



WE ARE  
HOLLAND  
~~A PILOT~~  
~~AREA~~ READY  
TO MARKET  
E-MOBILITY



Pioneers in international business



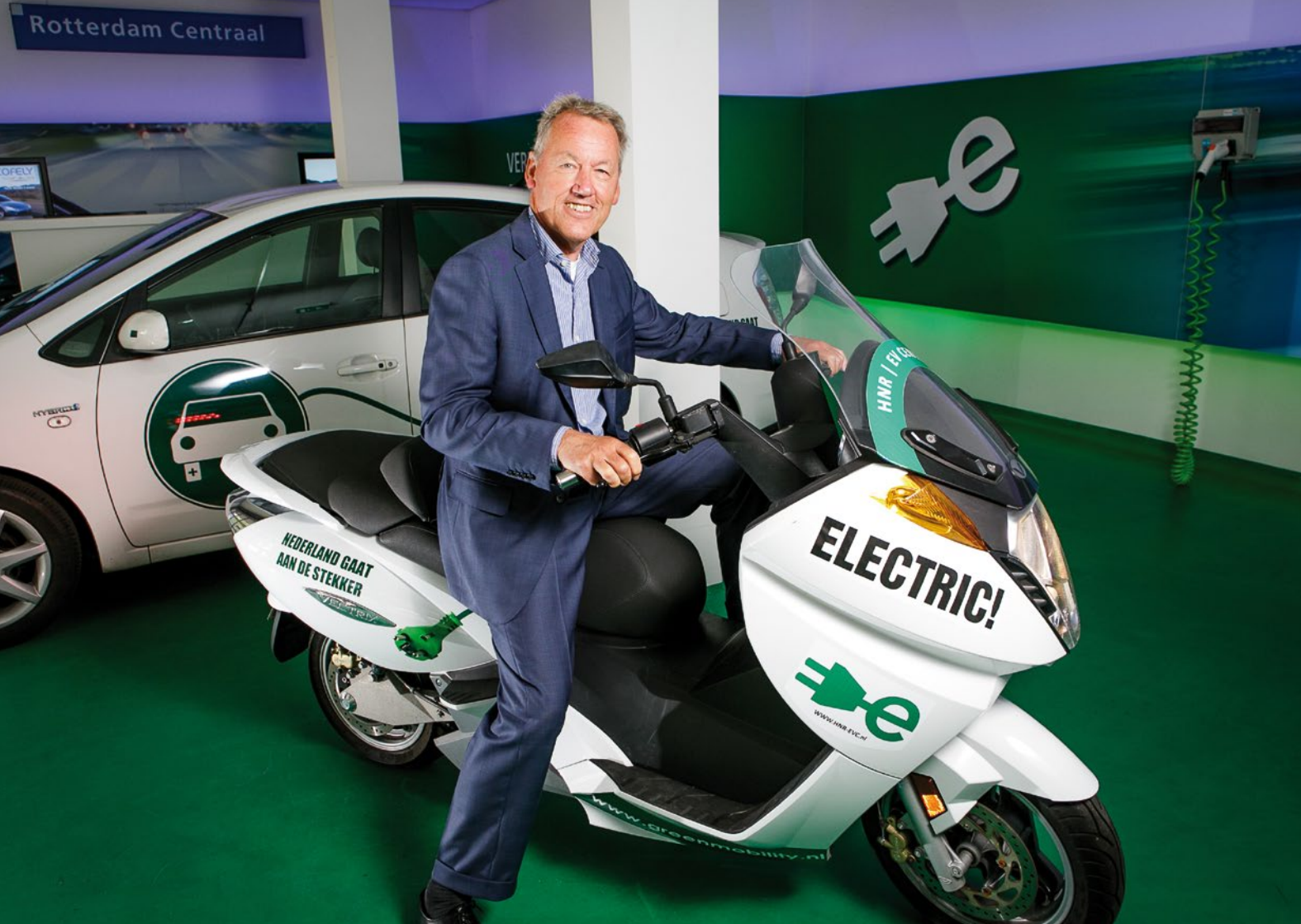
# OPENING STATEMENT

We are the Netherlands: a country of international traders with a logistics framework par excellence, a reputation for cutting-edge design and innovation, and a population that embraces new ideas. Where business, industry, academia, and government work together to enable breakthroughs in e-mobility. We have all the know-how, the networks, and the ideas to market your innovation. Let us show you how.

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# FOREWORD

It is with great pleasure that I introduce the Netherlands, its regions and cities, and its wealth of companies and institutions pursuing electric mobility. The opportunities that e-mobility presents in the Netherlands are promising in commercial terms. As you will see, we are primed and ready to market! Despite the current economic downturn, our investments in e-mobility are solid and growing in volume.

The Netherlands is the gateway to the European Union, characterised by its strategic location, profitable international business environment, superior logistics and technology infrastructure, attractive fiscal climate, highly educated and flexible work force, and excellent quality of life.

Some of the country's regions have considerable e-mobility experience in terms of use, product development, manufacturing, research, new business development, and funding models. Interesting projects are being conducted nationally and internationally, funded by companies, knowledge institutions, national authorities, and the European Union, among others.

But please don't take my word for it—see for yourself in this brochure. It's packed with information about e-mobility in the Netherlands. You will find companies, knowledge institutions, and authorities who are active in the field of e-mobility.

To fully capitalise on the field's strengths and opportunities, we invite you talk with leading e-mobility companies and institutions. The Netherlands is and always has been a country of knowledge exchange, opportunities, and mutual cooperation. We hope to welcome you into our community!

*Mr Bert Klerk*

*Chairman Formula E-Team, the Netherlands platform for e-mobility*





# 1) READY TO MARKET

The Dutch market offers attractive opportunities for many types of companies active in e-mobility: electric vehicle (EV) manufacturers,<sup>1</sup> charging infrastructure companies, battery makers, and auxiliary power unit producers. What makes the Netherlands such a perfect destination for companies in the EV industry? Let us share just four of the many reasons.

I. The Netherlands is a flat and densely populated country with a superior logistics infrastructure. Our main cities are to be found in a relatively small area, so distances between them are short. Through the Port of Rotterdam — the world's third largest seaport — and the international Amsterdam Airport Schiphol, the Netherlands has excellent connection to neighbouring countries. These factors make the Netherlands not only an ideal testing ground for EVs, but also a prime distribution hub for the European market.

II. Dutch consumers are open to new products. That's why many international companies use the Netherlands as a testing ground before a product's general introduction in Europe. In terms of automobiles, the Dutch don't favour any particular brand. Moreover, consumer acceptance towards clean vehicles is high. The country's expertise in navigation and traffic management also plays an important role in developing an e-mobility market in the Netherlands.

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<sup>1</sup> In this publication, electric vehicles or EVs stands for both fully electric vehicles (FEV) and plug-in hybrid electric vehicles (PHEV and E-REV).

**III.** The Netherlands has several world-class knowledge institutes, such as the Eindhoven University of Technology, the Delft University of Technology, the University of Twente, and TNO Automotive. These institutions are experts on EVs and related technologies such as mobility and environmental technology, and they work closely with the Dutch automotive industry to develop high-quality, innovative products. As a result, the Dutch automotive sector has a strong track record in mobility and environmental technology.

**IV.** The Dutch government is a staunch supporter of e-mobility. It has established the Formula E-Team, a public-private partnership to spur the development and use of EVs and the potential for the economy. A growing number of private parties are working together to expand and replace their existing car fleets with electric vehicles. Additionally, national and local governments are working to develop the necessary infrastructure for electric mobility.

## E-mobility in the Netherlands: Ambition and facts

Our ambition for electric driving is to reduce CO<sub>2</sub> emissions, improve energy-efficiency, and make us less dependent on fossil fuels. Electric driving also reduces noise pollution from traffic while opening up new opportunities for the commercial sector. For these reasons, the Dutch government is eager to realise a critical mass of two hundred thousand electric vehicles on the roads in the Netherlands by 2020. In documents like Electric mobility gets up to speed<sup>2</sup> and in the National Energy Agreement (2013), the government describes the activities that will be implemented to realise this ambition, and how the Netherlands can continue to expand its position as an internationally attractive place to test and market electric driving. To do so, we are concentrating our strengths in this arena, focusing on customised solutions, and aligning regional, national, and commercial activities.



## National roll-out scenario for electric vehicles

Time frame	Market development	Electric vehicles on the road (3 or more wheels)	Program stage
2009–2012	demonstration projects	2,500–3,000	start-up phase
2012–2015	upscaling	15,000–20,000	implementation
2015–2020	continued roll-out	200,000	consolidation
> 2020	mature market	1,000,000 cars in 2025	scaling back





## 2) READY TO INNOVATE AND CREATE

### An open market

The Netherlands is open to newcomers. Traditionally, the Dutch market welcomes new brands, products, and ideas, particularly when they offer high value in niche markets. The Dutch also have a strong tradition of collaboration. In the field of e-mobility, the Netherlands is home to close collaboration between knowledge institutes, innovators, new businesses and start ups, for example in associations like Dutch-INCERT and Dutch Organisation for Electric Transport (DOET).

### High consumer acceptance

The Dutch consumer is generally very accepting of new and innovative products — a fact that has led many international businesses to use the Netherlands as their test market before a product's general introduction in Europe.

### Cross-border cooperation

The Dutch automotive sector is innovative, ambitious, and well organised with a strong international orientation and a global scope. The sector actively uses its central location in Europe for cross-border cooperation. There are strong links with the automotive industry in Germany and Belgian Flanders. Cooperation with Sweden is focused on safety and ICT, while collaboration with Germany and France centres on electric vehicle and powertrain technology.



### **A vibrant automotive industry**

The Dutch automotive landscape covers the complete value chain from raw material suppliers – such as AkzoNobel, DSM, Sabic, and Royal Dutch Shell – through several global tier supply companies to OEMs such as DAF, VDL Bus & Coach, and VDL Nedcar. It also includes a broad range of service providers for research testing, engineering, and homologation. More than two hundred highly innovative tier suppliers produce a wide range of automotive components and systems for the global industry. Many of them are market leaders in their respective segments, such as NXP, Inalfa, Bosch-VDT, TomTom, Navteq, Power-Packer, Nedschroef, and Apollo-Vredestein.

### **AutomotiveNL serves as a highly cohesive industry organisation**

The Netherlands has a lively automotive sector with a large potential for growth within the international automotive industry. This sector can make a significant contribution to solving societal issues related to sustainability and mobility. To realise these objectives, the industry organisation AutomotiveNL conducts several activities to stimulate and support the entire Dutch sector. The organisation's goals for 2020 are as follows:

To grow revenue (to 24 billion euros) and employment (to 55,000 FTE) and to double the number of college graduates by focusing on the future powertrain and smart mobility.

#### **AutomotiveNL has established four major spheres of activity:**

##### **1) Ecosystem**

Providing services to its members and actively maintaining and expanding a world-class international collaborative automotive network comprising members from industry, services, education, academia, and government.

##### **2) Innovation**

Stimulating research and innovation in industry and academia through the shared development of strategy, roadmaps, and projects within the context of the high-tech systems and materials (HTSM) top sector.

##### **3) Campus**

Promoting the growth and success of the AutomotiveCampusNL in Helmond through operating the Automotive House facility and four automotive test centres for research, education, and open innovation.

##### **4) Acquisition and internationalisation**

Attracting top-quality automotive companies and knowledge institutes to the Netherlands and to AutomotiveCampusNL.

AutomotiveNL's four spheres of activity are clearly interrelated. Each sphere reinforces the other three, providing the synergy that drives progress in the automotive sector.

[www.automotivenl.com/en](http://www.automotivenl.com/en)



### Citea Low Floor Electric

With its large battery that charges via plug, the VDL Citea Electric is best suited for use over longer distances without interim recharging. The number of passengers is limited, however. If the operator prefers a more flexible concept that does not limit the number of passengers and allows for interim recharging, the options are greater. In that case, a relatively small battery can be combined with a variety of fast-charging methods such as induction, trolley, or plug-in. A range extender, which enables travel up to two hundred kilometres without recharging, can be added for optimal operation. The addition of a range extender does not affect the number of passengers or the comfort level. A significant advantage is that it helps keep infrastructure investments to a minimum.



### VDL

The Netherlands is good at developing future-proof concepts. For example, VDL has succeeded in developing a bus platform that can install a hybrid, battery, or hydrogen fuel cell system in an electric bus. Thanks to standardisation and the development of reliable power storage and delivery systems, the ideal configuration for every application and usage level can be created using standardised modules. This improves not only reliability, but also reduces expenses. The lower the vehicles' cost price, the more quickly the buses will become economically feasible and thus suitable for commercial operation.

### The Electric Scooter Factory

Rotterdam has gained an e-scooter learning facility: the Rotterdam Electric Scooter Factory (ESFA Rotterdam). The factory is a joint effort by scooter manufacturer QWIC, MAAS Leerfabrieken, and the City of Rotterdam. The assembly line for QWIC's electric scooters, which runs according to an on-the-job learning concept, is a unique initiative that combines sustainability with social employment opportunity programs. ESFA Rotterdam is collaborating with DAAD, an organisation that offers people who have difficulty in gaining access to the labour market the

opportunity to learn a trade in a specially designed work environment. The Rotterdam University of Applied Sciences, the Albeda College departments of metalworking and maintenance, and RDM Campus are closely involved in this extraordinary partnership. Michiel Hartman, one of the project's pioneers, says, "The RDM Campus is an ideal place for ESFA Rotterdam because, in addition to the participating knowledge institutes, the Port of Rotterdam and several other innovative businesses are located there."

### ABB

ABB develops, markets, and sells battery-charging products and services for optimised fast charging of electric vehicle batteries. A few years ago, ABB acquired Epyon, a start-up born from the valorisation programme of Delft University, that developed a groundbreaking fast charger. With its headquarters in the Netherlands, the European leader in EV fast-charging serves customers across Europe with customised solutions. Working with local installation partners, ABB offers maximum value to customers in the charging infrastructure, fleet vehicle, and industrial vehicle markets. ABB has been selected by Fastned to supply multistandard fast chargers to be installed in 200 Dutch Fastned highway charging locations. The chargers charge





electric vehicles in fifteen to thirty minutes and support all fast-charging standards. The first chargers are due to be delivered at the end of 2013. Construction of the Fastned stations, which will include a solar canopy and installation of the ABB chargers, is expected to complete by 2015.

### Spijkstaal Elektro

Spijkstaal, located in the Rotterdam area, is internationally renowned in the field of electric transport. Spijkstaal Elektro manufactures about five hundred electric vehicles per year for sale in the Netherlands and other European countries. Spijkstaal products are used by flower auctions, airports, automotive factories, manufacturing companies, hospitals, care institutions, and municipalities.



### The Dutch Organisation for Electric Transport

The Dutch Organisation for Electric Transport (DOET) was established in 2010 to stimulate the growth of the electric mobility sector. DOET engages in four key activities: promotion, projects, lobbying, and knowledge sharing. With almost a hundred members, DOET is the biggest electric vehicle industry organisation in the Netherlands, and it represents the complete EV value chain. The members of DOET are among the most crucial players in the electric mobility field.





## 3) READY TO TEST AND DEMONSTRATE

### Specialised automotive R&D services

The Dutch automotive sector is driven by knowledge and innovation. Research centres and engineering service providers support international OEMs and tier suppliers in research, development, and engineering. With specific expertise on vehicle electrification, efficient powertrains, and advanced driver assistance systems, they have proven to be valuable partners for the international automotive industry.

### The Dutch type-approval authority (RDW)

As the Dutch type-approval authority, RDW inspects, homologate and approves new vehicles and parts thereof. Its clients are manufacturers and importers from all over the world. RDW also makes knowledge available through consultation and support projects in other countries in the area of traffic safety. In addition, RDW closely cooperates with sister organisations in the area of European regulations.

### Homologation and testing

The Dutch automotive sector offers a full range of facilities and services for homologation, testing, and certification. Homologation authorities in the Netherlands assist OEMs in obtaining ECWVTA, UNECE, and national approval. The European Electric Mobility Center in the city of Helmond offers state-of-the-art facilities for crash testing, powertrain testing, emissions and performance measurement, and wind-tunnel testing.

### TASS International

Electric mobility is a relatively new trend. It's essentially a bowl of technological ingredients — batteries, inverters, e-motors, and power electronics — developed and manufactured by a mix of players from the traditional automotive industry and other sectors, such as the battery industry. Given this mix, integration is an essential aspect of vehicle development.



As one of five divisions within TASS International, the European Electric Mobility Center (EEMC) responds to this need by offering a comprehensive range of development, validation, and certification services for manufacturers of full and hybrid electric vehicles, systems, and components.

The level and quality of integration among a vehicle's components and systems is crucial for the vehicle's performance, efficiency, safety, and robustness. For this reason, the EEMC service portfolio focuses on these technical aspects, drawing upon the thirty-year international track record of Dutch scientific research organisation TNO and TASS International.

#### **Hybrid and electric vehicle safety**

Traction batteries for hybrid and full electric vehicles are undergoing constant improvement in terms of energy and power density. The challenge lies in simultaneously maintaining or improving the batteries' intrinsic safety. The trend towards incorporating batteries into an EV's structural design (e.g., as part of the floor) further motivates the need for an integral approach to designing battery packs. The EEMC supports this integral approach by enabling vehicle crash simulations that focus on battery pack integrity.

Simulation results are validated by battery sled tests in which batteries are exposed to realistic shock pulses. These validation results can be fed back into the design process to optimise the product's design. Finally, to close the development loop, the EEMC performs full-scale vehicle crash tests in its facility, including official homologation. As a spin-off of these activities, the EEMC also offers battery certification through a pool of European partners.



#### **Performance and efficiency on the battery, powertrain, and vehicle levels**

For fully electric vehicles to truly take off, their range performance must improve. That's a challenge, given the current energy density of lithium ion batteries and the need to also draw auxiliary power from the battery pack. The solution lies in tightly integrating thermal and energy management for the battery pack, power electronics, and traction motors to achieve optimal energy efficiency and performance.

The EEMC provides testing expertise and facilities to enable development, validation, engineering, and certification programs targeting vehicle efficiency and performance. A globally unique climatic altitude chamber, a drive-in battery climatic chamber, and four engine test beds are available to facilitate validation programs.



### The Electrical Vehicle Photovoltaic Grid

The EVPV Grid project is an R&D collaboration between Power Research Electronics BV, ABB Nederland BV, and the Delft University of Technology. Its goal is to use the batteries in multiple EVs to temporarily store photovoltaic (PV) energy. When solar panels installed in a business park generate more energy than can be fed into the electrical grid, the surplus can be directed into the batteries of nearby EV fleets. Then, when demand increases, that energy can be fed from the vehicles back into the grid. Ultimately the net effect is a multi-megawatt smart grid that enables power companies to balance the load on the network and increase capacity — and all of the increase will be from renewable sources. The project will develop breakthrough innovative power conversion technology and the energy management technology to go with it, thereby improving system efficiency and reducing the cost of investing in PV technology. A pilot project will put the technology into practice in 2015.

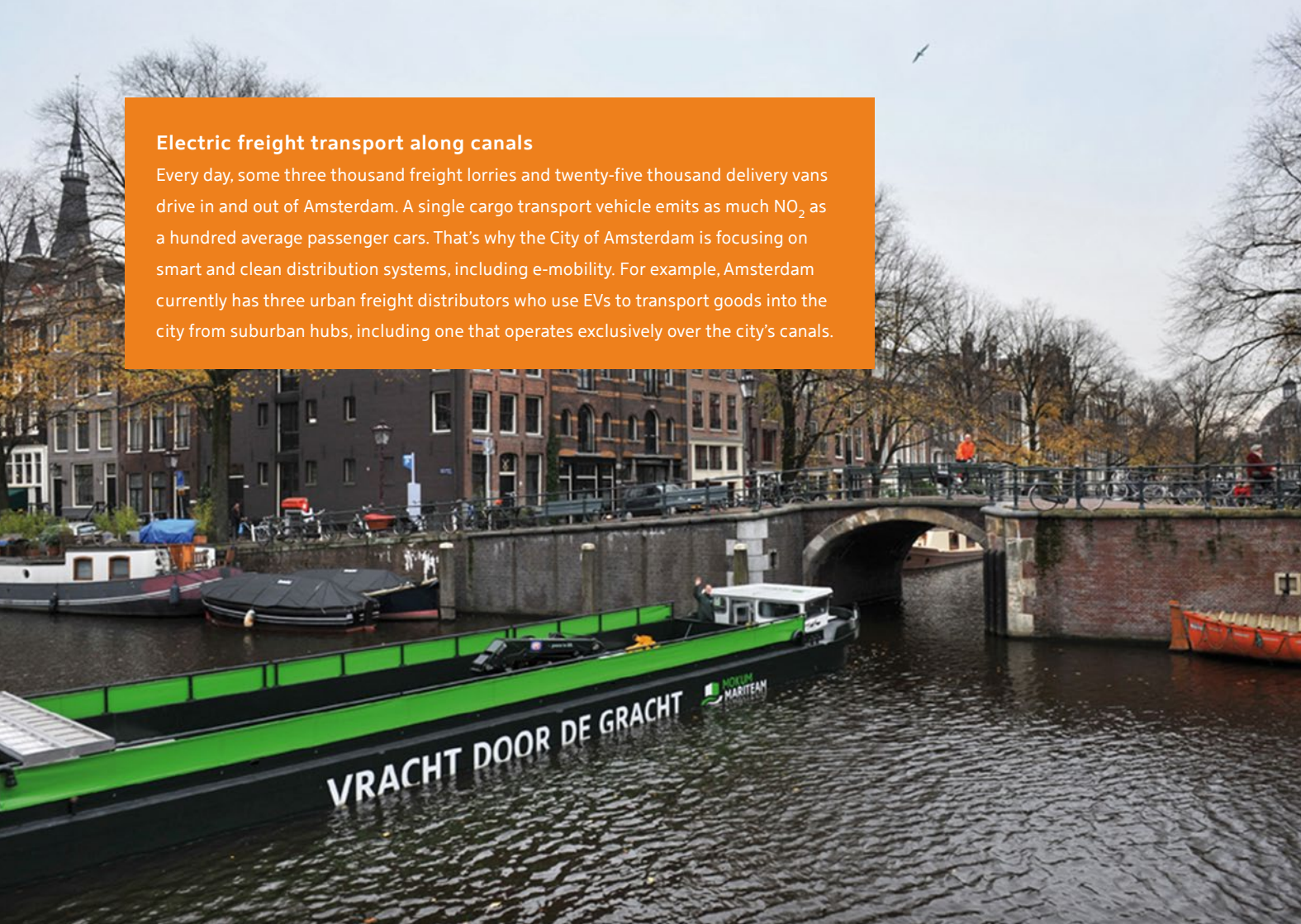
### The Rotterdam Electric Driving Test

The RTER project tested seventy-five electric and plug-in hybrid vehicles in real-time use. Led by the City of Rotterdam, energy company Eneco, and distribution grid operator Stedin, it is the largest EV project to date in the Netherlands. RTER has provided scientifically backed data on a wide range of topics such as environmental impact, effect on the electrical grid, total cost of ownership, safety, and the driver experience. The three partners implemented different models of electric and plug-in hybrid vehicles in their own fleets. The test, with a 10-Hertz data flow and 45 gigabytes of processed data, shows that plug-in hybrid vehicles are cleaner than their fossil-fuel-only counterparts, even when the plug-ins are driving only on fuel. What's more, the grid did not need extensive investment to cope with charging the electric cars' batteries. RTER shows that smart grids combined with solar energy, generated by households, can contribute to the challenges ahead the challenge ahead.



### Electric freight transport along canals

Every day, some three thousand freight lorries and twenty-five thousand delivery vans drive in and out of Amsterdam. A single cargo transport vehicle emits as much NO<sub>2</sub> as a hundred average passenger cars. That's why the City of Amsterdam is focusing on smart and clean distribution systems, including e-mobility. For example, Amsterdam currently has three urban freight distributors who use EVs to transport goods into the city from suburban hubs, including one that operates exclusively over the city's canals.



### Small and medium-sized enterprises

#### Test Electric Vehicles

In September 2013, the City of Amsterdam partnered with Aad de Wit Verhuizingen, a moving company that uses electric vehicles, and MKB Amsterdam, the regional association of SMEs, to create the SMEs Test Electric Vehicles project. By making a Renault Kangoo Z.E. available free of charge, the project enabled thirteen of the city's businesses to become acquainted with electric driving and test its suitability for their own operations in a risk-free manner. Via the project website, participants share their experiences with other Amsterdam businesses and residents.



### Dutch successes on the World Solar Challenge

In recent years, the student teams of the Netherlands' universities of technology have achieved good results at the World Solar Challenge, a solar-powered car race which covers 3,000 kilometers through Australia. The objective of this friendly competition is to promote research on solar-powered cars. Teams from all over the world participate in the race. In 2013 the Dutch results were impressive. In the Challenger Class, team Nuon Solar Car was first, while Solar Team Twente reached the finish third. The Dutch Solar Team Eindhoven was first in the Cruiser Class.







## 4) READY TO LOAD AND GO

### A sound and solid e-infrastructure

The Dutch infrastructure for the supply of electric energy is of high quality and superior performance. It reaches every building and every room in the country, and the infrastructure for charging EVs is starting to get well organised. Some individuals already have a garage or private parking place where EVs can easily be charged on their home networks. Others need to make use of public facilities. Dutch power plants have enough capacity to easily provide the necessary power.

### A unified charging infrastructure

Private and public parties are creating an open and competitive market model for the development of the EV charging infrastructure. The Netherlands has made national agreements on interoperability, corresponding to European standards. In fact, the country adopted the Mennekes Type 2 plug as its national charging interface standard even

before the European Union did so. Many charging systems in use in the Netherlands have been interoperable since the beginning of 2011. By the end of 2013, more than five thousand publicly accessible (excluding private charging points) charging points will have been realised in the Netherlands.

### A fast-charging network

A network of fast-charging<sup>3</sup> stations is being rolled out along Dutch highways. Many regional governments, cities, and companies now provide EV fast chargers in parking lots. Some organisations even use it as a unique selling point. The Netherlands has selected fast charging as a necessary option to complete the country's charging infrastructure. Two hundred fast recharging points are expected by the end of 2013 throughout the Netherlands.

<sup>3</sup> In general, charging above 22 kW is considered fast charging.





### eViolin

The eViolin association of charging point operators and charging service providers aspires to guarantee clear, accessible, transparent information for both end users and providers. Interoperability is a key phrase: electric vehicle drivers should be able to use a single card to charge their cars at any station throughout the Netherlands. The association is therefore working to ensure that its members' systems all speak the same charging language.

### The E-Laad Foundation

In 2009, the Dutch power grid operators established an organisation to implement public charging stations in the Netherlands: the E-Laad Foundation. E-Laad's mission is to realise a large network of openly accessible public charging stations.

E-Laad's objective is to prepare the electrical grid for the large-scale introduction of electric driving. To investigate EVs' effect on the grid and to make electric driving possible, E-Laad has installed more than twenty-five hundred public charging stations throughout the country since 2009. E-Laad is also working with the four major cities of Rotterdam, Amsterdam, The Hague, and Utrecht to install additional charging points. Thanks in part to E-Laad's efforts, the Netherlands has a public charging station network that provides the entire country with coverage. Moreover, the stations are interoperable (using a single charging card and a standardised outlet, plus real-time information for a variety of apps and navigation systems), even extending beyond the country's borders thanks to cooperative efforts with Belgium, Germany, and other countries.

E-Laad also values open innovation and the sharing of knowledge, and the foundation plans to focus even more intensely on these priorities in the upcoming years — both at home and abroad. For example, the foundation is one of the parties working with international partners to realise a variety of innovations, such as the following:

- Develop a cheaper public charging station (in terms of both one-off and recurring costs).
- Implement smart charging using smart grids, which schedule charging to make optimal use of the electrical grid and prevent the need to expand capacity. For example, the car may charge more slowly or not at all during peak load times, but rather wait until off-peak moments. By using smart methods to manage the process, the car will still be ready to use at the usual time.
- Provide choice to enable the consumer to select the desired energy retailer (and thus the origin of the renewable energy) at public charging stations.
- Continue developing OCPP (Open Charge Point Protocol) and the belonging independent *de facto* standardisation/development organisation Open Charge Alliance. OCPP is a Dutch initiative that is well on its way to becoming an international standard for communication between charging stations and central management systems.



### Amsterdam's charging network

Without charging points, EVs are useless, and without EVs, there's no need for charging points. In 2009, Amsterdam was faced with the challenge of solving this circular puzzle. The city decided to invest in charging points: every EV owner in the city could submit a request for a charging station. One thousand public charging points are expected to be operational by the start of 2014. The city only installs a charging station if it is truly necessary, which is reflected in intensive use of the station.

### The charging pyramid

The roll-out of the charging station network must be realised in the most cost-efficient way possible. To achieve this, Dutch stakeholders — national and regional governments, the automotive sector, network operators, and power companies — are supporting a 'charging pyramid' approach. This approach prioritises less expensive solutions (such as private stations, 'open' private stations, semi-public stations on company grounds, and so on) in implementing the charging infrastructure. Only in cases where these options are not possible will more expensive public charging infrastructure be installed. The options will be examined during the allocation process for a public charging point. The charging pyramid contains three charging solution levels, as seen from the perspective of the e-driver:

1. Park and charge your car on your own property.
2. Park and charge your car at a private station in the public space.
3. Use a public charging station.

### Monitoring charging data

Every charging session on the public charging network is registered the data and made available to municipal governments. Cities such as Amsterdam, Rotterdam,

The Hague, Utrecht, and Eindhoven use these data to gain insight in charging point usage, so that they can design the most efficient possible network. If demand for a particular charging station is high, the city can decide to install additional points. If demand is low, the city looks into the reasons why in order to decide how best to proceed.

### Government and business share the cost of charging points

How does one install public charging stations when they're not commercially viable? MRA-Electric organised the call for tenders, selected a company to install the stations, and advised the municipal governments involved. It was the first time that governments and the business community used shared financing to create new charging stations. The process makes installation easy and affordable for local governments while also facilitating growth in the EV market. Other areas of the country have expressed interest in this shared financing model. MRA-Electric is supporting them by actively sharing the knowledge and experience it has acquired in the Amsterdam metropolitan area.





### E-bikes

The electric bicycle was introduced ten years ago, and now one million of them are cycling around the Netherlands. The e-bike has become an integral part of the Dutch landscape, and the number of users continues to grow. An estimated 6 percent of Dutch citizens over the age of twelve have an electric bicycle — nearly twice as many as at the end of 2007. The rise of the e-bike supports the trend towards longer cycling distances: e-bike commuters travel one and a half times the distance of commuters with ordinary bikes. That's a feasible trend in the Netherlands; the country has an excellent infrastructure for cyclists. In addition to separate bike lanes throughout the country, more and more 'bicycle highways' are being created. A bicycle highway differs from other 'fast' bike paths in that it is a separate infrastructure that does not intersect with other traffic. The Netherlands has been a cycling country for as long as there have been bikes. Many prominent bicycle manufacturers are Dutch companies. In the e-bike market, too, the Netherlands is assuming a leading role, in terms of both production and innovation. For example, fully one fifth of the government's innovation vouchers for electric mobility have been awarded to innovations in electric bicycles and related components, such as improvements to bicycle powertrain efficiency.

### EV service providers

The number of companies eager to relieve drivers of all their electric-car cares keeps growing in the Netherlands. These service providers can take care of the entire process, from vehicle purchase or lease to installing charging stations, issuing subscriptions and charging cards, handling power company contracts, and doing the invoicing: a true one-stop shop for existing and potential electric vehicle drivers. For example, The New Motion and MrGreen offer a complete service package, including financing, maintenance plans, and charging facilities.





### Car2Go: Electric car sharing

Car2Go came to Amsterdam in 2011 and made e-driving accessible to a wide audience. Three hundred electric Smart cars are available for spontaneous rental, without the need to return them to a specific place or at a specific time. Amsterdam is the first city in the world to have a 100 percent electric shared-car club. As of September 2013, Car2Go has roughly twelve thousand members, who drove some 230 thousand emissions-free kilometres in 2012 — enough to circle the planet five and half times.

### Electric taxis

Amsterdam's electric subsidy scheme targets frequent business drivers, who drive the majority of urban kilometres. That makes the subsidies an efficient tool for improving air quality. Frequent business drivers include, for example, Amsterdam's taxi drivers. Calculations reveal that they generate thirty-five times more pollution than the average car.

At the end of 2011, Europe's first fully electric taxi company was founded in Amsterdam: TAXI-E. The company fulfils the growing corporate desire for sustainable transport, thereby contributing to cleaner air. The Netherlands' largest taxi company, Taxicentrale Amsterdam, has also added electric taxis to its fleet.

In Rotterdam, the Rotterdamse Taxi Centrale (RTC) added four electric taxis to its fleet in 2013, in the form of three BYDs and a Tesla Model S. The company, which is one of the Netherlands' largest taxi operators, is actively recruiting interested, committed drivers. The RTC's taxis are also part of the A15 project being run by the environmental organisations Natuur & Milieu and Milieudefensie (see section 7E). That makes the RTC, an iconic fixture in Rotterdam, an integral part of the most sustainable highway in the world.

### Electric Vehicle Centre and the EV agent

The Electric Vehicle Centre (EVC) in Rotterdam is an experience centre in which companies and consumers are able to test-drive electric vehicles from multiple brands, enabling them to dip their toes into the electric driving experience and more sustainable transport. Rotterdam also has its own EV agent, an EV specialist who helps companies look for ways to implement more electric vehicles in their fleets. The EV agent also helps fleet managers make their way through the world of subsidies.



### The Electric Vehicle Centre

The step towards implementing electric transport within a municipality or organisation often gives rise to a myriad of questions. The EV Centre, which provides information and the opportunity to try out electric driving, can help to answer them. The centre can present visitors' mobility concerns to its extensive network, ensuring a clear, transparent answer to every question. The EV Centre is the first location in the Netherlands to provide access to every aspect of electric mobility. An independent e-mobility advisor is on site to give personalised advice, and interested visitors can try out electric driving on the spot.

## 5) READY TO COLLABORATE

### Formula E-Team, the national public-private platform for e-mobility

In the Netherlands, the Formula E-Team serves as an ambassador and pioneer for electric transport. The team brings together business, academia, and government to advance electric driving in the Netherlands. The Formula E-Team discusses progress and provides substantial advice to the government and other stakeholders on various aspects of electric driving. The team inspires these stakeholders to work together to devise creative solutions to problems that arise. The cornerstones of the Formula E-Team's agenda are as follows:

- Stimulate policies for clean vehicles
- Stimulate development of a basic basic network of charging stations.
- Stimulate e-mobility in niche markets.
- Stimulate green growth.

The partners in the Formula E-Team present their shared communications on [www.nederlandelektrisch.nl/english](http://www.nederlandelektrisch.nl/english).

### Dutch Innovation Centre for Electric Road Transport

Founded in 2008, Dutch-INCERT is a network organisation of knowledge institutes working to link scientific research, technological innovation, and education with the transition to electric transport on Dutch roadways. The organisation is a platform supporting rapid knowledge transfer and mutual innovation and collaboration projects.

Dutch-INCERT brings together the Netherlands' three universities of technology in Eindhoven, Delft, and Twente and the Rotterdam, Arnhem-Nijmegen, and Fontys universities of applied sciences. These institutions provide the expertise to conduct thorough feasibility studies and ongoing insight into the latest social and technological developments. Dutch-INCERT is open to knowledge institutes and innovative companies working on technological solutions for electric mobility. The organisation's approach is precompetitive and focused on independent knowledge and technology development.

### Cooperation in the European Union

To stimulate collaboration and create opportunities, the Netherlands is a member of several international associations.

#### EVI

The Netherlands is a member of the Electric Vehicle Initiative (EVI) of the International Energy Agency, a global partnership of countries focused on electric transport.

#### HyER

Several Dutch cities and regions are members of HyER, a partnership of European cities and regions. Rotterdam has a prominent place on the HyER board and in the European Electromobility Observatory (EEO). The EEO tracks the development of e-mobility across Europe.

#### AVERE

The Formula E-Team is a member of AVERE, the European association for battery, hybrid, and fuel-cell electric vehicles.

### International Energy Agency

The Netherlands is a member of several of the International Energy Agency's Implementing Agreements, including the Hybrid & Electric Vehicle Implementing Agreement.

### Electromobility+

Electromobility+ is the contribution of thirteen European countries and regions to the European Green Cars Initiative. The initiative aims to create the long-lasting conditions necessary for the development of electric mobility in Europe by 2025. Within Electromobility+, the Netherlands has made 2.2 million euros in subsidies available for research into the following:

- Engineering models for charging systems
- Electrical grid management
- Charging systems in public and private parking areas
- Safety issues related to electric vehicles

### EU Life+ and Boosting Electromobility



The charging stations in the Amsterdam metropolitan area are getting a boost from the Boosting Electromobility project, which is part of the European subsidy

program Life+. In the project, MRA-Electric is working with the ANWB (Royal Dutch Touring Club) and the cities of Rotterdam and Utrecht to improve regular and fast charging station coverage in the Randstad area. By disseminating the acquired knowledge via international urban networks, the project ensures the growth of charging structure expertise throughout Europe.

### FREVUE

Rotterdam and Amsterdam are joining six other European cities in the FREVUE project to realise 127 fully electric freight lorries and the associated charging infrastructure along European roads. The project is designed to reveal the conditions for success in terms of logistics applications, logistics management, software, and local and national policy.

### TIDE

Innovative ideas usually start in one or two places, then slowly expand their reach. The European TIDE project, which kicked off in October 2012, hopes to hasten this process by uniting cities who are leaders in urban transport innovation. TIDE's mission is to enhance the broad transfer and acceptance of fifteen innovative urban transport and mobility measures throughout Europe. Rotterdam is the lead city for the project's electric mobility cluster. Rotterdam will develop TIDE implementation scenarios for clean city logistics and financing schemes for charging stations. The project allows the city to share its knowledge and experience with other European cities and to discuss existing challenges in a broader context.

### MOBI.Europe

The MOBI.Europe project is developing ICT solutions to link together regions that are at the forefront of electric transport. The project is a good fit for Amsterdam's planned expansion of its charging-point network and for the desire to optimise the network's use.





### Partnering with Shanghai

Rotterdam is working with sister city Shanghai in many areas. For example, Rotterdam's Electric Vehicle Centre (EVC) is in contact with its counterpart in Shanghai. The exchange of knowledge is the partnership's major focus, in order to propel innovation in electric transport forward.

### Partnering with Paris

In February 2013, the mayor of Amsterdam signed an agreement with his Parisian counterpart. The agreement targets collaboration and the exchange of knowledge to promote economic growth in their regions and to improve residents' daily lives. Electric transport joins culture, the economy, and water reuse as one of the agreement's major foci.

### The Amsterdam University of Applied Sciences

Since 2011, the Amsterdam University of Applied Sciences has offered Clean Tech, a research program focused entirely on sustainable innovation. Electric mobility and charging infrastructure are a significant part of the program, and Clean Tech is working closely with the Amsterdam Electric initiative to reinforce one another. The program receives many questions and requests to collaborate from university

students in social, geographical, and technical innovation programs throughout the land.

### Tesla

In March 2013, electric car manufacturer Tesla announced that it would be moving its European headquarters to Amsterdam. Dozens of people now work in Amsterdam for the maker of the Model S and other vehicles. Tesla will open a showroom on the city's high-end PC Hooftstraat shopping street in the fall of 2013. The company's headquarters is a major coup for the city and combines with Tesla's other decisions to reaffirm the Netherlands' role as a pioneer in clean transport and electric transport.

### BYD

Chinese car manufacturer Build Your Dreams has recently located its European headquarters in Rotterdam. The company supplies several European cities with taxis shipped from the Rotterdam port.





## 6) READY TO SUPPORT

The Netherlands has created a national action plan to stimulate electric mobility in focus areas and viable market segments, to strengthen international collaboration and partnerships, and to roll out communication, research, and monitoring. In addition to this general economic policy, the Netherlands intends to continue participating in European projects and welcomes opportunities for cooperation with other countries.

### **On the road to a clean future: The Energy Agreement**

The Netherlands has made great strides towards a clean future. In September 2013, more than forty organisations, including the government, signed the Energy Agreement for Sustainable Growth. Over the next few years, these organisations will make significant investments into energy savings and renewable energy generation. That makes the Energy Agreement good for not only the environment, but also the Dutch economy. It will generate tens of thousands of new jobs, improve industry's ability

to compete, and increase exports. In the Energy Agreement and in the Mobility and Transport Schedule created by the mobility roundtable, electric driving is positioned as a vital component of sustainable transport. The public-private electric driving project will be continued, with the Formula E-Team taking the reins and the government's involvement guaranteed for the coming years. The Netherlands is positioning itself as a leader in the field of electric transport. New pilot projects will commence, and agreements will be made to increase the electric use of plug-in hybrid vehicles. Finally, public and private parties will make agreements to stimulate the creation of a public charging infrastructure for electric vehicles.

The Energy Agreement was signed by the government, employers' associations and unions, nature conservation and environmental organisations, housing cooperatives, consumer organisations, and umbrella organisations representing industry, the transport sector, and the energy sector."



## Financial incentives

The Dutch national government and many local and regional administrations offer a variety of financial incentives to stimulate the purchase and use of electric vehicles in the Netherlands.

### Registration tax exemption

In the Netherlands, car owners must pay a tax when they register their cars. The amount of this tax depends on the vehicle's CO<sub>2</sub> emissions, catalogue value, and emission of other pollutants such as NO<sub>x</sub>. Electric cars are exempt from registration tax until 2018. This exemption provides a substantial fiscal advantage compared to cars with standard emissions characteristics; for mid-sized cars, it runs between five thousand and eight thousand euros.

### Road tax exemption

Electric cars are exempt from road tax until at least 2014. Car owners must pay this tax for the use of a motor vehicle, and the amount depends on the type of fuel and weight of the car. For a mid-sized petrol car, the tax is four hundred to seven hundred euros per year.

## Lower surcharge on income taxes for private

### use of company cars

In the Netherlands, people must pay income tax on their private use of a company car. The tax is calculated by adding 14 to 25 percent of the car's catalogue value to the person's taxable income. For electric cars a surcharge applies from 4 percent (FEV's) to 7 percent (PHEV's) until 2015. This provides a tax advantage of approximately two thousand euros per year compared to a regular company car.

### Tax-deductible investments

The Netherlands has a system to facilitate business investments into clean technology, which makes these investments partially deductible from corporate income taxes. Electric vehicles have been added to the list of deductible investments. Under the MIA tax relief scheme, companies investing in electric vehicles and recharging stations can deduct up to 19 percent of the investment amount.

### Euro VI subsidy programme

NSL, the national partnership programme for air quality, contains a set of measures designed to meet European air quality limits throughout the Netherlands before the

deadline in 2015. The programme's objective is to reduce NO<sub>x</sub> and particulate emissions in and near urban areas. The early purchase of Euro VI-compatible lorries and buses is part of the solution. By providing a subsidy amount up to 5.000 euros per vehicle, NSL expects to motivate buyers to purchase a total of eight thousand vehicles.

## Local incentives

All over the Netherlands there are local initiatives to support electric driving. To begin with in our focus areas, frontrunner cities and regions with a wide variety of showcases. From EV car clubs to dedicated parking places, from a E-shopping bus to e-bike lanes.

### Environmental zones for logistics in cities

An increasing number of municipalities are creating 'green' zones: dedicated urban areas, particularly in the city centre, that are not accessible to vehicles that produce emissions or noise above permitted levels. Electric vehicles are ideal for transport in these areas, and the growing number of green zones is a significant stimulus for urban electric driving. Some cities also give priority to owners of electric vehicles when allocating parking permits.

## Cities as launching customers

Several Dutch municipalities are spearheading the transition to electric driving, and their number keeps growing.

By 2040, the City of Amsterdam expects almost all its vehicular traffic to be electric, powered by green electricity from windmills, solar panels, and biomass powerplants. Electric boats will be the primary mode of canal transport. All cargo, whether transported by road or by water, will use electric power.

Between 2010 and 2012, the City of Rotterdam deployed forty EVs (e-cars and e-vans) in a groundbreaking pilot project. Rotterdam will introduce an additional 350 EVs into its municipal fleets by 2014. Public transportation company RET has announced that all public transport in Rotterdam will be 100 percent electric by 2025.



## 7) READY TO DISCOVER

### A) The Amsterdam metropolitan area

Amsterdam, the capital of the Netherlands, is one of Europe's most international cities. Its strength is based on its strategic location in Europe and its international business climate. The city's tolerant and open society attracts people from every corner of the world.

The roots of the city's cultural and commercial prowess lie in its trading history. For more than four centuries, Amsterdam has relied on strong social networks with other cultures and a comprehensive transportation infrastructure to ensure success. Home to nearly eight hundred thousand of the metropolitan area's two million inhabitants, the city still enjoys easy access to foreign and domestic markets and a highly qualified work force that speaks multiple languages with ease.

It comes as no surprise, then, that Amsterdam is one of Europe's major international hubs. Amsterdam Airport

Schiphol has been voted the best business airport in Europe for several years in a row. The Port of Amsterdam is the fourth largest seaport in Northwestern Europe, and it is well on its way to becoming the most sustainable port in Europe. The Port of Amsterdam car terminal specialises in handling electric vehicles and European logistics.

The recent shift of economic weight in Europe has added an extra dimension. In their search for an ideal operating base from which to coordinate and consolidate their activities on the European continent, companies are increasingly choosing the Amsterdam metropolitan area. Meanwhile, the presence of over two thousand foreign enterprises continues to attract business and service providers and their global networks. Renowned multinationals such as Philips, ING, Cisco Systems, Adidas-Reebok, IBM, Nissan, Hitachi Heavy Industries, Bombardier, Microsoft, and Cargill have set up pan-European headquarters, logistics centres, and manufacturing facilities in the Amsterdam metropolitan area.





The Amsterdam metropolitan area is a leader in electric mobility. Every aspect of e-mobility is present: infrastructure and IT, the lightweight composites industry, engineering and consulting firms, smart grid and vehicle-to-grid technology, leasing firms and service providers, and automotive parts and manufacturing. Furthermore, the Amsterdam area excels in product and process innovation, design, and logistics, and it provides significant consumer demand and a receptive test market — all crucial aspects for the successful introduction of electric mobility.

As a result, several leading global e-mobility companies have chosen the Amsterdam metropolitan area as a launching platform for their European ambitions, such as ZERO Motorcycles and Nissan Motor Parts Center. In 2013, Tesla Motors moved its European headquarters from England to Amsterdam and established its European distribution and assembly centre in the Brabant area (see section B below).

### MRA-E helpdesk

MRA-Electric is a partner in the North Sea Region Electric Mobility Network and is responsible for the development of an electric transport knowledge and information centre. The objective is to share knowledge of electric transport, thereby assisting policy makers and implementers. MRA-E has set up a helpdesk where people can ask questions about installing charging points, suitable vehicles, partners, or funding. The centre has drawn many foreign visitors recently at an international congress held in Haarlem. MRA-E is delighted to share its knowledge with colleagues from cities such as Copenhagen, Stockholm, Barcelona, Shanghai, Shenzhen, and Los Angeles. MRA-E welcomes you!





### Amsterdam: Pioneer in electric mobility

In 2009, the City of Amsterdam launched the Amsterdam Electric plan. With air quality objectives as its major driver, the plan intends to bring six thousand electric cars to the city by 2015.

Amsterdam Electric focuses on reducing emissions from commercial kilometres to help keep Amsterdam an attractive, pleasant city to live in. With its unique demand-driven public charging network, the city has cleared the way for electric cars. Amsterdam is superbly suited for the growth of electric transport, as evidenced by the rapidly growing percentage of electric vehicles, as well as the many companies who view Amsterdam as the perfect testing grounds for electric mobility.

### Amsterdam gives subsidies on corporate electric vehicles

The city has made 8.6 million euros available through 2015 for 'high urban kilometre' companies who replace standard vehicles with electric ones. The subsidy gives businesses the opportunity to practise corporate social responsibility and to realise significant savings on fuel expenses.

Amsterdam's programme focuses on the following:

- Electric delivery vans
- Electric taxis
- Electric lorries
- Electric passenger cars logging many kilometres in the city

Because the subsidy targets frequent business drivers in the city, it is an efficient way to improve air quality, particularly combined with fiscal and subsidy incentives provided by the national government.

### Stimulating cleaner canal trips

The city has implemented a subsidy to stimulate the purchase of cleaner motors in the canal cruise industry, and thus improve air quality at bottleneck locations and world heritage sites. This subsidy provides particular incentive to replace diesel motors with electric and hybrid ones.





### Subsidy for charging points on private and semi-private property

Amsterdam is committed to incorporating charging stations into new and older properties and has made subsidy funds available. This is a relatively inexpensive way to expand the city's charging station network.

Companies can request a maximum subsidy of one thousand euros to install a charging point on property that is publicly accessible, such as company grounds or a parking garage. A maximum of five hundred euros is available for private charging stations.

### E-parking permits

E-drivers receive priority when they apply for a parking permit. In some parts of the city, applicants are on a multiple-year waiting list. By placing electric vehicles at the front of the queue, Amsterdam hopes to rapidly increase the percentage of electric cars in the city.

### MRA-Electric

The Amsterdam Metropolitan Area Electric project (MRA-Electric) launched in 2011. The project's objective is to stimulate the continued adoption of electric transport in the region. MRA-E currently engages with a variety of domestic and international partners. The project focuses on sharing knowledge, realising charging infrastructure, and increasing the number of electric cars. By learning from one another, investing wisely, and collaborating with market players, MRA-E is facilitating the rapid adoption of electric driving. Would you like to start using electric transport? MRA-Electric, the living lab for electric transport, is looking for enterprising partners to make rapid progress together.





## B) The Brabantstad metropolitan area and surrounding province

### About Brabant

The Dutch province of Brabant is located right in the heart of Europe. It is centrally positioned in the triangle formed by the port cities of Rotterdam and Antwerp and the German Ruhr area. The citizens of Brabant are renowned for their openness, modesty, amiability, hospitality, and bon vivant lifestyle. Combined with world-class innovation and a vibrant business community, these qualities make Brabant the ideal province in which to live, work, study, or start a business.

As is typical of the Netherlands, the Brabant region partners intensely with other regions, including Amsterdam and the rest of the Randstad area, to create a country with a climate favourable to the development of electric driving.

Brabant is one of the Netherlands' most productive regions, as witnessed by its share of the gross national product, employment levels, number of companies, and number of patents related to inventions.

With strong technological leadership and a logistically strategic location, Brabant is a gateway to Europe. The region covers five thousand square kilometres (two thousand square miles) and accounts for 14.8 percent (2.4 million) of the total Dutch population.

Brabant strongly believes in the economic opportunities offered by EVs, and the region has built up a strong position in the electric vehicle field. Through its many companies and research institutions, the region fully supports the electric mobility industry.





### Brabant: A triple helix of innovation

Local testbeds are the key to Brabant's successful approach. They create an early market for innovations in which the 'triple helix' of industry, knowledge institutes, and government works together to develop expertise and knowledge in an open innovation environment. This approach enables regional actors and other stakeholders to thoroughly test the market introduction and valorisation of new products and services, thereby helping them to develop a strong export position. Because the province is working with international stakeholders on innovation, it is an appealing location for external companies, as evidenced by groundbreaking innovator Tesla's move to the area. The Brabantstad metropolitan area supports the development and implementation of electric mobility solutions not only by creating demand, but also by incorporating the support of a technology-driven industry. With its strong background in electromechanics, semiconductors, and industrial automation, Brabantstad is the ideal site for suppliers in the electric mobility industry to develop new technologies.

The regional capital, 's-Hertogenbosch, is creating testbed markets for varying forms of electric vehicle technology, such as inductive charging in inner-city zones. The primary focus is on relatively small vehicles. In return, the city, the local bus company, and other businesses gain knowledge on issues such as system failures, cost, and maintenance. The ultimate goal is to export these ideas and products worldwide, creating new jobs locally and producing profits for both government and companies. Brabant invites companies, knowledge institutes, educational institutions, and governments around the world to collaborate on smart grids and mobility in an open environment.

### The Brabant testbed

- The High Tech Automotive Campus in Brabant provides a home for companies, educational institutions, public and private research centres, laboratories, and test facilities in the field of automotive technology and smart mobility. It offers a challenging and inspiring environment where knowledge and business come together in a spirit of cooperation, knowledge sharing, and open innovation.
- The regional capital, 's-Hertogenbosch, is creating testbed markets for varying forms of electric vehicle technology, such as inductive charging in inner-city zones. In return, the city, local public transport, and other companies gain knowledge on issues such as system failures, cost, and maintenance.
- Brabant invites companies, knowledge institutes, educational institutions, and governments around the world to collaborate on smart grids and mobility in an open environment.

### Public charging on demand

A new project in Brabant enables e-drivers without their own driveways and with no charging stations nearby to request a charging point be installed in their streets. The province's goal is to realise three thousand new charging stations in the 2013–2014 period.

### Emissions-free public transport

With approximately five hundred public buses driving through Brabant each day, the province is eager to transition to an emissions-free public transit system by the year 2020. Brabant has started a large-scale pilot to operate fifteen electric buses in public transport. Through this and other pilot projects, the province can gain experience that will facilitate the full-scale transition from fossil fuels to renewable sources. The projects also provide an opportunity to identify new business cases and analyse the need to expand the charging infrastructure.

### The first shared fleet

Local companies and institutions in Brabant have created a shared fleet of different types of electric vehicles, to increase sustainability in the region and to test the first smart charging system. This is the first Dutch project to use a shared EV fleet.



### Tesla

In 2013, American electric car manufacturer Tesla opened the doors to its European distribution and assembly centre in the province of Brabant. From its base there, the company plans to permeate the European market. Tesla will be assembling cars, providing components, and carrying out maintenance at its European distribution centre in Tilburg. Tesla is a perfect match for Brabant, marrying two of the province's core strengths — high tech and logistics — in its new centre.

According to George Blankenship, vice president of worldwide retail at Tesla Motors: "Tesla and the Netherlands share a similar vision surrounding energy sustainability and a clean future for generations to come. We're thrilled to base our final assembly, distribution, service, sales, and operational headquarters in the Netherlands and look forward to many years of great relationships with our business and governmental partners, and most importantly, our Dutch customers".





### A variety of innovation programmes

The City of Rotterdam is committed to hastening the growth of the still young and vulnerable electric transport market, and is currently involved in twenty-four international, national, and local innovation programmes related to EV. Examples include the use of electric TukTuks, the EBUSZ (electric public transportation bus) project, and the QWIC Electric Scooter Factory (described in chapter 2). What's more, Chinese EV manufacturer BYD (Build Your Dreams) recently opened its European headquarters in Rotterdam.

## C) The Rotterdam–The Hague metropolitan area

The Rotterdam–The Hague metropolitan area is a natural convergence of the urban agglomerations around these two cities. Each city has its own unique profile and a distinctive identity; at the same time, they complement each other well, and their strengths act in synergy. In many ways, the region functions as a single urban system: every day, half a million commuters travel from home in one city to work or school in the other, and the twenty-four local authorities have been working together for years in a number of domains. It's safe to say that the Rotterdam–The Hague metropolitan area is alive and kicking.

The region is home to three economic giants with a powerful international focus:

- Mainport Rotterdam, Europe's largest seaport
- The Hague Security Delta, a European network stimulating world-class security solutions
- Greenport Westland-Oostland, a global leader in horticulture under glass

The region's three world-class universities underscore its international flavour:

- Erasmus University Rotterdam
- Delft University of Technology
- University of Leiden – The Hague campus

By the end of 2014, the City of Rotterdam will deploy one thousand charging points within the city limits. In addition, Rotterdam is signing an agreement with the surrounding cities to enable the greater metropolitan area to profit from the city's contracts with its charging infrastructure providers. Public transportation company RET has also announced that all public transport in Rotterdam will be 100 percent electric by 2025.

### A clean fleet strategy

Rotterdam intends to make its employee fleet 100 percent clean, to set an example for its inhabitants and other cities. The Rotterdam Electric Driving Test project described in chapter 3 showed that, given current usage and vehicle range, 60 percent of the city's fleet can be replaced by electric vehicles. The city plans to replace at least 25 percent of its fleet (about four hundred vehicles) with fully electric and hybrid vehicles by the end of 2014.





## D) The province of Fryslân

Fryslân is a unique province in the Netherlands. It is a region characterised by its nature, lakes, and landscape, its soft-spoken inhabitants, and its vibrant economic development. But Fryslân also has its own language, culture, and sports.

### Sustainability

Sustainability is one of Fryslân's major policy drivers, and in 2011, the province's efforts on e-mobility were rewarded by the signing of a covenant with the Dutch government. In the covenant, Fryslân and the government join forces to stimulate electric mobility in the province.

### Inspiration:

#### The European Capital of Culture in 2018

In 2018 the city of Leeuwarden, the capital of Fryslân, will be the European Capital of Culture. The province is honoured by the distinction, and eager to contribute to the development of a new European ethic: one that is ready for the future, and able to address such profound European issues as human diversity and environmental management.

All across Europe, there are inspiring examples of communities that are working together to enrich the collective quality of life. The Frisian people also have a long history of shared community. Fryslân looks forward to exchanging ideas and experiences with Europe and working to create mutual solutions to preserve the natural environment, enhance the relationship between city and countryside, and balance the needs of community and diversity.





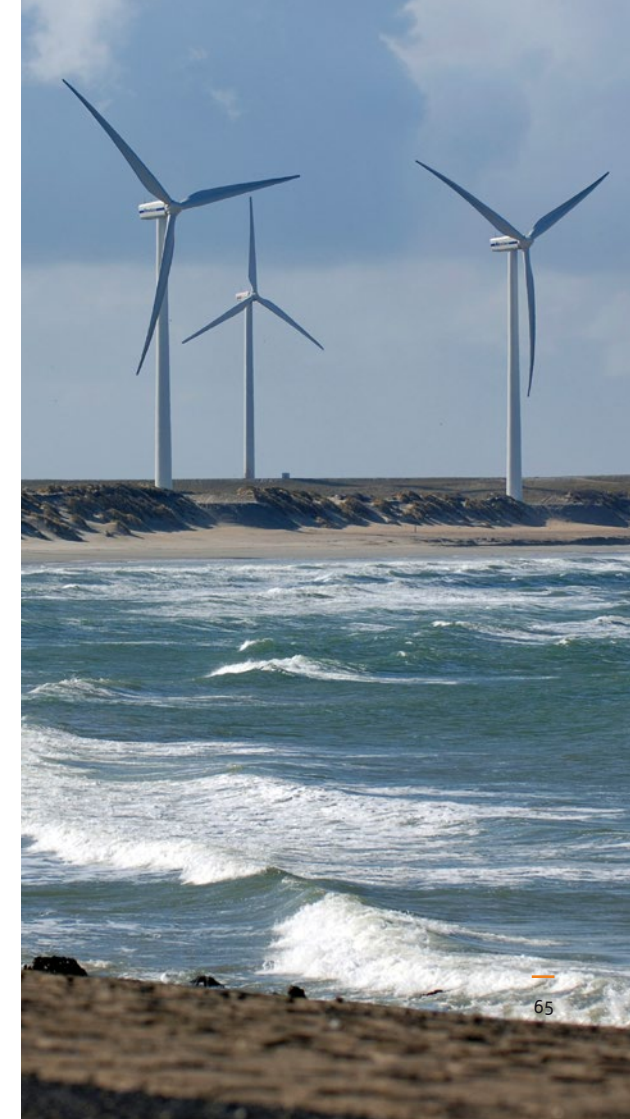
### Electric boats

Fryslân is a province full of lakes and waterways, which makes it ideal for electric boats. There are already several hundred electric boats sailing the waters of Fryslân, and their number is rapidly growing. The province of Fryslân is also the proud host of the DONG Energy Solar Challenge, an annual race in which solar-powered boats compete against one another.

Several Frisian shipbuilders are specialised in electric boats, and the industry is working closely with knowledge institutions to conduct joint research. A new centre of excellence will open soon, creating a unique environment that promotes innovation in sustainable boating and sailing.

### E-buses on the Frisian Islands

Schiermonnikoog is a beautiful little island in the middle of the Wadden Sea. The island chose to transform its public transport system to fully electric with the purchase of six e-buses from BYD Europe. The results have been positive, and the island is proud of its contribution to the ongoing transition to sustainable transport.



## E) Project A15: The world's most sustainable highway

Leading Dutch environmental NGOs Milieudefensie and Natuur & Milieu believe electric mobility is part of the solution for pollution caused by cars. In Project A15, the two groups are working together to create a transition to sustainable mobility. From 2012 to 2015, highway A15 – the main corridor linking Rotterdam, the second-largest city in the Netherlands and one of the largest ports in the world, to the eastern part of the country – will be transformed into the most sustainable highway in the world. Solar panels and wind turbines around the A15 will generate the power for shared electric cars.

By 2015, Project A15 wants forty thousand people to use and share electric cars in the A15 region. That's why Project A15 is giving as many people as possible the chance to experience how easy, clean, and enjoyable it is to drive electric. Not everyone needs to own an electric car; on the contrary, electric cars are perfect for sharing with others. Working with partners such as Athlon Car Lease, the City of Rotterdam, Snapp Car, and The New Motion, Project A15 began several pilot projects in 2013 to enable large numbers of people to 'go electric'.



Project A15 creates several options for enthusiastic people who want to drive electric and are willing to share or rent out their cars. Driving schools will introduce the drivers of tomorrow (who are learning today) to electric driving. Self-employed entrepreneurs can benefit from substantial subsidies for buying an electric car.

Companies have several options, such as electric car lease plans. Several businesses and municipalities will make use of shared cars for their employees. Companies in the same commercial zone may pool their interests and resources to arrange the joint use of one or more electric vehicles and charging points.

Participation is the key to the project's success, and Project A15 ultimately hopes to involve all the people and companies in the A15 region.

[www.projecta15.nl](http://www.projecta15.nl)





## 8) READY FOR THE NETHERLANDS?

### We know e-mobility.

A country the Dutch created on the delta of three large rivers, flowing into the North Sea . . . where 70 percent of the GDP is earned below sea level . . . where there used to be a lake almost two million acres wide where Amsterdam Schiphol Airport is today . . . where innovative and daring solutions for water control protect two thirds of the country from being permanently flooded, earning the Dutch a worldwide reputation . . . We know water.

A country that was in need of more land for agriculture . . . where land was reclaimed from the sea and kept dry in the famous 'polders' . . . where it was supposedly too cold to grow certain vegetables and flowers . . . where greenhouses were invented to solve that problem . . . where Dutch farmers now produce two and a half times more food per acre than EU farmers produce on average . . . We know food and flowers.

A country that is the gateway to Europe . . . that connects nearly half a billion consumers in the European hinterland to the world's producers . . . that is home to the world-class Port of Rotterdam, the internationally acclaimed Amsterdam Schiphol Airport, an extensive network of waterways, Europe's strongest road transport sector, and an extensive network of railways . . . We know logistics.

A country with an open and cooperative attitude . . . whose residents have always felt the need to explore what lies beyond its borders . . . where the world's first multinational corporation originated in the seventeenth century . . . where, today, 87 percent of people over fifteen speak English . . . We know international business.

A country that is ready to market e-mobility . . . with extensive experience in testing and fine-tuning electric driving . . . with all the know-how, the networks, and the resources to market your innovation . . . We know e-mobility.





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