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## **1 million e-cars by 2020 in Germany**

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### **Summary**

**1 million e-cars by 2020 in Germany.** The “German approach” to set up the market development structure and create answers of how to become market leader in electro mobility as well as to reach technical leadership.

The presentation will explain the setup as well as the experiences after 5 years and will give an inside view of positive developments and lessons learned.

*Keywords: Federal government, Germany, infrastructure, market, business model*

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# 1 million e-cars by 2020 in Germany

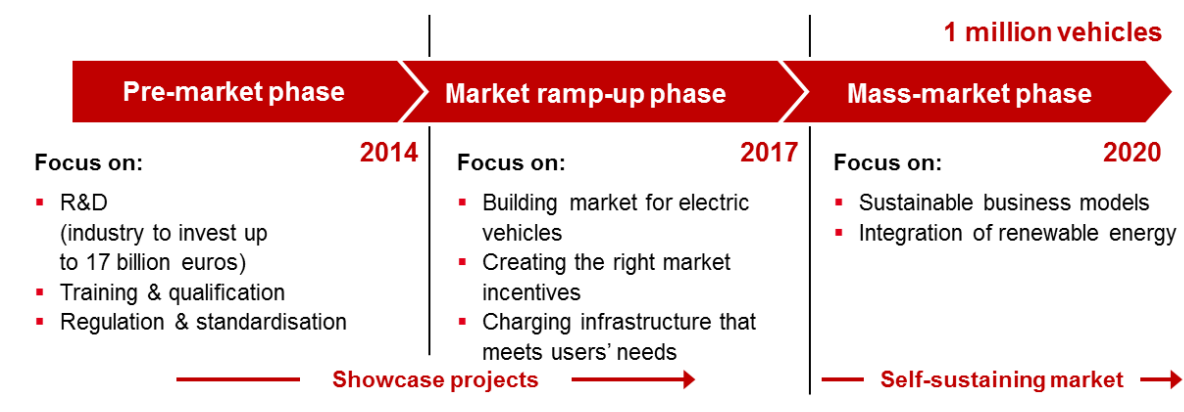
## 1 Introduction

Electro mobility has been seriously pursued by German government since 2009. One of the major ideas was to install a nationwide board consisting of industry leaders and relevant actors. This group was initiated by German chancellor Angela Merkel. This expert group was led by Prof. Dr. Henning Kargermaun from acatec (National Academy of Science and Engineering)

“The German National Platform for Electric Mobility (NPE) orchestrates the development of electric mobility in Germany. The advisory body of the Federal Government brings together 150 representatives from industry, science, politics, trade unions and trade associations for strategic dialogue. Collectively, they investigate the economic, social and environmental potential of electric mobility and recommend actions for politicians and business.

The NPE was founded on the initiative of the Federal Government and coordinates the process of making Germany the lead market in the areas of infrastructure, products, standardisation and training. At the interfaces of various sectors and scientific disciplines, it identifies topics for research and development that are critical to success. It also evaluates national and international activities in electric mobility. The members summarise their recommendations and ideas in reports and continuous monitoring. The NPE defines the necessary steps in roadmaps on topics such as standardisation, education and training. The scientific basis for this is provided by studies in areas such as the market ramp-up for electric vehicles. The NPE will also be strengthening collaboration in electric mobility across different sectors and disciplines in the future.”<sup>i</sup>

The major goal of the NPE could be summarized under the slogan “**1 million e-cars by 2020**”.



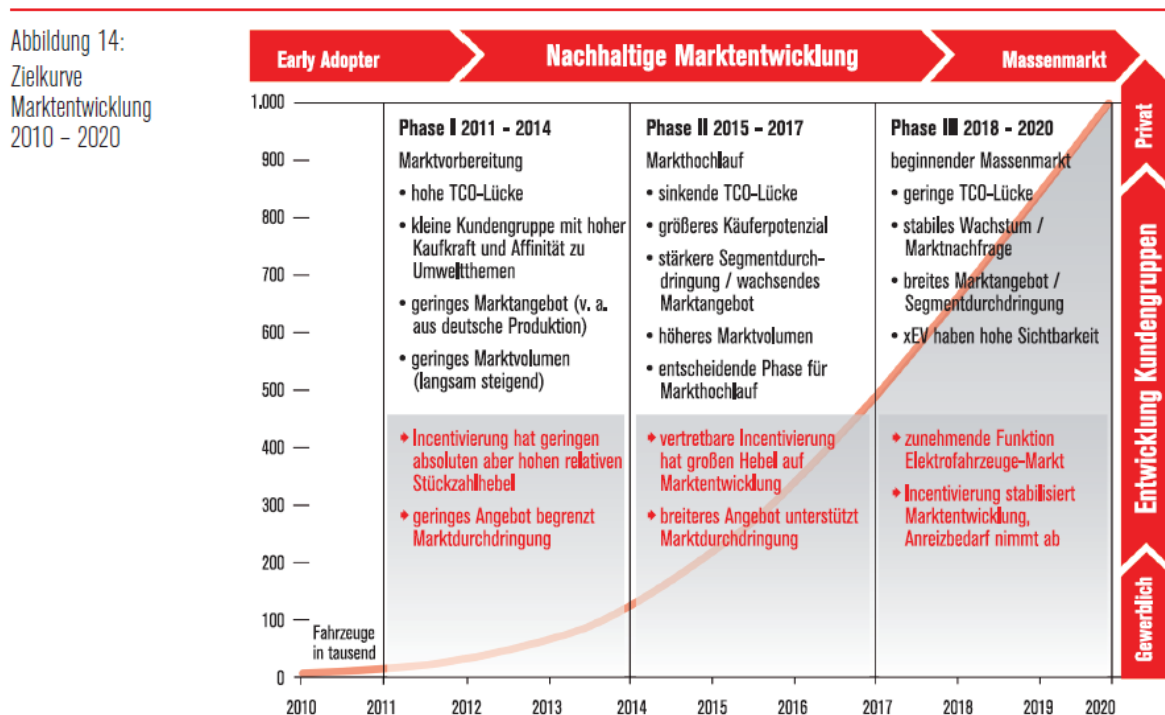
Picture 1: NPE approach - Developing the electric mobility system in three phases

## 2 Status Quo in 2016

Over all Germany is still a leading player in the OEM Industry and this is a major benefit in development of cars with a new drive train – BUT: The power of disruptive innovation was under estimated and a special German car industry decided probably too late to support this new behavior for mobility. The way of setting

up a local 3 phase market development program didn't anticipate the world market and new global players. The pre-market phase was not done accurate enough so that the ramp-up phase just reflect open issues rather than building market capacity. At the moment decisions for the local Germany e-mobility market will be led by strong influence of the European Union in areas of climate protection and regulation/standardisation in various areas.

The outlook for the 2020 goal is not that good but also not impossible to reach. Actually we have little bit more than 50.000 eCars (per 03/2016) in the German market and the approach to set up incentives. Here is the initial plan:



Picture 2: Targets for market development (Will be translated in the presentation)

Especially when we consider that a limited number of private cars are not fulfilling the requirements from an environment perspective we need especially in urban areas support also from heavy duty vehicles and busses. Also the change in focus from pure "Hardware" to mobility behavior and all kinds of impact out of the "Energiewende" discussion was not covered enough in the planning and showing in the actual phase. The commercial impact of electro mobility for the German industry is extremely big by failing completely. If we are just late by 2-3 years we expect no bigger problems but the industry needs to change very fast and even faster by taking into account the "Digitalization" and effects like autonomous driving cars.

The NPE played the role of an incubator for new development at a maturity level more or less "low". The commitment of big industry players like OEM, utilities, big industry associations and also political representatives trigger a lot of research activities and community building. All activities necessary and

successful indeed, as long as it was relevant to get from maturity level “low” to a high degree which will be translated as “ready for the market”. This first strategic phase was called market preparation and no one could really win by doing something alone (...that was the intention so far).

Time passes by and by 2015 we reached the defined next stage which was expected as the rise of the market. And at this point we pause to **reflect on the current situation**...

We have several actors in the market (both German ones and also from abroad like TESLA) with proprietary solutions and tons of innovative ideas. A little bit of a startup culture was even seen in Germany. Here, the structure of existing big industry representatives in NPE became questionable. The new players did not have political supporters, the big ones started fighting for (potential) market shares and politicians realized that they actually had more pending questions than answers out of the market preparation program. Slowly, we also realized that the decision-making process in Germany is still based on old legislation and that the speed for updates doesn't fit into the process. The transformation is getting faster than the highly precise and quality-oriented process in Germany has expected. Today we very often focus on industry agreements rather than regulated or legally solved issues. Reflecting the overall approach, we may confirm what future researchers said about digitalization – it is really fast and with unexpected disruptive power.

In 2015/2016, we have learned our lessons and restructure some of the processes. We believe in “communities and clustering”. We will probably not reach the initial target of 1 million e-cars by 2020, but we understand where the benefit for the industry is and in which direction to continue.

### **3 Measures and (re-)actions of the market**

We need to accept, that the initial plan to align politicians, business, science and civil society will work in a different way than expected. As the working structure of the market is not that simple we try to look at the some simple questions and answers by major actor groups including a brief status of R&D activities:

#### **3.1 Car Manufacturing Industry**

Especially in Germany where car manufacturing has a long history and also this is the most important economic area for prosperity, people are wondering why this industry isn't pushing even more the new technology. A simple answer – Just money or friendly speaking “There is no market”.

By talking to the representatives of the industry you will not get official statements. You will rather get the information we are “up to date”, we have done “major steps towards”..., and so on. The insight is that this industry has earned the biggest profit ever in 2015. So as investor in times with low interest rates everyone is happy to get money out of this and don't think of heavy investments in order to ensure further profit. The short term view is comprehensible and as soon as profit going to collapse, the capital will move on.

But the OEM's have also heard the message in their strategic departments and going to prepare their own future – But this will happen in other geographical areas than Germany. They can act from a global perspective and here we have to accept that the China market is even more interesting than Europe. Here we

see joint ventures, new development centers and new car models. Also relevant will be the US market and after “Dieselgate” from Volkswagen a shift in product policy is visible.

So the general view in Germany is that the OEM’s are less active in their home country but the development on electric drive trains and mobility concepts will go on in other areas of the world. We may profit as soon as the home market will rise because than the know-how is available and the production capacity also. As soon as money is in the market (demand and willingness to pay from customer side) we expect the companies are ready to serve the market.

The only open issue is if other competitors will not also come into the EU Market as soon as potential is seen and this partially new companies are even better positioned in electrical cars (new and even more comprehensive concepts) than the old industry. TESLA is just one player. Also critical seen is that major areas of mobility are not covered sufficient from the old industry. Here the issue is with electrical busses and heavy vehicles. Experts and niche players are well situated to cover a market launch with their existing know-How.

Conclusion: We see a transformation rather than a disruptive development within a global environment. The final winners are not named now and everyone is keen on business.

### **3.2 Tier 1 OEM Supplier**

Behind the scene of car manufacturers Germany got a strong tier 1 industry. Players like ZF, BOSCH, Conti, Scheffler and so on as a global companies developed a strong position with innovative know-how. They are able to deliver all components for electric driven cars also to old and new players and some of them are able to cover a complete production line for new cars outside the “old” industry. By thinking of these companies I have no doubt that German engineering will suffer by new technologies like eMobility.

Conclusion here: The NPE didn’t have the tier 1 suppliers in focus when they start their approach but due to this we see today an independent strong development ready for the market and well situated.

### **3.3 Utilities**

By beginning the discussion around Electro mobility the Utilities seems to play a big role. They were included in the planning to build the infrastructure and most of the R&D projects got at least one utility as partner. Here we see today a change in thinking and acting of the utilities. First it become clear that the market will not request charging infrastructure that somehow influence the grid in a critical way. Also the strong impact on decentralized generation and focus on renewable energy shift the focus. In combination with an old legislation and regulation the processes become very complicated for a utility so that they today just ask the market for the information of the grid connection point and how much energy should be delivered.

Conclusion: Utilities actually do not invest in charging infrastructure or smart services. They re-focused on the delivery of energy by using the old patterns of regulation. Innovative use of flexibility or battery capacity (Second-Life of Batteries) is just a research topic and far from market maturity level.

Something which might get interesting is in the future is the combination of energy and heat in smart cities or smart real estate. We see that developments will converged and here local smart grids will show benefit for those who operate them. Utilities see here a “Third Party” approach to deliver and sell know-how beside public regulated markets.

### **3.4 Mobility Service Provider**

Mobility Services is a very global approach. As we talk about software we see some start-ups in Germany but the much stronger and faster players are spread all over the world. Even in that areas where we see more cars on the street we will find smart solutions and new variety of services.

Conclusion: As long as we do not have significant number of cars on the road we will not see creative and new mobility services. We have just a few developments around cities like Stuttgart, Hamburg, Berlin and so on who try to create something like mobility services based on public transport. Not very innovative but somehow necessary.

### **3.5 (Smart) Cities**

As just mentioned cities try to push electro mobility mainly because of the environmental impact. Therefore we see a strong demand for solutions with electric busses and heavy trucks. Also CEP-Services in the cities should use electric drive trains. The cities push the development not by incentives rather than limitations and prohibitions cause of environmental law. The effect is quite the same – We will see that cities will faster change to more environment friendly concepts. That means more public transport, more intelligent transport and rules who force the commercial traffic to change the drive train to electric engines.

The push mechanism are different than for private users but from a development perspective this is one of the strongest drivers for eMobility in Germany.

Conclusion: Environmental arguments are a very strong driver to use electric drive trains in cities. Commercial traffic and public transport is in focus.

### **3.6 Legislation/Regulation**

Last but not least some short information about German law and regulation. We face the fact that some of the law is from the second to last centuries and has never changed. Most of the regulation e.g. for the utilities industry is up to 100 years old.

The actual research projects deliver the right questions and we are aware of which legislation should be changed (Tenancy law, energy law, building law, tax law, etc.) but the general process for changing the legislation is extremely slow. Good for legal certainty but very bad for innovation and improvement.

A major mistake even in the NPE approach was the underestimation of disruptive development. A necessary social discourse was not raised and the focus was still on technical development. Today we hinder our self in dynamic development because of missing clearance for testing – There is no extralegal sphere by definition; even not for R&D Projects.

### **3.7 The NPE recommendations**

Despite all arguments the NPE position is today that a total of 29 vehicles (Full BEV and Hybrids), products and services such as mobility cards and e-carsharing are already available for users. “Now the vehicles need to be put onto the road. The NPE thus recommends rapid implementation of the following measures for the next phase:

- Purchase bonus for private users in the amount of EUR 5,000 and for commercial users EUR 3,000.
- Introducing a special depreciation of 50 percent in the first year for commercial users – fleets and company cars are a gateway to electric mobility. They make up 60 percent of the new car market. The cost of the depreciation would amount to annual tax shortfalls in the full year effect of approximately EUR 200 million.
- Public and private investments in publicly accessible charging infrastructure in the context of a "10,000-charging stations program" in the amount of EUR 100 million by the end of 2017. A common stimulating in building the public charging infrastructure is needed, then the private sector bears the running costs. Moreover, it needs clear, legal framework for the buildup of the charging infrastructure.
- Public acquisition program: conversion of 30 percent of public fleets to electric vehicles until 2017.
- Continuing research and development into new areas and securing funding of EUR 360 million per annum through Federal Government support.
- Jointly researching and driving forward the establishment of a long-term cell manufacturing facility in Germany.”<sup>ii</sup>

## **4 Conclusion and outlook**

Dark grey to black - or is there a silver bullet? The future is clear by saying that the mobility of the future is electric. Germany suffers under a weak alignment of industrial players – upfront the car manufactures. As soon as they will use their market power developments could go rather fast. In the meanwhile the competition will take place somewhere in the world but not in Germany. So the outlook is split in two scenarios:

The global development doesn't interfere the German position not that strong so that when the critical mass is reached in the home market the car manufactures will be back and grow with the new technology. Everything will be fine and the critical changes (e.g. legislation) will be changed until this point in time. It doesn't matter if this is in 2020 or 2030 or beyond.

The second scenario is that new players will learn how to play the new processes and how to earn market and money even in new roles. They would be able to deliver what we describe by industry 4.0 and digitalization and they don't need to care about old industry structures. They will redefine the market without old players. Within this scenario it would be absolutely necessary for the society to learn and shift attention into new areas.

Germany's prosperity is heavily depending on the car industry and one of the major goals for an organization like NPE is to foster change rather than to keep old industry. Whether this happens by 2020 or some years later doesn't matter but we need to be honest to ourself and accept that things are going to change. We got a good chance!

## Author:



*Detlef Schumann was born on May 10, 1963. Following his studies at a university in business administration and an employment with a mechanical engineering group, Detlef Schumann started his career in IT consulting.*

*For more than 20 years he has been engaged in issues of several industries mainly utilities. He worked on innovations such as Smart Grids, new mobility concepts and smart cities, both on national and international level. At this, Detlef Schumann advises large companies and corporations as well as governmental organizations on aligning their strategy.*

*Detlef Schumann is acting on behalf of Federal German Ministries BMVI, BMWi, BMBF and BMUB. BridgingIT here is together with the German Dialogue Institute and VDE instructed to work on the accompanying research and effect research in the showcase of electric mobility in Germany.*

*Detlef Schumann is also a member of several expert circles including:*

- *Federation of German Industry committee for energy and climate policy and Working group "Internet of Energy" and Energy Research*
- *Head of ICT innovation area within the cluster Electric Mobility South-West*
- *Project management of the parallel research into effectivity within the German federal program "Electro mobility Showcase"*
- *and author/co-author of various publications plus expert in various special topics:*
  - *Research program "Horizon 2020" of the European Union*
  - *Digital Agenda of the Federal Government – promotion of innovation*

*Within the scope of innovation and business development Detlef Schumann is engaged with the current trend topic of Digitization – from Big Data, Industry 4.0 and demographic change through to issues of the whole transformation of industries.*

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<sup>i</sup> Source: <http://nationale-plattform-elektromobilitaet.de/en>

<sup>ii</sup> Source: <http://nationale-plattform-elektromobilitaet.de/en/background/the-measures/#tabs>