Sjoerd Bakker

e-mobility NSR

E-Mobility NSR Conference
“Policy, Practice and Profitability”

The Interreg IVB North Sea Region Programme
Investing in the future by working together for a sustainable and competitive region

European Union
The European Regional Development Fund

Provincie Noord-Holland

Metropoolregio Amsterdam elektrisch

e-mobility NSR

EV recharging infrastructure in the North Sea Region

- **Sjoerd Bakker – TU Delft**
- E-Mobility Conference “Policy, Practice and Profitability"
- 10 October 2013, Philharmonie - Haarlem, The Netherlands

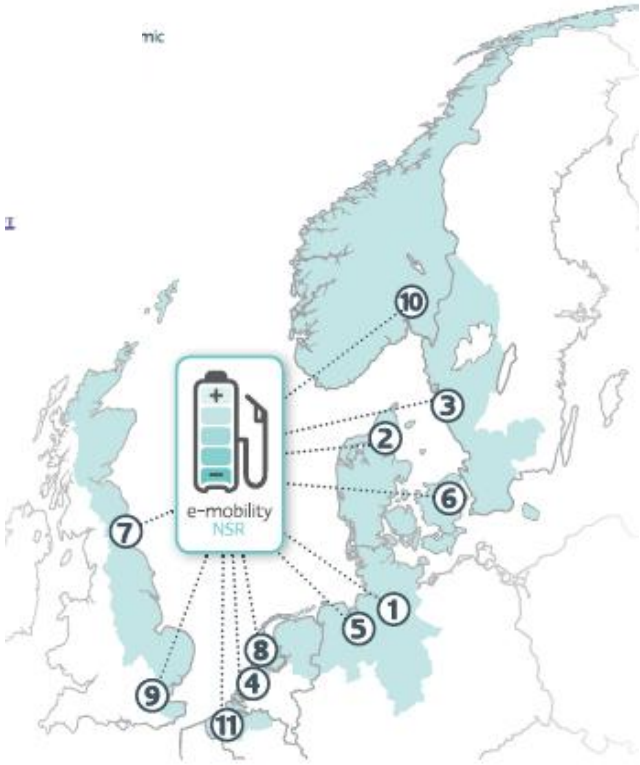
The Interreg IVB North Sea Region Programme
Investing in the future by working together for a sustainable and competitive region
European Union
The European Regional Development Fund

Content

e-mobility NSR

- 7 Countries -> 7 Stories
  Who, what, why?

- Cross-country comparison
  - Nationwide vs regional networks
  - Task division between actors
  - Regular, semi-fast, and fast charging
  - The role of EVs in future energy systems



United Kingdom

e-mobility NSR

Plugged-in-Places: PPPs in 8 regions
Focus on learning and diversity
Both on and off street chargers

Outside PiPs:
Polar Network (equipment manufacturer)
Ecotricity (e-supplier icw Welcome Break)

Belgium

e-mobility NSR

5 Living Labs in Flanders
- EVA: Cars, charging and grid impact
- Olympos: charging at railway stations

Beyond Living Labs:
TOTAL operates 12 fast chargers at gas stations
Semi-public points at shops etc. (TNM, BlueCorner)

The Netherlands

e-mobility NSR

E-Laad foundation (grid operators)
Living Labs
Cities/regions

Green Deal in the making

Fast chargers along highways

Germany

e-mobility NSR

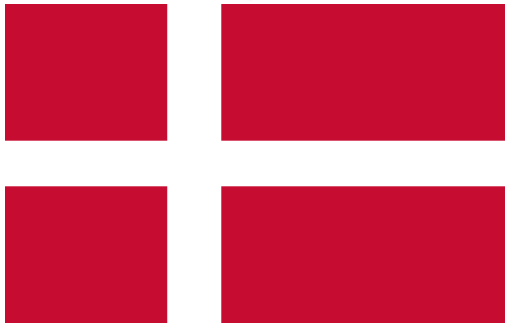
8 Model regions
4 Showcases
PPPs with Federal and regional gov's, utilities, e-suppliers

Focus on private and semi-public points icw local hosts

Fast chargers are rare

Denmark

e-mobility NSR



Local gov's biggest investors in publ. infra
Shift to:

- Regular chargers for private and semi-public
- Fast chargers for public space

Clever (subsidiary of e-suppliers): fast chargers
Better Place: battery swapping (18 stations)

Sweden

e-mobility NSR

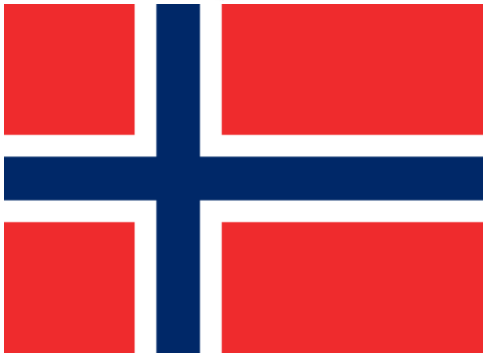
National gov still considering strategy
Stockholm most active
Municipal parking company with indoor and outdoor chargers: charging included in parking fee

Small regional networks set up by grid operators

Engine pre-heater sockets hardly used

Norway

e-mobility NSR



National gov provides subsidies for infra
Focus on free regular charging in cities
Corridors of fast chargers to enable longer trips

Also: several regional networks of fast chargers
Owned by municipalities/utilities, operated by commercial operators/service providers

Nationwide vs regional networks

e-mobility NSR

Nationwide networks

- Countries with high ambitions: NL, DK, NO
- Focus on numbers of Evs
- Either ‘dumb’ charging or early standards

Regional networks

- Low(er) ambitions: UK, BE, DE, SE
- Focus on learning and innovation
- Standards seen as innovation killers

Partners: OTB

Planning: 1 Sept. 2011 – 30 Sept. 2014

Task division between actors

e-mobility NSR

Ownership (paid for equipment/installation)

- Local governments, utilities, e-grid operators, e-suppliers, dedicated companies, hosts
- Depends on e-sector structure and gov't ambitions

Network operation & Service provision

- Grid operators, e-suppliers, dedicated companies
- Gov's only in case of dumb chargers
- Dedicated service providers mostly in ambitious countries

Semi-fast & fast charging

e-mobility NSR

Semi-fast (3phase power) charging:

- Mainly in NL & DE
- Early selection of Type 2 plug
- Fit with pay-per-charge business model

Fast charging

- Mostly in ‘successful’ countries: subsidies & commercial opportunities
- NL exception with fast charging in public space (vs semi-public at shops etc)

The role of EVs in future energy systems

e-mobility NSR

Balancing supply & demand of electricity

- Increasing shares of renewables
- EVs as buffers for solar and wind
- Advocated in NL, DK
- Ignored in DE, UK, BE
- Irrelevant to SE, NO due to hydropower

EV impact on e-grid

- Only a concern in NL, BE, and UK

Questions?

e-mobility NSR

Report will be available soon!

Check: http://e-mobility-nsr.eu/

Or: s.bakker-1@tudelft.nl