchange with the named projects)
- What are the differences between developing infrastructure in urban, suburban and rural locations? Which factors must be considered in each setting, and what recommendations can be made? How should the motorway and expressway network be included in the development of zero emission infrastructure?
- What are the potential synergies between different vehicle types in the future use of zero emission infrastructure? How can these synergies be leveraged, and which factors would have to be taken into account?
- Where should the zero emission infrastructure be primarily developed for the different vehicle types, and which features of the different vehicle categories should be included in these considerations? Which charging and filling concepts are feasible, and which are preferable on the grounds of energy and cost efficiencies?
- How can the generation of electricity and green hydrogen using renewables be intelligently combined with zero emission infrastructure? What recommendations can be made for this purpose, and which factors should be considered? Which aspects should be taken into account with respect to power distribution and storage within the zero emission infrastructure, and what are the different infrastructure needs for battery electric vehicles and hydrogen fuel cell vehicles? What other potential synergies should be exploited, e.g., to avoid peak loads at fast charging stations (HPC)?
- What are the costs of developing zero emission infrastructure for the different types of vehicles and drive systems, and how could these costs potentially be reduced? How are these costs broken down? What are the potential synergies around infrastructure development and use, and where should the focus be placed? What accompanying publicly-funded programmes and measures are needed to develop the zero emission infrastructure?
- What effects do the projected infrastructure scenarios have on the demand for a trained workforce in the relevant economic sectors?

The result of this study should be a quantity structure for the development and expansion of zero emission infrastructure for the different drive technologies and vehicle types within the specified timeframes. The study findings will be used for subsequent strategic planning by the Austrian Federal Ministry for Climate Action, and should therefore specify the necessary framework conditions and identify potential obstacles.

The study should consider the assessments offered by the relevant industries (e.g. vehicle manufacturers, infrastructure manufacturers and operators), research institutions and other relevant stakeholders. Tenderers are encouraged to engage in exchanges with the predecessor projects mentioned above as well as expert organisations concerning potential ramp-up scenarios and the applications of different drive technologies.

Since Austria is a transit country and thus plays a significant role in building up and developing a standardised, interoperable cross-border zero emission infrastructure, European developments and scientific findings from national and European studies should be taken into account in a comparative assessment. It is recommended in particular to consult with the German National Centre for Charging Infrastructure (under the umbrella of NOW GmbH, the National Organisation for Hydrogen and Fuel Cell Technology) and to analyse the study entitled "Charging infrastructure after 2025/2030 – scenarios for market ramp-up" commissioned by the German Federal Ministry of Transport and Digital Infrastructure (BMVI). The current developments in the EU as part of the Green Deal, the revision of the Alternative Fuel Infrastructure Directive (AFID) and strategic preliminary work carried out by the Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) should also be taken into account.

Dissemination

The results must be published on the relevant platforms and trade events after consultation with the client.

Given the extreme relevance of the present study, tenderers must be able to start promptly once the contract has been awarded. The project period will not be extended.

Project duration

max. 12 months

Project costs

max. EUR 150,000 plus VAT (if applicable)

4.0 Administrative Information

4.1 Call documents

Projects may only be submitted electronically via [eCall](#) ein. The proposal consists of:

- Online cost plan – enter directly in eCall
- Project description – upload in eCall (PDF)

Please use the templates and call documents provided on the [FFG Zero Emission Mobility Website](#).

Special attention should be paid to quantifying the project objectives. Please do not exceed the maximum number of pages per chapter specified in the application forms.

The funding conditions, application procedure and funding criteria are described in the relevant **Technical Guidelines**.

Call documents

Flagship Project	Technical Guidelines for Flagship Projects (PDF) Project Description for Flagship Projects (WORD) Declaration of SME status (if required) (PDF)*
Cooperative R&D Project	Technical Guidelines for Cooperative R&D Projects (PDF) Project Description for Cooperative R&D Projects (WORD) Declaration of SME status (if required) (PDF)*
General Cost Regulations	Cost Guidelines 2.1 (Guidelines for the Accounting of Project Costs) (PDF)
R&D Service	Technical Guidelines for R&D Services (PDF) Tender (WORD) Affidavit (eCall) Declaration of Commitment (eCall) Model Contract (PDF)

* **Please note:** A Declaration of SME Status is required for associations, sole proprietorships and foreign companies. In the template provided, applicants must (as far as possible) categorise their business for the last three years according to the SME definition.

4.2 Obligatory preliminary meeting for all flagship projects

In order to clarify stipulations and requirements, the submission of a flagship project requires an obligatory preliminary meeting with the Climate and Energy Fund, the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) and the Austrian Research Promotion Agency (FFG) **by 17 September 2021 at the latest**. Applicants are requested to contact the FFG in due time to arrange a date for the meeting. The preliminary meeting is necessary to provide optimal support to the applicants in preparing their project proposals. Preliminary meetings are therefore also recommended for cooperative projects. **Applications for flagship projects submitted without having conducted a preliminary meeting will be rejected for formal reasons.** If the proposal also includes an application for funding according to Chapter 4.4, the meeting will also be attended by Kommunalkredit Public Consulting (KPC), or a separate meeting must be arranged with KPC (see Chapter 4.4).

4.3 R&D service

Please note that the procurement of research and development services (R&D Services instrument) is exempted from the Public Procurement Act (BvergG 2018) as specified in Sec. 9 (12) and is thus subject to a tendering process. The Climate and Energy Fund is the contracting entity for the R&D Services instrument. The FFG funding agency acts in the name and for the account of the Climate and Energy Fund.

By submitting a tender, the tenderer accepts the content of the present Guide and all other relevant call documents in their entirety.

If a (sub-)contractor is mentioned in several tenders, the respective tenders will be excluded from the tendering process if it can be assumed that this multiple participation leads to a restriction or distortion of competition.

Supplementary information

Requests for supplementary information about the R&D service tendered shall be sent exclusively by e-mail to the FFG (dagmar.weigel@ffg.at) no later than 21 days prior to the submission deadline, specifying the sender address (e-mail). The questions will be collected and answered in an anonymised form no later than 11 days prior to the submission deadline. To ensure equal treatment, inquirers are asked to formulate their questions in such a manner that no conclusions can be drawn as to their identity. The questions and answers will be published on the websites of the Climate and Energy Fund and the FFG. Requests for information cannot be sent after this date. The Climate and Energy Fund and the FFG will not comment on the evaluation of the tenders submitted during the tendering process.

4.4 Environmental funding managed by Kommunalkredit Public Consulting (KPC)

Projects that receive funding from the Climate and Energy Fund and include at least one Work Package qualifying as experimental development can also be managed by FFG in cooperation with Kommunalkredit Public Consulting (KPC). In this case, research activities receive funding from the FFG, while investments in demonstration facilities are supported by KPC based on the Funding Guidelines for Environmental Assistance in Austria (UFI). Both funding components are covered by the present programme. Demonstration facilities submitted for additional environmental funding under the Zero Emission Mobility programme must be of key importance to the relevant research project. The research and development activities must constitute the prerequisite for the investment for which environmental funding is sought.

Demonstration facilities as specified in the Funding Guidelines for Environmental Assistance in Austria go beyond standard technologies. They serve to test and introduce new or substantially improved technologies and must be based on the research activities. The environmental effect expected (reduction in air emissions, noise or hazardous waste, reduction in energy consumption, innovative supply of renewable energy) must be able to be assessed and quantified as a prerequisite for funding. Funding can only be granted for the share of the investment which is directly necessary for, and contributes to, achieving the environmental effect. Costs that are not or only indirectly related to the environmental effect are not eligible for funding.

Funding is based on the environmentally relevant additional investment costs (eligible costs less any reference costs if the demonstration facility can be compared with a standard facility) according to the Funding Guidelines for Environmental Assistance in Austria. Later submission to other funding programmes and other funding agencies (business development funding – Austrian federal development and financing bank AWS; environmental funding – KPC) is possible subject to the relevant funding conditions if the project submitted to the present programme does not involve application for or granting of funding for demonstration facilities.

Obligatory preliminary meeting with KPC

If a project proposal also involves funding of a demonstration facility in accordance with the Funding Guidelines for Environmental Assistance in Austria, a mandatory advisory meeting with experts from FFG and KPC must be held **by 17 September 2021 at the latest**, unless KPC has already participated in the preliminary meeting mentioned in Chapter 4.2. Applicants are requested to contact the FFG to arrange a date for the meeting. The advisory meeting helps KPC experts to assess whether the planned investment is eligible for funding as a demonstration facility in the respective call. Environmental funding will not be granted if such an advisory meeting has not been held.

Application

Application shall be in the form of ONE project application which must be submitted to the FFG as follows:

- The planned demonstration parts to be funded by KPC need to be listed in detail in the annex to the Project Description of the R&D part (PDF file). The additional specifications are designed to enable KPC to assess the demonstration parts and the expected environmental effects.
- A [Cost Plan \(Excel File\)](#) for the demonstration part must be uploaded via eCall in addition to the Project Description (PDF file) and other annexes.

The following supplementary information is required:

- Cost of facility broken down into trades/items, assembly costs, planning costs.
- Quotations must be provided for third-party services (must be available by the date of the final accounts at the latest).
- Comprehensible description and quantitative prediction of the environmental effect; the environmental effect is shown by comparing the demonstration facility to the status quo or a reference plant producing the same output using conventional technologies (example: comparison of energy consumption [MWh/a] by energy source before and after the implementation of the demonstration facility).
- Presentation of the feasibility and market potential of the demonstration plant.
- Feasibility analysis with operating costs and profits of the demonstration facility in comparison to the status quo or a reference plant.

If no information on the environmental effect and the costs of the demonstration facility is available on submission of the proposal, the applicant must provide reasonably substantiated estimates.

Procedure after project submission

Please consult the relevant Technical Guidelines (see Chapter 4.1) for more information about the project selection procedure following submission of the application. Projects involving applications for both R&D funding and environmental funding will additionally be sent to Kommunalkredit Public Consulting GmbH (KPC) for further processing. Experts from KPC will check compliance with the funding requirements and prepare a funding proposal for the investment cost portion.

If necessary, the relevant funding agency may contact applicants directly to request additional information.

If the project receives additional funding from KPC, two funding contracts will be drawn up:

- FFG funding contract for R&D-related costs
- KPC funding contract for investment costs in accordance with the Guidelines for Environmental Assistance in Austria

Further information regarding environmental funding can be found on the

[KPC website detailing the funding of other environmental measures](#)

and on the

[KPC website detailing environmental funding for businesses](#)

Eligible costs

Industrial Research FFG	Experimental Development FFG	Demonstration Facility KPC
<p>“Industrial Research” denotes planned research or critical investigation to acquire new knowledge and abilities. The aim is to develop new products, procedures or services or to effect significant improvements to existing products, procedures or services. This includes the creation of parts of complex systems necessary for industrial research and in particular for the validation of technological fundamentals.</p>	<p>“Experimental Development” denotes the acquisition, combination, formation and use of existing scientific, technical, economic and other relevant knowledge and abilities in the development of plans or concepts for new, modified or improved products, procedures or services. It also includes, for example, other activities for the definition, planning and documentation of new products, procedures and services as well as the preparation of drafts, sketches, plans and other documentation, provided these are not intended for commercial purposes.</p>	<p>“Demonstration Facilities” as specified in the Funding Guidelines for Environmental Assistance in Austria (UFI) are of a highly innovative character. They go beyond standard technologies and serve to demonstrate and introduce new or substantially improved technologies. Demonstration facilities can only be funded by KPC under the Zero Emission Mobility programme if they are directly based on the research activities carried out as part of the project submitted. The expected environmental effect can be assessed and quantified. Investments immediately required for achieving the environmental effect are eligible for funding.</p>

If the funded measure qualifies as an energy-saving measure in terms of end consumption according to the Federal Energy Efficiency Act (EEffG), it will be credited to the Climate and Energy Fund as a strategic measure according to Sec. 5 (1) 17 of the EEffG in proportion to the funding granted. Obligated third parties may claim

the eligible measures (in whole or in part) only for the part of the project costs exceeding the funding granted by the Climate and Energy Fund. This applies in particular if the measures are transferred by the funding recipient to the third party for the purpose of allowing them for individual obligations according to Sec. 10 EEffG.

5.0 Legal Aspects

5.1 Data protection and confidentiality

The FFG is under a legal obligation to maintain secrecy concerning company and project information pursuant to Sec. 9 (4) of the Austrian Research Promotion Agency Act (FFG-G, Federal Law Gazette BGBl. I No. 73/2004). External experts who are involved in the assessment of projects as well as Kommunalkredit Public Consulting GmbH (KPC) are also subject to confidentiality obligations with respect to company and project information.

Personal data will be processed pursuant to Art. 6 et seq. of the General Data Protection Regulation (EU) 2016/679:

- for compliance with legal obligations to which the FFG, KPC and the Climate Fund are subject (Art. 6 (1) (c) GDPR,
- if no legal obligation exists, for the purposes of the legitimate interests pursued by the FFG, KPC and the Climate Fund (Art. 6 (1) (f) GDPR), namely conclusion and processing of the funding contract and for control purposes.

This use may mean that the data must be transferred or disclosed in particular to bodies and authorised representatives of the Court of Audit, the Federal Ministry of Finance and the EU. There is also the possibility to obtain information from the transparency portal according to Sec. 32 (5) of the Transparency Database Act (TDBG 2012).

All project applications submitted will only be forwarded to the persons responsible for the management of this RTI Initiative as well as to the programme owner. All persons involved are bound by strict confidentiality rules.

5.2 Legal basis

The following guidelines provide the legal basis for this Call:

- Guideline for the Promotion of Industrial/Technical Research, Technology Development and Innovation ([RTI Guideline 2015](#)) Thematic RTI Guideline. The Thematic RTI Guideline was prolonged until 31/12/2021 based on the European Commission's prolongation of the State aid provisions (Prolonging Regulation (EU) 2020/972 of 2 July 2020).
- Funding Guidelines for Environmental Assistance in Austria (UFI) as amended.

The company size shall be established in accordance with the corresponding SME definition specified in EU competition law. More detailed information about the SME definition can be found on [the FFG Website](#). All EU provisions shall be applicable as amended.

Research and development services shall be subject to the exemption provision of Sec 9 (12) of the Public Procurement Act (BVerG 2018).

5.3 Publication of funding decision

In the event of a positive funding decision, the Climate and Energy Fund reserves the right to publish the name of the funding applicants, the funding decision, the rate and amount of funding granted as well as the title and a brief description of the project in order to pursue the Climate and Energy Fund's legitimate interests to ensure funding transparency (Art. 6 (1) (f) GDPR).

5.4 Open access – notes on publication

The projects funded under this Call and their results will be made available to the public in line with the general objectives and tasks of the Climate and Energy Fund as defined in Sec. 1 and Sec. 3 of the Climate and Energy Fund Act (KLI.EN-FondsG) and the special characteristics of the funding programme, which is specifically aimed at publishing project and contact data for the dissemination of project results, as well as the Recommendation of the European Commission (2012/417/EU) on Open Access. The open access provisions do not apply to confidential information (e.g. related to patent applications). The funding recipient is obliged to ensure that the reports submitted to the Climate and Energy Fund for publication do not contain any sensitive data (Art. 9 GDPR) or personal data about criminal convictions and offences (Art. 10 GDPR). The funding recipient is also obliged to obtain all other approvals and consents from third parties (including but not limited to image rights) that are required for lawful publication by the Climate and Energy Fund and to indemnify and hold harmless the Climate and Energy Fund in this respect.

Since the dissemination of the project results is an essential purpose of this funding programme, the Climate and Energy Fund will publish these project results and project information in order to pursue its legitimate interest to ensure funding transparency and to fulfil the objectives of the Climate and Energy Fund (Sec. 1 and Sec. 3 of the Climate and Energy Fund Act, KLI.EN-FondsG) (Art. 6 (1) (f) GDPR).

Visibility and easy availability of innovative results are essential to increase the impact of the programme. Where possible, all project results achieved under this RTI Initiative will thus be published and made available by the Climate and Energy Fund in accordance with the principle of open access. To be able to present the project results in a clear and comprehensible manner, instructions for public relations on projects funded under the call are made available in a "Guide for Project Reporting and Public Relations", which also forms an integral part of the agreement.

6.0 Contact

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Further funding opportunities:

[Energy and Environmental Research](#)
[Mobility of the Future](#)
[Energy Research](#)
[Smart Cities Demo](#)

Funding agency for investment costs

Kommunalkredit Public Consulting GmbH
Türkenstraße 9, 1090 Vienna
DI Wolfgang Löffler, MSc
Telephone: +43 1 31 6 31-220
Email: w.loeffler@kommunalkredit.at
www.public-consulting.at

Imprint

Proprietor, editor and media owner:
Climate and Energy Fund
Leopold-Ungar-Platz 2 / 1 / Top 142
1190 Vienna

Programme management:
Mag. Gernot Wörther

Graphic design:
angineering.net

Photos:
Smile Fight / Shutterstock.com
Sergii Chernov / Shutterstock.com

Place of publication:
Vienna, April 2021

