



Federal Ministry  
for Economic Affairs  
and Energy



# Electric mobility

One of the keys to sustainable, low-carbon  
and environmentally-compatible mobility

# Imprint

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# Message of greeting



High-quality innovative products are a major strength of our industry. They are, however, not a given. Companies must rather make consistent efforts. In order to survive on the global markets, their products must increasingly be focused on sustainability and energy and resource efficiency. In this context, electric mobility offers huge opportunities.

Electric mobility combines advances in technology and environmental and climate protection in a promising manner. At the same time, it offers a good opportunity to strengthen the leading position of German firms on the global market and to give further impetus to the economic upswing in our country.

It is worthwhile continuing research and the development of electric mobility concepts and guaranteeing a pro-investment climate in Germany. A good regulatory framework is an intelligent way to support market-based processes in this field.

We have the opportunity to make Germany the leading market and production site for electric mobility. Let us grasp this opportunity together.

Yours,

A handwritten signature in blue ink that reads "Sigmar Gabriel". The signature is written in a cursive style with a large initial 'S' and 'G'.

**Sigmar Gabriel**

Federal Minister for Economic Affairs and Energy



# Electric mobility is the future

Electric mobility can offer major economic and social opportunities for Germany:

- With its innovative products and services that can compete around the world, the sector is acting as a true engine for growth and making a lasting positive impact on our industrial society.
- It is a key element of climate-friendly industrial, transport, and energy policies. It offers potential for us to become less dependent on oil-based fuels.
- Vehicles which run on electricity generated from renewables produce zero carbon emissions.
- In the medium term, electric vehicles will be able to promote the stability of the electricity grids by serving as mobile storage units.

# Electric mobility in the fast lane



Electric mobility is forging new alliances between different industrial sectors that join forces to create added value. As innovative companies network with the research community, they can acquire technological expertise and turn it into marketable products and business models.

By deploying an active industrial policy focused on energy and resource efficiency, by offering targeted funding, and by cleverly balancing regulation with a market-based approach, we will succeed in ensuring that electric mobility can truly move into the fast lane.

## Convenient recharging

Recharging electric cars wherever and whenever needed must be convenient and affordable. At the same time, we are in need of efficient solutions for integrating the charging points into the overall electricity system. And we need the right information and communication technologies to ensure that the interfaces between electric vehicles, charging points, and energy utilities will function smoothly and across different systems. Against this background, we have brought the legal basis into line with the latest developments in technology. We are also calling for functioning competition when it comes to the purchase of electricity: vehicles manufactured by different companies should be able to charge up from units run by different operators.

- **Providing the energy**

Back in 2011, the revised version of the Energy Industry Act put important rules in place for smart grids in terms of energy law, data protection and data security. This means that contracts on grid use can provide for reduced grid fees when it comes to recharging electric vehicles. This has the potential to reduce the price of recharging electric cars.

- **Safe and secure charging and billing**

If there is to be user-friendly and grid-friendly charging of e-vehicles, it is vital to have standards for the metering and billing of charging processes. The legal basis for secure charging and billing of electricity for e-vehicles has therefore been set out in the Act on the Re-organisation of Statutory Metrology.

## Boosting demand for electric vehicles

The Federal Government has adopted a number of measures to make the purchase of electric vehicles a more attractive proposition.

- **Exemption from vehicle taxation**

The exemption from vehicle taxation for all classes of purely electric vehicles registered for the first time by 31 December 2015 has been extended from five years to ten years. A tax exemption for five years will be granted when such vehicles are first registered between 1 January 2016 and 31 December 2020.

- **Taxation of staff cars**

To counteract the continuing high level of prices for electric and hybrid vehicles compared with conventional vehicles, the rules on the private use of these cars are being improved in line with the 2013 Annual Tax Act. With regard to the taxation of the pecuniary advantage of staff cars, the higher list price of e-vehicles is to be offset in comparison with cars with internal combustion engines. This ensures that electric and hybrid electric vehicles are not subject to disadvantages in terms of income tax.





- **Public procurement initiative for electric vehicles**  
Public procurement is an important instrument which can foster the market launch of electric vehicles. The federal ministries are setting a good example here: Since 2013, the aim is that ten percent of all the new vehicles to be purchased or leased are to emit less than 50g of CO<sub>2</sub> per kilometre. Also, a group of experts on electric mobility has been set up as part of the alliance for sustainable procurement. The procurement guidelines drawn up in this group by the representatives of the Federal Government, the Länder and the municipalities offer important help to people buying e-vehicles.

## Promotion of research and development

Anyone seeking success needs to turn ideas into innovations. Here, it is up to the companies to deliver convincing and marketable products and services. After all, the companies are best placed to know which innovations are sought after on the market in response to the urgent challenges. As they do this, the Federal Ministry for Economic Affairs and Energy backs them with tailor-made funding programmes.

- **Investigating new value chains**

Germany can develop new products and services at all stages of the electric mobility value chain. The Federal Ministry for Economic Affairs and Energy is therefore funding projects to optimise the entire value chain via the programme entitled “ELECTRIC POWER – electric mobility, positioning along the value chain”. The programme particularly supports research and development into the production of cells and batteries, light-weight construction and systems integration.

- **Electrical drives – efficient, quiet and zero local emissions**

The Economic Affairs Ministry’s research initiative entitled “ATEM – drive technologies for electric mobility” provides funding towards advances in technology for drive systems for next-generation electric and hybrid vehicles. The aim is to improve the efficiency, capacity, driving performance and safety of electric vehicles.

- **Energy and battery research**

Batteries are the key element for the electrification of the drive. In order to boost their capacity, we are providing funding towards the development of improved battery materials, manufacturing and production methods and ways to optimise the inclusion of the batteries in the vehicles.



- **The electric car is always online**

The funding programme entitled “Information and Communication Technologies (ICT) for Electric Mobility II” ([www.ikt-em.de](http://www.ikt-em.de)) supports the interplay of smart vehicle technology with energy supply and traffic management systems. For example, innovative charging infrastructures are being developed and gradually brought to market. Forward-looking technical solutions have been put in place. It is now important for us to prove their national and international competitiveness.

## Examples:

### Communication standard for charging stations

An internationally applicable communication standard on the basis of an ISO/IEC standard 15118 between the e-vehicle and the charging station makes it simpler and safer to recharge e-vehicles.

Smart cards have been developed to register and activate charging stations.

### Identification of an ID number allocation centre

As part of the research which is accompanying the “ICT for electric mobility II” programme, agreement was reached between the vehicle, energy, IT sectors and other stakeholders on a central ID number allocation centre. Since March 2013, the German Association of Energy and Water Industries (BDEW) has been allocating uniform ID numbers for the whole of Germany. This system simplifies billing at charging stations and is thus an important step towards making a success of electric mobility.



## Harmonising the exchange of data

A uniform data exchange format has been developed for the billing of charging processes with national and European electricity providers. This billing is already taking place in Germany, the Netherlands and Austria via a uniform system to identify the user and the charging station. In future, this will enable operators of charging stations to share and bill such data – not only in Germany, but ideally throughout Europe.

## Clearing centre for charging processes

Also, a central clearing office is being developed ([e-clearing.net](https://www.e-clearing.net)), which in future is to ensure interoperability between different charging infrastructures in Europe.

- **Promoting innovative SMEs in electric mobility**

In recent years, industrial small and medium-sized enterprises (SMEs) have been increasingly contributing towards advances in technology in the field of electric mobility. Funding for R&D by SMEs is available via the “Central Innovation Programme for SMEs” (ZIM) and “Co-operative Industrial Research” (IGF). The Federal Ministry for Economic Affairs and Energy also supports start-ups, e.g. following a period of project support, for example via the EXIST programme and the High-tech Start-up Fund.

## Experiencing the future: “Electric Mobility Showcases”

The “Electric Mobility Showcases” programme is totally unique: The four federal ministries responsible for electric mobility (Economic Affairs, Transport, Environment and Research) support innovative companies and research establishments as they research and develop technologies for electric mobility which help the environment and the climate. Since April 2012, four large-scale regional showcases have been demonstrating and testing technologies:

- “LivingLab BWe mobil” (Baden-Württemberg)
- “International e-mobility showcase” (Berlin/Brandenburg)
- “Our horsepower is going electric” (Lower Saxony)
- “Electric mobility links together” (Bavaria/Saxony)

to find out just how well these innovative developments work in day-to-day use.

At the interface between the energy system, the vehicle and the transport system, companies, local public transport, municipalities and scientists are working together to test and display electric mobility in the form of specific applications. The three-year programme is thus a central milestone as we gather key insights into the use of e-vehicles in practice.

The showcase projects make electric mobility something that both potential users and the general public – in Germany and beyond – can experience directly.



A whole range of solutions for different aspects of mobile day-to-day life is being studied: individual e-mobility, car-sharing concepts, and fleet models. It is also interesting to create a smart link between different forms of electric transport, e.g. the e-bike or private e-vehicle and local public transport (intermodality). The consideration of intermodal mobility concepts makes it possible to specify the need for corresponding solutions for mobility in the urban environment, for links between urban and rural areas, and for long-distance mobility. Further priorities include the use of electric commercial vehicles and the establishment of the necessary charging infrastructure. Also, the programme looks into the need for training. Since the beginning of 2014, the showcases programme has been backed up by accompanying research and research into its impact.

# International co-operation

International standards are needed to ensure that there are no problems when electric vehicles are charged up abroad. Also, uniform standards reduce the costs of manufacturing vehicles and the charging infrastructure. Charging plugs and sockets, and the communication between the vehicle and the charging infrastructure, must be made mutually compatible. Safety standards are also being agreed via the instrument of standardisation.

This makes it all the more important to co-operate in this field with key EU partners and non-EU countries in order to back the bilateral co-operation between German firms and foreign companies.



- The Federal Ministry for Economic Affairs and Energy is working intensively together with partners in China on questions of standardisation, certification and product safety for electric vehicles.
- We have an intensive exchange of information with the Japanese government on standards for quick charging.
- With the United States, a plan of work on electric mobility was adopted in the framework of the Transatlantic Economic Council in 2011. It chiefly covers questions of standardisation, safety aspects and joint research work.
- There is also an intensive bilateral dialogue with many European countries. e.g. with France on questions of



The Federal Ministry for Economic Affairs and Energy is active in multilateral bodies in order to help electric mobility to make the break-through.

- Germany, represented by the Federal Ministry for Economic Affairs and Energy, is a founding member of the Electric Vehicle Initiative (EVI) set up in 2010 which now embraces 15 countries (e.g. U.S., Japan, China, Denmark, Finland, France, Italy). The initiative aims to ensure an intensive dialogue on e-mobility. Here, the focus is on comparing the measures taken in the member states to promote e-mobility.
- The Federal Ministry for Economic Affairs and Energy participates in the electric mobility+ funding initiative (in the context of the European Commission's ERANET Transport), a bridge between national initiatives in European countries, and in the European Green Cars Initiative. The intention is to establish a long-term platform for cross-border co-operation.
- Further to this, Germany has representatives of science, industry and the Federal Government working in a large number specialised working groups of the International Energy Agency's Implementing Agreement Hybrid and Electric Vehicles (IEA IA-HEV).



