Bachelor Thesis Abstract

Name: Christian Conradi

Topic: Promotion of Electric Vehicles in German Cities

Supervisor: Prof. Dr.-Ing. Manfred Boltze

M.Sc. Stefan Groer

Electric vehicles as well as the superior concept of electric mobility have become frequently discussed topics over the last few years. The main reasons for this are the progressive climate change and narrowing resources in the area of fossil energy sources. Greenhouse gases and concentrations of fine dust in urban areas can clearly be reduced by these vehicles. The development is still at the beginning; therefore it requires a suitable support from industry as well as politics. Especially the cities can have a considerable influence.

It will be dealt with the issue of an effective and sustainable promotion of electric vehicles at a communal level, based on a comparative case study. The study should help to adept and optimize former facilitating policies.

First, there are shown some environmental principles, which illustrate the dimension of anthropogenic influence on climate and nature. Furthermore, a basic knowledge about electric vehicles shall be given. Following, a focus will be laid on examining facilitation. Based on this, fitting procedures to promote the distribution of electric vehicles will be summarized. The measures are a requirement for the following empiric case study, in which the respective policies of the German cities Stuttgart, Munich and Frankfurt am Main will be analyzed, compared and evaluated. This comparison should help to win awareness about how a suitable policy can or should look like.

Basically, the idea of electric engines for vehicles is not a new one, because first approaches were already present in the 19th century. Unfortunately, the technology could not establish itself at this time as of the combustion engine which had higher range and lower costs, making it more attractive. In the younger past most electric vehicles only appeared for special uses and in a very small number of pieces. The costs for the user are still significantly higher than for conventional vehicles. Therefore, the consumers must be convinced to switch to electric vehicles by attractive offers and consideration of individual needs.

Germany has set itself a target to bring at least one million electric vehicles on German streets until 2020. Seen from an international viewpoint, they want to take a leading role in developing the technology and establish itself as the leading force on the market. Therefore billions are spent in funds. The cities and communities have a big responsibility as they are in charge of implementing the supra-local requirements of politics at the local area.

Following, some selected measures, available to the cities are presented, to advance the promotion of electric vehicles, to rise spreading and to increase the general attraction of the technology.

First of all, the focus lies on the *improvement of a public charging infrastructure.* Even if private and commercial charging stations will represent the biggest portion, the establishment of public charging points is important to take away the fear of a break down.

The *exchange of communal vehicles* is another measure. Thus, the city can replace their present conventionally powered vehicle fleet by electric vehicles and be a guide in the field of electric

mobility. This not only makes sense in long-term economic issues, but could also convince potential users to switch to electric vehicles.

Traffic law privileges are offered as they are relatively easy to convert. For example, *special parking lots* can be established, preferably in areas with a high magnitude of stationary traffic. Like this, the driver of the electric vehicle gets a significant advantage while searching for a suitable parking lot. An extenuated variation of this measure is the suppression of parking fees for electric vehicles in public areas. Considering the higher initial costs of cars with an electric engine, this would be particularly suited for commuters, who have to rely on public parking lots every day. They could get back part of their expenditures by saving the parking fees.

Electric mobility is still an unknown topic for many people. Therefore, it is recommended to be also active in the field of information and consultation in the community. Possible measures in this context are the *establishment of a public advice centre*, which citizens can go to if they have questions about electric mobility, the *organization of special activity days*, where test runs can be carried out or information desks visited to give the citizens an understanding of electric vehicles. Also the *organization of discussion groups* in which enthusiasts can introduce their opinions and ideas would be an option.

All collected actions are gathered in an appropriate catalog system to give a clear summary of the results. This offers the basis for the empiric case study, in which the strategies of promotion and the connected measures of the three cities in regard to electric vehicles will be analyzed, evaluated, and compared with each other.

At the beginning of the analysis a short description of the respective community is given to gain an insight into the local conditions. Afterwards, the policy of the city is worked out on the basis of empirical sources including public documents of the cities and their partners and reporting of local media. A focus will be on the aims and planned measures of the respective city. Following, the current status of the implementation with regard to the thought up strategy will be considered. Based on the catalog system and additional suitable criteria, the overall policy is evaluated. Finally the probable different attempts of the cities will be compared and conclusions will be drawn concentrating on what policy appears to be effective and lasting and which strategies are more reasonable than comparable others.

As a result, it may be noted that cities should have a clear line in the promotion policy through the use of suitable environmental and traffic concepts. There are many procedures available to the community. The right planning and cooperation with interested companies can help in making these methods more affordable. Nevertheless, an effort should be made on implementing a huge number of measures to illustrate the omnipresence of the subject. The measures should be integrated into a systematic approach, and if possible cover the fields of infrastructure, public traffic areas, information and cooperation. During the implementation of the measures the focus should be on a supply-oriented way to accelerate the expected market penetration. That is why a wide offer of electric-mobile options should be made available first. When the electric vehicle market has become independent in the future the documented measures can be decreased. It is important to gain strategic partners, for example from the energy supply area and the car sharing system. They have the necessary know-how and, as already mentioned, reduce the costs for the city. The companies can profit through the partnership as well, because they can open new markets and improve their competitive positions.

Christian Conradi

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