# National Strategic Framework ‘Clean Energy in Transport’

In fulfilment of the Austrian implementation obligation of

**Directive 2014/94/EU**
**of the European Parliament and of the Council**
**of 22 October 2014 on the deployment of**
**alternative fuels infrastructure**

**Article 3 – National Strategic Framework**

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[*Bundesministerium für Verkehr, Innovation und Technologie – bmvit*]
in collaboration with the

Federal Ministry of Agriculture, Forestry, Environment and Water Management
[*Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft– BMLFUW*]
Federal Ministry of Science, Research and Economy
[*Bundesministerium für Wissenschaft, Forschung und Wirtschaft - BMWFW*]

Burgenland
Carinthia
Lower Austria
Upper Austria
Salzburg
Styria
Tyrol
Vorarlberg
Vienna

Austrian Association of Towns and Cities
Austrian Association of Municipalities

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# Contents

# 1. Introduction

## 1.1. Austria Needs to Change Its Mobility Concept

This document implements parts of EU Directive 2014/94/EU in Austria. The aim of the Directive is to reduce the environmental impact of transport and dependence on petroleum. Measures taken to this end include, among other things, the creation of a National Strategic Framework for the market development of alternative fuels for transport applications and the development of the appropriate infrastructure. This National Strategic Framework will be submitted to the European Commission by 18 November 2016.

The Strategic Framework is in line with applicable environmental and climate protection regulations and with existing climate and energy targets (see Section 1.2) designed to reduce the environmental impact of transport and dependence on petroleum. As a first step, 195 countries agreed on a joint climate agreement in December 2015. Austria was one of the first countries in the world to submit its ratification to the United Nations[1]. The goal of limiting global warming to well below 2 °C in the long term and reshaping the global economy to become largely $CO_2$ neutral by the end of this century poses a special challenge for the transport sector, which accounts for 35% of Austria's energy consumption. Road transport accounts for 87% of all energy consumed by the transport sector; a share that has risen continuously since 1990. Petroleum covers a large part of energy needs[2]. At present, natural gas, liquefied petroleum gas and electricity account for only 3% of energy supplies in the Austrian transport sector, so their role is very small[3]. At the same time, sustainable biofuels and the relevant legal framework conditions and initiatives are key contributors to decarbonisation in Austria. Under the substitution obligation for fossil fuels in the Austrian Ordinance on Automotive Fuels, around 8.9%[4] of fossil fuels are already being replaced with biofuels. However, these are not the subject of Directive 2014/94/EU and are therefore not included in the National Strategic Framework either.

Road traffic is the largest contributor by far, accounting for just under 99 percent of $CO_2$ emissions. In comparison, $CO_2$ emissions by the remaining modes of transport, i.e. (national) air, ship and rail traffic are slightly above 1%.[5] In addition, air and noise pollution poses high health risks.

In particular, diesel and gasoline consumption must reduce significantly in the next decade up to 2030 and beyond. The key challenge is to prevent the increased use of fossil fuel due to the forecasted increased traffic. Forecasts for Austria predict an increase in passenger transport (25%) and freight traffic (33%) by 2030. Currently, 73% of passenger transport is by car, 24% by public transport and 3% on foot or by bicycle[6]. Despite having the highest rate of rail kilometres per capita in the EU and a comparatively high share of public transport in total transport, passenger vehicles remain the dominant means of transport outside of the

[1] https://www.parlament.gv.at/PAKT/AKT/SCHLTHEM/SCHLAG/166Klimavertrag.shtml
[2] Statistik Austria, Gesamtenergiebilanz Österreich [Total Energy Balance in Austria]
[3] Idem
[4] Österreichischer Biokraftstoffbericht 2016 [Austrian Biofuel Report]: https://www.bmlfuw.gv.at/umwelt/luft-laerm-verkehr/verkehr-laermschutz/alternatkraftstoffe/biokraftstoffbericht.html
[5] Umweltbundesamt [Federal Environmental Agency] (2016), Klimaschutzbericht [Climate Protection Report]
[6] BMVIT (2012), Gesamtverkehrsplan für Österreich [Overall Transport Scheme for Austria]

metropolitan areas. In freight transport, rail has a 32% share in Austria, which is very high in European comparison. Here, too, road transport is expected to increase due to a further increase in the volume of traffic and despite a target of 40% in the 2030 modal split. As a result, greenhouse gas emissions, caused almost entirely by road transport, are expected to fall sharply in spite of the ***increased*** traffic.

In addition to the use of first and second/third generation biofuels, the transition to alternative fuels in transportation and electromobility with renewable energy, which requires the development of an appropriate infrastructure, is seen as an important, if not the only step towards achieving low-emission mobility in Austria. The proposed change in mobility has high added-value and employment potential for Austria.

In line with the agreement of the international community to extensively decarbonise the world economy[7] and in keeping with existing climate and energy targets[8], Austria is pursuing the following objectives in the transport sector:

- By 2050, Austria aims to achieve a largely $CO_2$-neutral transport sector that is social, efficient and secure, guaranteeing the mobility needs of people and goods[9]. In the medium and long term, this requires a major overhaul of low-emission and zero emissions vehicles based on renewable energy sources.
- The achievement of this goal requires a shift to low-$CO_2$ alternative fuels and electricity from renewable sources across all transport sectors. Austrian transport policy is based mainly on the electrification of means of transport as a building block for a modern and efficient overall transport system.
- The development and production of innovative technologies in the field of alternative fuels and propulsion is supported for the purpose of strengthening competitiveness and creating workplaces. Austria works toward a largely decarbonized transport system as an opportunity to strengthen its industrial base.
- In order to ensure the desired change in mobility, with the objectives of achieving an integrated, low-emission and low-carbon overall transport system, a coordinated approach is required, with intensive cooperation between the EU, the Member States, the federal states, the local authorities and other stakeholders.

To achieve this comprehensive change in mobility, the overall transport plan for Austria, which was developed in 2012, provides a strategic framework for the traffic policy. The aim is to make the transport system more efficient, safer, more socially inclusive and environmentally friendly. Therefore, it focuses, among other things, on developing measures to strengthen and extend public transport, pursuing an active transfer policy on environmentally-friendly railways, promoting cost-effectiveness, intelligent transportation technologies, soft mobility forms such as cycling and walking as well as new services, such as sharing. Also, the general plan provides for alternative building blocks for a modern and efficient transport system, backed by significant

[7] UNFCCC (2015), Paris Convention of the 195 Member States of the United Nations Framework Convention on Climate Change, ratified by the Austrian National Council on 8 July 2016
[8] European strategy for low-emission mobility of the European Commission 501 (2016); Conclusions of the European Council 23/24. October 2014 (EUCO 169/14); European Strategy for Alternative Fuels KOM(2013)017; White paper on traffic KOM(2011) 144
[9] This is the result of the objectives towards a $CO_2$-free urban logistics by 2030 and the total elimination of conventional fuel in urban transport by 2050, as laid down in the White Paper.

contribution to greening based on the combined use of renewable energy sources in public transport and environmentally-friendly vehicles in private transport. Thus the National Strategic Framework fulfils the task of further developing sub-areas of the general transport plan. Looking ahead, the National Strategic Framework will contribute to the integrated energy and climate strategy in Austria, still in the development phase.

The strategy is based on the guidelines of the underlying Directive and focuses largely on road transport. Additional topics such as partial aspects of inland navigation, air traffic and the planned continuation of the electrification of railway lines are also examined.

Government support measures are being developed for the development of the market of alternative fuels in the transport sector and the construction of the relevant infrastructure. In accordance with Directive 2014/94/EU, electricity, hydrogen and natural gas in the form of compressed natural gas (CNG) and liquid natural gas (LNG) are considered infrastructure-relevant fuels and/or energy sources that are essential for the implementation of these strategies. According to the Directive, these have the potential to replace crude oil in the transport sector, have a better carbon footprint and are responsible for significantly lower levels of pollutant emissions. Directive 2014/94/EU does not cover measures for promoting traditional and advanced biofuels, as these can also be used within existing infrastructures and therefore do not constitute the subject of this strategic framework.

Measures for the use of these alternative fuels are to be developed at all administrative levels and implemented in close dialogue with stakeholders and companies. To this end, the Federal Ministry of Transport, Innovation and Technology (bmvit) is developing the strategy framework in close cooperation with the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW), the Federal Ministry for Science, Research and Economy (BMWFW), all Austrian federal states, the Austrian Association of Towns and Cities as well as the Austrian Association of Municipalities, as representatives of municipalities, other associations of interest and companies.

Important regulatory frameworks for the path towards low-emission mobility are set at EU level, in particular the updating of the exhaust gas limit value as well as the determination of the $CO_2$ targets for vehicles from 2025 to 2030. Regulatory measures also have an impact on this, but they cannot wholly compensate for the fact that the range of models is rather restricted, the existing technological obstacles, and the high costs of alternative drives and fuels compared with the current very low price of oil. The mobility shift is not only about replacing engine types, but about providing an overall sustainable traffic development and qualitative transport changes. As such, it is a long-term project that requires a joint effort by all the relevant federal ministries, states, municipalities, industry actors and civil society, and encompasses far more than the use of alternative fuels and expanded infrastructure.

In the market development of alternative fuels for transport applications and the construction of the corresponding infrastructure, Austria is in a good starting position. Section 1 of the Strategic Framework describes the strategic context in Europe and Austria and provides an overview of the development process. Section 2 describes the current state of market development and the infrastructure for the traffic-relevant use of electricity, compressed natural gas (CNG), liquid natural gas (LNG) and hydrogen as well as the existing support measures. Market development scenarios and national targets for the construction of the infrastructure for alternative fuels are discussed in Section 3. Section 4 discusses the proposed measures and the evaluations required by provisions contained in Directive 2014/94/EU on specific infrastructure measures

for LNG and electricity for transport applications. Section 5 examines the specific role of municipalities in the market development of alternative fuels for transport applications. Details on measures already in place in Austria are presented in the Annex to the National Strategic Framework.

## 1.2. Legal and strategic requirements generate pressure to act

In addition to the fundamental agreement reached by the international community on the decarbonisation of the world economy over the course of this century[10], there are a number of relevant market conditions for alternative fuels in transportation and infrastructure development, which are in part legally binding:

- By 2020, 10% of the final energy in transportation must be generated from renewable energy sources, in line with the objectives of Directive 2009/28/EC on the promotion of renewable energy. In addition, greenhouse gas emissions originating from the marketing of fuels must be reduced by 6% pursuant to the provisions contained in Directive 2009/30/EC, i.e. the Fuel Quality Directive.

- Emission standards were set with the aim of reducing $CO_2$ emissions by both passenger cars (M1) and light commercial vehicles (N1)[11]. By 2021, the emission threshold values for new vehicles in a manufacturer's fleet will average a maximum of 95 g (M1)/147 g (N1) of $CO_2$/km. A reduction of these threshold values is currently being negotiated for the period 2025-2030. With the European strategy for low-emission mobility presented in July 2016, the European Commission announced similar emission standards for trucks as well as urban and long-distance buses.

- By 2030, greenhouse gas emissions must be reduced by at least 40% EU-wide compared to the 1990 level. In the non-EHS sector (including the transport sector), the $CO_2$ reduction target is 30%[12].In July 2016, the European Commission presented proposals for binding national annual targets for the reduction of greenhouse gas emissions by the Member States in the period from 2021 to 2030. Related to 2005, for Austria a 36% reduction of $CO_2$ emissions is proposed in the sectors of the Effort Sharing Regulation[13]. The transport sector in Austria is responsible for 45% of $CO_2$ emissions in the sectors of the Effort Sharing Regulation. Given the expected increase in passenger and freight transport, which has so far been accompanied by continuously rising emissions, these objectives require ambitious measures to decouple the environmental impact and the increasing performance.

- The European Strategy for Low-Emission Mobility (2016), the Energy Union (2015), the European Strategy for Alternative Fuels (2013) and the Transport White Paper (2011) identified a number of objectives at EU level, clearly aimed at replacing mineral oil as the main source of energy in the transport sector and creating a competitive and sustainable transport system based on a zero-emission scenario, particularly in road

[10] UNFCCC (2015), Paris Convention of the 195 Member States of the United Nations Framework Convention on Climate Change, ratified by the Austrian National Council on 8 July 2016
[11] Regulation (EC) No 443/2009 and Regulation (EC) No 333/2014 of the European Parliament and of the Council for passenger cars and Regulation (EC) No 510/2011 for light commercial vehicles
[12] A distinction is made between emissions trading in the EHS (electricity sector and industry) and the non-ETS sector, which is subject to the Effort Sharing Decision and thus remains the sole responsibility of the Member States. In this respect, the largest emitter is the transport sector.
[13] http://europa.eu/rapid/press-release_MEMO-16-2499_de.htm

transport.

- The Directives on air quality and clean air in Europe (2008/50), on the promotion of the use of energy from renewable sources (2009/28), energy efficiency (2012/27), which have already been implemented in Austria, or the directive on the promotion of clean and energy-efficient road vehicles (2009/33) are aimed at reducing emissions of $CO_2$, particulate matter ($PM_{2,5}$) and nitric oxide ($NO_X$) in road transportation.

The European guidelines provide the basis for the already adopted Austrian strategies, which also set the course for a change in mobility:

- The Austrian Climate Protection Act (KSG) adopted in 2011 sets emission ceilings for a total of six sectors and regulates the elaboration and implementation of effective climate protection measures outside the EU emissions trading. For a total of six sectors, including the transport sector, the KSG established maximum emission levels for the years 2008 to 2012 (Annex 1 to the Act) and the years 2013 to 2020 (Annex 2, as amended by the 2013 KSG Amendment). In order to achieve the objectives set for the sector, the federal government – represented by the respective federal ministries - and the federal states worked together to create a first programme of measures for 2013 and 2014 and further measures for the period 2015-2018. This programme was approved by the Council of Ministers on 16 June 2015.

- Based on reference year 2010, the 2012 Overall Transport Scheme for Austria stipulates that $CO_2$ emissions in the transport sector must be reduced by 19% by 2025, particulate emissions by around 50% and $NO_X$ emissions by about 70%. According to the overall transport scheme, the Austrian traffic policy relies on electromobility as one of the building blocks for a modern and efficient overall transport system.

- The scheme for the implementation of electromobility in and from Austria, drawn up by the BMLFUW, bmvit and BMWFW in 2012 and approved by the Council of Ministers, listed 65 measures to promote electromobility.

- To develop an integrated energy and climate strategy for Austria, the BMWFW, BMLFUW, bmvit and BMASK presented a Green Paper in June 2016. On this basis, the integrated energy and climate strategy will be developed by 2017 via a broad consultation process. The measures contained in the present Strategic Framework do not constitute a prejudice for any action taken in the context of the integrated energy and climate strategy, but should be incorporated into the development process.

- In addition to these national strategies and objectives, there are a large number of state and municipal action plans in Austria that promote the use of clean energy for transport applications (see 0 and Annex). Electromobility strategies containing specific political objectives have been adopted in three out of nine federal states. Lower Austria has defined a target of 5% of e-vehicles in the total passenger car fleet by 2020. In Vorarlberg, an objective of 10 000 cars by 2020 was defined, with a sub-target of 300 vehicles in the public sector. In the electromobility strategy presented in the autumn of 2016, Styria set 10 000 electric vehicles as a target for 2020 and 225 000 for 2030, together with corresponding targets for the charging infrastructure. Salzburg also presented a new state mobility concept to be implemented before 2025,

requiring a clear increase in the share of electric vehicles in the official state fleet of vehicles as well as a statewide strategy for the introduction of alternative engines. In its 2015 strategy Vienna focused on infrastructure development. Carinthia adopted a new mobilization master plan in July 2016. Upper-level negotiations on long-term mobility and energy strategies, including sectoral electric mobility and energy strategies are currently underway in Upper Austria and Tyrol, and are expected to come into force during the following months. In Upper Austria, the reduction of climate and environmental pollution caused by transportation, the promotion of alternative and environmentally friendly drives and fuels as well as electromobility are among the ten highest priority measures in the transportation segment of the energy strategy. In particular, promoting electromobility in rural areas is one of the pillars of the current government programme in Burgenland. The current National Strategic Framework does not repeat the measures contained in all these documents, but builds on them and defines additional measures for the transition to a low-emission mobility.

## 1.3. The conversion of the traffic system requires joint action

The National Strategic Action Programme 'Clean Energy in Transport' implements parts of Directive 2014/94/EU. In the negotiation phase of this Directive, around 80 representatives from federal ministries and institutions, associations, companies, states and municipalities formed a national-level working group, who were regularly informed of the status of negotiations and asked for contributions.

Following the publication of the Directive in October 2014, a national control group was formed, with the participation of the three involved ministries, the AustriaTech Federal Agency for Technological Measures Ltd., the A3PS Platform, Energie-Control Austria as well as the Federal Environmental Agency. In addition to that, the federal states as well as the Association of Towns and Cities and the Association of Municipalities were also included.

Since the beginning of 2015, the bmvit, with the support of AustriaTech, has carried out a sweeping stakeholder process to prepare the National Strategic Framework, which brought together around 300 participants from the administration, the industrial and research sector as well as the associations. The activity had the following objectives:

(1) to identify the regulatory need for adaptation with regard to promoting alternative fuels for transport applications and developing the appropriate infrastructure; and

(2) to adapt the framework conditions and develop initiatives at the level of the federal government, the federal states and the municipalities, as early as in the implementation phase.

Therefore, the national implementation of Directive 2014/94/EU included the following activities:

- Nationwide online consultation on 'Clean energy for transport' initiated by the Austrian Association of Towns and Cities and AustriaTech in the spring of 2015 (all federal states, eight cities, ten associations and 27 companies responded, submitting a total of 70 feedback items)[14];

- Working groups on infrastructure-relevant fuels (electricity, CNG, LNG and hydrogen)

[14] AustriaTech (2015), Gemeinsam zu sauberer Mobilität [Together for a Clean Mobility]

from Spring to Autumn 2015, with the focus on developing measures for the National Strategic Framework (around 85 participants in total);

- Series of workshops entitled 'Einbindung der Lander im Rahmen der Umsetzung zu RL 2014/94/EU' [Involving the Federal States in Implementing Directive 2014/94/EU], with participation from regional governments and other regional representatives from the business sector and associations, in all nine federal states from summer to autumn 2015, focusing on alternative fuels for transport applications as well as legal and administrative regulations (about 120 participants in total);
- Series of workshops entitled 'Saubere Energie im kommunalen Verkehr' [Clean Energy in Municipal Transport], with participation from the Austrian Association of Towns and Cities and the Austrian Association of Municipalities, in Graz, Salzburg and Innsbruck in the Spring of 2016, focusing on the integration of municipal level measures into the National Strategy Framework (about 75 participants in total);
- BMLFUW hearing on environmental effects and mobility aspects of electromobility 2020/2030, together with the Federal Environmental Agency in the spring of 2016 (about 50 participants in total).

In order to ensure good cross-border coordination and dialogue with other Member States and representatives from industry and associations in Europe, the implementation process for Directive 2014/94/EU also included the following:

- Workshop for the regional implementation of Directive 2014/94/EU, with the participation of representatives from the involved ministries and downstream agencies from Germany, Czech Republic, Slovakia, Slovenia, Italy and Croatia (Spring 2016, bmvit), with the aim of developing planned measures for the market launch of alternative fuels for transport applications;
- Ongoing representation of Austria at the Sustainable Transport Forum of the European Commission (AustriaTech, bmvit), and in the subordinate working groups 'Implementation of Directive 2014/94/EU' AustriaTech, bmvit), 'Alternative Fuels in Cities' (BMLFUW), 'Biofuels' (BMLFUW) and 'Electromobility Market Services' (E-Control for CEER);
- Ongoing representation of Austria in the interministerial Government Support Group Alternative Fuels, headed informally by the Netherlands and Germany.

The implementation process for the development of the 'Clean Energy in Transport' National Strategic Framework was based on the understanding that Austria already has a wide range of energy and transport policy strategies at federal, state and municipal level. This means that intensive cooperation, coordination at administrative level, a high level of participation and solutions adapted to local situations are indispensable for actually implementing measures considered as important. The aim was to clearly define measures that promote the use of alternative fuels and the development of the necessary infrastructure across all modes of transport and start implementing them during this process. For example, licensing procedures for charging infrastructure were simplified in Lower Austria (building regulations), Vienna (charging gases) and Styria (decree by the trade authority)[15]. In Tyrol, a new passage related to empty conduit lines in buildings will soon be included in the construction law. During the

[15] Detailed information on licensing procedures can be found in the Annex to the National Strategic Framework.

implementation process, a requirement for 700 vehicles was included in the framework of a demand survey and the following invitation to tender for alternative vehicles operated by the federal procurement agency [*Bundesbeschaffungsgesellschaft*].

A much greater range of models (particularly for electric vehicles) and lower vehicle prices are essential for the market development of alternative fuels for transport applications and the development of the corresponding infrastructure. In addition to this, there is significant cooperation between the public authorities and private enterprises and associations. This cooperative approach was also used for creating the present National Strategic Framework.

The reporting on the implementation of the National Strategic Framework and, where appropriate, the level of implementation of the individual and total targets referred to above, follows the provisions of Article 10 of Directive 2014/94/EU.

# 2. Status quo: The first steps towards cleaner energy in traffic have been taken

The federal government, the states and the local authorities have been providing support for the research, development and market development of alternative fuels for transport applications for several years. Furthermore, various activities have also been promoted in the area of training, awareness-raising and market implementation. As a result of these initiatives, Austria has developed a nationwide basic coverage supporting the required amount of charging and refueling infrastructure, despite the fact that the total number of both electric and natural gas (CNG) vehicles in the road transport sector is low. With a high share of renewable energy in the electricity mix, Austria offers especially good conditions for the supply of the transport sector with electricity.

Despite a number of projects and promising activities, natural gas, liquefied petroleum and electricity still play a minor role with only 3% of the total energy supplies in the transport sector. Biofuels have been successfully used in Austria since 2005. At present, 8.9% of fossil fuels were substituted with biofuels in 2015, which corresponds to a $CO_2$ reduction of 2.1 million tonnes.

The current state of market development in the area of electricity, natural gas and hydrogen (vehicles and infrastructure) as well as the current state of public incentives are presented below. Detailed information on the topic is included in the Annex to the National Strategic Framework. The presentation of the status quo and of the planned measures, as indicated in Section 4, follows the reporting scheme proposed in Annex I to Directive 2014/94/EU.

## 2.1. Current status of the market development of alternative fuels for transport applications

Table 1: The number of alternative fuel vehicles in Austria (Statistic Austria)

| Alternative fuel vehicles | Number of vehicles (30 June 2016) |
|---|---|
| Class M1 electric vehicles (BEV & PHEV) | 9 225 |
| Class N electric vehicles (BEV) | 1 178 (of which 1 177 N1) |
| Class M2, M3 electric buses | 148 |
| Class L electric-powered vehicles | 5 895 |
| Class M1 CNG vehicles | 4 933 (including petrol/natural gas bivalent) |
| Class N CNG vehicles | 1 931 (including petrol/natural gas bivalent)[16] |
| Class M2, M3 CNG buses | 186[16] |
| Class N LNG heavy goods vehicles | no data |
| Class M2, M3 LNG buses | no data |
| Class M1 hydrogen vehicles | 12 |

[16] as of 31 December 2015

### 2.1.1. Electricity

69% of the Austrian rail network is electrified. However, as the grid mainly covers high-frequency passenger and freight lines, the percentage of electrified train kilometres is even higher. The electrification of road transport occurs at a slower pace. Nevertheless, the number of electric vehicles is steadily increasing. At the end of 2015, 0.14% of the entire vehicle fleet, consisting of almost 4.7 million passenger cars, was electrically driven, of which 5 032 were purely battery-driven electric vehicles (BEV) and 1 512 were plug-in hybrids (PHEV).

At the end of the year 2015 the remaining vehicle classes encompassed 6 532 pure battery-electric vehicles. The low number of registrations can be traced back to the still very limited model selection, and the costs that are sometimes significantly higher compared to conventional vehicles.

In the first months of 2016, there was a significant increase in new registrations. This effect was due to the amendment of the taxation for company cars, which entered into force on 1 January 2016. For example, BEVs are entitled for input tax deductions and benefits in kind. As a result, 2 008 new BEVs were registered In the first half-year of 2016, an increase of 146.7%, or nearly 2.5 times, compared to the same period of the previous year.

In 2016, with a 1.5% increase in new registrations, Austria is within the first third of European countries with regard to the new registrations of electrically operated passenger cars. As of 2016, 17 BEV and 15 PHEV models are available.

A nationwide charging infrastructure has been established for electric vehicles. Thus a nationwide coverage is available in the TEN-V core network, including urban and suburban metropolitan areas and other densely populated areas (see Annex). A nationwide fast-charging infrastructure with more than 22 kW charging capacity was built within the framework of the Central European Green Corridors TEN-V project. In addition, there are regional initiatives that build publicly accessible charging points at specific distances (e.g. 15 km for standard infrastructure and 60 km for fast-charging infrastructure).

As of the end of 2015, almost 90 fast-charging stations with around 250 charging points are in operation. By the end of the first half of 2016, this figure had risen to 124 fast-charging stations with 316 charging points[17]. Pursuant to Annex 2 of Directive 2014/94/EU, a total of around 1 650 publicly accessible charging points are currently installed at 828 locations, and this number is steadily increasing[18].

Interoperability in electromobility, i.e. the unhindered use of charging stations by different operators, is currently a challenge. All Austrian operators are working intensively on interoperable solutions that can be used on an ad hoc basis, both within Austria and integrated into the corresponding pan-European infrastructure.

With regard to shore-side electricity for inland waterway vessels, Austria has a basic supply. However, its environmental advantages and its acceptance by ship-owners is low, while the investment costs are high. Electricity for stationary aircraft is available at all Austrian airports.

[17] The vast majority of fast-charging stations in Austria are multi-standard, i.e. they can be used by both vehicles with CHAdeMO and Combo-2-CCS connectors. Depending on the design, the fast-charging stations have two to three fast-charging points.
[18] The information is based on self-made reports of the operators regarding the number of charging points and public accessibility.

### 2.1.2. Natural gas CNG

Compressed natural gas (CNG) is the most environmentally friendly fossil fuel. Despite the well-developed, nationwide filling-station infrastructure and certain tax advantages, only 4 775 class M1 passenger cars were registered in Austria as of 31 December 2015. Thus, the number of vehicles remained virtually unchanged compared to the previous year. There is a wide range of CNG production vehicles available for passenger cars, buses as well as light and heavy commercial vehicles, together with a nationwide network of filling stations.

As of June 2016, CNG is available in Austria at 171 public filling stations, of which five are pure biomethane filling stations. The number of CNG filling stations is falling, as it stood at 175 at the end of 2015. Currently, the TEN-V core network provides nationwide coverage in both urban and suburban metropolitan areas and other densely populated areas (see Annex). The unit for the assessment of natural gas or CNG is fundamentally in contrast to petrol or diesel in kilograms. In 2016, CNG was included in the fuel price calculator (www.spritpreisrechner.at) operated by E-Control. A separate function was also introduced for the conversion into equivalents of diesel or Super 95, to ensure the comparability of CNG with petrol and diesel.

The market development of CNG in Austria is sluggish despite the expanded infrastructure and the existing technical and regulatory framework. In addition, the vehicles are not yet widely advertised.

### 2.1.3. Natural gas LNG

Liquid natural gas (LNG) provides an alternative for ships and for heavy goods traffic, allowing a reduction in the sulphur content of marine fuels required by ship sector regulations and providing a cost-effective fuel alternative for heavy goods vehicles, allowing them to meet the emission limits in the Euro VI standards. Since at present LNG does not play an important role in inland shipping or heavy goods traffic in Austria, expanding the LNG infrastructure was not a priority issue.

In Austria, it is currently assumed that for financial reasons, LNG cannot offer a viable alternative at locations where the network of natural gas pipelines is already developed. Nonetheless, there is potential for future use and therefore the Austrian institutions are intensively working on feasibility studies and pilot applications such as the Rhine-Main-Danube LNG Master Plan project.

### 2.1.4. Hydrogen

So far, vehicles with fuel cell drives using hydrogen as the source of energy (FCEVs) have had low market penetration rates in Austria. This is mainly because such vehicles are still a relatively recent product on the market and still need further development. The construction of a publicly accessible infrastructure must go hand in hand with the development of vehicles. As of 31 December 2015, six fuel cell vehicles were registered in Austria. This number doubled by the end of 2016. FCEVs benefit from the same tax advantages for company cars as BEVs.

Boasting Europe's first indoor hydrogen fuelling system for supplying the hydrogen-powered vehicle fleet at a logistics centre (E-LOG BioFleet), Austria promotes innovative industrial

applications. Inaugurated in 2015, the 'Wind2Hydrogen' pilot plant produces renewable hydrogen used for refuelling vehicles, among other things.

Considering the current number of vehicles, Austria fulfils the requirements of Directive 2014/94/EU, with three filling stations in full operation in Vienna, Innsbruck and Linz.

## 2.2. The situation of infrastructure construction for alternative fuels

**Table 2: Publicly accessible infrastructure for alternative fuels in Austria**

| Fuel/energy source | Type of charging point/filling station | Number of stations Q2/2016 | Source / Weblink |
|---|---|---|---|
| | Street: Standard charging point with a charging capacity of max. 22 kW | 1 327 | https://e-tankstellen-finder.com |
| | Street: Fast-charging point with a charging capacity of more than 22 kW | 316 | VBW Study |
| | Shoreside electricity supply for inland waterway vessels | Standard equipment | |
| | Power supply for stationary aircraft | The Austrian airports have a sufficient number of stationary and mobile ground power units at the Vienna International Airport and a sufficient number of mobile aggregates on federal airports. For example, 42 stationary infrastructure units for supplying power to stationary aircraft are in operation at the Vienna Airport. | |
| Natural gas CNG | For road transport | 171 | http://www.erdgasautos.at/ |
| Natural gas LNG | For heavy goods vehicles | 0 | no data |
| | For inland waterway vessels | 0 | no data |
| Hydrogen (700 bar) | For road transport | 3 | http://www.omv.at |

## 2.3. Existing incentives and measures in the public sector

The federal government, the states and the municipalities are already implementing a series of measures promoting alternative fuels for transport applications and the development of appropriate infrastructure. The section below lists the reporting requirements defined in Annex I of Directive 2014/94/EU and includes the following measures:

Table 3: Overview of measures taken by public authorities under Annex I to Directive 2014/94/EU

| | |
|---|---|
| **Legal measures** | Legal and administrative provisions for the promotion of the infrastructure for alternative fuels, such as building codes, building permits for parking, etc. |
| **Political measures** | - direct incentives for the purchase of means of transport using alternative fuels or for building the infrastructure;<br>- Tax incentives;<br>- Funding for alternative fuels in the context of public procurement;<br>- demand-side non-financial incentives, for example preferential access to restricted areas, parking policy and dedicated lanes;<br>- technical and administrative procedures and legislation with regard to the authorisation of alternative fuels supply, in order to facilitate the authorisation process. |
| **Promotion of infrastructure construction and production facilities** | Funding for the construction of the infrastructure for alternative fuels and the promotion of alternative fuel technologies |
| **Research, technological development and demonstration** | Means of funding for research, technological development and demonstration of alternative fuels |

### 2.3.1. Legal measures

The already implemented legal measures to promote alternative fuels for transport applications and construct the relevant infrastructure focus on construction law, which falls under the competence of the federal states in Austria. The approval procedures (see also Section 2.3.2.5) and empty conduit lines regulations are particularly relevant for ensuring the transport power supply.

Table 4: Construction law measures for the transport power supply

| | |
|---|---|
| **Construction law – approval procedures for the establishment of the charging infrastructure for electric vehicles** | - Development of a guideline for the approval process for the establishment of the loading infrastructure. Part I of the status quo on construction law has already been published.[19]<br>- In Lower Austria, the approval procedure was simplified in April 2016. There is no longer an obligation to report the construction of charging stations (LGBl. No 37/2016). In February 2016, Vienna made it clear that garages with electric charging stations do not require special exhaust systems. A Styrian ordinance of 15 September 2015 stipulated that commercial charging stations are subject to commercial law but do not require authorization. This position is now shared by the other states as well. |
| **Construction law – empty conduit lines in buildings and storage facilities in the charging infrastructure** | Currently, five out of nine federal states have corresponding provisions in place.<br>In Lower Austria, specific provisions were included in the building regulations for the first time in 2011, which went on to be extensively amended in 2014 (NÖ BO 2014). The corresponding Section 64(3)-(8) contains the most stringent guidelines in Austria. The regulations in Styria and Upper Austria are roughly equivalent to the NÖ BO before their amendment in 2014, and are, correspondingly, less detailed, missing such provisions as the specifications for residential buildings. In Vienna, the focus is on garages and building regulations. In Carinthia, the respective building authorities are referenced. Only the parking space regulations of Klagenfurt draw on this possibility and contain specific guidelines. |

Table 5: Overview of the empty conduit lines provisions in the Austrian building regulations[20]

| **Empty conduit lines** | **NÖ** | **OÖ** | **STMK** | **BGLD** | **KTN** | **SBG** | **VBG** | **T** | **W** |
|---|---|---|---|---|---|---|---|---|---|
| Empty conduit lines in residential buildings | ✓ | - | ~ | - | ✓ | - | - | - | ✓ |
| Empty conduit lines in publicly accessible storage facilities | ✓ | ✓ | ✓ | - | ✓ | - | - | - | ~ |
| Electrotechnical equipment of publicly accessible storage facilities | ✓ | ✓ | - | - | ~ | - | - | - | - |

[19] bmvit , federal states (2016), guidelines to the authorization procedure for the charging infrastructure for electric vehicles

[20] NÖ…Lower Austria, OÖ…Upper Austria, STMK…Styria, BDLD…Burgenland, KTN…Carinthia, SBG…Salzburg, VBG… Vorarlberg, T…Tyrol, W…Vienna
✓…Provision available, - Provision not available, ~ Provision partly available

### 2.3.2. Political measures

#### 2.3.2.1. Taxes and fees

The Austrian tax system offers a range of incentives for alternative fuels in transport:

- Motor vehicle insurance tax: Not for exclusively electrically-powered vehicles. Motor vehicles with combustion engines in connection with the transmission of electrical energy ('electric hybrid vehicles') are taxable. However, the performance of internal combustion engines in such motor vehicles is taken as the exclusive basis for assessment.
- Motor vehicle tax: Tax exempt like the engine-related insurance tax.
- No standard consumption tax [*NoVA*] for vehicles under 90 g $CO_2$/km.
- 2016 tax reform: In force since 1 January 2016, the tax reform provides incentives in the form of input tax deductions for using M1 and N1 class vehicles with zero $CO_2$ emissions as service cars. Benefits in kind for private individuals are excluded.
- Tax advantages related to CNG: There is no mineral oil tax; however, the lower natural gas fee applies.

#### 2.3.2.2. Purchase incentives

- At the federal level, the BMLFUW's funding programme for municipalities, companies and associations provides subsidies for alternative vehicles (bicycles, passenger cars, commercial vehicles and buses) and for the establishment of charging infrastructure for electric vehicles. Between 2007 and 2015, EUR 21.6 million was approved in subsidies for electric mobility and alternative drive systems, including EUR 17.1 million for electric vehicles and EUR 0.4 million for charging infrastructure. 15 700 alternative vehicles were subsidized by the BMLFUW, including 13 600 electric vehicles (of which 2 400 electric passenger cars), 9 900 electric bicycles, 500 electric scooters, 800 electric light vehicles. In addition, the construction of around 1 000 electric charging stations was also funded in the context of the programme. In 2016, an additional EUR 10 million was made available for electromobility in two funding packages.
- Within the framework of the Austrian Climate and Energy Fund, electromobility from renewable energies has been subsidized under the electromobility model regions programme since 2008, to promote electromobility in everyday life. The seven model regions received funding totalling around EUR 20 million. Since 2013, the focus has been on the networking and interoperability of the seven electromobility model regions with renewable energies. In addition, the BMLFUW has funded electromobility projects for 106 rural climate and energy model regions through the Austrian Climate and Energy Fund since 2014. In these projects, the focus was on setting up rental systems with electric vehicles and testing/adding them to car fleets and providing them to commuters. In addition, driver's education and training was

promoted in workshops for the relevant target groups.

- In almost all federal states, private individuals, companies and public institutions are offered purchasing premiums as well, which mainly include subsidies for electric vehicles and CNG vehicles, but also for buses, taxis and car-sharing vehicles.
- In addition, transport measures such as the replacement of vehicle fleets or the construction of charging infrastructure were adopted as part of the implementation of the Energy Efficiency Act.

#### 2.3.2.3. Procurement

Currently, there are no public procurement targets for alternative vehicles in Austria. However, the states have proposed certain initiatives:

- The eco-procurement service [*ÖkoBeschaffungsService*] in Vorarlberg had a tender procedure for 40 electric vehicles for municipal use. By mid-2016, a total of 54 electric vehicles were registered by the local authorities and the state administration.
- In certain other states, such as Carinthia, Styria or Salzburg, procurement initiatives have been announced and vehicle fleets have been analysed.

In several municipalities, e-car-sharing schemes, such as the EMIL system in Salzburg, are also available. Alternative fuels are used for buses. The entire bus fleet in the city of Linz runs on natural gas, a number of cities use zero-emission buses, and the Vienna bus routes are serviced by battery-electric buses. The Post AG operates Austria's largest fleet of electric vehicles.

Table 6: Overview of political measures for promoting clean energy for traffic applications

| | Federal Government | NÖ | OÖ | STMK | BGLD | KTN | SBG | VBG | T | W |
|---|---|---|---|---|---|---|---|---|---|---|
| **Purchasing premiums for companies and local governments** | ✓ EV + CNG | ✓ EV + CNG | ✓ EV + CNG | ✓ EV + CNG | ✓ EV + CNG | ✓ EV | ✓ EV + CNG | ✓ CNG | ✓ CNG | ✓ CNG |
| **Purchasing premiums for private individuals** | | ✓ EV + CNG | ✓ CNG | ✓ EV + CNG | ✓ EV + CNG | ✓ EV | ✓ EV | ✓ EV + CNG | ✓ CNG | ✓ CNG |
| **Electromobility strategies** | ✓ | ✓ | ✓ | ✓ | - | - | - | ✓ | - | ✓ |
| **Procurement initiatives** | ✓ | - | - | - | - | - | - | ✓ | - | ✓ |

#### 2.3.2.4. Non-financial incentives

Non-financial incentives for the use of clean energy for transport applications primarily consist of municipal measures such as adapting the parking policy. Several cities, such as Graz,

Klagenfurt, Villach, Krems, Innsbruck, Wörgl or Wels, waive parking fees for electric vehicles. Electromobility and the use of other alternative fuels must be integrated into local strategies and overall transport objectives. In Austria, several municipalities have developed customized municipal and operational strategies in coordinated participatory processes using 'e-action plans' and are thus building on the European approach of the Sustainable Urban Mobility Plans (SUMPs).

Currently, there are no environmental zones for passenger vehicles in Austria and there is no priority access to areas with access restrictions.

#### 2.3.2.5. Technical and administrative procedures

The approval procedures related to the implementation of the infrastructure for alternative fuels mainly concern the supply of electricity and hydrogen for transport applications. In many cases, licensing procedures for the private and public charging infrastructure constitute a challenge in spite of a series of amendments to construction regulations and a uniform presentation of the Austrian status quo (see Section 2.3.1). In the course of the implementation of Directive 2014/94/EU, all federal states have expressed support in favour of harmonizing and simplifying the enforcement of relevant federal legislation (such as, for example, the right to operate facilities for the construction of e-charging stations).

### 2.3.3. Construction of infrastructure and production facilities

A large part of the existing infrastructure for the supply of electricity for transport applications was funded by the BMLFUW as part of the electromobility programmes in model regions. In Austria, the corresponding infrastructure was set up under the Crossing Borders project funded by the bmvit and the Central European Green Corridors TEN-V project, with particular emphasis on the fast-loading network. Many federal states also provide funding for building the charging infrastructure.

Currently, no funding is available for production facilities, but the potential for electromobility was investigated in 2016[21] and research is focusing on funding priorities. However, the federal government and the states have numerous business development programmes for companies, such as the 'Innovation and Growth Programme for the Economy of Upper Austria'. This programme provides funding for investment projects, such as the expansion of industrial plants or the construction of new buildings.

[21] KLIEN (2016), E-MAPP: E-Mobility and the Austrian Production Potential

Table 7: Overview of infrastructure funding

| | Federal Government | NÖ | OÖ | STMK | BGLD | KTN | SBG | VBG | T | W |
|---|---|---|---|---|---|---|---|---|---|---|
| **Infrastructure** | ✓ | ✓ | ✓ | - | ✓ | - | - | ✓ | ✓ | - |
| **Production facilities** | - | - | - | - | - | - | - | - | - | - |

### 2.3.4. Research, technological development and demonstration (RTD&D)

The Federal Government promotes research activities for alternative drives and fuels in the framework of various funding programmes such as 'Leuchttürme der Elektromobilität' ('electromobilitiy beacons'), 'Mobilitat der Zukunft' ('mobility of the future', 'Smart Cities' (bmvit) or the three Christian Doppler Labs (BMWFW). For example, more than EUR 40 million in grants has been awarded since 2009 within the framework of the 'Leuchttürme der Elektromobilität' programme, which promotes technologies and business models along the entire electromobility value chain. In addition, there is a public-private partnership funded by bmvit with the Austrian Association for Advanced Propulsion Systems (A3PS) as well as a research and industry partnership for technology development in the area of alternative drives and fuels.[22]

The states provide funding for research activities related to clean energy in transport as well. For example, Upper Austria and Styria jointly finance projects on 'smarter mobility and automated production processes'.

Table 8: An overview of funding provided for research, technological development and demonstration

| | Federal Government | NÖ | OÖ | STMK | BGLD | KTN | SBG | VBG | T | W |
|---|---|---|---|---|---|---|---|---|---|---|
| Research support for alternative fuels, infrastructure and production | ✓ | ✓ | ✓ | ✓ | - | - | - | - | ✓ | ✓ |

In addition to these measures, training and qualification are also important in the context of the Austrian projects. Special education materials for school students have been developed in recent years, particularly in the field of electromobility, as well as a special training module on high-voltage drives for car technicians. Furthermore, education materials related to the use of LNG in logistics were produced for high school and university students in the framework of the LNG Masterplan.

[22] A3PS (2015), Roadmap Eco-Mobility 2025$^{plus}$

Awareness raising and environmental effects are also important. There are a number of initiatives in this regard, such as tourism mobility, the www.autoverbrauch.at website, the EL-MOTION conference organized each year jointly by the Chamber of Commerce and the relevant federal ministries as well as studies on the ecological performance of alternative drives, commissioned by the Federal Environmental Agency.

# 3. Outlook: Future development of clean energy in transport

The National Strategic Framework uses the forecasts of greenhouse gas emissions in the transport sector issued by the Federal Environment Agency and the development of fuel volumes in the transport sector by 2030 as a scenario method for target definition. These were developed by the Federal Environment Agency in cooperation with the BMLFUW, taking into account the relevant energy sources and the opinion of external experts. These are based on scenarios for the climate reporting requirements of Austria within the framework of the EU climate and energy package, which develop scenarios every two years WEM (with existing measures) and WAM (with additional measures) based on current economic forecasts, population development and political agendas. In the transport sector, the degree of motorization, mileage and technology distribution (including infrastructure development) are emphasized. In addition, the WAM Plus scenario includes ambitious measures from 2021 onwards.

Estimates of vehicle development, market development with regard to electricity, CNG, LNG and hydrogen, and infrastructure expansion targets are also developed. These infrastructure targets are strongly oriented towards the expansion announced in the context of the National Strategic Framework and can be adapted to the future market development.

## 3.1. Market development of alternative fuels for transport applications

### 3.1.1. Forecasts for market development (WEM/WAM/WAM+)

The WEM scenario produced by the Austrian Federal Environmental Agency forecasts the development of alternative fuels in the transport sector, taking into account the measures that have already been adopted *(business-as-usual).* The Agency's WAM scenario includes measures that have not yet been adopted.

The third scenario - WAM Plus – depicts a change in trends in the transport sector, with assumptions and far-reaching measures that go beyond the WAM scenario, such as the modal split in passenger and freight transport or environmentally-friendly modes of transport that have greatly reduced annual MIV mileage.

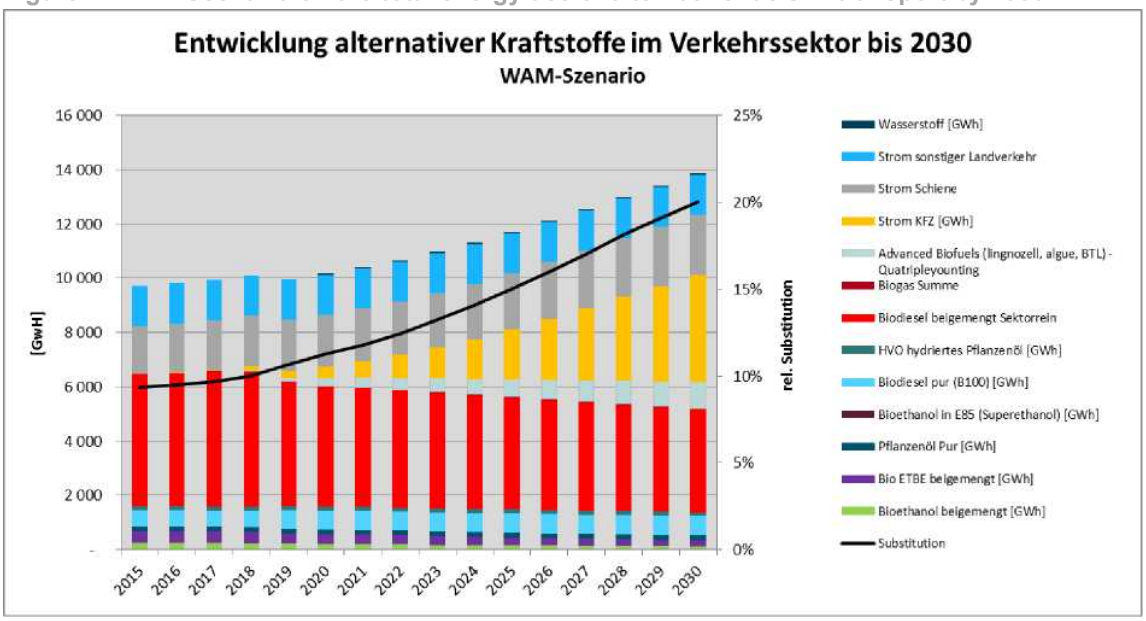
Table 9: Greenhouse gas emissions in the transport sector (in million tonnes of CO2 equivalent)

| | 2014 (Inventory) | 2020 | 2030 | 2050 |
|---|---|---|---|---|
| **WEM** | 21.73 | 22.9 | 22.7 | 21.1 |
| **WAM** | | 18.4 | 16.2 | 13.8 |
| **WAM+** | | 17.9 | 13.5 | 6.8 |

According to these data, $CO_2$ targets for 2030 can only be achieved in a WAM or WAM+ scenario. It should be noted in both scenarios that significant GHG reductions have already been calculated in the approximate amount of 18 million tonnes of $CO_2$ in the period up to 2020.

Figure 1 indicates the projected distribution of total energy input to individual alternative fuels, assuming decisions on additional measures (WAM scenario). The main difference compared to the WEM scenario (in addition to the differences in energy levels) is the consideration of hydrogen and second generation biofuels. Also, a much larger share of electromobility is assumed.

Figure 1: WAM Scenario on the total energy use of alternative fuels in transport by 2030[23]




**The development of alternative fuels in the transport sector by 2030 WAM scenario**

- Hydrogen (GWh)
- Electricity for other overland transportation
- Electricity for railroads
- Electricity KFZ (GWh)
- Advanced biofuels (lignocellulosic biomass, algae, BTL) - [undecipherable]
- Total natural gas
- Admixed pure biodiesel sector
- HVO hyrdated vegetable oil (GWh)
- Pure biodiesel (B100) (GWh)
- Bioethanol in E85 (superethanol) (GWh)
- Pure vegetable oil (GWh)
- Admixed bio ETBE (GWh)
- Admixed bioethanol (GWh)
- Substitution

[23] German Federal Environmental Agency, 2016

The future challenge will be a restricted approach to the achievement of objectives for year 2030 and beyond. The various scenarios prepared by the Federal Environmental Agency discuss a wide range of measures, the implementation of which is under examination by the relevant authorities.

#### 3.1.1.1. Electricity –outlook

The electrification of road transport shall play a major role in the following years. In the electromobility scenarios, the Federal Environment Agency assumes a broader introduction of electric vehicles from 2017 onwards, because new vehicle models have been announced in several vehicle classes, ensuring a broader vehicle offer. In addition, the higher ranges and lower costs anticipated for battery systems will make these vehicles increasingly attractive, both for commercial and private use. In the WEM scenario, the number of electric vehicles (battery-powered vehicles and plug-in hybrids) will rise to around 64 000 electric vehicles by 2020, with far-reaching additional measures such as further economic incentives and the substantial expansion of infrastructure. By 2030, in the WEM scenario this will increase to 930 000 electric vehicles, while in the WAM scenario this will increase to just under 1.7 million electric vehicles, almost 75% of which are purely battery-powered.

Currently, adequate charging infrastructure is available nationwide for the number of vehicles in Austria. However, the publicly accessible infrastructure is becoming more and more exhausted regionally. Therefore, more infrastructure needs to be established at mobility nodes such as railway stations and P&R facilities. In Styria, public charging stations will be established for electric vehicles at 15 km distance from each other within the framework of the 'Panther' project by the end of 2017. In Vienna, there are plans for the construction of 1 000 charging points by the end of 2017.

#### 3.1.1.2. Natural gas CNG –outlook

In spite of the up to 20% reduction in fuel emissions compared to conventional fuels, the elimination of harmful nitrogen oxide emissions to a minimum, the nationwide availability of filling stations and the public incentives, the uptake of the technology is still lacking in Austria. For a broader uptake, changing the behaviour of car manufacturers and dealers is crucial with regard to achieving an at least equivalent marketing and use of CNG vehicles. If natural gas's fuel-potential is not more widely used, the existing infrastructure will be dismantled in the medium and long term. Based on the widely differing acceptance of CNG vehicles at regional level, only Tyrol is planning a demand-oriented expansion of filling stations, which will probably equate one station per year. Altogether, the construction of three or four combined LNG-CNG filling stations is planned in the Linz-Enns-Wels-Steyr agglomeration in the medium term, i.e. by 2020/22. In any case, whether the substitution of fossil fuels is meaningful and ecological in the medium and long term remains to be discussed.

#### 3.1.1.3. Natural gas LNG –outlook

Compared to diesel, the use of LNG reduces the emissions of sulphur oxide and fine dust by almost 100%, nitrogen oxide emissions by about 80-90% and $CO_2$ emissions by almost 20%.

Due to the difficulties in transportation, LNG has most potential in maritime shipping,

especially on coastal areas that are not supplied with natural gas.
For Central Europe, the use of LNG is unprofitable at present. The construction of a proposed liquefaction plant in Bratislava could turn this situation around. In the current conditions, transporting LNG to the interior of the continent would negatively impact the carbon footprint. The use of LNG in the heavy goods transport sector is also difficult to imagine under current market conditions.
In any case, whether the substitution of fossil fuels is meaningful and ecological in the medium and long term must be thoroughly examined.

The refuelling market for heavy-goods vehicles could be expanded along the TEN-V corridors, especially the West-South corridor, using the central position of Austria and its transit routes to supply the major cities and motorways. In shipping, low demand precludes the construction of LNG filling stations for refuelling ships on lakes within Austria. Only the construction of a single stationary LNG terminal, possibly fitted with additional equipment for refuelling road transport in the TEN-V area along the Danube, would be realistic. The Danube shipping sector is develop in the same way as its northwest European counterparts, where the construction of an LNG refuelling infrastructure has already begun. The TEN-V port of Linz is particularly popular, due to its proximity to the Voestalpine AG, which is responsible for the bulk of shipping traffic. The TEN-V port of Enns-Ennsdorf offers similar opportunities. Both ports are suitable for the storage and distribution of LNG as a source of energy and as a fuel for heavy road transport. At present, Austria anticipates the construction of at least one dual-use LNG filling station by 2030.

#### 3.1.1.4. Hydrogen – outlook

Austria is planning the construction of a hydrogen supply network for road transport. Due to the high construction costs associated with hydrogen filling stations, the infrastructure is closely tied to trends on the vehicle market. Austria's approach for expanding the hydrogen filling station network according to the actual number of fuel cell vehicles on Austrian roads is in line with Germany's plans in this area.

For this reason, it is not useful to prescribe a number of filling stations. The filling station network can only be expanded in future in coordination with the neighbouring countries, in particular the south-eastern regions, which do not regard the construction of the hydrogen supply network as a priority in their national strategies for road transport.

In case of a parallel roll-out of fuel cell vehicles and hydrogen filling stations, the agglomerations (Vienna, Linz, Graz and Innsbruck) and the TEN-V corridors (Scandinavia – Mediterranean → Innsbruck; the Baltics – the Adriatic → Vienna, Graz; Rhine – Danube → Asten, Vienna) will be served first. Subsequently, the rest of Austria could be supplied as well, including the areas far from the TEN-V network, depending on the conditions on the market and the frequency of the traffic.

## 3.2. Publicly accessible infrastructure: Targets

The market developments and objectives set out below for the establishment of the infrastructure for alternative fuels, including charging points for electric vehicles and natural gas (LNG and CNG) as well as hydrogen filling stations, were proposed after close consultation with the industry as well as the local and regional authorities. Thanks to the very good basic supply of CNG and electricity in Austria, which already meets the requirements of Directive 2014/94/EU, no agglomeration areas were flagged for priority infrastructure development. In the case of the establishment of a private charging infrastructure, it is assumed that one private charging point is created per passenger car.

Table 10: Infrastructure targets for alternative fuels

| Fuel/energy source | Type of charging point/filling station | 2020 | 2025 | 2030 |
|---|---|---|---|---|
| Electricity | Standard charging point with a charging capacity of max. 22 kW | 3 000-4 000 | depending on the market situation | |
| | Fast-charging point with a charging capacity of more than 22 kW | 500-700 | depending on the market situation | |
| | Shore-side electricity for inland waterway vessels | Preservation of the existing basic infrastructure and assessment of the additional needs in the context of the bmvit Action Programme Danube until 2022 (measure 07: Requirement analysis for the land infrastructure of berthing areas) | | |
| | Electricity supply for stationary aircraft | Preservation of the existing adequate power supply for the use of stationary aircraft at the Austrian airports. | | |
| Natural gas CNG | For road transport | Preservation of existing infrastructure | | |
| Natural gas LNG | For heavy-goods vehicles | no data | Depending on the market situation, an LNG terminal at the Linz or Ennsdorf TEN-V port with a filling station for heavy-duty traffic and possibly a second LNG port in Vienna (incl. a filling station for heavy-duty traffic) | depending on the market situation acc. to TEN-V |
| | For inland waterway vessels | | | depending on the market situation acc. to TEN-V |
| Hydrogen (700 bar) | For road transport | 5 | depending on the market situation | |

**An assessment of the need to install refuelling points for LNG in ports outside the TEN-V Core Network,** The entire section of the Danube in Austria is part of the TEN-V network. The market situation means that LNG refuelling stations at other rivers or lakes would appear not to be expedient.

**Consideration of the need for renewable jet fuel refuelling points in airports within the TEN-V Core Network.** The stakeholders shall act on any potential need for jet fuel refuelling

stations from renewable sources or the adaptation of the existing underground refuelling system at the Vienna International Airport in the TEN-V Core Network only if the economic conditions are adequate.

# 4. New measures for clean energy for traffic applications

The existing range of models, in particular of electric vehicles, is the result of a clear regulatory signal from the EU Commission and the Member States, which set clear targets through regulations aimed at limiting fleet emissions. These regulations will be further strengthened in 2016. Such binding emission standards have also been announced for heavy goods vehicles and buses.

In the following years, the model range of alternative vehicles is expected to expand across all vehicle classes. Particularly in the case of electric vehicles, greater ranges are likely to be available at lower costs. Some manufacturers are working intensively on widening the range of fuel cell vehicles. It is still difficult to assess the use of LNG in inland waterways shipping and heavy-load traffic in Austria, while the market development of CNG is uncertain, due partly to the reluctance of manufacturers.

The achievement of climate targets in the transport sector and ensuring value creation in Austria requires the development of appropriate measures and initiatives at national, regional and local levels. The use of alternative fuels for transport applications and the development of the appropriate infrastructure must be integrated in a sustainable manner into the overall economic objectives of maintaining and promoting mobility. Currently, Austria's automotive supply industry is export-oriented and it strongly favours combustion technologies. The objective must be to achieve a mobility shift in Austria through maintaining and strengthening innovative, industrial value creation. We can assume that the Austrian automotive supplier industry has special potential in the fields of vehicle components and subcomponents, infrastructure solutions and production technologies[24].

The measures mentioned below were developed based on the reporting requirements included in Annex I to Directive 2014/94/EU, as described in Section 2.

[24] KLIEN (2016); E-MAPP: E-Mobility and the Austrian Production Potential

## 4.1. Legal measures

Table 11: Overview of legal measures for supporting alternative fuels in traffic

| Legislation/measure | Regulation for the promotion of alternative fuels | Responsibility |
|---|---|---|
| 28th Road Transport Act amendment [*28. StVO-Novelle*] 2016 | The Road Transport Act contain a marking and a definition for electric vehicles to keep parking spaces in front of charging stations free during the charging process. The additional panel under Section 54 (in combination with stopping and parking restrictions). Definition: the rechargeable facilities are able to serve all vehicles with connectors and include cable-free future developments (e.g., inductive charging). | bmvit |
| Vehicle marking | The objective is to ensure that particularly clean and low-pollutant (high zero emission) vehicles of Class L, M1 and N1 are provided with uniform identification. | bmvit |
| Vehicle registration office act amendment [*ZulassungsstellenVerordnung-Novelle*] 2016 | Registration certificate amended to include the field 'electrical range'. | bmvit |
| Austrian law on motor vehicles [*Kraftfahrgesetz - KFG*] | Implementation of Directive (EU) 2015/719 amending Directive 96/53/EC on laying down the maximum permitted dimensions for certain road vehicles in national and international traffic in the Community and establishing the maximum weights in international traffic in the KFG. Among other things, this Directive increases the maximum permissible weight for two- and three-axle vehicles with an alternative drive by the additional weight required for the alternative propulsion technology, but a maximum of 1 t. | bmvit |
| Driving Licence Act [*Führerscheingesetz - FSG*] | FSG amended to increase the permissible total mass for purely electric small transport vehicles to 4.25 tonnes with Class B driver's license (extension of the scope of the class B driver's license to purely electric small transport vehicles with a maximum permissible total mass up to 4.25 tons). | bmvit |
| Passenger Cars Consumer Information Act [*PKW VIG-Novelle*] 2016 amendment | Amendment of the Passenger Cars Consumer Information Act, which provides consumers with information on fuel consumption and $CO_2$ emission values of new passenger cars. Implementation of Article 7 (user information) of Directive 2014/94/EU. | BMLFUW |
| Fuel Act [*Kraftstoffverordnung*] | Implementation of the technical specifications for the hydrogen offered at hydrogen filling stations | BMLFUW |
| Harmonization of licensing procedures | Charging infrastructure:<br>Assessing the simplification and de-bureaucratization of all notification and approval procedures for the charging infrastructure for electric vehicles. Clarifying that charging stations generally do not require a business operation license, except for individual cases when there are specific unusual or dangerous local circumstances that require a license.<br><br>Hydrogen filling stations:<br>The BMWFW is working together with the states and industry actors to establish the basis for the unification of various licensing procedures for various types of operational facilities. These procedures are published on the BMWFW website as well. The development of an assessment base for hydrogen filling stations. | BMWFW<br>Federal states |
| Technical standards | Implementation of technical specifications for charging points, hydrogen filling stations and gas stations according to Annex II to Directive 2014/94/EU. Technical specifications apply only for the publicly accessible charging points under the Directive. | Verification of jurisdiction |

| | | |
|---|---|---|
| The creation of a register for publicly accessible charging stations | Implementation of Article 7(7) of Directive 2014/94/EU, if the location information for publicly accessible filling stations and charging points is available to all users in an open and non-discriminatory manner. Information on CNG filling stations is already available in the E-Control fuel calculator. Examination of the eventual recording of real-time information about the accessibility of charging stations. | BMWFW |
| Ongoing analysis and verification of adaptations in the building regulations of the states | Creating a viable infrastructure for electromobility, in particular by building empty conduit lines in residential buildings and publicly accessible parking facilities (increase up to 100%), electrotechnical equipment, licensing procedures and harmonization (e.g. in the OIB directives). | all federal states |
| Adaptation of OIB Directive 2.2 | Harmonized clarification of provisions contained in Section 2.2 of the OIB Directive (fire protection in garages, covered parking spaces and parking decks) regarding ventilation systems and fire safety regulations from a technical engineering perspective for the entry of modern electric vehicles in garages, in the sense that there are no additional requirements for garages and parking decks for electric vehicles or electric vehicles under charging. Such a clarification has already been made for CNG. | all federal states |
| Amendments to the 2011 Tyrolean Building Regulations (TBO amendment 2016) | With a June 2016 amendment of the TBO (LGBl. No 94/2016), provisions contained in Section 21(2) clarified that the establishment and modification of free-standing charging stations for electric vehicles are subject to a notification requirement, with the exception of buildings. Furthermore, the Austrian Administrative Reform Act proposes a statutory regulation for empty conduit lines within the framework of a regulatory amendment to the building regulations, in accordance with the building regulations in force in other federal states. | Tyrol |

## 4.2. Political measures

Funding for the market launch of alternative fuels for transport applications requires a coordinated approach at the European, national, regional and local level, in coordination with industry stakeholders.

The following measures are prepared:

- As part of this National Strategic Framework, the bmvit created the 'Clean Energy in Transport' coordinating body, which meets at least once a year, or when the need arises, with the participation of the relevant federal ministries and institutions (if military defence issues are concerned, the Federal Ministry of Defence and Sports is also included), the states, the Austrian Association of Towns and Cities, and the Austrian Association of Municipalities. This body is responsible for revising the implementation of all proposed measures and discusses further incentives with the representatives of industry actors and associations.
- In addition, the bmvit continues to represent Austria at the Sustainable Transport Forum of the European Commission and consult with other Member States in the Government Support Group Alternative Fuels.

Freight transport, which accounts for about half of all greenhouse gas emissions in the transport sector, is also a priority topic. 95% of commercial vehicles that entered the Austrian

market in the first half of 2016 are Class N1 light commercial vehicles, and potentially offer significant savings, due to an annual $CO_2$ emissions value of 17 tonnes per vehicle. The bmvit is also committed to increasing the share of alternative drives in the sector as part of the implementation of the logistic action plan as a further development the overall transport plan for freight transport and logistics.

The following measure is proposed:

- Together with representatives of the Federal Government and the municipalities, the Council for Sustainable Logistics organizes logistics-related dialogues, in order to work together in the spirit of civic and environmental responsibility towards achieving $CO_2$-free municipal logistics by 2030. The objective, within the Strategic Framework, is to develop suitable framework conditions for promoting the use of electric commercial vehicles and investments in the associated infrastructure in municipalities.

#### 4.2.1.1. Taxes and fees

In addition to more stringent emission standards defined at European level, the regulatory system is key for achieving changes in the mobility system.

Details on the existing tax incentives, which are maintained until further notice, can be found in the Annex to the National Strategic Framework. In addition, the following measures must be examined:

- Retention of fiscal benefits for electric vehicles (BEV, FCEV); and abolishing the non-cash compensation for charging privately-owned electric vehicles at company charging stations.

#### 4.2.1.2. Purchase incentives

Currently, alternative fuel vehicles are much more expensive than conventional vehicles, which is generally seen as the main reason for the slow market penetration of alternative fuels for transport applications.

The following measures are prepared:

- The continuation of the BMLFUW's climate-active mobility programme for companies, associations and municipalities for the acquisition of electric and CNG vehicles of all vehicle categories when using electricity from renewable energy sources or a biofuel share of at least 50%; the continuation of the funding programmes for the expansion of the e-charging infrastructure, for both standard and fast charging.

- Continuation of the existing purchase subsidies for private individuals, companies and municipalities in most federal states.

- In the medium term, the funding criteria of the purchase incentives for electric vehicles (e.g. with regard to the minimum range of PHEVs) should be broadly harmonized by the regional authorities.

#### 4.2.1.3. Procurement

The public sector has a pioneering role in the conversion of the traffic system and the procurement of alternative fuels.

The following measures are prepared:

- Invitation to tender published by the Federal Procurement Agency [*Bundesbeschaffungsgesellschaft - BBG*] on vehicle fleet management for alternative drives (Class M1, N1, buses, L), consultancy and vehicle fleet analysis as well as offers for operating leasing (electricity, CNG, hydrogen) in the autumn of 2016.
- Defining a strategic procurement target for the conversion of low-emission vehicles for federal ministries and institutions, including vehicle fleet analyses, considering special requirements for vehicles, in particular those for military defence.
- Significant strengthening of sustainable public procurement requirements and the revisions of the adjustment of procurement guidelines for vehicles, e.g.
    - verification of the introduction of total cost of ownership (TCO), which is compulsory throughout Austria, for the procurement of vehicles for publicly accessible carpools to compensate for the disadvantages of alternative vehicles, with the exclusion of purchase costs.
    - Testing whether the changes in procurement guidelines ensure that, in the event of routine replacement procurements, it is not the procurement of an alternatively-driven vehicle that needs to be justified, but rather the rare exceptional circumstances when such a vehicle is out of the question (e.g. the requirements of the country's military defence).

#### 4.2.1.4. Non-financial incentives

Municipalities play a key role in the introduction of new technologies and mobility concepts as well as the market launch of alternative fuels. Therefore, Section 5 of the National Strategic Framework sets out the position of the Austrian Association of Towns and Cities and the Austrian Association of Municipalities separately.

The municipal framework for action is determined by the legal provisions at state and federal level. One planned measure is the introduction of uniform labelling for particularly clean and low-pollutant vehicles and for use as a basis for developing non-financial incentives.

#### 4.2.1.5. Technical and administrative procedures

The partly non-uniform administrative practices in areas such as the (public and private) charging infrastructure for electric vehicles or the procurement of alternative fuel vehicles is a challenge for the market development of alternative fuels for transport applications and the development of the corresponding infrastructure. The development of uniform administrative practices requires access to a uniform information base.

The statutory requirements defined in the Austrian Weights and Measures Act for measuring instruments for electricity, CNG, LNG and hydrogen are also taken into consideration.

The following measures are prepared:

- All administrative levels should be provided with uniform information and guidance such as civil law issues in housing law, licensing procedures for the charging infrastructure or procurement procedures. In the context of the 'Clean Energy in Transport' coordinating body, an administrative dialogue is established, with the objective of creating a unified information base and uniform administrative practices, in particular with regard to the development of the private and public charging infrastructure for electric vehicles.
- In order to facilitate the construction of a hydrogen infrastructure in Austria and to provide legal security for the far-reaching investments in the sector, a uniform base of assessment must be developed for the required licensing procedures.

The grid integration of charging stations and the conversion to smart grids are also relevant topics in the context of ensuring the supply of power for transport applications. Smart grid technologies must be implemented in view of the requirements of electromobility in terms of time, technology and regulations. Significantly faster charging services in the future will require better network compatibility and more economical procedures. An up and running electromobility market will create demand for the installation of private charging infrastructure (up to 11 kW connections) in buildings and parking facilities. This requires an in-depth analysis of the necessary technical measures such as, for example, the reinforcement of the local distribution network in conjunction with dynamic load management, the examination of the feasibility of the energy and housing law and any amendments necessary.

Issues such as connecting the private charging stations to the power grid in multi-party homes pose a significant challenge. In many cases, the charging station must be physically connected to the electrical mains of the houses, which could create considerable burdens in terms of construction and housing law. Therefore, a solution must be developed for a simpler and more flexible integration of private charging stations at parking lots in multi-party buildings.

The following measures are prepared:

- The establishment of a working subgroup with the participation of the federal, state and local governments on 'Electromobility and its effects on the grid' (based on existing projects and preparatory work), structured with the interactions at the level of different networks, and discussion of the technical and legal aspects of ongoing issues such as flexibility, local grid management, load management, V2G, storage integration, decentralized self-consumption optimization etc. The subgroup is chaired by the BMWFW.
- The establishment of a working subgroup with the participation of the federal, state and local governments on 'Electromobility and its impacts on building standards and equipment', structured with the effects of the market launch of electric mobility on

new or existing buildings. Development and adaptation of planning bases for new buildings, (administrative) regulations for the necessary electrotechnical development of existing buildings (increase of grid connection performance, cost-sharing with owner-owned joint ventures etc.). The subgroup is chaired by Lower Austria.

## 4.3. Funding for infrastructure construction and production facilities

The establishment of a demand-driven infrastructure is of crucial importance for the market launch of alternative fuels for transport applications. It should be noted that Austria has a strong industrial landscape, especially in the field of electromobility components. Failing to exploit alternative fuels can lead to significant disadvantage in value creation and employment in the Austrian automotive industry.[25] Therefore, the public sector provides incentives for the construction of both infrastructure and production facilities.

The following measures are prepared:

- The continuation of the BMLFUW's climate-active mobility programme for companies, associations and municipalities.
- All states are planning to expand the charging infrastructure for electric vehicles according to demand. Some existing state subsidies for charging infrastructure will continue (e.g. Vorarlberg). In Burgenland, municipal charging stations will be funded with a budget of EUR 50 000 in 2016.
- The 'Light Emissions/Low Cost Industrial Production for Electromobility' programme in the context of the 'Leuchttürme der Elektromobilitat' bmvit programme is still underway in 2016, with a subsidy budget of EUR 5 million.
- The 'Produktion der Zukunft' and 'IKT der Zukunft' FTI initiatives will be continued.

### 4.3.1. Measures that can promote the deployment of alternative fuels infrastructure for public transport services

- With the purpose of electrifying diesel routes, the bmvit plans an intensive programme for rail electrification, which involves both the electrification of remaining diesel sections and the possibility of using railroad vehicles with alternative fuels or electric drive on the remaining diesel routes. A guideline for the electrification of railway lines is currently under development, supported by the ÖBB's investment decisions.

The creation of public access points at public transport stations is another focus of Austrian activities:

- The bmvit's 'Charge & Ride' initiative will be used to develop new guidelines for the

[25] KLIEN (2016), E-MAPP: E-Mobility and the Austrian Production Potential

construction of park & ride facilities, including the construction of the charging infrastructure for electric vehicles and corresponding arrangements for operators.

- In addition, a significant part of railway stations in Austria are scheduled for equipment with charging infrastructure in order to enable a combined use of public transportation and environmentally friendly vehicles in private transportation, in line with the overall transportation plan.

## 4.4. Research, technological development and demonstration (RTD&D)

Since 2002, the bmvit has been promoting research, technological development and demonstration for alternative fuels, mainly alternative drive systems and the required energy supply, as well as large-scale lead projects in the field of electromobility. The Austrian FTI roadmap for the mobility of goods includes topics such as 'designing new models for the integration of environmentally friendly modes of transport' or 'integration of vehicles with alternative drive systems'. For future automated and electrified vehicles, the bmvit published an action plan[26] in June 2016. The bmvit is working on a new version of energy research strategy, which will focus on the energy system aspects of mobility. The federal states also provide funding for the use of alternative fuels in transportation and the related infrastructure. Austria is closely involved in the relevant European and international research networks such as the European Green Vehicles Initiative (EGVI), the Fuel Cells and Hydrogen Joint Undertaking or the Hybrid and Electric Vehicle Implementing Agreement of the International Energy Agency. BMWFW also supports research activities in the field of alternative drives.

The following measures are prepared:

- The continuation of planned multi-year FTD programmes for electromobility, such as the 'Leuchttürme der Elektromobilitat'.

- The continuation of the 'Mobilitat der Zukunft' programme and the funding of research projects in the field of fuel research with a budget of around EUR 1.5 million per year.

- Austria's participation in a joint call within the framework of the ERA-NET Co-fund Electric Mobility Europe (EMEurope).

- The continued integration of electromobility and lightweight construction into research programmes such as the energy research programme or the 'Stadt der Zukunft', the 'Smart Cities Demo' and the 'energy model regions' programmes of the bmvit and the Austrian Climate and Energy Fund.

- Continued funding of the Christian Doppler Laboratory for Renewable Syngas Chemistry (about EUR 1.3 million from 2012-2019), lithium batteries (about EUR 1.5 million from 2012-2019) and the boundary in metal-based electrochemical energy converters (about EUR 1.2 million from 2014-2021).

[26] bmvit (2016), Automatisiert – Vernetzt – Mobil: Aktionsplan Automatisiertes Fahren

- The continuation of various research funding programmes of the states.
- Project evaluation and monitoring of potential energy and environmental impacts across all FTI funding lines and instruments as well as the market transition of technologies and successes, including appropriate support and incentives for project consortia.

A number of pilot projects have been proposed:

- In Upper Austria, the pilot project 'LNG für den Schwerverkehr in Oberösterreich' [LNG for Heavy Traffic in Upper Austria] is under preparation.
- Tyrol is planning to test the pilot plant for reducing $CO_2$ emissions in the cold chain logistics in order to test plant management and to gain knowledge for electrically powered mobility applications. The plant in Vomp is one of the ASFiNAG's three pilot plants intended to establish electrical supply stations for refrigerated lorries at service areas. By the end of 2016, electric supply stations with uniform technical standards and interoperable billing systems will be installed at the three pilot sites, i.e. Kesselhof service area on the A1, the lorry park at Vomp on the A12 and the Schwechat service station on the S1. A further rollout will be decided after these three sites are established and evaluated.
- In the autumn of 2016, a pilot project will be launched in Graz, in which two electric buses equipped with so-called supercapacitors will be used on an electrified bus test track.
- In a study, the ASfiNAG will examine the possible development scenarios for future challenges on the high-level motorway and express road network. This should also include a concept for the establishment of a nationwide charging infrastructure on the ASFiNAG network.

# 5. Clean energy in municipal transport

Cities and municipalities have a decisive role in the introduction of new technologies and mobility concepts. In recent years, they already taken a number of measures related to vehicle parking, awareness-raising campaigns or parking policy, among other things. To take account of the particular role played by municipalities, a series of workshops on clean energy in municipal traffic were held in the course of the implementation of Directive 2014/94/EU. In Section 5 of the National Strategic Framework, the Austrian Association of Towns and Cities and the Austrian Association of Municipalities provide a list of current challenges and measures for clean energy in municipal traffic.

Local challenges are dependent on various traffic factors. Larger cities place a particular emphasis on walking, cycling and public transportation. A key issue is which measures are required to shift traffic further towards green transportation and make the remaining motorized private transport, logistics and buses cleaner in the future. As electromobility is the only currently available solution for achieving zero-emission targets, the aim is to increase the share of electric vehicles in various fleets. An increase in the proportion of electric vehicles in municipalities must be included in the objectives of the cities and municipalities (mobility concepts and zero emissions traffic). For example, electric car sharing has great potential for reducing overall vehicle stocks in both the rural and urban areas. Through a wide rollout of electric car sharing, which offers an affordable public accessibility solution, the vehicles can be better utilized and the private vehicle stock can be lowered.

Cities and municipalities can lead the way by making the transition to electromobility in their municipal fleets. This is in fact already happening, as shown by the climate protection survey carried out in 40 municipalities by the Austrian Association of Towns and Cities in 2013.

## 5.1. Challenges for clean energy in municipal traffic

Currently, the cities and municipalities experience the following major challenges:

### 5.1.1. Procurement

For smaller commercial vehicles, electrification is already possible without any problems, so strategies for vehicle fleets should be examined. However, larger vehicles, such as electric buses, are still very expensive. This is why purchasing subsidies play such a major role.

In the case of municipal procurement processes, there should be a growing trend to transition from current practices towards the establishment of municipal car parks. In order to promote a consideration of life cycle costs, the current procurement rules still need some adjustments, also with regard to acquisition costs.

A nationwide procurement campaign is required for the purchase of alternative commercial vehicles for municipal fleets. The Federal Procurement Agency has drafted a framework agreement to this end (see Section 4.2.1.3), which the Austrian Association of Towns and Cities has notified to its' members.

### 5.1.2. Establishment of the charging infrastructure for electric vehicles

The topic of electromobility always includes issues related to parking spaces and the charging infrastructure. In this regard the Austrian Association of Towns and Cities and the Austrian Association of Municipalities has noted that as in the case of all other vehicles, the policy for electric vehicles is to relocate parking spaces from public areas to privately owned land. In urban areas, a large number of charging points for electric vehicles should be funded and constructed at street level, i.e. in the public domain. In certain cases, charging points should be provided with a fast-charging option as well. Each municipality is entitled to decide whether to create and operate charging facilities for electric vehicles on public land.

Up to now, only the building regulations of Carinthia, Lower Austria, Upper Austria, Styria and Vienna contain provisions for the construction of electric charging stations, and garage operators frequently prevent the use of their charging systems, even for vehicles with lithium-ion batteries. Progress in this area would be welcomed. From the perspective of the Austrian Association of Towns and Cities and the Austrian Association of Municipalities, the following are the most important issues:

- making legal and technical specifications available in guidelines
- simplifying the construction of charging infrastructure in multi-storey buildings and making uniform information on the legal situation available.
- ensuring that uniform information is made available on the compulsory construction of charging facilities in the building and/or garage regulations and that experts are given uniform information on topics relevant to fire protection in the OIB directives.
- ensuring that uniform licensing procedures are accessible for charging infrastructure throughout Austria, by simplifying and standardizing the implementation of the relevant federal laws (see the measure for the harmonization of licensing procedures in Chapter 4.1).

### 5.1.3. Logistics

Austrian municipalities are working towards achieving an essentially $CO_2$-free municipal logistics in urban centres by 2030, in line with the 2011 EU white paper on transport. Existing and new instruments should progressively help make logistics and goods transport in metropolitan areas smarter and more efficient.

The municipalities could give preferential treatment to suppliers using electric vehicles in the area of freight trips and taxi services using electromobility.

Especially in the old parts of towns, noise and air pollution from traffic is considerable. Bundling goods deliveries with electric supplier solutions could create added value. Systemic solutions would still be needed here, which could then be applied to smaller cities as well.

Under the 2012-2014 annual programmes of the Austrian Climate and Energy Fund, preparatory work was carried out for a new programme line, 'Smart Urban Logistics' (or 'Effizienter Güterverkehr in Ballungszentren' in German). As a next step, it would be important to build on the knowledge gained in this process, to continue this funding track and

to make funding available for specific municipal implementations.

## 5.2. Measures enacted for providing clean energy in municipal traffic

When measures promoting the use of electric mobility in the public sector are introduced, the incentives must be clearly communicated, especially if the individual measures or subsidies are only available for a limited time.

With regard to the measures, timetables and roadmaps should be developed in cooperation with transport operators, industry actors, municipalities, states and the federal government, in order to avoid duplication and to enable coordinated activities. Pilot projects are, and will continue to be, an important part of the promotion of electromobility. The current fixed funding amounts for the procurement of such vehicles, in particular electric buses or vehicle fleet conversions, should be carried forward and expanded. From the point of view of the Austrian Association of Towns and Cities and the Austrian Association of Municipalities, the following measures are the most urgent:

Table 12: Municipal measures

| Measures | Need for adaptation |
|---|---|
| Procurement | There is urgent need for the clarification of legal requirements with regard to the consistent shift towards considering total cost of ownership (TCO) instead of the cost of acquisition. Furthermore, a nationwide campaign is needed for the procurement of alternative commercial vehicles for municipal fleets, such as the establishment of a framework agreement by the Federal Procurement Company. |
| Parking space regulations / Planning permission | Parking place regulations must be made more flexible in order to adapt to the new forms of mobility, such as electric car sharing. Moreover, in the medium term, there is a clear need for the expansion of the charging station infrastructure in the course of the development of residential and commercial buildings. Considering the already high construction costs, a solution must be found for ensuring that this will not lead to the further increase of costs. |
| Funding | Subsidies should continue to be provided for the acquisition and development of e-car sharing, e-buses, e-stations, fleet conversions etc. at both the level of the states and the federal government. However, the funding regime should be substantially simplified at federal level, in particular. In terms of city logistics, what is particularly important is funding that builds on the results of the existing 'smart urban logistics' research programme to further system solutions and the practical implementation of measures. Funding for demand-oriented transport systems running on alternative drives, such as car sharing, call buses, taxis systems etc. as well as the promotion of electric and alternative buses and commercial vehicles must be continued. |
| Adaptation of the StVO | A great number of measures can be developed with regard to the marking/definition of electric vehicles. Also, legislation to ban other cars from blocking access to the charging stations would also be useful (ban on parking for all vehicles other than electric vehicles for the time it takes for them to charge). |
| Fiscal law | Review of the abolition of benefits in kind provided for recharging privately owned electric vehicles at company charging stations. |

Non-financial incentives, such as the exemption from certain types of parking fees are regarded from a different angle by the Austrian Association of Towns and Cities, since parking space management is based on the space requirements of vehicles. A number of Austrian cities use incentives, such as the exemption from parking fees for electric vehicles,

but other cities reject such incentives for the above reasons. The top priority in urban areas is the transition to public transport, the use of clean buses, e-car sharing, clean logistic services and the use of e-taxis.

## 5.3. Measures enacted for providing clean energy in public transport (buses)

The transport sector is dependent on fossil fuels, leading to high emissions of pollutants and greenhouse gases. As a result of the high degree of electrification for trains, public transport has become a pioneer in the transition from fossil fuels to electricity. Trams, buses and subway trains have also played a decisive role in the transition to a virtually $CO_2$-free transport system, and will keep doing so in the future.

As a result of the dynamic development of electromobility in the last few years, it is now also possible to start the electrification of the fossil fuel-operated segment of the public transportation system. Electric vehicles using electricity from renewable energy sources offer high energy efficiency and climate-friendly mobility.

With regard to electric buses, the Austrian Association of Towns and Cities commissioned the Austrian Energy Agency to prepare a brochure on the vehicle models and technologies available on the market, such as pure electric vehicles, plug-in hybrids and fuel cell vehicles. This also includes pricing information from the manufacturers and an overview of current forms of funding provided for the purchase of electric vehicles, in particular electrical busses, as part of the BMLFUW climate programme.

Since the conversion to electric buses is very cost-intensive for municipalities, existing funding offers an important incentive that should be pursued.

# 6 Glossary

| | |
|---|---|
| A3PS | A public-private partnership funded by bmvit with the Austrian Association for Advanced Propulsion Systems (A3PS) and a research and industry partnership for technology development in the area of alternative drives and fuels |
| ASFiNAG | Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft, an Austrian publicly owned corporation that plans, finances, builds, maintains and collects tolls for the Austrian autobahns. |
| AUSTRIATECH | Federal Association for Technology Policy Measures |
| BBG | Bundesbeschaffungsgesellschaft [Federal procurement agency] |
| BEV | Battery electric vehicle, a vehicle operated purely by a battery |
| BMASK | Bundesministerium für Arbeit, Soziales und Konsumentenschutz [Federal Ministry of Labour, Social Affairs and Consumer Protection] |
| BMLFUW | Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft [Federal Ministry of Agriculture, Forestry, Environment and Water Management] |
| bmvit | Bundesministerium für Verkehr, Innovation und Technologie [Federal Minister for Transport, Innovation and Technology] |
| BMWFW | Bundesministerium für Wissenschaft, Forschung und Wirtschaft [Federal Ministry of Science, Research and Economy] |
| CNG | Compressed natural gas |
| $CO_2$ | Carbon dioxide |
| ESD | Effort Sharing Decision |
| EGVI | European Green Vehicles Initiative |
| EIWOG | Electricity Industry and Organization Act 2010 |
| ERA-NET activity | Networking the European Research Area, supports the co-ordination of national and regional funding programs in Europe |
| EV | Electric vehicle |
| FCEVs | Fuel cell electric vehicle |
| FTD | Research, technological development and demonstration (RTD&D) |
| FTI | Research, technology and innovation |
| GWh | Gigawatt hours |
| KFG | Kraftfahrgesetz 1967 [Motor Vehicles Act] |
| km | Kilometres |
| Class L | Mopeds and motorcycles, quad bikes and other small motorcycles with three or four wheels. |

| | |
|---|---|
| Class M | Motor vehicles with at least four M1 wheels used for passenger transport: passenger vehicles & station wagons<br>M2, M3: Vehicles for passenger transport with more than eight seats (buses) |
| Class N | Motor vehicles used for the transport of goods<br>N1: Vehicles intended for the transport of goods with a maximum permissible mass not exceeding 3.5 tonnes: |
| LNG | Liquefied natural gas |
| NoVA | Austrian car registration tax |
| NOx | Nitrogen oxides, nitrous oxide and nitrous gases emitted by motorized vehicles |
| MIV | Motorized private transport |
| OIB | Österreichisches Institut für Bautechnik [Austrian Institute of Construction Engineering] |
| PBStV | Prüf- und Begutachtungsstellenverordnung [Inspection and assessment regulation] |
| PHEV | Plug-In Hybrid |
| CAR | Passenger vehicle |
| PKW VIG | Personenkraftwagen-Verbraucherinformationsgesetz [Passenger Vehicles – Consumer Information Act] |
| PM2,5 | Particulate matter |
| StVO | Straßenverkehrsordnung 1960 [Road Transport Act] |
| SUMP | Sustainable Urban Mobility Plan |
| Syngas | Synthesis gas |
| TCO | Total cost of ownership |
| TEN-T | Trans-European Transport Networks |
| WAM | With additional measures |
| WAM+ | With additional measures + |
| WEM | With existing measures |
| Wind2Hydrogen | Conversion of wind power into hydrogen (project) |

## Annex

The Annex to the Austrian National Strategic Framework 'Clean Energy in Transport' provides detailed information on the legal and strategic framework conditions presented in the main document as well as on the status quo of the market development of alternative fuels for transport applications, the corresponding infrastructure and the existing state sector measures in Austria.

This is an additional document to the National Strategic Framework.

# Annex

In fulfilment of the Austrian implementation obligation of

## Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure

### Article 3 – National Strategic Framework

Bundesministerium für Verkehr, Innovation und Technologie [Austrian Ministry of Transport, Innovation and Technology] (bmvit)
In collaboration with the

Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft [Federal Ministry of Agriculture, Forestry, Environment and Water Management] (BMLFUW)
Bundesministerium für Wissenschaft, Forschung und Wirtschaft [Federal Ministry of Science, Research and Economy] (BMWFW)

Burgenland
Carinthia
Lower Austria
Upper Austria
Salzburg
Styria
Tyrol
Vorarlberg
Vienna

Austrian Association of Towns and Cities
Austrian Association of Municipalities

Vienna, November 2016

*The Annex to the Austrian National Strategic Framework 'Clean Energy in Transport' provides detailed information on the legal and strategic framework conditions presented in the main document as well as on the status quo of the market development of alternative fuels for transport, the corresponding infrastructure and the existing state sector measures in Austria.*

*The structure of the document follows the National Strategic Framework. Additional information on the introductory section 1 and on the description of the status quo in section 2 is provided.*

# Contents

# 1 Introduction: Background information

## 1.1 Austria needs a mobility shift

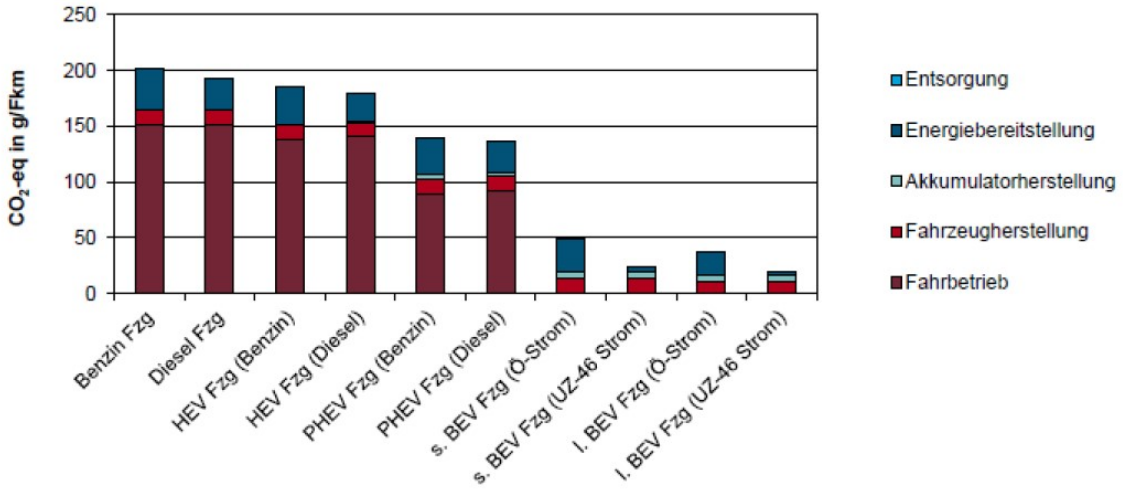
Table 1: Overview of infrastructure-relevant fuels in accordance with Directive 2014/94/EU

| Fuel/energy source | Description |
|---|---|
| **Electricity** | Like fuel cell vehicles (see hydrogen), electrically operated vehicles have the potential to be $CO_2$ neutral and free of any local emissions. The prerequisite for this is that the traction current must be generated from renewable energies. Today, Austria is in the privileged position of generating around 70% of electricity from renewable sources. In parallel with the rising demand for energy for transportation purposes, the quota for renewable energy will also continue to rise in the electricity sector, contributing to a further improvement of the climate footprint of battery-electric vehicles. |
| **Natural gas CNG (compressed natural gas)** | Natural gas is transported in pressure tanks under a pressure of approximately 200 bars and burned in optimized gasoline engines, although the development potential of these engines has not yet been fully exploited. The special tanks in natural gas vehicles are built to the strictest safety guidelines and tested under extreme conditions. These tanks can store gas at a pressure of approximately 200 bars and thus reduce the volume to a rate of about 1/200. They are fitted with number of additional safety devices, such as valves, which prevent the excessive build-up of pressure in the event of a fire or emergency shut-off valves, and are subjected to regular checks.<br>Natural gas or CNG is among the most environmentally friendly fossil fuels. CNG is a low-emission solution where $CO_2$ emissions are reduced by as much as 20% compared to conventional fuels. In addition to that, particle emissions are almost completely eliminated and harmful nitrogen oxide emissions are reduced to a minimum. Natural gas can be compressed to a very high level, which increases performance. Due to its high octane number (RON = research octane number) of 125 (compared to 95 or 98 for petrol), fuel combustion in the engine is significantly more efficient. |
| **Natural gas (liquefied natural gas – LNG)** | LNG is produced by the liquefaction of natural gas at temperatures between -161 and -164 °C. The volume ratio of LNG is only about 1/600 compared to gaseous natural gas at atmospheric pressure, which multiplies its volumetric energy density. In spite of its fossil origin, the use of LNG has several advantages from both the technical perspective, such as less noise generated by lorries at night, and the environmental perspective, such as less pollution. Compared to diesel, the use of LNG reduces SOX emissions and fine dust by almost 100%, $NO_X$ emissions by approx. 80-90% and $CO_2$ emissions by almost 20%. In addition, LNG can be a component of a strong diversified fuel portfolio.<br>The standard transportation route of LNG is ensured via pipelines from the natural gas production plants to a specially designed LNG terminal in a port. Until now, only insignificant amounts of LNG are transported through pipelines, as approximately 10-25% of the energy content of the gas is required for the costly process of liquefaction. If the distances between the source of natural gas and the consumer are not too large (under 2 500 km), it is more economical to transport the gas as CNG through the pipeline. |
| **Hydrogen** | Like electric current, hydrogen is not a primary energy carrier, but must be converted from other energy sources at an additional loss of energy. It does not cause harmful emissions, especially carbon dioxide ($CO_2$), and is sustainable if it is obtained from renewable sources such as wind, sun or biomass. Up to now, hydrogen has mainly been obtained from fossil energy sources for economic reasons.<br>Concepts for the future management of hydrogen generally include the generation of hydrogen from renewable energies, which means that it could be free of emissions. Due to its ecological and economic importance as well as the national value chain, hydrogen can be a decisive energy carrier in both the mobile and the stationary sector. In addition to its versatility in terms of production and use in the energy sector, hydrogen can be used by the steel industry as well, for reducing its carbon footprint. |

The comparison of electric cars and conventional petrol/diesel vehicles clearly indicates that electric vehicles perform significantly better in all relevant environmental parameters. According to the Federal Environmental Agency, this advantage can be even more pronounced if

electricity is generated from renewable sources. Figure 1 shows the results of this ecobalance study.

Figure 1: Total greenhouse gas emissions (CO2 equivalent) of passenger vehicles[1]




Fzg: Fahrzeug
$CO_2$-eq: $CO_2$ Äquivalente
Fkm: Fahrzeugkilometer

UZ: Umweltzeichen
s. BEV: schweres BEV
l. BEV: leichtes BEV

Fzg: Vehicle
$CO_2$-eq: $CO_2$ equivalent
Fkm: Vehicle kilometre

UZ: Environmental labels
s. BEV: Heavy BEV
l. BEV: Light BEV

Waste
Energy provision
Battery production
Vehicle production
Driving

[1] German Federal Environmental Agency, 2015

## 1.2 Need for legal and strategic requirements

Table 2: Legal and strategic framework for a change in mobility

| Relevant regulations, contracts and strategies | Main content/objectives and relevant content for the market development of alternative fuels for transport applications |
|---|---|
| **UN level** | |
| Paris Convention (United Nations Framework Convention on Climate Change) – 12 December 2015 at the UN Climate Conference in Paris. Signed by 175 states in April 2016. Ratified by the Austrian National Council on 8 July 2016. Entered into force on 4 November 2016. | Limiting the increase of the global average temperature to well below 2 °C over the preindustrial level; to 1.5 °C if possible.<br>Obligation of the parties to the agreement to achieve overall emission reduction targets with the purpose of achieving the overall decarbonisation of the global economic system. |
| **EU level** | |
| **Regulations** | |
| Commission Regulation (EC) No 443/2009 setting emission standards for new passenger cars (2009), as amended by Regulation (EU) No 333/2014 as regards the establishment of the modalities for the achievement of the 2020 target for the reduction of $CO_2$ emissions by new passenger cars (2014) | By 2021, new cars launched as part of a manufacturer's fleet may not exhaust more than 95 g $CO_2$/km on average of (special bonuses for electric vehicles). This value is 130 g $CO_2$/km in 2015. |
| Regulation (EU) No 510/2011 on setting $CO_2$ emission performance standards for light duty vehicles (2011) | Average $CO_2$ emission of 175 g $CO_2$/km for new light commercial vehicles by 2015 and 147 g $CO_2$/km by 2020. |
| Regulation (EU) No 1315/2013 on guidelines for the development of the Trans-European Transport Network (TEN-T Guidelines, 2013) | Promoting a low-carbon, environmentally friendly, cost-efficient, safe and user-friendly transportation. |
| **Directives** | |
| Directive 2008/50/EC on air quality and clean air in Europe | Definition and specification of air quality targets for the prevention, avoidance or reduction of adverse effects on human health and the environment. Penalties for non-compliance (implementation in Austria via the Federal Pollution Control Act). |
| Directive 2009/33/EC on the promotion of clean and energy-efficient road vehicles *(under revision)* | Energy and environmental impact (energy consumption, $CO_2$ emissions, pollutant emissions) of the procurement of road vehicles by public operators for the promotion of the market for clean and energy-efficient vehicles (implemented in Austria via the Federal Procurement Act and the adaptation of the general tendering provisions). |
| Directive 2009/28/EC on the promotion of the use of energy from renewable sources *(under revision with the target horizon of 2030)* | A 10% market share for renewable energy sources used for producing transport fuels by 2020 (implementation in Austria via the 2012 Austrian Ordinance on Automotive Fuels). |
| Directive 2012/27/EU on energy efficiency | A 20% increase in energy efficiency by 2020. Use of the considerable potential of increased energy savings in buildings, traffic, products and processes (implementation in Austria via the Austrian Energy Efficiency Act). |
| Directive 2014/94/EU on expanding the infrastructure for alternative fuels | Reducing the environmental impact of traffic and the dependence on oil by establishing a common framework for measures established for the construction of the infrastructure for alternative fuels (implementation in Austria scheduled until 18 November 2016) |

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| Directive 2015/1513/EU (ILUC Directive) | Limiting the share of energy from first generation biofuels to a maximum of 7% of final energy consumption in the transport sector in Member States by 2020. |
| **Legislative proposals** | |
| The European Commission's proposal for the establishment of binding national targets for the reduction of greenhouse gas emissions (2021-2030) based on the European Climate and Energy Framework for 2030 (Conclusions of the European Council, 23/24 October 2014) | The burden sharing regulation, which sets binding national targets for the reduction of greenhouse gas emissions in the period 2021-2030 in the economic sectors not covered by the EU ETS emissions trading scheme. The sectors of buildings, agriculture, waste management and transport were responsible for almost 60% of the EU's total emissions in 2014. Transport in Austria accounts for 45% of non-ETS emissions. A $CO_2$ reduction target of -36% is proposed for Austria.<br>http://europa.eu/rapid/press-release_MEMO-16-2499_en.htm |
| **Strategic guidelines** | |
| A European strategy for low-emission mobility COM(2016)501 | The establishment of guiding principles for the Member States marking out the path towards low-emission mobility and the announcement of planned Commission initiatives. Some of the most important elements of the strategy:<br>- Increasing the efficiency of the transport system<br>- A quick introduction of low-emission alternative energy carriers in the transport sector<br>- Transition to emission-free vehicles<br>Among others, binding $CO_2$ standards were announced for lorries, city buses and long-distance buses. |
| Energy Union COM(2015)080: Framework strategy for a crisis-proof European energy union with a future-oriented climate protection strategy and implementation mechanism | The goal is the transition to a sustainable, low-carbon and environmentally-friendly economy. The energy union consists of five dimensions:<br>- Energy security<br>- Integrated internal market<br>- Energy efficiency<br>- Transition to a low $CO_2$ emissions economy<br>- Research, innovation and competitiveness<br>As the transport sector accounts for more than 30% of the final energy consumption in Europe, it must be made more energy-efficient and low in $CO_2$ emissions. Among others, national climate and energy schemes must be implemented to achieve the targets for the reduction of greenhouse gases by 2030, the expansion of renewable energies and an energy efficiency increase. |
| A European strategy for alternative fuels COM(2013)017 | The objective is to break the dependence on oil by means of a comprehensive strategy for alternative fuels and a roadmap for their implementation in all modes of transport, in order to create a long-term framework for providing guidance on technological development and investment in the distribution of these fuels as well as building confidence among consumers. Directive 2014/94/EU was part of the 'Clean Energy in Transport' package, the core element of which is strategy. |
| White Paper on Traffic COM(2011)144 | Road map to a unified European transport area in view of reducing greenhouse gas emissions in transportation by 60% by 2050. As regards the development and introduction of new, sustainable fuels and propulsion systems, two objectives were established:<br>- Halving the use of passenger cars running on conventional fuel in urban traffic by 2030; full abandonment of such vehicles in cities by 2050; and achievement of a largely $CO_2$-free city logistics sector in urban centres by 2030<br>- Achieving a proportion of low $CO_2$-emission, sustainable aircraft fuels of 40% by 2050 |
| **Austria** | |

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| 2012 Overall Transport Scheme for Austria | Electromobility as a building block for a modern and efficient overall transport system. This goes further than merely replacing the internal combustion engine with an electric engine. Electromobility is expected to help make traffic more efficient and environmentally friendly,<br>- as part of a combined use of public transport and environmentally friendly vehicles in private transport and<br>- in conjunction with the use of efficient and renewable sources of energy<br>- as part of an intelligent and intermodal overall transport system. |
| Implementation plan for electromobility inside and outside of Austria 2012 | The interministerial implementation plan for electromobility adopted by the Federal Government in 2012 aims to help Austrian transport policy leverage electromobility in a technologically neutral manner.<br>Adopted by the Council of Ministers, the implementation plan for electromobility inside and outside of Austria defines 65 measures, such as the steps towards the market launch and the establishment of an incentive system aimed at raising awareness of new mobility solutions and maximizing the positive environmental effects |
| In preparation:<br>Integrated energy and climate strategy | The goal is the creation of an integrated energy and climate strategy, which will provide a framework for the future orientation of the Austrian energy and climate policy. The objectives are derived from the corresponding EU guidelines, in particular the future effort sharing measures regarding non-emissions trading (Effort Sharing).<br>At the beginning of the process, a Green Paper was drawn up to provide the basis for an informed and factual discussion on an integrated energy and climate strategy. The Green Paper analyses the existing situation in terms of $CO_2$ emissions, energy consumption and power generation in Austria, and compares the existing scenarios for future development. A consultation process on the Green Paper is still ongoing until November 2016, with the broad involvement of all stakeholders. |

In the federal states, alternative fuels for transport are handled primarily as part of electromobility strategies or higher-level mobility strategies.

**Table 3: Strategies adopted by the federal states for alternative fuels for transport (as of June 2016)**

| Federal state | Description | Source |
|---|---|---|
| **New 2016 Carinthia** | The targets set by Carinthia were published in the 2014 energy master plan, which defines the ambitious goal of a $CO_2$-free mobility by 2035. This includes the promotion of public transport, cycling and walking as well as the transition to individual (automotive) mobility with alternative drives. The master plan will be accompanied by a mobility strategy based on electromobility as part of the overall transport system. The mobility master plan for Carinthia, MoMaK 2035, was presented by the state government in July 2016. | http://www.mobilitaetsmasterplankaern-ten.at/306626_DE |
| **NEW 2016 Carinthia** | There is no specific electromobility strategy in Salzburg. Developed in 2015, the state mobility concept 'Salzburg mobil 2016 - 2025' defines the strategies for sustainable mobility and local transport policy measures. The goal is to reduce air pollutants and $CO_2$ emissions according to the climate and energy strategy 2050. Particularly, non-fossil engines are used in both public and private transportation. Vehicles operated with fossil fuels will be replaced with 10 000 electric vehicles. The concept was adopted by the state government in September 2016 and a separate strategy for alternative fuels was announced. | https://www.salzburg.gv.at/themen/verkehr/salzburgmobil |
| **NEW 2016 Styria** | For autumn 2016, the state announced the 'KESS 2030' Energy and Climate Strategy Styria with the aim of combining and legally anchoring the climate protection plan and the energy strategy for 2025. The 2030 Electromobility Styria was presented in early October 2016 as a component of KESS 2030.<br>The state strategy has two phases. Phase 1 lasts until 2020 and promotes the transition to electromobility, especially in public and company fleets as well as private individuals. For this phase, a programme containing 21 measures was implemented in four main areas:<br>- Model function of the public sector.<br>- Legal framework for the expansion of the charging infrastructure.<br>- Funding for the establishment of infrastructure and vehicle procurement.<br>- Measures to raise awareness and connect the actors. | http://www.energie.steiermark.at/cms/beitrag/12530147/132798639 |
| **NEW 2015 Vorarlberg** | With the 2008 VLOTTE pilot project, Vorarlberg served as a model region for electromobility in Austria and adopted an electromobility strategy in October 2015. These include 32 measures for the promotion of electromobility with a focus on public transport, two-wheelers, charging infrastructure and specific passenger car applications. 20 electric buses will be purchased for the transport network. In addition, 10 000 electric vehicles will be introduced in Vorarlberg by 2020. The electricity needs will be covered by locally generated renewable energy.<br>The electromobility strategy is incorporated into the transport strategy, the energy autonomy scheme and the bicycle transport strategy of Vorarlberg. | http://www.energieautonomie-vorarl-berg.at/de/elektromobilitaetsstrategie-2020 |

| | | |
|---|---|---|
| **NEW 2015 Vienna** | The electromobility strategy of the City of Vienna, adopted by the City Council in September 2015, explains the principles, objectives and measures taken by the city for the promotion of electromobility by 2025. The strategy emphasizes the priority of public transportation. Charging stations will be constructed only in semi-public space.<br>The main focus of the electromobility strategy is on the following:<br>- the measures for the electrification of vehicle fleets; and<br>- the establishment of the required charging infrastructure.<br>In Vienna, at least 10% of all car trips must be taken by electric vehicles in 2025. Furthermore, the Smart City Vienna framework strategy adopted in 2014 puts forward the following mobility objectives:<br>- Ensuring that the largest possible share of traffic is relocated or replaced by new drive technologies (such as electricity) by 2030.<br>- Ensuring that the entire motorized traffic within the city limits occurs without conventional drive technologies by 2050.<br>In spring 2016, MA 33 was accepted as the new contact partner for the development and implementation of a specific infrastructure concept. | https://www.wien.gv.at/stadtentwicklung/studien/pdf/b008435.pdf |
| **ANNOUNCED 2016 TYROL** | The 2016 electromobility strategy for Tyrol was announced under the motto 'So fahrt Tirol 2050' ['How Tyrol drives in 2050']. In addition to researching technology trends, an incentive system must be developed as well. Tyrol hopes to achieve autonomy in energy production by 2050. The electromobility strategy should be ready by the second quarter of 2016. | https://www.tirol.gv.at/meldungen/meldung/artikel/regierungsklausur-1/ |
| **Burgenland** | Burgenland has no electromobility strategy, but increasing e-mobility throughout Burgenland is among the priorities of the new government, in place since 2015. Adopted in 2013, the Burgenland 2020 energy strategy regards the transition to electromobility as a key issue. The state's overall transport strategy (2014) contains a large number of relevant provisions as well. | http://www.tobgld.at/uploads/tx_mddownloadbox/Energiestrategie_Burgenland_2020_.pdf<br>http://www.burgenland.at/fileadmin/user_upload/Downloads/Mobilitaet_und_Sicherheit/Mobilitaet/Gesamtverkehrsstrategie_Burgenland_Web_9MB.pdf |
| **Lower Austria** | Adopted in 2014, the electromobility strategy defines the following targets by 2020:<br>- 5% of electromobility in the entire carpool<br>- Reduction of passenger car traffic by 25 000 people through electromobility<br>- A state-wide increase in value creation and employment in the field of electromobility. | http://www.ecoplus.at/sites/default/files/niederoesterreichische-elektromobilitaetsstrategie-2014-2020-web.pdf |
| **Upper Austria** | Upper Austria has no electromobility strategy. The promotion of electric mobility and environmentally-friendly drives and fuels are priority measures within the scope of traffic sector objectives defined in the context of the Upper Austrian energy strategy (2009). A new energy strategy related to the public and private charging infrastructure is currently under development. | http://www.land-oberoesterreich.gv.at/files/publikationen/praes_energiezukunft2030.pdf |

# 2 Status Quo: Detailed Information

## 2.1 Current Status of the Market Development of Alternative Fuels for Transport Applications

Table 4: New registrations by type of vehicle, fuel or energy source (as of July 2016)

| Types of vehicle, fuel and energy source | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 (Q1+Q2) |
|---|---|---|---|---|---|---|---|
| **Passenger cars Kl. M1** | 328 563 | 356 145 | 336 010 | 319 035 | 303 318 | 308 555 | 171 770 |
| Petrol incl. flex-fuel | 159 740 | 159 027 | 143 325 | 134 276 | 126 503 | 122 832 | 68 262 |
| Diesel | 167 130 | 194 721 | 189 622 | 180 901 | 172 381 | 179 822 | 99 274 |
| Electro (BEV) | 112 | 631 | 427 | 654 | 1 281 | 1.677 | 2.008 |
| Natural gas CNG (monovalent & bivalent) | 333 | 444 | 460 | 628 | 788 | 703 | 293 |
| Plug-In Hybrid (PHEV) | k. A. | k. A. | k. A. | 184 | 434 | 1.101 | 562 |
| Hydrogen (FCEV) | k. A. | k. A. | k. A. | k. A. | 3 | 9 | 0 |
| ***New vehicle registrations M1 (BEV, PHEV, FCEV)*** | **112** | **631** | **427** | **838** | **1 718** | **2 787** | **2 570** |
| ***Share of electric vehicles in new registrations M1*** | **0.03%** | **0.18%** | **0.13%** | **0.26%** | **0.57%** | **0.90%** | **1.50%** |
| **Further Class L, M and N pure electric vehicles** | **1 225** | **979** | **1 400** | **791** | **876** | **930** | **689** |
| Motorbikes/Trikes/Quadricycles(Class L) | 1 206 | 923 | 1 094 | 585 | 672 | 651 | 571 |
| Class M2 and M3 buses | 8 | 5 | 14 | 15 | 1 | 12 | 10 |
| Class N1 Heavy-load vehicles (< 3.5 t) | 11 | 51 | 292 | 191 | 203 | 267 | 108 |
| Class N2, N3 Heavy-load vehicles (> 3.5 t) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 5: Vehicle fleet by type fuel and energy source (as of July 2016)

| Fuel types and energy sources | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 (Q1+Q2) |
|---|---|---|---|---|---|---|---|
| **Passenger cars Kl. M1** | 4 441 027 | 4 513 421 | 4 584 202 | 4 641 308 | 4 694 921 | 4 748 048 | 4 793 759 |
| Petrol incl. flex-fuel | 2 445 506 | 1 997 066 | 2 001 295 | 2 003 699 | 2 011 104 | 2 019 139 | 2 033 082 |
| Diesel | 1 988 079 | 2 506 511 | 2 570 124 | 2 621 133 | 2 663 063 | 2 702 922 | 2 730 693 |
| Electro (BEV) | 353 | 989 | 1 389 | 2 070 | 3 386 | 5 032 | 7 151 |
| Natural gas CNG (monovalent & bivalent) | k. A. | 2.670 | 3.109 | 3.651 | 4.262 | 4.775 | 4.933 |
| Plug-In Hybrid (PHEV) | k. A. | k. A. | k. A. | 408 | 776 | 1.512 | 2.074 |
| Hydrogen (FCEV) | k. A. | k. A. | k. A. | k. A. | 3 | 6 | 12 |
| ***Stock of electric vehicles M1 (BEV, PHEV, FCEV)*** | **353** | **989** | **1 389** | **2 478** | **4 165** | **6 550** | **9 237** |
| ***Electric vehicles – changes since last year*** | **58.3%** | **180.2%** | **40.4%** | **78.4%** | **68.1%** | **57.3%** | **-** |
| ***Share of electric vehicles in the total carpool M1*** | **0.01%** | **0.02%** | **0.03%** | **0.05%** | **0.09%** | **0.14%** | **0.19%** |
| **Further Class L, M and N pure electric vehicles** | **3 217** | **4 024** | **5 120** | **5 594** | **6 067** | **6 532** | **7 221** |
| Motorbikes/Trikes/Quadricycles(Class L) | 3 034 | 3 772 | 4 565 | 4 835 | 5 116 | 5 324 | 5 895 |
| Class M2 and M3 buses | 113 | 116 | 126 | 139 | 131 | 138 | 148 |
| Class N1 Heavy-load vehicles (< 3.5 t) | 69 | 135 | 428 | 619 | 819 | 1 069 | 1 177 |
| Class N2, N3 Heavy-load vehicles (> 3.5 t) | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

## 2.2. The status of infrastructure construction for alternative fuels

Figure 2: Publicly accessible charging points for electric vehicles (as of July 2016)

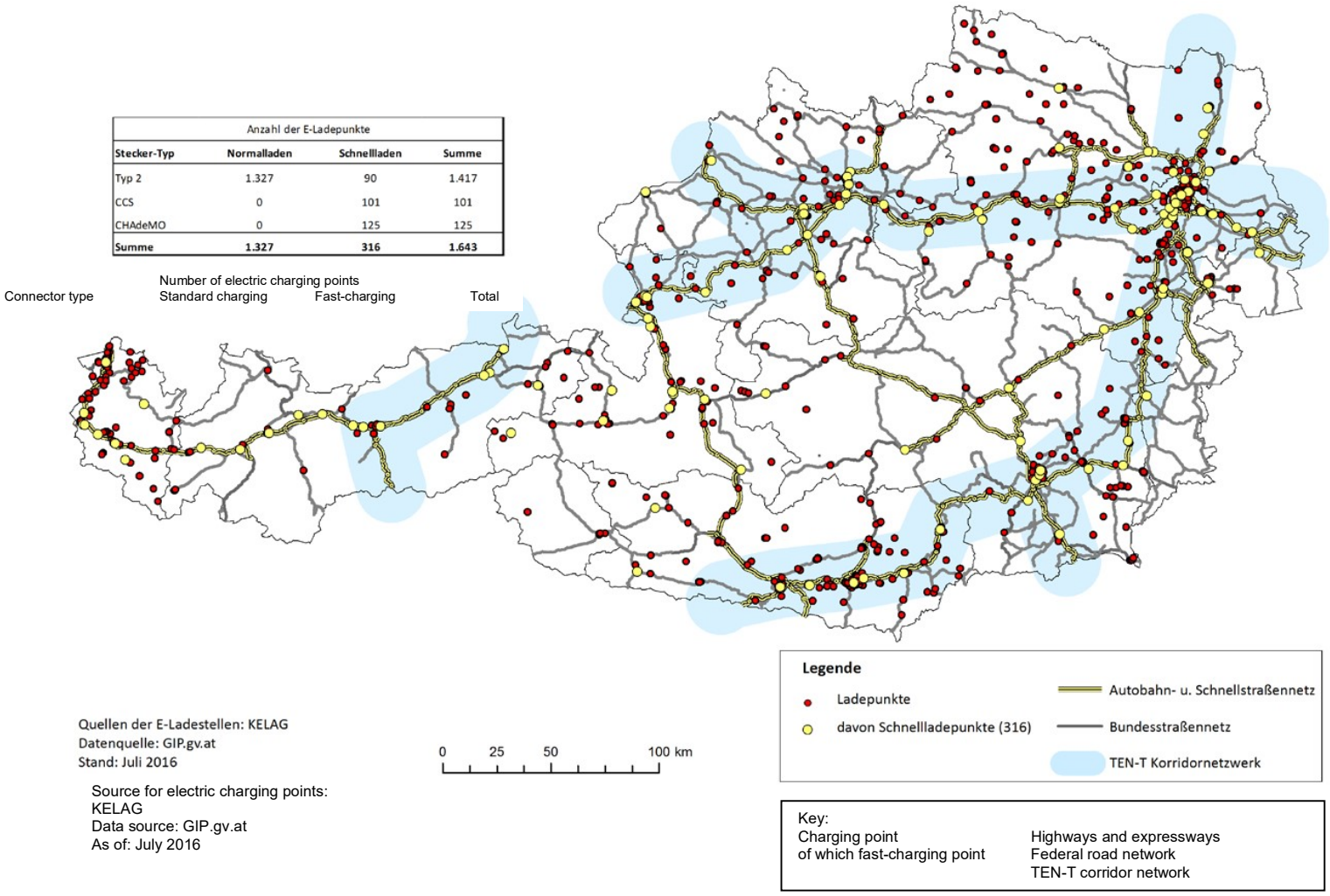
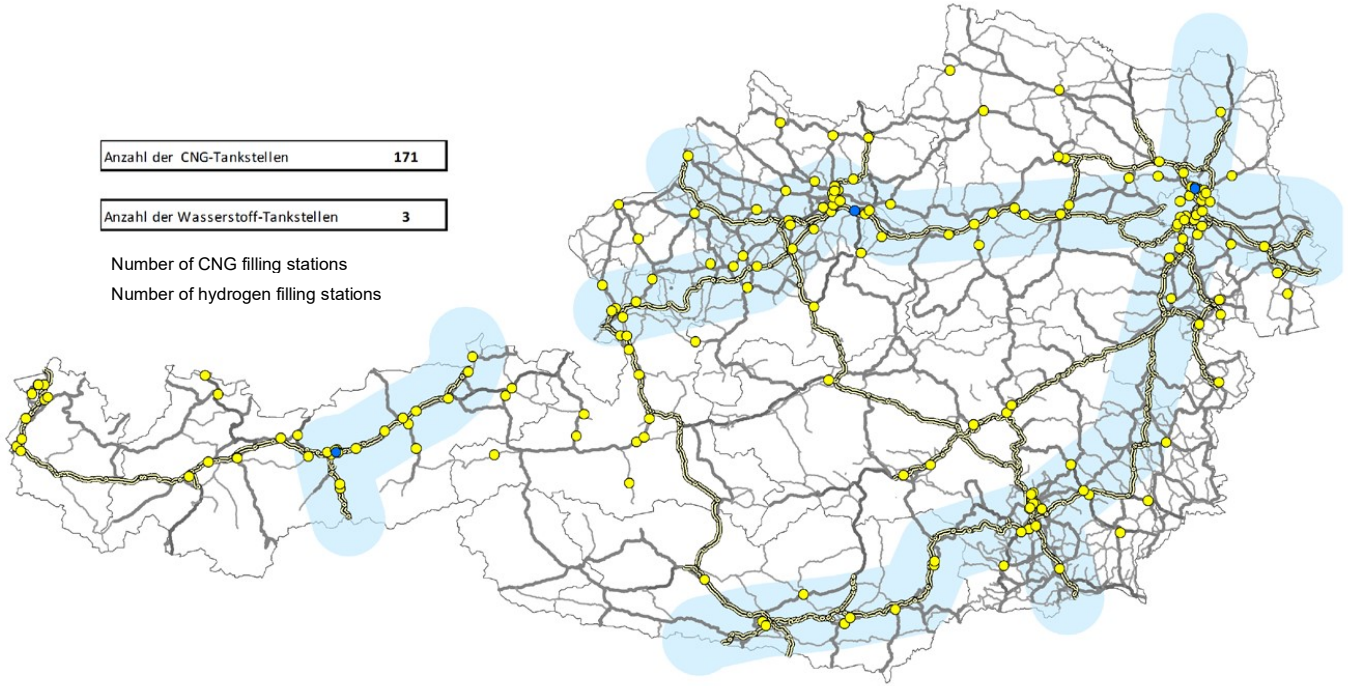


Figure 3: Publicly accessible CNG and hydrogen filling stations (as of July 2016)




Source for CNG filling stations: Fachverband Gas Warme (FGW)
Source for hydrogen filling stations: OMV AG
Data source: GIP.gv.at
As of: July 2016

Key:

| | |
|---|---|
| CNG filling station | Highways and expressways |
| Hydrogen filling station | Federal road network |
| | TEN-T corridor network |

## 2.3 Existing incentives and measures in the public sector

### 2.3.1 Legal measures

The current legal measures for promoting alternative fuels for transport applications and constructing the relevant infrastructure focus on construction law, which falls under the competence of the federal states in Austria. For example, construction law may provide for empty conduit lines for getting electromobility up and running in the future (see Table 6). Licensing requirements under construction law for charging infrastructure can also be regulated in these legal instruments or derived from similar regulations.

The implementation process of Directive 2014/94/EU included the development of a guideline for the authorization process for the construction of charging infrastructure. Extracts from this are shown below in Figure 4. Part I of the status quo related to construction law has already been published.[2]

Recent years have seen some facilitiations from the federal states. In Lower Austria, for example, the approval procedure was simplified in April 2016. Under the new regulations, the construction of charging stations carries no reporting obligation (LGBl. No 37/2016). In February 2016, Vienna made it clear that garages with electric charging stations do not require special exhaust systems. A Styrian ordinance issued on 15 September 2015 stipulated that while commercial charging stations are subject to commercial law, this does not mean they require authorization per se.

[2] BMVIT, federal states (2016), guidelines to the authorization procedure for the charging infrastructure for electric vehicles http://www.bmvit.gv.at/verkehr/elektromobilitaet/downloads/eTankstelle_Genehmigung_Leitfaden.pdf

**Figure 4: Approval procedure for charging stations pursuant to the construction laws of the states (as of June 2016)**

| Federal state | Current construction method for electric charging stations *), **) | |
|---|---|---|
| | Outdoors | In buildings/garages |
| NÖ | Charging points and stations for accelerated charging are subject to registration. | |
| | - | Please provide signposting as follows: 'Loading prohibited for electric vehicles with lead-acid traction batteries', according to the guidelines (2015) http://www.ecoplus.at/sites/default/files/leitfaden-zur-errichtung-von-ladestationen-fuer-e-fahrzeuge.pdf |
| VBG | **Case-by-case analysis:** If they do not endanger the safety or health of people or impose on neighbours, they can be classified as free construction projects. | |
| BGLD | **Free** without foundation<br>**Notification** only with foundation | **Free** |
| KTN | **Free** | |
| W | **Free** for < 3m | **Free:** Equipping a standard parking space with a wall box<br>**Notification:** Equipping all parking spaces with electric charging stations(= charging places)<br>In both cases, please provide signposting as follows: 'Loading prohibited for electric vehicles with lead-acid traction batteries', pursuant to MA37 (2016)<br>http://www.wien.gv.at/wohnen/baupolizei/pdf/stellplaetze-elektro.pdf |
| STMK | **Free** | |
| T | **Free** without foundation<br>**Notifications** only with foundation | **Free** |
| SBG | **Free** | **Free**<br>In the case of projects with a higher charging capacity, construction authorities must be contacted (fire protection) |
| OÖ | **Free** | |

*) The table provides general information. It is advisable to contact the construction authorities to clarify whether permission is required for the project. AustriaTech does not accept liability for the correctness or completeness of the information provided.

**) In principle, a technical description of the charging station (installation and operating instructions), prepared by a professional electrician, is required. In the case of projects in garages, providing site plans and the exact location of the charging station often accelerate the process of clarifying all technical aspects.

**Table 6: Empty conduit lines and equipment in buildings and parking facilities for the charging infrastructure**

| Federal state | Description of the provision |
|---|---|
| **Burgenland** | - |
| **Carinthia** | **Karntner Bauordnung 1996 [Carinthia Building Regulations], as amended in LGBl. No 31/2015**<br>Section 18(5)<br>(5) For projects under Section 6(a)-(c), the Authority shall order the creation of playgrounds, garages, parking spaces and electric filling stations for motor vehicles according to the type, location, size and use of the building or facilities as well as the necessary structural measures for ensuring basic protection and access for people with disabilities. The location and construction of these facilities shall be based on local requirements. During the construction of playgrounds, the children's safety is top priority.<br>**Parking space regulations in Klagenfurt**<br>Calculation key for apartments (empty conduit lines)<br>In the case of apartments [...], 230 V/400 V electrical connectors should be installed for use as electrical filling stations in 10% of the parking spaces (but at least 1 location).<br>Calculation key for further building projects (full equipment)<br>For new builds (2 to 28) with 21 or more parking spaces, one charging station for electric vehicles must be constructed and operated for every additional 100 parking spaces. At each charging station, 2 parking spaces must be colour labelled for electric cars.<br>**Construction and business requirements – Department of Environmental Protection of Klagenfurt**<br>In 10% of proposed parking spaces (commercially rounded to whole numbers; at least 1 parking space), adequate structural measures must be created for 230 V/400 V electrical connectors, for use as an electrical filling station for motor vehicles (charging current up to 16A) in such a manner that the finalized charging stations cannot be regarded by the operator of the parking spaces as a significantly alteration or extension of an electrical equipment or electrical installation within the meaning of the Austrian Electrical Engineering Act of 1992. (Dimensioning of the main line. Empty conduit lines. Measuring system. Data line. Voltage outputs.)<br>The requirements and definitions of ÖVE ÖNORM EN 61851-1 apply.<br>Parking lots for passenger cars must be colour labelled (RAL 6018) as ‘parking spaces for electric cars’. Next to these parking spaces, one charging station for electric vehicles (electric tanking stations) must be constructed for each couple of parking spaces in accordance with the provisions contained in ÖVE/ÖNORM EN 61851-1, with a connected load of up to 22 kW and at least two IEC 62196-1 type 2 connectors. Required number of parking spaces for different types of facilities:<br>1 Charging station with 2 marked electric parking spaces for 11-50 parking spaces.<br>2 Charging station with 4 marked electric parking spaces for 51-100 parking spaces.<br>3 Charging station with 6 marked electric parking spaces for 101-200 parking spaces.<br>4 Charging station with 8 marked electric parking spaces for 201-300 parking spaces and so on.<br>(From 51 parking spaces = 1 charging station and 1 further charging station for every additional 100 parking spaces) |

| | |
|---|---|
| **Lower Austria** | **Lower Austria Building Code 2014, LGBl. No 37/2016**<br>Section 64 - The construction of parking facilities for motor vehicles<br>(3)In the case of parking facilities in buildings with more than 12 apartments, it must be ensured that at least one of the ten compulsory parking spaces can be retrofitted with a charging point with a capacity of at least 3 kW for electric vehicles (empty conduit lines). Reserved spaces for the dispensation and distribution of electricity and similar tasks.<br>(4)In the case of all other non-public parking systems with more than 10 compulsory parking spaces, it must be ensured that at least one parking space for each 10 compulsory parking spaces started is fitted with a charging point for electric vehicles (with a charging capacity of at least 3 kW), or at least one parking space with a charging station for accelerated charging for each additional 25 compulsory parking spaces (with a charging capacity of at least 20 kW).<br>(5)In the case of publicly available parking facilities with more than 50 compulsory parking spaces, it must be ensured that at least one of every additional 10 compulsory parking spaces can be retrofitted with a charging point with a capacity of at least 20 kW for the accelerated charging of electric vehicles.<br>(6) In the case of publicly accessible parking facilities with more than 50 compulsory parking spaces that have been approved since 1 January 2011, it must be ensured that at least one parking space per every 50 compulsory parking spaces can be retrofitted with a charging point (with a capacity of at least 20 kW) for the accelerated charging of electric vehicles before 31 December 2015.<br>(7) In the case of publicly accessible parking facilities with more than 25 compulsory parking spaces that have been approved since 1 January 2011, it must be ensured that at least one parking space per every 50 compulsory parking spaces can be retrofitted with a charging point (with a capacity of at least 20 kW) for the accelerated charging of electric vehicles before 31 December 2018.<br>(8)Pursuant to Sections 6 and 7, publicly accessible parking facilities with an average parking duration of more than 6 hours can be equipped with 4 charging points with a charging capacity of at least 3 kW for each station for accelerated charging. |
| **Salzburg** | **-** |
| **Styria** | **Styrian Construction Act, as amended in LGBl No 34/2015**<br>Section 92a – charging stations for electric vehicles<br>(1)When constructing shopping centres and parking facilities for motor vehicles and bicycles with more than 50 parking spaces, it must be ensured that one parking space can be retrofitted with a charging station for electric vehicles (e.g. empty conduit lines) for at least every 50 parking spaces.<br>(2)By way of departing from provisions contained in Section 1, the municipalities shall be entitled to specify the number of parking spaces (increasing or decreasing) and/or provide more extensive arrangements for retrofitting them with charging stations for electric vehicles or fully execute the construction of such charging stations. |
| **Tyrol** | **-** |
| **Vorarlberg** | **-** |
| **Upper Austria** | **Upper Austrian Act on Structural Engineering, as amended in LGBl. No 61/2015**<br>Section 20 – Charging stations for electric vehicles<br>(1)When constructing publicly accessible parking facilities for motor vehicles and bicycles with more than 50 parking spaces, it must be ensured that one parking space can be retrofitted with a charging station for electric vehicles (e.g. empty conduit lines) for at least every 50 parking spaces, provided that no appropriate electrical facilities had been installed during construction.<br>(2)Parking spaces under Section 1 must be retrofitted with charging stations for electric vehicles by 31 December 2017 at the latest. |
| **Vienna** | **Vienna Garage Act 2008, as amended in LGBl. No 26/2014**<br>Section 6(3) – Installations for the adjustment of motor vehicles – Construction requirements<br>(3) During the construction of garages, it must be ensured that they can be retrofitted with charging places for electrically operated vehicles. |

## 2.3.2 Political Measures

### 2.3.2.1 Taxes and Fees

| Relevant taxes and fees | Main content or relevant tax relief for the market development of alternative fuels for transport applications |
|---|---|
| **Engine-related insurance tax**<br>Austrian Insurance Act 1953, as amended | The engine-related insurance tax is to be paid in addition to the 11% insurance tax calculated based on insurance fees (premiums) for the motor vehicle liability insurance. The tax consists of a fixed amount, which depends on the type of the insured motor vehicle and the period for which the insurance policy is paid.<br>- For motorcycles, the calculation is based on the cubic capacity of the engine specified in the registration certificate.<br>- For passenger cars, combination cars and all other types of motor vehicles with a maximum permissible total weight of up to 3.5 tonnes, the calculation is based on the performance of the combustion engine specified in the registration certificate, decreased by 24 kilowatts (fractional kilowatts shall be rounded up to the nearest full kilowatt).<br>For passenger cars, combination cars and all other types of motor vehicles (with the exception of motorcycles) with a maximum permissible total weight of up to 3.5 tonnes, the following calculation applies per month for the yearly method of payment of the motor vehicle liability insurance premium:<br>- for the first 24 kilowatts of the registered performance per kilowatt: EUR 0 (regardless of the method of payment)<br>- for the next 66 kilowatts of the registered performance per kilowatt: EUR 0.62 (in case of semi-annual payment: EUR 0.6572; in case of quarterly payment: EUR 0.6696; in case of monthly payment: EUR 0.682)<br>- for the next 20 kilowatts of the registered performance per kilowatt: EUR 0.66 (in case of semi-annual payment: EUR 0.6996; in case of quarterly payment: EUR 0.7128; in case of monthly payment: 0.726)<br>- and for all further kilowatts of the registered performance per kilowatt: EUR 0.75 (in case of semi-annual payment: EUR 0.795; in case of quarterly payment: EUR 0.81; in case of monthly payment: EUR 0.825)<br>Example:<br>- Passenger car, 120 kW, yearly payment of the insurance policy, taxation from 1 March 2014:<br>120 kW – 24 kW = 96 kW, calculation base:<br>66 kW x 0.62 = EUR 40.92, 20 kW x 0.66 = EUR 13.20, 10 kW x 0.75 = EUR 7.50 = EUR 61.62 x 12 months = EUR 739.44 of engine-related insurance tax per year<br>- Electric hybrid vehicle, 100 kW total power (73 kW internal combustion engine, 60 kW electric motor), yearly payment of the insurance policy, taxation from 1 March 2014:<br>73 kW – 24 kW 49 kW x 0.62 = 30.38 x 12 months = EUR 364.56 engine-related motor vehicle insurance tax per year.<br>The engine-related motor vehicle insurance tax must be paid for all motor vehicles that are exclusively electrically driven. Motor vehicles with combustion engines in connection with the transmission of electrical energy (‘electric hybrid vehicles’) are taxable. However, the performance of internal combustion engines in such motor vehicles is taken as the exclusive basis for assessment.<br>https://www.bmf.gv.at/steuern/fahrzeuge/motorbezogene-versicherungssteuer.html |
| **Motor vehicle tax**<br>Motor Vehicle Tax Act of 1992 (KfzStG), as amended | The motor vehicle tax is payable after the following motor vehicles in a domestic traffic authorization procedure:<br>- Motor vehicles with a maximum permissible total weight of more than 3.5 tonnes, excluding tractors and traction engines |

| | |
|---|---|
| | - Trailers with a maximum permissible total weight of more than 3.5 tonnes<br>- Motor tractors and traction engines identified as such by the law, regardless of their maximum permissible total weight<br>The motor vehicle tax must be paid for all motor vehicles that are exclusively electrically driven. Motor vehicles with combustion engines in connection with the transmission of electrical energy ('electric hybrid vehicles') are taxable. However, the performance of internal combustion engines in such motor vehicles is taken as the exclusive basis for assessment.<br>https://www.bmf.gv.at/steuern/fahrzeuge/kraftfahrzeugsteuer.html |
| **Standard consumption tax (NoVA)** | The NoVA is paid when a motor vehicle is delivered to customers in Austria or is admitted to traffic in Austria for the first time (through import or relocation). The following items are taxed under the NoVA: motorcycles, passenger cars and other motor vehicles principally designed for passenger transportation. The standard consumption tax is a one-time tax.<br>The tax rate is calculated as follows:<br>- Cubic capacity in cubic centimetre minus 100 times 2% = tax % (rounded to the full percentage)<br>For passenger cars:<br>- $CO_2$ emission value in g/km minus 90 g divided by 5 plus EUR 20/g of $CO_2$ over 250g/km minus the deduction items.<br>- The result is the tax rate used to calculate the NoVA. Maximum tax rate is 32%.<br>Example:<br>- Net purchase price: EUR 10 000 (before VAT)<br>Diesel engine with emissions of 100 g $CO_2$/km<br>100 minus 90 = 10 divided by 5 = 2% tax rate<br>Calculation of the tax in 2016:<br>10 000 EUR times 2% = 200 minus 300 deducted amount = NoVA EUR 0 (no tax credit)<br>- Net purchase price: EUR 50 000 (before VAT)<br>Diesel engine with a $CO_2$ emission of 240 g $CO_2$/km<br>240 minus 90 g $CO_2$ km = 150 divided by 5 = a tax rate of 30%<br>Calculation of the tax in 2016:<br>EUR 50 000 x 30% = EUR 15 000 - EUR 300 = NoVA EUR 14 700<br>Exclusively electrical or electrohydraulical vehicles are exempted from the standard consumption tax. The same calculation system is applied to vehicles under 90 g $CO_2$/km as well.<br>https://www.bmf.gv.at/steuern/fahrzeuge/normverbrauchsabgabe.html |

| | |
|---|---|
| **2016 tax reform**<br><br>(Tax Reform Act of 2015/16), amending the<br>- Value Added Tax Act of 1994<br><br>- Sachbezugswerteverordnung [Regulation on the valuation of benefits in kind] (Austrian Income Tax Act of 1988) | In force since 1 January 2016, the tax reform provides incentives in the form of input tax deductions for using M1 and N1 class vehicles with zero $CO_2$ emissions as service cars. Benefits in kind for private individuals covers completely (formerly at 1.5%):<br>- Input tax deduction for companies<br>Input tax can be deducted for the acquisition (manufacture), rental or operation of passenger cars or combination cars with a $CO_2$ emission value of 0 g/km (purely electric vehicles or hydrogen vehicles).<br>- In the assessment year of 2016, a new calculation base applies to benefits in kind offered to private individuals, in particular to employees who use an employer's motor vehicle for non-occupational trips, including journeys between their home and the workplace. The benefit in kind must be based on the actual acquisition costs of the motor vehicle (including the value-added tax and the standard consumption tax):<br>- 2% benefit in kind for motor vehicles (max EUR 960 per month)<br>- 1.5% benefit in kind for motor vehicles with less than 130 g of $CO_2$/km emissions (max EUR 720 per month), where the relevant $CO_2$ value decreases by 3 grams by 2020. From 2021 onwards, the $CO_2$ emission value for the year 2020 of 118 g is used. The $CO_2$ emission limit in the acquisition year of the motor vehicle is essential for the determination of the value of the benefit in kind.<br>- 0% benefits in kind (complete exemption from benefits in kind) for vehicles with a $CO_2$ emission value of 0 g by 2020 (purely electric vehicles and hydrogen vehicles)<br>Example:<br>- Fiscal year 2015: Electric vehicle 0g $CO_2$/km EUR, acquisition costs: EUR 47 900 tax burden per month: 47 900 x 1.5% = EUR 718.5 gross<br>Tax burden per year: EUR 8.622 gross<br>- Fiscal year 2016: Electric vehicle 0g $CO_2$/km EUR, acquisition costs: EUR 47 900 tax burden per month: 47 900 x 0 % = EUR 0 gross<br>Tax burden per year: EUR 0 gross |
| **Tax advantages related to CNG** | Mineral oil tax is paid after most liquid and some of the gaseous hydrocarbonaceous products (mineral oils under Section 2(1) of the 1995 Mineral Oil Tax Act - MinStG) as well as fuels (all other goods used as fuels) and heating fuels (all other hydrocarbons used for heating, with the exception of natural gas, peat, coal and comparable solid hydrocarbons).<br>There is no mineral oil tax; however, the lower natural gas fee applies. In Austria, the tax on natural gas is EUR 0.066/$Nm^3$.<br>https://www.bmf.gv.at/steuern/verbrauchsteuern/mineraloelsteuer.html<br><br>https://www.e-control.at/industrie/gas/gaspreis/steuern-und-abgaben |

### 2.3.2.2 Purchase Incentives

**Federal level: Companies and municipalities**

1. CLIMATE ACTIVE MOBILITY FUNDING PRIORITIES 2016

Within the framework of the 'Umweltförderung im Inland' [Environmental Support in Austria] (UFI) programme

- **'Elektro-PKW für Betriebe' [Electric passenger cars for companies]** (Class M1, N1; maximum permissible total weight less than 2.5 tonnes); 100% of electricity from renewable energy sources/budget already exhausted in September 2016

| Motor vehicles for: | **Passenger transportation**<br><br>**Class M1** (up to 9 persons including the driver) | **Freight transportation**<br><br>**Class N1; maximum permissible total weight ≤2.5 tonnes** |
|---|---|---|
| **Drive type/fuel type** | **Funding per vehicle** | |
| purely electric drive | EUR 3 000 | |
| ... but always 30% of all eligible costs at most | | |

https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/Fahrzeuge_Mobilitaet_Verkehr/UFI_Pauschalen_Infoblatt_ELADE_PAU.pdf

- **'Elektro-PKW im öffentlichen Interesse' [Electric passenger cars in the public interest]** (Class M1, N1; maximum permissible total weight less than 2.5 tonnes); 100% of electricity from renewable energy sources/budget already exhausted in August 2016

| Motor vehicles for: | **Passenger transportation**<br><br>**Class M1** (up to 9 persons including the driver) | **Freight transportation**<br><br>**Class N1; maximum permissible total weight ≤2.5 tonnes** |
|---|---|---|
| **Drive type/fuel type** | **Funding per vehicle** | |
| purely electric drive | EUR 4 500 | |
| ... but always 30% of all eligible costs at most | | |

https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/Fahrzeuge_Mobilitaet_Verkehr/UFI_Pauschalen_Infoblatt_EPKW_PAU_im_oeffentlichen_Interesse.pdf

- **'E-Ladeinfrastruktur' [E-charging infrastructure];** non-discriminatory, public access to the subsidized charging point and the use of electricity from renewable energy sources/until 31 December 2016

https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/Fahrzeuge_Mobilitaet_Verkehr/UFI_Pauschalen_Infoblatt_ELADE_PAU.pdf

| **Specifications** | **Funding per charging station** |
|---|---|
| **Standard charging at wallbox or stands** with alternating current of up to 3.7 kW (230V, 16A) | EUR 200 |
| **Standard charging at wallbox** with alternating current of 3.7-22 kW (400V, 32A) | EUR 300 |
| **Standard charging at stands** with alternating current of 3.7-22 kW (400V, 32A) | EUR 1 000 |
| **Accelerated charging** with alternating current or direct current of 22-43 kW (400V, 63A) | EUR 2 000 |
| **Fast-charging** with alternating current of more than 43 kW or direct current of more than 50 kW (500V, >125A) | EUR 10 000 |

... but always 30% of all eligible costs at most

In the framework of climate-**active** mobility (incl. climate and energy funds):

- **'Fahrzeuge mit alternativem Antrieb und Elektromobilitat' [Vehicles with alternative drives and electromobility]** (maximum permissible total weight less than 3.5 or 5 tonnes, respectively); of electricity from renewable energy sources and at least 50% of biofuels, respectively/until 15 October 2016

| **Vehicles for passenger and freight transport** | | |
|---|---|---|
| **Drive type/fuel type** | **Funding per vehicle** | |
| Single-track electric vehicles | EUR 375 | |
| Light electric vehicles pursuant to Section 2 of the KFG or three-wheel electric vehicles | EUR 750 | |
| Multiple-track light electric vehicles | EUR 1 500 | |
| Motor vehicles for: | **Passenger transportation** (e.g. passenger cars)<br>**Class M1** (up to 9 persons including the driver) | **Freight transportation** (e.g. light commercial vehicle)<br>**Class N1 and <2.5 tonnes of maximum permissible total weight** |
| **Drive type/fuel type** | **Funding per vehicle** | |
| Plug-in hybrid drive (PHEV) and electric drive with range extender (REEV REX) | **< 35 g $CO_2$/km:** EUR 2 250<br>**36-70 g $CO_2$/km:** EUR 1 500<br>**> 70 g $CO_2$/km:** EUR 750 | |
| | EUR 150 per vehicle if biofuel is used in a share of at least 50% | |
| Full hybrid drive (HEV) | EUR 600 | |
| Vegetable oil | EUR 500 | |
| Biodiesel | EUR 200 | |
| Superethanol E85 | EUR 200 | |
| Biogas | EUR 1 000 | |
| Motor vehicles for: | **Passenger transportation** (e.g. minibus)<br>**Class M2** (more than 9 persons including the driver and <5 tonnes of maximum permissible total weight) | **Freight transportation** (e.g. light commercial vehicle)<br>**Class N1 >2.5 tonnes and <3.5 tonnes of maximum permissible total weight** |
| **Drive type/fuel type** | **Funding per vehicle** | |
| purely electric drive | EUR 20 000 | |
| Biogas | EUR 2 000 | |
| Plug-in hybrid drive (PHEV) and electric drive with range extender (REEV REX), full hybrid drive (HEV)<br>Vegetable oil, biodiesel, Superethanol E85 | see above | |

... but always 30% of all eligible costs at most

https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/Fahrzeuge_Mobilitaet_Verkehr/KA MOBIL_Infoblatt_Fuhr_PAU.pdf

- **'Vehicles with alternative drive and electromobility in the public interest'** (≤5 tonnes of maximum permissible total weight); 100% of electricity generated from renewable energy sources and a rate of biofuel of at least 50%/by 15 October 2016

| Motor vehicles for: | **Passenger transportation (e.g. passenger cars)**<br>Class M1 (up to 9 persons including the driver) | |
|---|---|---|
| **Drive type/fuel type** | **Funding per vehicle** | |
| Plug-in hybrid drive (PHEV) and | **< 35 g $CO_2$/km:** | EUR 2 850 |

| | | |
|---|---|---|
| electric drive with range extender (REEV REX) | **36-70 g $CO_2$/km:** | EUR 2 100 |
| | **> 70 g $CO_2$/km:** | EUR 975 |
| | EUR 150 per vehicle if biofuel is used in a share of at least 50% | |
| Full hybrid drive (HEV) | | EUR 750 |
| Vegetable oil | | EUR 750 |
| Biodiesel | | EUR 300 |
| Superethanol E85 | | EUR 300 |
| Biogas | | EUR 1 500 |
| Motor vehicles for: | **Passenger transportation (e.g. minibuses)** **Class M2** (more than 9 persons including the driver and <5 tonnes of maximum permissible total weight) | |
| **Drive type/fuel type** | **Funding per vehicle** | |
| purely electric drive | | EUR 30 000 |
| Biogas | | EUR 3 000 |
| Plug-in hybrid drive (PHEV) and electric drive with range extender (REEV, REX), full hybrid drive (HEV)<br><br>Vegetable oil, biodiesel, Superethanol E85 | | see above |

... but always 30% of all eligible costs at most

https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/Fahrzeuge_Mobilitaet_Verkehr/KA_MOBIL_Infoblatt_Fahrzeuge_im_oeffentlichen_Interesse.pdf

- **'Electric bikes and cargo bikes'**; 100% of electricity generated from renewable energy sources/before 31 December 2016

| **Funding per vehicle** | | |
|---|---|---|
| Electric bicycles | EUR 300 | |
| Electric cargo bikes | EUR 500 | Loading weight >80 kg |
| Cargo bikes | EUR 400 | Loading weight >80 kg |
| Bicycle trailer | EUR 100 | Loading weight ≥40 kg |

... but always 30% of all eligible costs at most

https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/Fahrzeuge_Mobilitaet_Verkehr/KA_MOBIL_Infoblatt_E-Rad_PAU.pdf

- **'Retrofitting for bicycle parking'**; the construction of parking facilities outside the public transport area for buildings (erected before 1 January 2000) with more than 3 residential units, more than 10 workplaces, more than 20 training places and/or more than 40 clients / visitors per day; the parking facilities can be combined with e-charging stations for electric bikes, where 100% of the electricity is generated from renewable energy sources/before 31 December 2016

| **Funding per bicycle parking place**<br><br>(up to 100 covered bicycle parking places in combination with up to 100 e-charging stations) |
|---|
| EUR 200 per bicycle parking place or |
| EUR 400 per bicycle parking place with e-charging station |
| ... but always 30% of all eligible costs at most |

https://www.umweltfoerderung.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/Fahrzeuge_Mobilitaet_Verkehr/KA_MOBIL_Infoblatt_Nachruesten_zum_Fahrradparken.pdf

## 2. CLIMATE-ACTIVE MOBILITY FUNDING PRIORITIES 2016

In the framework of climate-**active** mobility (incl. climate and energy funds):

The funding priorities for climate-active, target group-oriented mobility were aimed at the implementation of individual measure concepts and measure packages, in the field of electromobility as well; case-by-case calculation of subsidy, but flat-rate funding for the following:

- **'Vehicles with alternative drives and electromobility with a maximum permissible total weight more than 3.5 or 5 tonnes, respectively'**; 100% of electricity from renewable energy sources or a 50% share of biofuels, respectively

| Motor vehicles for: | **Passenger transportation (e.g. buses)**<br><br>**Class M3** (more than 9 persons including the driver and >5 tonnes of maximum permissible total weight) **and up to 39 persons including the driver** | **Freight transport (e.g., heavy goods vehicles)**<br><br>**Class N2** (>3.5 tonnes and <12 tonnes of maximum permissible total weight) |
|---|---|---|
| **Drive type/fuel type** | **Funding per vehicle** | |
| purely electric drive | EUR 40 000 | EUR 20 000 |
| Plug-in hybrid drive (PHEV) | There are no production vehicles available currently; therefore, the funding is individually calculated | |
| Full hybrid drive (HEV) | EUR 3 000 | EUR 2 000 |
| Vegetable oil | EUR 1 500 | EUR 1 500 |
| Biodiesel | EUR 200 | EUR 200 |
| Biogas | EUR 3 000 | EUR 3 000 |
| | **Class M3** (more than 9 persons including the driver and more than 5 tonnes of maximum permissible total weight) **and more than 39 persons including the driver** | **Class N3** (more than 12 tonnes of maximum permissible total weight) |
| **Drive type/fuel type** | **Funding per vehicle** | |
| purely electric drive | EUR 60 000 | There are no production vehicles available currently; therefore, the funding is individually calculated |
| Plug-in hybrid drive (PHEV) | There are no production vehicles available currently; therefore, the funding is individually calculated | |
| Full hybrid drive (HEV) | EUR 10 000 | EUR 5 000 |
| Vegetable oil | EUR 1 500 | EUR 1 500 |
| Biodiesel | EUR 200 | EUR 200 |
| Biogas | EUR 5 000 | EUR 5 000 |

... but always 30% of all eligible costs at most

https://www.umweltfoerderung.at/

## Purchasing premiums of the states for enterprises and municipalities

Table 7: Purchasing premiums for companies and municipalities (as of June 2016)

| Federal state | Description of the premium |
|---|---|
| **Burgenland** | **Alternative mobility funding channel**<br>Acquisition of electric vehicles through the payment of non-repayable subsidies for<br>- New acquisition of electric scooters for pensioners and disabled persons with 30% of the acquisition costs or a maximum of EUR 250<br>- New acquisition of electric mopeds and electric motorcycles with 30% or a maximum of EUR 350<br>- New acquisition of or the conversion of vehicles to fully electric drive with 30% or a maximum of EUR 750<br>- New acquisition of or the conversion of vehicles to natural gas or biogas drive with 30% or a maximum of EUR 750<br>http://www.eabgld.at/index.php?id=986 |
| **Carinthia** | As part of the CEMOBIL project, Carinthia provides funding for purely electric vehicles at a rate of 12% of the respective sales price, but at most EUR 3 500. Charging boxes with a value of EUR 1 300 are provided.<br>Funding is provided for institutions, enterprises and private individuals.<br>http://www.cemobil.eu/index.php?ID1=6&id=68&sprache1=de |
| **Lower Austria** | **Electric vehicle promotion for municipalities and associations**<br>The following will be supported:<br>25% (max EUR 1 000) of the federal funding as supplementary funding by Lower Austria for companies or municipalities and associations + up to EUR 500 additional funding for:<br>- Charging stations<br>- e-Car-Sharing Equipment<br>http://www.noel.gv.at/Umwelt/Energie/Elektromobilitaet/e-PKW-Gemeinden_Vereine.html<br>http://www.ecoplus.at/de/ecoplus/cluster-niederoesterreich/e-mobil/foerderungen-fuer-e-fahrzeuge<br>**Funding for alternative drives for vehicles with combustion engines (CNG, Bio-CNG and vegetable oil)**<br>Class M1 (max. 120 $gCO_2$/km) and tractors. For driving schools, funding is extended to lorries of categories N1, N2 & N3. Funding is capped at EUR 700 per vehicle for new purchases and up to EUR 1 500 for the conversion of tractors. For driving schools and taxi companies for each 5 vehicles purchased or converted, a subsidy of EUR 2 000 is provided.<br>http://www.noel.gv.at/Umwelt/Klima/Foerderungen-Gewerbe-LW/alternativantriebfoerderung.html |
| **Salzburg** | **In the context of the climate and environmental package [*Klima- und Umweltpaktes - KLUP*], funding is provided for SMEs, public authorities and associations:**<br>Funding for companies and municipalities ran out on 12 July 2016 as the subsidies were exhausted. → Funding ended on 12 July 2016.<br>https://www.salzburg.av.at/umweltnaturwasser_/Seiten/foerderprogramm-klimaschutz.aspx<br>**Temporary funding for CNG cabs**<br>CNG cabs and rental cars are provided a subsidy of EUR 1 000 in the period between 1 July 2015 and 15 October 2016. In addition to that, Salzburg AG offers petrol vouchers as well.<br>https://www.salzburg.av.at/umweltnaturwasser_/Documents/Infoblatt-Umwelttaxi.pdf |

| | |
|---|---|
| **Styria** | The City of Graz maintains a subsidy for environmentally-friendly vehicle fleets under the directive on the subsidy of environmentally-friendly car fleets for its municipal enterprise and charitable institutions (tax, commercial, car and transport services). The amount of subsidy is EUR 1 500 for cars with purely electric drive and Plug-In-Hybrids, EUR 750 for full hybrids and EUR 500 for vehicles with a pure or partial gas drive.<br><br>http://www.umwelt.graz.at/cms/ziel/4919578/DE/<br><br>The state of Styria promotes the purchase or lease of taxis.<br><br>Full hybrid vehicles are subsidized with EUR 3 500. Natural gas vehicles are subsidized with EUR 2 450.<br><br>https://www.wko.at/Content.Node/branchen/stmk/TransportVerkehr/BefoerderungPKW/Foerderung_fuer_den_Ankauf_von_Vollhybrid-_und_Erdgasfahrz.html |
| **Tyrol** | Funding is provided for small and medium-sized enterprises for the purchase of vehicles with alternative propulsion and electromobility. Funding comes in the form of a non-repayable one-time subsidy and covers a maximum of 30% of federal funding granted within the context of environmental federal funding, including all-inclusive EU funding (climate-friendly mobile).<br><br>https://www.tirol.gv.at/arbeit-wirtschaft/wirtschaftsfoerderung/wirtschaftsfoerderungsproaramm/energiesparmassnahmen/<br><br>In 2016, TIGAS (natural gas company) offers an 'environmental premium' in the value of EUR 1 000 (including VAT) for the purchase of a natural gas car. This funding is accessible if the vehicle is registered for the first time after 1 January 2012, the vehicle is registered with the police in North Tyrol in 2016 and the sticker 'Ich fahre mit Erdgas' [I drive with natural gas] is affixed to the vehicle for at least 2 years. In addition, the applicant undertakes to carry out the relevant energy efficiency measures required by TIGAS in accordance with Section 27 of the EEffG (purchase of a natural gas vehicle) as well as completely fill out the data sheet attached to the application form an enclose it in the letter of response. TIGAS is entitled to check the fulfilment of funding prerequisites at the time of their choosing.<br>Additional increased funding for TIGAS's natural gas customers within the framework of TIGAS initiative: ProUmwelt – ContraFeinstaub funding in the amount of around EUR 450 Natural gas vehicles are entitled to park free of charge in the short-term parking zones of the towns of Wöral, Kufstein and Telfs.<br><br>http://www.tigas.at/index.php/produkte/treibstoff/foerderungen |
| **Vorarlberg** | For an environmentally-friendly and economical use of energy in the transport sector, VKW supports the acquisition of new production vehicles running on natural gas. The subsidy is provided in the form of a fuel credit of 500 kg of natural gas (biogas since 2015). The fuel credit can only be used at natural gas filling stations in Vorarlberg. Funding is available since 1 January 2014.<br><br>http://www.vkw.at/downloads/at/VKW Mobilitaet_Infoblatt_Erdgas_Fahrzeuge_Foerderprogramm.pdf |
| **Upper Austria** | **Funding programme for the promotion of e-car sharing**<br><br>Funding for the implementation of e-car sharing systems in Upper Austria. Climate alliance communities Funding is open for all natural and legal persons. Up to 75% of gross eligible costs is funded per beneficiary and per eligible project. The funding ceiling is EUR 3 000 per municipality.<br><br>https://www.land-oberoesterreich.gv.at/136327.htm<br><br>Funding for e-cars from the city of Linz (for companies) in the amount of EUR 2 000 per vehicle<br><br>Funding for electric cargo bikes for individuals, carpools, companies/organizations in the amount of EUR 400 per bike<br>Funding for electric service bikes for companies/organizations in Linz in the amount of maximum 10% of investment costs<br><br>http://portal.linz.gv.at/Serviceguide/viewForms.html?chapterid=121399<br><br>In 2016, Energie AG Power Solutions currently provides support in the form of different privileges and various discounts for the acquisition of natural gas vehicles.<br><br>http://erdgasooe.ooegw.at/de/ihre-vorteile/preisvorteile-und-foerderungen-fuer-erdgas-fahrer.html |

| | |
|---|---|
| **Vienna** | The city of Vienna (until 31 December 2016) promotes the purchase of new natural gas-powered motor vehicles approved for road traffic. Funding ceiling (including conversions): EUR 1 000 per vehicle<br><br>https://www.wien.gv.at/amtshel-fer/umwelt/umweltschutz/foerderun-gen/erdgasfahrzeuge.html<br><br>The city of Vienna (until 31 December 2016) promotes the purchase of natural gas-powered vehicles approved for taxi business. Funding is available to new vehicles only and a maximum of two vehicles can be subsidized per taxi operator.<br><br>https://www.wien.gv.at/amtshelfer/umwelt/umweltschutz/foerderungen/erdgastaxis |

## Purchasing premiums granted by the states for private individuals

### Table 8: Purchasing premiums for private individuals (as of June 2016)

| Federal state | Description of the premium |
|---|---|
| **Burgenland** | **Alternative mobility funding channel**<br><br>Acquisition of electric vehicles through the payment of non-repayable subsidies for<br><br>- New acquisition of electric scooters for pensioners and disabled persons with 30% of the acquisition costs or a maximum of EUR 250<br>- New acquisition of electric mopeds and electric motorcycles with 30% or a maximum of EUR 350<br>- New acquisition of or the conversion of vehicles to fully electric drive with 30% or a maximum of EUR 750<br>- New acquisition of or the conversion of vehicles to natural gas or biogas drive with 30% or a maximum of EUR 750<br><br>http://www.eabgld.at/index.php?id=986 |
| **Carinthia (until 30 September 2016)** | As part of the CEMOBIL project, Carinthia provides funding for **purely electric vehicles** at a rate of 12% of the respective sales price, but at most **EUR 3 500.** Charging boxes with a value of **EUR 1 300** are provided**.**<br><br>Funding is provided for institutions, enterprises and private individuals.<br><br>http://www.cemobil.eu/index.php?ID1=6&id=68&sprache1=de |
| **Lower Austria** | **Funding for the acquisition of electric vehicles for private individuals (until 31 December 2017 or up to 500 vehicles)**<br><br>The following will be supported:<br><br>BEV:<br>acquisition funding up to **EUR 3 000**<br>**+**<br><br>funding for additional services up to **EUR 2 000**:<br><br>- Charging station<br>- Energy management system<br>- Stationary current storage<br>- A maximum of 2 annual tickets for public transport<br>- ÖBB discount card for 2 years<br><br>**PHEV, REX** (max. 70 $gCO_2$/km) up to EUR 1 500<br><br>If the proven costs for the purchase, leasing or conversion of the vehicle exceeds **EUR 47 000** (including all particulars, taxes and fees), **no more subsidies will be paid out.**<br><br>http://www.noel.gv.at/Umwelt/Energie/Elektromobilitaet/e-PKW-privat.html<br><br>Alternative drive for vehicles powered by combustion engines (CNG, bio-CNG and vegetable oil)<br><br>Class M1 (max. 120 $gCO_2$/km) and tractors. For driving schools, funding is extended to lorries of categories N1, N2 & N3. The funding ceiling is EUR 700 per vehicle for new purchases and up to EUR 1 500 for the conversion of tractors. A subsidy of EUR 2 000 is provided for driving schools and taxi companies for each 5 vehicles purchased or converted.<br><br>http://www.noel.gv.at/Umwelt/Klima/Foerderungen-Gewerbe-LW/alternativantriebfoerderung.html |

| | |
|---|---|
| **Salzburg (until 1 April 2017)** | Promotion of the e-mobility of multi-track motor vehicles for private use (only purely electric passenger cars and REX, no PHEVs)<br><br>The subsidy shall be paid in the form of a one-time, non-refundable lump sum<br>- **Funding in the amount of EUR 5 000** per vehicle when using green electricity pursuant to Section 5(1) of the Green Electricity Act.<br><br>- Funding in the amount of EUR 6 000 per vehicle after demonstrating the presence of additional capacities for regenerative electricity production.<br>However, the amount of funding cannot exceed 35% of eligible costs.<br><br>The gross purchase costs of the vehicle (relative to the standard equipment) cannot exceed **EUR 40 000**.<br><br>https://www.salzburg.gv.at/umweltnaturwasser /Documents/infoblatt_emobilitaet private.pdf |
| **Styria** | Under the directive on the support of older people and people with disabilities, Styria guarantees climate-friendly mobility by offering non-repayable funding for the purchase of new electrically operated two-track vehicles that do not require official authorization and, in particular, support the mobility of older people and people with disabilities. Such purchase is funded with an amount of EUR 250.<br><br>http://www.wohnbau.steiermark.at/cms/dokumente/12117789_113383975/c10ca53b/ABT15EW-3.0-E-Fahrzeuge-Richtlinie-Klimafreundliche-Mobilit%C3%A4t%202015.pdf<br><br>Private individuals are offered a CNG fuel bonus of (maximum) EUR 600 in the context of the 'Saubere Luft – Erdgas' [Clean Air - Natural Gas] initiative.<br>The amount of funding is a maximum of EUR 800 for commercial and industrial customers and EUR 1 050 for taxi companies and driving schools.<br><br>https://www.e-steiermark.com/downloads/gas/Erdgas/Folder%20-%20Aktion%20Saubere%20Luft.pdf<br><br>Starting from October 2016, Styria offers direct funding for electric vehicles and charging stations for private use.<br><br>http://www.wohnbau.steiermark.at/cms/dokumente/12117789_113383975/af0b3b8b/ABT15EW-3.0%20RL%20Elektromobilit%C3%A4t%202016.pdf |
| **Tyrol** | In 2016, TIGAS offers an 'environmental premium' in the value of EUR 1 000 (including VAT) for the purchase of a natural gas car. This funding is accessible if the vehicle is registered for the first time after 1 January 2012, the vehicle is registered with the police in North Tyrol in 2016 and the sticker 'Ich fahre mit Erdgas' [I drive with natural gas] is displayed on the vehicle for at least 2 years. In addition, the applicant undertakes to carry out the relevant energy efficiency measures required by TIGAS in accordance with Section 27 of the EEffG (purchase of a natural gas vehicle) as well as completely fill out the data sheet attached to the application form an enclose it in the letter of response. TIGAS is entitled to check the fulfilment of funding prerequisites at the time of their choosing.<br>Additional increased funding for natural gas customers of TIGAS within the framework of the TIGAS initiative: ProUmwelt – ContraFeinstaub funding in the amount of around EUR 450. Natural gas vehicles are entitled to park free of charge in the short-term parking zones of the towns of Wöral, Kufstein and Telfs.<br><br>http://www.tigas.at/index.php/produkte/treibstoff/foerderungen |
| **Vorarlberg** | As part of the VLOTTE 2.0 project, Vorarlberg provides funding for vehicle purchase for commuters. A grant quota of 125 vehicles is accessible in 2016. At the time of writing (May 2016), around 60 vehicles were funded. (Federal funding)<br><br>https://www.vlotte.at/inhalt/at/foerderung.htm<br><br>For an environmentally-friendly and economical use of energy in the transport sector, VKW supports the acquisition of new production vehicles running on natural gas. The subsidy is provided in the form of a fuel credit of 500 kg of natural gas (biogas since 2015). The fuel credit can only be used at natural gas filling stations in Vorarlberg. Funding is available since 1 January 2014.<br><br>http://www.vkw.at/downloads/at/VKW_Mobilitaet_Infoblatt_Erdgas_Fahrzeuge_Foerderprogramm.pdf |
| **Upper Austria** | - |
| **Vienna** | The city of Vienna (until 31 December 2016) promotes the purchase of new natural gas-powered motor vehicles approved for road traffic. Funding ceiling (including conversions): EUR 1 000 per vehicle<br><br>https://www.wien.gv.at/amtshel-fer/umwelt/umweltschutz/foerderun-gen/erdgasfahrzeuge.html |

### 2.3.2.3 Procurement

Table 9: Procurement initiatives of the states

| Federal state | Description of the initiative |
|---|---|
| **Burgenland** | - |
| **Carinthia** | In preparation |
| **Lower Austria** | - |
| **Salzburg** | In preparation |
| **Styria** | In preparation |
| **Tyrol** | - |
| **Vorarlberg** | The eco-procurement service ÖkoBeschaffungsService in Vorarlberg executed a tender for electric vehicles for municipal use. The tender included 40 vehicles. At the present time (mid-May 2016), a total of 54 electric vehicles were registered by the local authorities and the state administration.<br><br>http://www.umweltverband.at/verband/archiv/detail/article/neue-einsatzbereiche-fuer-elektromobilitaet/<br><br>http://www.umweltverband.at/beschaffen/oebs-shop/ |
| **Upper Austria** | - |
| **Vienna** | In the context of climate protection, the city of Vienna initiated the 'ÖkoKauf Wien' programme in 1998. The aim is to enforce environmental considerations in the procurement of goods, products and services in all areas of the city administration. One of the major related topics is the carpool. As part of this, a range of criteria were set for passenger cars, lorries, construction machines, small tractors and others.<br><br>https://www.wien.gv.at/umweltschutz/oekokauf/ergebnisse.html#fuhrpark |

### 2.3.2.4 Non-financial incentives

Table 10: Parking fee exemptions for electric vehicles in Austrian municipalities (June 2016)

| Federal state | City |
|---|---|
| **Burgenland** | - |
| **Carinthia** | Klagenfurt<br>Villach<br>St. Veit<br>Wolfberg<br>Krumpendorf |
| **Lower Austria** | Krems<br>Perchtoldsdorf |
| **Salzburg** | - |
| **Styria** | Graz<br>Gleisdorf<br>Weiz<br>Hartberg |
| **Tyrol** | Innsbruck<br>Wörgl |
| **Vorarlberg** | - |

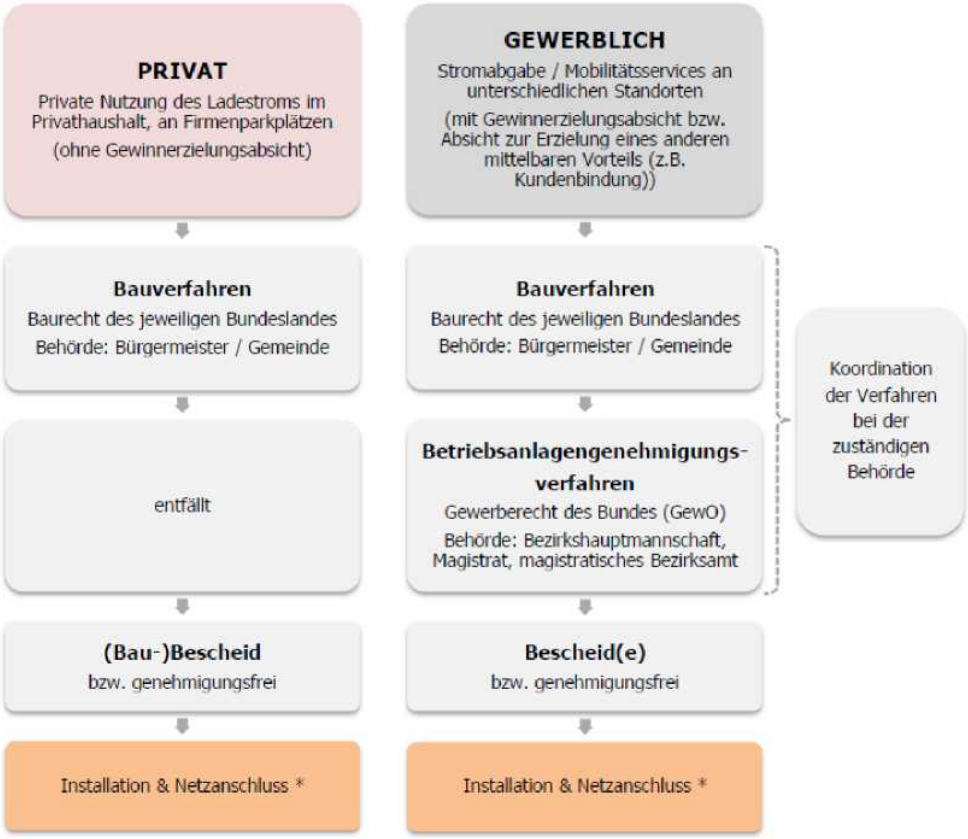
| | |
|---|---|
| **Upper Austria** | Wels |
| **Vienna** | - |

### 2.3.2.5 Technical and administrative procedures

The guideline for the authorization of the construction of the charging infrastructure already mentioned under Section 2.3.1 consists of two major parts. Part I covers the aspects of the approval process that relate to construction law. The approval process is complete for most non-commercial, i.e. private charging stations. In the case of commercially used charging stations, installation is according to the Austrian trade regulations. Figure 5 compares the two differently designed approval processes

The measures proposed for simplifying the commercial licensing procedures have already been outlined in Chapter 4.1, 'Legal Measures', in the main document on the Strategic Framework.

Figure 5: Overview of the process for private and commercial charging stations




For translation of graphic, see next page.

| | | |
|---|---|---|
| **PRIVATE**<br>Private use of charging facilities in private households and company parking lots (on a non-profit basis) | **COMMERCIAL**<br>Current output / mobility services at different locations<br>(for a commercial purpose or with the intention to achieve another indirect advantage, such as customer retention) | |
| **Construction techniques**<br>Building regulations of each state – Authority: Mayor / Municipalities | **Construction techniques**<br>Building regulations of each state – Authority: Mayor / Municipalities | Coordination of the procedures with the competent authorities |
| Unnecessary | **Approval procedures for the construction of commercial facilities**<br>Commercial law of the different states – Authority: district authorities, municipal authorities, district municipal authority office | |
| **(Construction) notice**<br>or does not require authorization | **Notice(s)**<br>or does not require authorization | |
| Installation and grid connection | Installation and grid connection | |

*) The electrical connection to the public supply network must be executed by a licensed electrician who meets the special technical requirements (see the TAEV website at http://akademie.oesterreichsenergie.at/taev.html) The construction of charging stations is internationally standardized (for example, ÖNORM EN 61851). Therefore, all electrotechnical aspects of the installation and operation are regulated.

Depending on the connected load, further materials of electrotechnical law may have to be considered in this context, (such as ElWOG, state-level ElWOGs, heavy current path laws etc.).

### 2.3.3 Construction of infrastructure and production facilities

In addition to the subsidies offered as part of the climate-friendly BMLFUW programme for the construction of the charging infrastructure for enterprises and municipalities already mentioned in Section 2.3.2.2, states offer funding for the expansion of the charging infrastructure as well.

Table 11: Funding for the deployment of charging infrastructure by federal states

| Federal state | Description of the premium |
|---|---|
| **Burgenland** | Funding for local charging boxes in the context of village reform with a total budget of EUR 50 000 |
| **Carinthia** | - |
| **Lower Austria** | Funding is provided for private individuals, companies and associations for the construction of charging stations<br><br>(see the purchasing premiums mentioned above for the promotion of electric vehicles for private individuals, municipalities and associations) |
| **Salzburg** | - |
| **Styria** | Starting from October 2016, Styria offers direct funding for electric vehicles and charging stations for private use.<br><br>http://www.wohnbau.steiermark.at/cms/dokumente/12117789_113383975/af0b3b8b/ABT15EW-3.0%20RL%20Elektromobilit%C3%A4t%202016.pdf |
| **Tyrol** | The state of Tyrol offers purchasing subsidies for charging stations for single-track and multi-track electric vehicles for use at publicly accessible places with a high dwelling time and visitor frequency. The one-time subsidy amount is 50% of the invoice amount and is limited to EUR 10 000 per customer.<br><br>Additional funding, amounting to 50% of the invoice amount, but limited to EUR 10 000, is available for charging stations at the consumption points in the TINETZ distribution network. Therefore, a total subsidy amount of 100% of the invoice amount, or EUR 20 000 per customer, is possible.<br><br>Budget: EUR 200 000<br><br>http://energieeffizienz.tiwag.at/<br><br>http://energieeffizienz.tiwag.at/fileadmin/energieeffizienz_tiwag_at/Paket_2015/Antragsformular_Ladestationen_TIWAG 2015.pdf<br><br>Investment promotion from the public sector for the construction of natural gas stations |
| **Vorarlberg** | - |
| **Upper Austria** | **Construction of charging stations for electric vehicles in Upper Austrian municipalities**<br><br>Upper Austrian municipalities are offered funding for the construction of charging stations, with a ceiling of EUR 5 000 per station. In order to qualify for funding, the charging stations must meet certain conditions.<br><br>Funding became available as of 18 August 2015 until the funds are depleted, no later than 30 September 2016. The budget is EUR 750 000.<br><br>https://www.land-oberoesterreich.gv.at/162399.htm |
| **Vienna** | - |

### 2.3.4 Research, Technological Development and Demonstration

## Federal government – Research, development and demonstration

Table 12: The research, development and demonstration programme of the federal government

| Name | Subject of the funding | Reference | Processing |
|---|---|---|---|
| **'Leuchttürme der Elektromobilitat'** | 'Leuchttürme der Elektromobilitat' is a research and demonstration programme of the Federal Ministry for Transport, Innovation and Technology (bmvit) and the Austrian Climate and Energy Fund in the field of sustainable mobility and energy supply. The programme encompasses large-scale, highly visible projects that address the topics of vehicles, users and infrastructure and contribute significantly to the strength of the Austrian business environment, to the visibility of electromobility as well as the spread of integrated system solutions for electromobility. 2015 saw the 7th tender procedure under 'Leuchttürme der Elektromobilitat', which focused on 'Low-Emission Electric Fleets' and aimed at significantly reducing greenhouse gas emissions by Austrian vehicle fleets. Published in autumn 2016, the 8th tender procedure addressed special aspects of production and special vehicles. | https://www.ffg.at/leuchttuerme-der-elektromobilitaet-0<br><br>https://www.ffg.at/ausschreibungen/7.AS LT-Emobilitaet<br><br>https://www.ffg.at/ausschreibungen/8.AS LT-Emobilitaet | Climate and energy funds<br><br>Settlement agency: Forschungsförderungsgesellschaft [Austrian Research Promotion Agency] (FFG) |
| **'Mobilitat der Zukunft'** | The 'Mobilitat der Zukunft' programme provides funding for research projects that provide medium or long-term solutions to challenges arising within society with respect to mobility and create new markets through innovation. The 6th tender - focused on 'Innovative personal mobility', 'Development of alternative vehicle technologies' and 'General development of transport infrastructure' - ended on 10 February 2016. | https://www.ffg.at/mobilitaetderzukunft<br><br>https://www.ffg.at/mobilitaetderzukunft_call2015as6 | Settlement agency: Forschungsförderungsgesellschaft [Austrian Research Promotion Agency] (FFG) |
| **Electric mobility for all – an urban electromobility programme** | Under this programme, the bmvit funds projects that focus on the operation of electric car sharing services and electric taxi fleet in urban areas. Consisting of the implementation of two demonstration projects, Phase 2 began in 2015. | https://www.bmvit.gv.at/verkehr/elektromobilitaet/foerderungen/urban2.html<br><br>https://www.schig.com/foerderungen-ausschreibungen/ | Settlement agency: Schieneninfrastruktur-Dienstleistungsgesellschaft mbh (SCHIG) |
| **start:e – e-mobility start-up challenge** | Funded by the bmvit in cooperation with the Austrian Climate and Energy Fund, the 'start-e' initiative provides financial support for projects related to new enterprises dealing with electric mobility. Potential entrepreneurs and startup owners are encouraged to get involved in the field of electric mobility and to contribute their know-how to drive technological innovation as well as to venture into the market with their ideas and solutions. Within the framework of the invitation to tender, startups can network with each other and with potential partners and investors, and communicate their projects effectively to the public. Of the 27 submissions in 2015, 10 innovative ideas were ultimately selected. | http://www.start-emobility.at<br><br>https://www.bmvit.gv.at/verkehr/elektromobilitaet/foerderungen/starte.html | Austrian Climate and Energy Fund |

| | | | |
|---|---|---|---|
| **Model regions for electromobility** | In the model regions for electromobility, the Federal Ministry for Agriculture, Forestry, the Environment and Water Management and the Climate and Energy Fund work in cooperation to support the development of electric mobility regions. To date 7 model regions have received funding. Under a new invitation to tender in the summer of 2015, these regions applied again with projects focusing on 'Awareness raising: practical tests for user groups', 'Interoperability of charging stations' and 'Promotion of electric vehicles for commuters'. | https://www.klimafonds.gv.at/foerderungen/aktuelle-foerderungen/2015/modellregionen-elektromobilitaet/ | Climate and energy funds<br><br>Settlement agency: Forschungsförderungsgesellschaft [Austrian Research Promotion Agency] (FFG) |
| **Smart Cites Demo** | The 'Smart Cities Demo' programme aims to initiate visible implementation measures in urban areas for the creation of an innovative interim system integrating (individual) technologies and methods, (individual) systems as well as (partial) processes. The 7th invitation to tender covered areas that included buildings, energy and urban mobility. | https://www.ffg.at/smart-cities-das-programm<br><br>https://www.ffg.at/smart-cities-das-programm-cities-demo-7-ausschreibung/downloadcenter | Austrian Climate and Energy Fund<br><br>Settlement agency: Forschungsförderungsgesellschaft [Austrian Research Promotion Agency] (FFG) |
| **Energy model region** | In the energy model region, innovative energy technologies from Austria will be used to develop and demonstrate prototype solutions for the intelligent, safe and affordable energy and traffic systems of the future. The focus is on an efficient interplay between production, consumption, system management and storage in an overall system optimized for all market participants, with a timely supply of up to 100% renewable energies. The first call for tenders ran from 21 December 2015 to 31 March 2016 and promoted the development of concepts for the Energy Model Region. | https://www.ffg.at/vorzeigeregion-energie/ausschreibungen<br><br>https://www.ffg.at/sites/default/files/images/seiten/vorzeigeregion 2015-12-21_fin_dl.pdf | Austrian Climate and Energy Fund<br><br>Settlement agency: Forschungsförderungsgesellschaft [Austrian Research Promotion Agency] (FFG) |

Several market-oriented research and demonstration projects have been funded through the 'Leuchttürme der Elektromobilität' and the 'Modellregionen Elektromobilität 'programmes since 2009 and 2008, respectively. For example, the LEEEF and SEAMLESS projects launched in 2016 after receiving funding under the 2015 'Leuchttürme der Elektromobilität' call for tender, which focused on electric fleets.

**Table 13: 'Leuchttürme der Elektromobilitat'**

| |
|---|
| EMPORA I + II - E-Mobile Power Austria |
| E-LOG-Bio Fleet |
| CMO - Clean Motion Offensive |
| eMORAIL - Integrated eMobility Service for Public Transport' |
| SMILE - Smart Mobility Info & Ticketing System Leading the Way for Effective E-Mobility Services |
| VECEPT - Vehicle with cost-efficient power train, All Purpose Cost Efficient Plug-In Electric (Hybridized) Vehicle |
| CROSSING BORDERS |

| |
|---|
| EMILIA - Electric Mobility for Innovative Freight Logistics in Austria |
| eMPROVE - Innovative solutions for the industrialization of electrified vehicles |
| LEEEF - Low Emission Electric Freight Fleets |
| SEAMLESS - Sustainable, Efficient Austrian Mobility with Low-Emission Shared Systems |

**Figure 6: Electromobility model regions**


Geographical distribution of the regions included in the electromobility model regions programme. The E-Mobility Post model region is active in many regions of Austria (see examples)

**Table 14: Christian Doppler Laboratory (for alternative fuels and vehicles)**

| |
|---|
| Christian Doppler Laboratory for Sustainable SynGas Chemistry<br>University of Cambridge<br>1 April 2012 - 31 March 2019 (EUR 1.3 million) |
| Christian Doppler Laboratory for Lithium Batteries: Aging Effects, Technology and New Materials<br>Graz University of Technology<br>1 September 2012 - 31 August 2019 (EUR 1.5 million) |
| Christian Doppler Laboratory for Interfaces in Metal-Based Electrochemical Energy Converters, Jülich Research Centre and an external module at the Vienna University of Technology, 1 September 2014 - 31 August 2021 (EUR 1.2 million) |

## Federal states – Research, development and demonstration

Table 15: Research, development and demonstration programme of the federal states

| Federal state | Description of the premium |
|---|---|
| **Burgenland** | General research funding |
| **Carinthia** | General research funding |
| **Lower Austria** | 'Sustainabilty 2016' call for funding: responsible management (Budget: EUR 300 000)<br>http://www.noe.gv.at/Wirtschaft-Arbeit/Wirtschaft-Tourismus-Technologie/-U-Entwicklung-Nachhaltigkeit/foerdercall nachhaltigkeit_noe.html |
| **Salzburg** | **General research funding** |
| **Styria** | Funding by Upper Austria and Styria for Smart Mobility (across different fuel types), one-time, EUR 2 million per state (for 2016)<br>http://www.kommunikation.steiermark.at/cms/beitrag/12341573/29767960/ |
| **Tyrol** | Pilot project: Reduction of $CO_2$ emissions in the cold chain logistics (budget: EUR 100 000)<br>Practical test of the alternative fuel company vehicle (budget: EUR 105 000)<br>https://energieeffizienz.tiwag.at/<br>Promotion of innovation in Tyrol is based on the cornerstones of the Tyrolean innovation strategy (https://www.tirol.gv.at/arbeit-wirtschaft/wirtschaft-und-arbeit/tiroler-forschungs-und-innovationsstrategie/) and is regarded as an open-topic promotion tool. This means that it is possible to support research and development projects in the field of alternative fuels (renewable energies), but without specific budget reservations. |
| **Vorarlberg** | General research funding |
| **Upper Austria** | Funding by Upper Austria and Styria for Smart Mobility (across different fuel types)<br>One-time, EUR 2 million per state (for 2016)<br>http://www.land-oberoesterreich.gv.at/164800.htm |
| **Vienna** | General research funding |

In addition to these measures, training and qualification are also important in the context of the Austrian projects. Special education materials have been developed in recent years, particularly in the field of electromobility, as well as a special training module on high-voltage drives for car technicians. Besides these topics, raising awareness about environmental effects is also prioritised.

Table 16: Education, qualification, raising awareness (excerpt)

| Domain | Description |
|---|---|
| **Tourism** | Guidelines on sustainable mobility in tourism<br>http://www.bmwfw.gv.at/Tourismus/Veranstaltunaen/Documents/Leitfaden_Mobilitaet_Web Doppelseite.pdf |
| **Education** | E-Mob-Train – Further education available in the field of electromobility<br>http://emobtrain.at/wordpress/. http://www.bmvit.gv.at/verkehr/elektromobilitaet/downloads/emobtrain.odf |
| **Education** | 'Intelligent unterwegs' [Intelligent transport] educational materials on mobility: innovative concepts Visions for the future and environmentally friendly alternatives<br>http://www.bmvit.gv.at/verkehr/elektromobilitaet/ausbildung/unterrichtsmaterial/index.html<br>http://www.bmvit.gv.at/verkehr/elektromobilitaet/ausbildung/unterrichtsmaterial/downloads/material_gesamt.pdf |
| **University Studies** | FH Campus Vienna: 'Green Mobility' master study<br>https://www.fh-campuswien.ac.at/departments/technik/studiengaenge/detail/green-mobility.html |
| **Info portal** | www.autoverbrauch.at |
| **Event** | http://elmotion.at/<br>http://www.a3ps.at/a3ps-conferences |