E-mobility in The Netherlands

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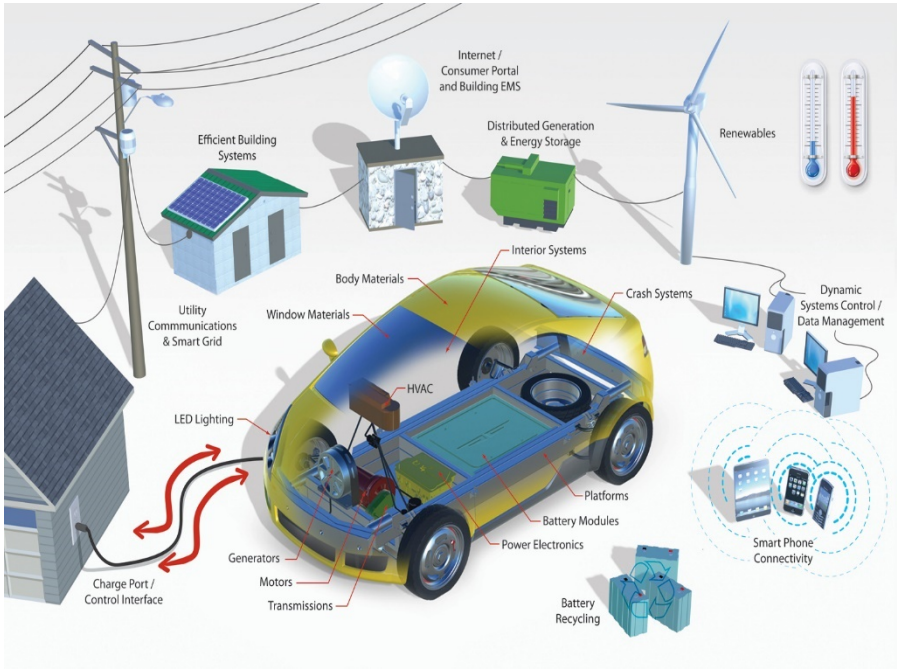
IEA INTERNATIONAL ENERGY AGENCY
HYBRID & ELECTRIC VEHICLE TECHNOLOGY COLLABORATION PROGRAMME

Dutch vision

Why do the Dutch invest in electric mobility?

- Climate/CO_2 emission reduction
- Air quality
- Economic position/green growth
- Energy transition
- Energy security



Coalition agreement Rutte III

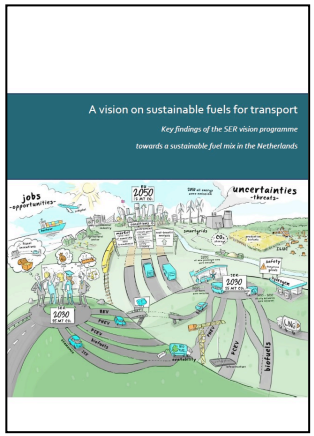
- All new passenger cars zero emission at the latest in 2030
- Tax incentives for zero emission cars will be aligned with this ambition
- Sufficient charging infrastructure will be taken care of
- Installation and exploitation of charging infrastructure primarily stays the responsibility of market parties

Sustainable transport goals

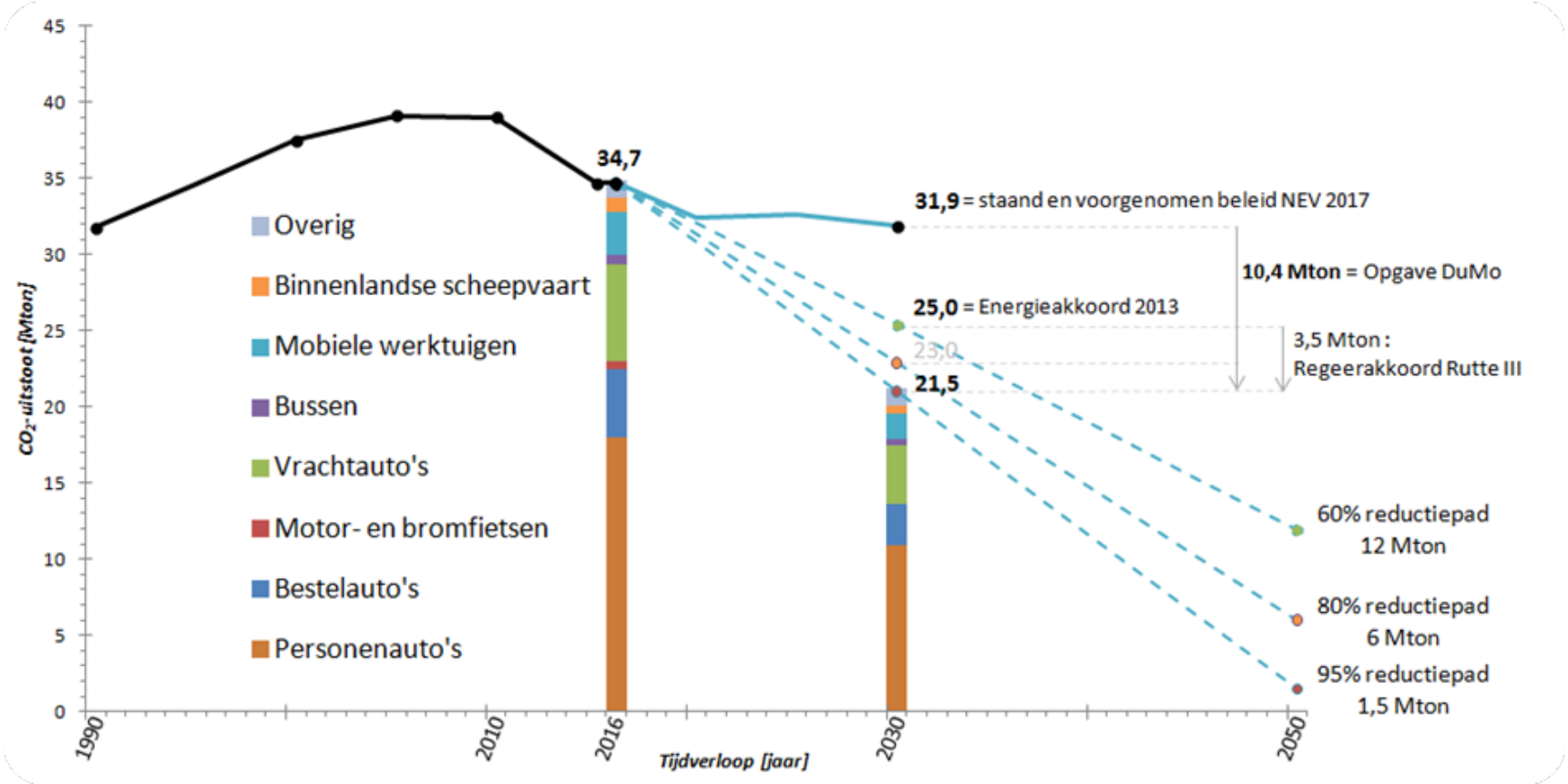
- New registered cars zero emission in 2030
- All cars capable for zero-emission in 2050
- In 2050: 60% less CO_2 emission (1990) - 95% less after Paris

- ➢ National Energy Agreement for Sustainable Growth (2013)
- ➢ Sustainable Fuel Vision (2014)
- ➢ Energy Agenda (2015)

- ➢ Paris Climate Agreement:
  - ➢ INDC in preparation



Transition path mobility sector in focus



2030 perspectives

- All new passenger cars zero emission
- All public transportation zero emission
- City distribution zero emission in G30 (30 largest cities in the Netherlands)
- Doubling of mandatory blending biofuels (compared to 2020)

Public Private Cooperation: Green Deal Electric Driving 2016-2020

A joint contribution in realizing economic growth and energy transition in the Netherlands through e-mobility

Formula E-Team
PPS platform

E-mobility ambitions in Green Deal

- 2020: 10% new car registrations have e-drivetrain
- 2025: 50% new car registrations have e-drivetrain
  - of which 30% is BEV
- Nationwide network of charging points
- Netherlands is a frontrunner in e-mobility
- 2020: >10.000 FTE in EV sector
- EVs attractive for consumer market
- More electric kms for PHEVs

Green Deal, actions of market parties

- NGO's : information to consumers about EV
- Lease companies: increase actions for electrifying company fleets
- Distribution system operators (DSOs): internationalise standards such as OCPI
- Automotive sector: development E-Trucks en testing charging infrastructure for heavy duty
- Various living labs

Green Deal, government commitment

- Sustain government fleets
- Support R&D Innovation programme
- Take away obstructive laws and regulations
- Vision charging infrastructure
- Others such as: AFID implementation, connection to building policies (eg building owners' association), support open ICT protocols charging infrastructure

Green Deal on public charging infrastructure

- Government financial contribution for public charging poles
- Provided that municipality and market party contribute equally
- In total €7,2 million
- Runs until mid 2018

- And installation of the Netherlands Knowledge Platform on Public Charging Infrastructure

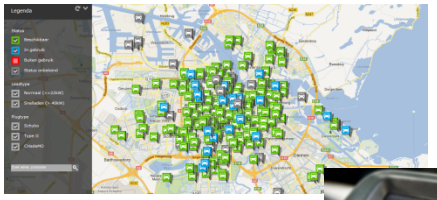
The Netherlands Knowledge Platform on Public Charging Infrastructure

- Government, knowledge institutions and companies come together to achieve affordable public charging
- Facilitates innovative projects and stimulates development
- Benchmark study shows that cost of public charging infrastructure is in 2017 continuing to decline - by approximately 35% since 2013
- http://en.nklnederland.nl/

Living Lab Smart Charging

- The Netherlands as one huge living lab for the smart charging of electric vehicles
- Using them a.o. to store peak power production of solar and wind energy
- https://www.livinglabsmartcharging.nl/en/
- About the Dutch LLSC:

E-mobility sector



ICT

Vehicles and boats

Components

Smart mobility

Charging infrastructure & roaming

Customized Vehicles Innovation and Living labs (Heavy Duty)

Serial Hybrid Garbage truck

Handling

Light Electric Vehicles as a solution in e-distribution

- E bike:
  - 16% of all Dutch inhabitants has an e-bike
  - Of these 16% has a high speed e-bike
  - 29% of all new sold bikes is an e-bike

- Living Labs e-distribution

- Scooters:
  - 2018 only Euro4 norm

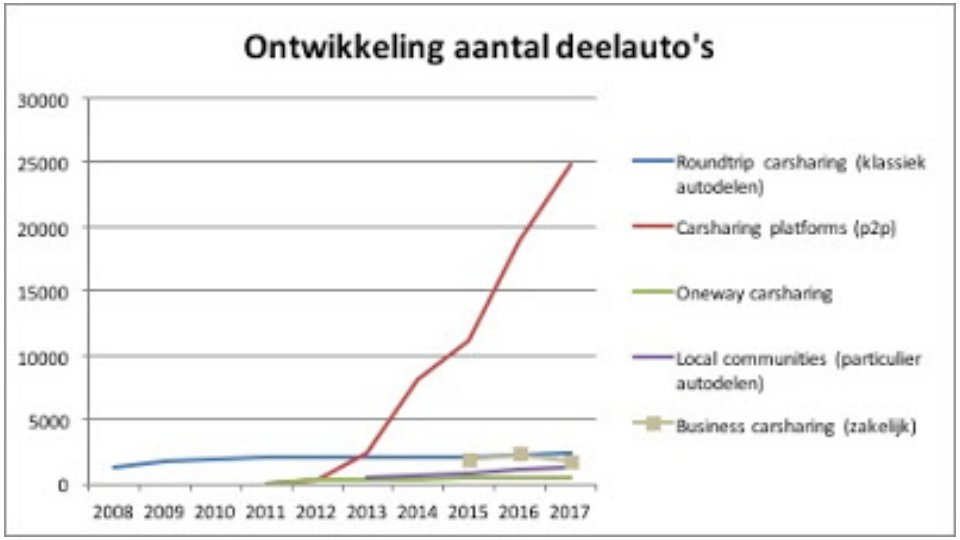
Zero emission public transport

Provinces, municipalities and public transport companies have agreed:

- 2025: 100% new buses in public transport zero emission
- 2030: 100% buses in public transport (5,000) zero emission

Mobility as a service

- Carsharing schemes getting more popular
- More than 30,000 shared cars
  - Of which 4% is e-cars
  - Compared to 1% in Dutch total fleet
- Green Deal on Carsharing
- Many start-ups and initiatives



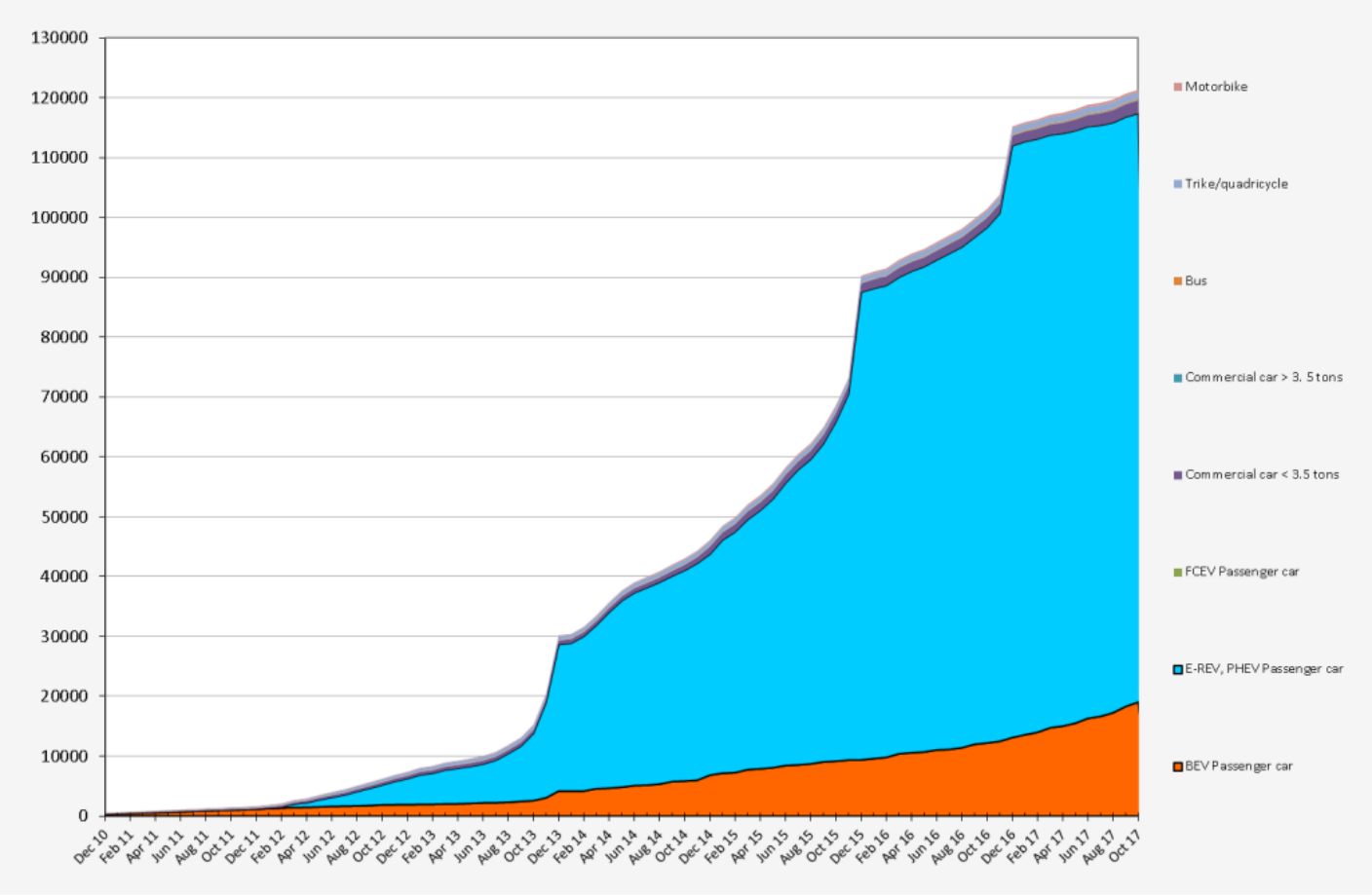
Research in the field of E-mobility (1)

- Dutch Incert: Dutch Innovation Centre for Electric Road Transport: Technical Universities and Universities of Applied Sciences work together in the field of innovate e-mobility research
- Student teams developing innovative electric and hydrogen vehicles, motors and boats and racing globally

Research in the field of E-mobility (2)

- R& D innovation programme in development
- Multi-annual, several millions
- Initiated by companies and universities but embedded in Dutch innovation policy (top sectors)
- Still in development, themes are:
  - Heavy Duty Commercial Vehicles
  - Personal / Light Electric Vehicles
  - Infrastructure & energy markets

Electric vehicles on the road (1)



Source: Dutch Road Admission Authority, edited by RVO.nl

Electric vehicles on the road (2)

Type of vehicle / Number as of	31-12-2015	31-12-2016	31-08-2017	30-09-2017	31-10-2017
Passenger car (BEV)	9,368	13,105	17,254	18,299	19,041
Passenger car (E-REV, PHEV) #	78,163	98,903	98,617	98,518	98,376
Passenger car (FCEV)		30	38	37	37
Commercial car ≤ 3.5 tons	1,460	1,628	2,032	2,078	2,114
Commercial car > 3. 5 tons	50	66	74	77	79
Bus *	94	168	194	196	198
Trike/quadricycle	872	1,007	1,076	1,076	1,077
Motorbike	268	316	415	419	426
Subtotal	**90,275**	**115,223**	**119,700**	**120,700**	**121,348**
Light moped 45 km/h	3,610	3,775	4,033	4,105	4,152
Light moped 25 km/h	28,459	32,496	35,019	35,370	35,600
Microcar 45 km/h	219	258	286	288	293
Total	**122,563**	**151,752**	**159,038**	**160,463**	**161,393**

Source: Dutch Road Admission Authority, edited by RVO.nl

Electric vehicles on the road (3)

Top 5 registered models of plug-in hybrid electric vehicles on Dutch roads

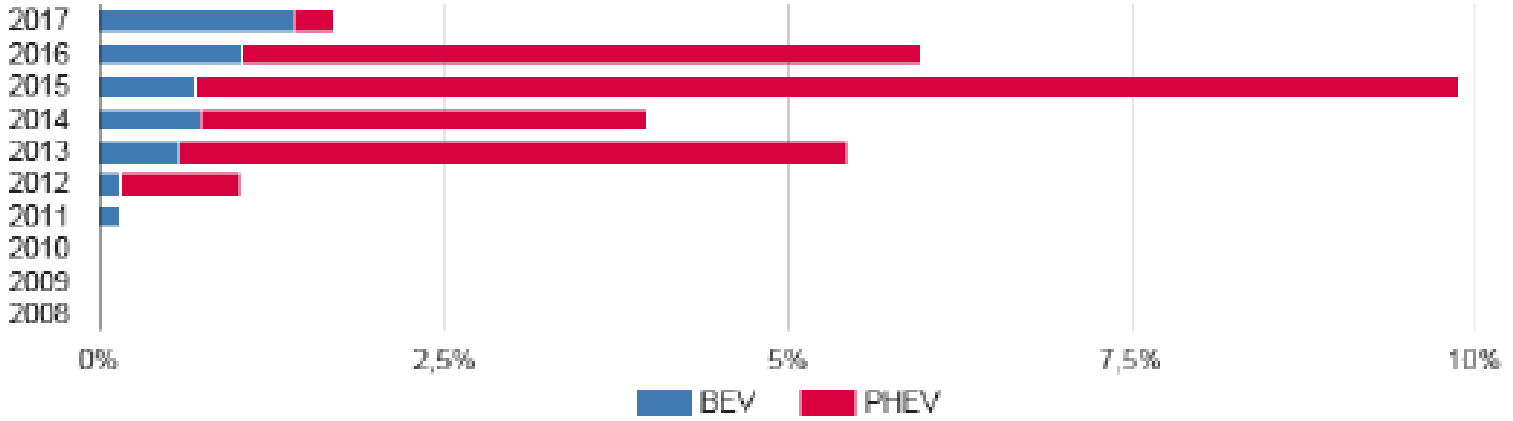
Model	Type of vehicle	Number	Change from last month
Mitsubishi Outlander	Passenger car (PHEV)	25,246	-100
Volvo V60 Plug-in hybrid	Passenger car (PHEV)	15,767	-19
Volkswagen Golf	Passenger car (PHEV)	10,867	13
Volkswagen Passat	Passenger car (PHEV)	7,894	4
Mercedes Benz C350 E	Passenger car (PHEV)	6,208	-4

Top 10 registered models of battery electric vehicles on Dutch roads

Model	Type of vehicle	Number	Change from last month
Tesla Model S	Passenger car (BEV)	7,417	105
Nissan Leaf	Passenger car (BEV)	2,097	-16
Renault ZOE	Passenger car (BEV)	2,083	67
BMW I3	Passenger car (BEV)	1,663	98
Tesla Model X	Passenger car (BEV)	1,350	60
Hyundai Ioniq	Passenger car (BEV)	865	127
Volkswagen Golf	Passenger car (BEV)	834	186
Nissan E-NV200	Commercial car ≤ 3.5 tons	790	16
Renault Kangoo Z.E.	Commercial car ≤ 3.5 tons	730	6
Smart ForTwo / Electric Drive	Passenger car (BEV)	467	1

Source: Dutch Road Admission Authority, edited by RVO.nl

Market share electric vehicles (% new registrations)



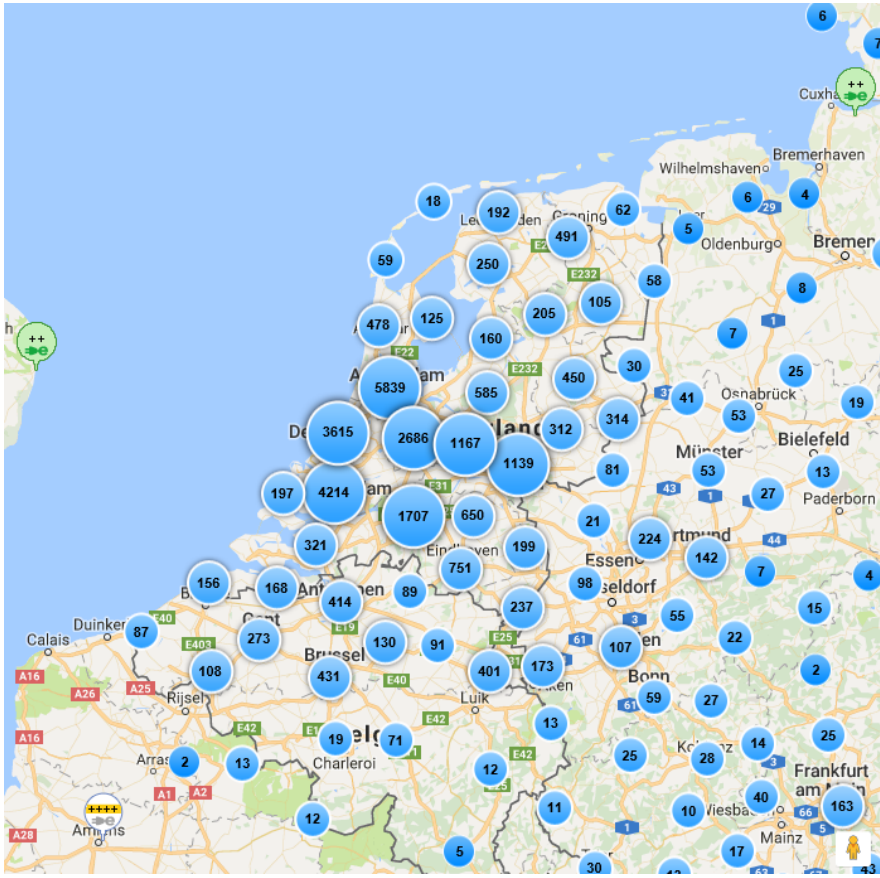
Source: eafo.eu

Charging infrastructure

- Highest density of charging points worldwide

- More than 31,000 (semi) public charging points
- Estimated 75,000 private charging points
- Fast charging along highways and in urban regions: 174 locations

- All charging interoperable



Fiscal measures 2017 (1)

- Vehicle purchase tax
  - Exemption for ZEVs
  - Discount for PHEVs compared to conventional cars:

Vehicle type	*Purchase tax tariff*	
ZEV	Exemption	
Conventional car		
Starting tariff	€ 353	
Tariff levels	CO_2 boundaries	per gram CO_2
Level 1	1-76	€ 2
Level 2	77-102	€ 66
Level 3	103-150	€ 145
Level 4	151-168	€ 238
Level 5	>168	€ 475
Dieselmotor:	starting at	per gram CO_2
Diesel surcharge	65	€ 86,69
PHEV		
Starting tariff	€ 0	
Tariff levels	CO_2 boundaries	per gram CO_2
Level 1	1-30	€ 20
Level 2	31-50	€ 90
Level 3	>50	€ 300

CO_2 boundaries in gr/km

Fiscal measures 2017 (2)

- Vehicle circulation tax
  - Exemption for ZEVs
  - Half tariff for PHEVs until 50 gr CO2/km (up to 2020)
  - Normal tariff is € 400 to € 1.200 (depending on fuel, weight and address)
- Reduction of taxation for private use of company car
  - 4% ZEVs
  - 22% all other cars, including PHEVs
- Environmental investment rebate
- Various local and regional incentives

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Smart Charging Challenge 16 & 17 March 2018

Thank you for your attention! Questions?

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