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The Dutch Approach to EV

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Executive summary

In this article, we examine the ways in which the Dutch government and business community are shaping the transition to electric driving. How did the Netherlands become one of the leading EV countries? Which factors have given rise to the Dutch market model? And how does the Netherlands intend to “solve” some parts of the energy puzzle while making the transition to electric driving?

Keywords: EV policy, public-private cooperation, public charging infrastructure

1 Public-private cooperation

Various factors place the Netherlands in a good starting position to implement electric driving. With 504 inhabitants per square kilometre, the Netherlands is an exceptionally densely populated country.¹ We don't need to travel long distances, but we do have a great deal of traffic movements: in 2014 the average Dutch citizen travelled 32 kilometres per day, and 75% of this was by car. More than 6.6 of the 17 million Dutch citizens owned a car in 2014, which translates to 71% of all households.² The Netherlands holds 4th place worldwide in the Global Competitiveness Index 2016-2017 published by the World Economic Forum. In addition to an excellent across-the-board performance, the Netherlands also stands out in terms of infrastructure, education and technology readiness.³

The Netherlands is not only flat in geographical terms but also as regards hierarchy. Cooperation is in our genes. An oft-cited fact in this context is that the greater part of our country is below sea level and that we already have centuries of experience with cooperation in order to keep our feet dry. In practice this means that there is plenty of consultation between the state and the private sector on economic and social issues. Also, companies often take on social and economic responsibilities beyond their private business goals. These characteristics are important in the Dutch “polder model”, a term coined for the socio-economic decision-making model with cooperation between the government and the private sector, prominent in the 1980s and 1990s. This tradition of policy development has resulted in a series of institutions in which public and private parties collaborate in order to address the challenges faced by society. The public-private partnership that focuses on Electric Transport is the Formula E-Team.

1.1 Formula E-Team & Green Deal

In 2009 the ministers of Economic Affairs and of Transport, Public Works & Water Management allocated a sum of 65 million euros to an Action Plan intended to make the Netherlands the leader in the field of electric driving. Furthermore, in 2009 the Formula E-Team was set up to act as an ambassador to boost the further development of electric driving. This team comprises representatives of the business community, knowledge institutions and government bodies. The first chair of this team was Prince Maurits, who from November 2009 to March 2012 played an active role in both the introduction and promotion of electric transport in the Netherlands.

In 2011 the cooperation initiated by the Formula E-Team resulted in a Green Deal for Electric Transport. In the Netherlands, the Green Deal is used to help businesses, social organisations and local authorities to undertake sustainable steps together. The goal of this Green Deal is that all actions taken in the field of EV are clustered so as to give electric transport a solid foundation by 2020 and that after this date no further state support is required to continue its growth. Priorities of the Green Deal include: further developing the consumer market, improving the charging infrastructure, improving the variable use of sustainable energy in the power grid by means of EVs, and lastly giving space to leading companies in the EV field to capitalise on (international) earning potential.

The goal of the cooperating parties is that by 2025 50% of newly sold cars will have an electric power train and plug-in connector and that at least 30% of these, i.e. 15% in total, will be fully electric. The goal for 2020 is that 10% of newly sold passenger cars will have an electric power train and plug-in connector. As part of this strategy, the parties hope that the current commercial lease vehicles can be retained as far as possible for the Dutch consumer market once the leases expire.

Following the first phase of the Formula E-Team in which Prince Maurits put the issue on the map by heading the group, Bert Klerk took over as chair in June 2013. Klerk is a former CEO of ProRail* and has been appointed chiefly to move the implementation of the Green Deal another step forward on the basis of his management network and experience. Klerk says: “Right from the start, green growth has been the aim of the Formula E-Team. We are polder-builders. We discuss action with each other in order to strengthen the earning capacity of electric driving in the Netherlands.”

The national government gains various advantages from working with a well-organised sector. Firstly, the government, the business community and knowledge institutions are able to contact each other easily and thus strengthen the knowledge economy. There are also practical advantages, such as organising trade missions and trade fairs. The Partners for International Business (PIB) programme is another good example: it aims to position a group of companies and knowledge institutions in a specific foreign country with the support of a Dutch embassy, consulate or Netherlands Business Support Office (NBSO). Moreover, it is effective for the government to have a sounding board for the development of European legislation. This applies to things like the implementation of the European Alternative Fuels Infrastructure Directive, or the Energy Performance of Buildings Directive.

1.2 Top-Down & Bottom-Up

One last characteristic involved in the polder model for electric driving is that it can initiate top-down developments in the political sphere and the upper echelons of the business community but can also power bottom-up development through knowledge in the field. While institutions often think in terms of ‘the system’, it is crucial that people on the ground are able to acquire knowledge and to experiment. This enables successful projects to be upscaled, innovations to be capitalised on and laws and regulations to be adjusted in good time. This is why the Formula E-Team includes a number of working groups in which the business community, knowledge institutions and authorities work together to develop specific areas. This sometimes involves overarching themes such as the International and Communication working groups, and sometimes specific issues such as plug-in hybrids and light electric vehicles. The Plug-in Hybrids working group involves a coalition of businesses that is working to reduce the administrative costs for commercial drivers, which should ultimately increase the number of electrically driven kilometres for plug-in hybrids. Another relevant example is the Charging Infrastructure working group which is developing a plan to accelerate the roll-out of public charging infrastructure and is issuing recommendations to authorities and the business community. Naturally, it is very beneficial for the national government if the sector itself undertakes actions such as these, thanks in part to the support provided by the Formula E-Team.

* ProRail is the organisation that manages the Dutch railway network infrastructure.

2 Charging infrastructure

At the time of writing, there are 28,700 publicly accessible charging points and roughly 60,000 private charging points in the Netherlands; these can charge a total of around 118,000 electric vehicles that are now registered in the Netherlands, including both plug-in hybrids and full-electric vehicles. Since the first governmental Action Plan for electric driving in 2009, the Netherlands has consistently supported the deployment of available charging infrastructure. While many different policy instruments have promoted the general adoption of electric driving in the Netherlands, including a number of tax measures, we will now take a closer look at the ways in which charging infrastructure has been supported, and has made the Netherlands the most “charging-point-dense” country worldwide.

The following table indicates the growth of the number of public and semi-public charging points in the years 2010-2017. In the Netherlands we draw a distinction between charging points in the public spaces of municipal car-parks (public) and other charging points installed at shopping centres, hotels and other businesses and which are, or may be, dependent on the opening hours of these businesses (semi-public).

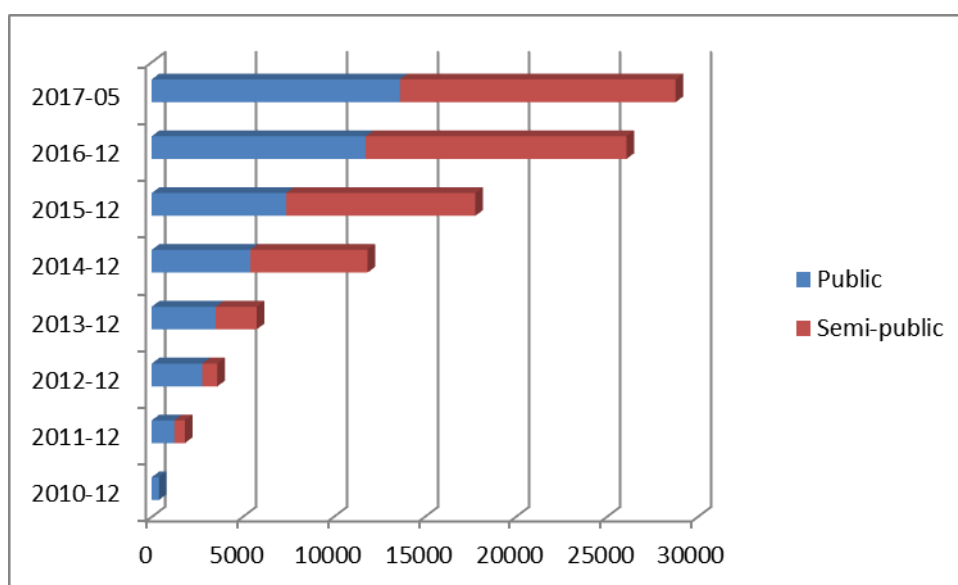


Figure 1: Growth of Charging Points in the Netherlands ⁴

The growth in the number of semi-public charging points is due chiefly to the fact that, in the Netherlands, the business market is an important driving force behind the introduction of electric driving. Many businesses facilitate their employees with charging points. But in addition to this, ever more businesses are integrating electric charging points in their business model and offering these to their customers. The table does not consider the number of fast charging stations along highways, which is also experiencing rapid growth.

A puzzle for policymakers has been how to create country-wide incentives for public charging infrastructure, when in fact local governments are in ‘the driving seat’ concerning regional planning and development. In response to this, a market model has been developed as well as a priority model that we call ‘the charging ladder’. The principle is that the charging point is installed in response to demand. To begin with, people park on their own premises and charge their car at home. If this is not possible, then they should first make use of semi-public facilities. If these are lacking too, then there may be a demand for facilities at public car-parks. The EV driver then contacts the local authority, which can provide the facility.

The success of public charging facilities in the Netherlands is chiefly the result of public-private partnerships in the Green Deal Publicly Accessible Charging Infrastructure. The National Government has made funds available to assist the local authority, while the local authority determines when and where a charging point is installed at the request of an EV driver. The total state funding for the Green Deal Publicly

Accessible Charging Infrastructure amounts to a maximum of € 33 million. This may seem a modest sum but due to the financial booster role of larger local authorities this incentive has been highly effective.

The National Knowledge Platform for Public Charging Infrastructure (NKL) was set up as an independent institute in order to ensure that knowledge on charging infrastructure becomes available to the local authorities. Ivo Weekenborg has been the Director of the Knowledge Platform since 2015. Weekenborg explains the Dutch EV success as follows: “In the Netherlands we are able to achieve concrete results, but as a trading nation we are also focused on the world at large. In Europe, we form an important hub in transport and logistics, but the Dutch high-tech sector is well-positioned as well, allowing logistics and new technology to come together.” The NKL publishes a yearly benchmark and estimates that the business case for public charging infrastructure will be profitable by 2020. This means that the coming years will see implementation of the actions such as those agreed in the Green Deals. This matches the expectation that the major growth in electric transport will take place after 2020 and that then the market can be expected to meet the increased demand for charging infrastructure by itself.

2.1 EV and the energy transition

Electric transport as a disruptive innovation has a much broader social impact than just in the fields of energy and mobility. While battery prices continue to fall and solar panels become ever cheaper, many networks relating to the automotive industry and the energy sector are changing. Autonomous driving and car-sharing are new ‘disruptors’. Simultaneously a need is arising for new business models for energy trading based on domestic energy production, in a smart combination with the needs and capacity of the car battery.

In late 2016, the Minister of Economic Affairs commissioned a survey of the factors that influence the rise of electric driving and of the expected growth in vehicles – as well as the required charging infrastructure. Research agency Ecofys examined four scenarios along two axes: one axis for speed of the energy transition and the other for the degree to which autonomous driving and car sharing play a role. Depending on the development of the two axes, Ecofys calculates that in the Netherlands between 40% and 70% of vehicles will be electric by 2035.⁵ One of the recommendations made by the agency is that the electric car be used in an increasingly smart energy system because EVs can contribute to a cost-effective energy network in the longer term.

In order to gain knowledge about charging infrastructure at an early stage, the Dutch distribution system operators (DSO's) set up Elaad in 2009. Elaad is a knowledge institution in the field of electric transport, and Onoph Caron has been Director of Elaad since June 2010. Caron, a former member of the management team of the DSO Alliander, says: “Elaad has been transformed from a resource – the charging point – to a goal: to achieve flexibility in the networks in terms of electric transport. Besides this, Elaad is increasingly becoming a network organisation that makes knowledge and value available to charge point operators, service providers, energy suppliers and the developers of charging infrastructure.” Elaad is also working together with the Dutch government at the international level to promote the use of open ICT protocols in managing charging infrastructure. At the invitation of Henk Kamp, the Dutch Minister of Economic Affairs, in June 2017 Onoph Caron visited a conference in China within the framework of the Clean Energy Ministerial, where he explained the importance of open protocols and smart charging.

2.2 Charging abroad

In the summer of 2015 (the most recent figures at the time of writing), 8.6 million of the Netherlands' 16 million residents took extended holidays abroad. Of the tourists who went to the most popular destinations, France (18%), Germany (13.3%) and Spain (11.8%), 90% travelled by car.⁶ The ability to go abroad by car is therefore undoubtedly important to Dutch people. Several years ago, long car journeys with the first generation of electric cars still involved major challenges, but nowadays it is increasingly easy to charge your car at fast charging stations. While various businesses are working to achieve networks of fast charging stations and corridors along Europe's motorways, it is crucial that we adapt technology and business models to each other in such a way that roaming becomes reality.

The Alternative Fuels Infrastructure Directive, which comes into force in late 2017, brings many advantages for the EV driver. Member States set themselves targets for realising charging infrastructure, the

use of standard plugs is made mandatory for publicly accessible charging points, and it must be possible to charge your vehicle at every charging station without a subscription (ad hoc charging). E-roaming is also a goal for many market players, however, and the Dutch government recognises the importance of this issue. While in some countries it is still necessary to take along various charging cards when passing through different regions, in the Netherlands you need just one charging card for all charging stations. Moreover, since November 2016 it has been possible for Dutch EV drivers to use 12,000 charging points in Germany (and vice versa) now that e-Violin and EClearing.net have joined forces. It is by far the easiest option for individual users if they can charge their vehicle abroad in the same way they do at home. This is why the Netherlands is also promoting e-roaming at the international level, according to an open market model and with use of open ICT protocols. This facilitates price transparency and increases consumer convenience.

3 Final remarks

The development of electric transport in the Netherlands is progressing well. Besides favourable tax measures and a positive starting situation, the Dutch polder model has also played a facilitating role here. Moreover, attractive businesses are arising, key international players are settling in the country and there is a growing knowledge base for electric and smart transport in the Netherlands. Thanks to public-private cooperation a strong network of publicly accessible charging points for EVs has been created. Without these charging points, people would not have the confidence to switch to electric driving. Due in part to an agreement for clean bus transport, the zero-emission bus sector in the Netherlands is on the rise. Following the early years in which public funding had a stimulatory effect, the moment is now approaching when the market can continue further development by itself. We in the Netherlands happily accept the challenge to further shape the energy and transport transitions by means of electric transport.

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