

Electromobility in Finland - Policy and Status

Juhani Laurikko, VTT

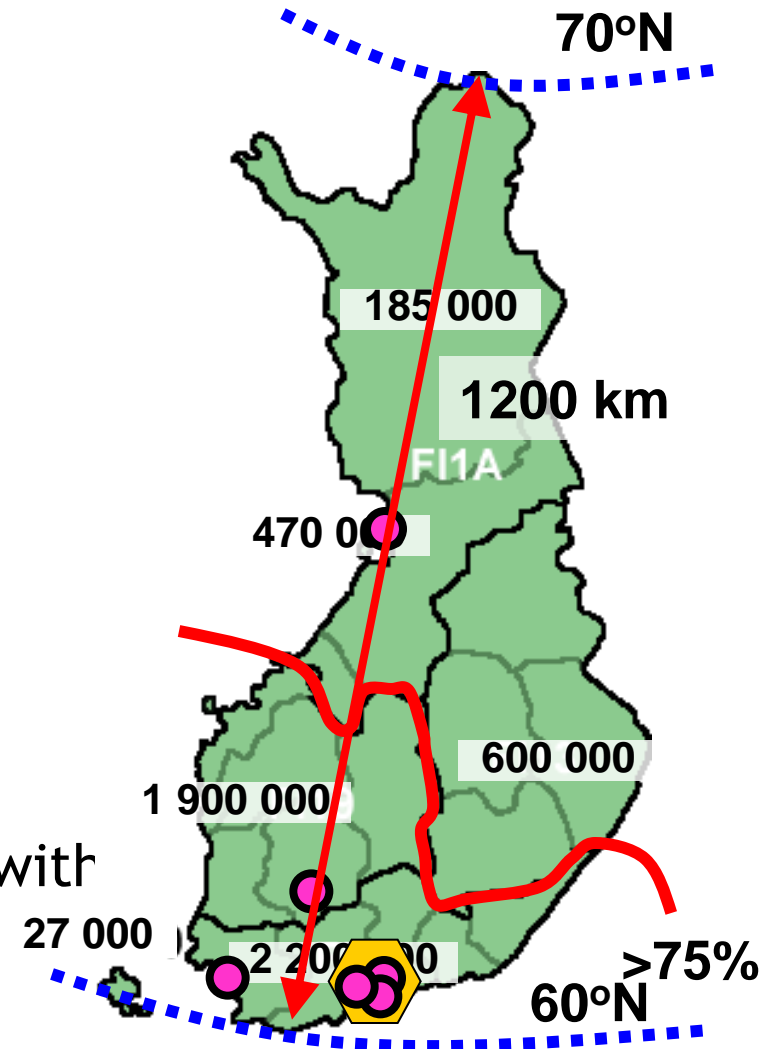
Electromobility in the North Atlantic Regions
Reykjavik 4.10.2012

Some Facts about Finland

- Large territorial area, 340 000 km²
- Sparse population, in total 5.4 million
- Nordic climate, the coldest in all of Scandinavia

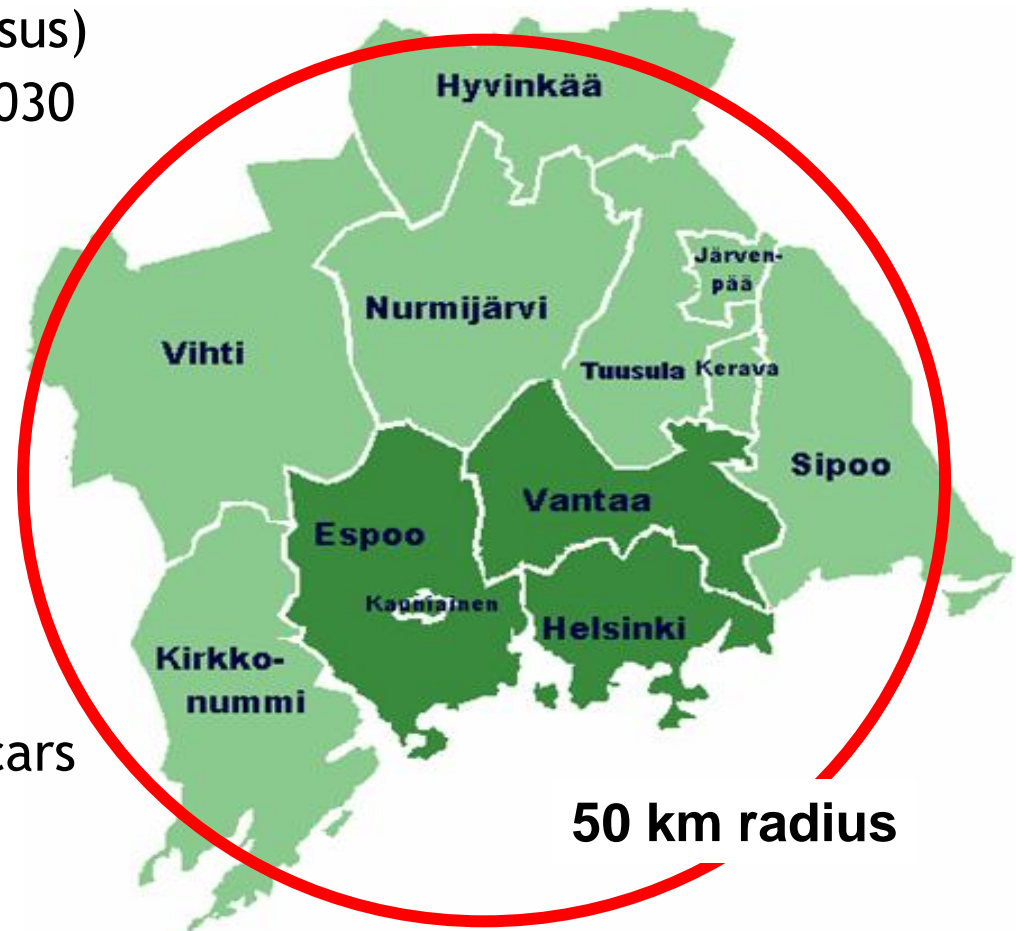
but...

- Very uneven spread of population, South-West dominates
- Six major urban areas (>100 000 inh.)
- Helsinki Metropolitan Area dominates with > 1 Million inh., < 1000 km² area



Metropolitan Helsinki - 12 Municipalities

- Over 1 Million inhabitants (2009 Census)
- Growing, estimated to be 1.2 M in 2030
- Work commuters 1.5 M (2007)
- Area 765 km², within 50 to 70 km from Helsinki City center
- High GDP-per-capita index (140)
- High education level
- Eco-conscious consumers
- Car density \approx 400 cars/1000 inh.
- > 10 % of households has 2 or more cars



50 km radius

Primary Target Area for EV Release!

Finnish Car Market in Numbers

- Moderate-sized car park: some 2.8 million passenger cars
- Slow turn-around rate and fairly old mean age, about 10 years
- Annual sales between 100 000 to 150 000 cars
- High volatility, depending on economical situation
- Sales of >40 k€ cars about 20 % of total (20 000 to 30 000 #/a)
- Sales of hybrids in total about 4000 units since 2003, mostly Prius
- Helsinki Metropolitan Area sales is >30% of all new registrations
- Assume HMA's share in >40 k€ cars is 75% >> 15 000 to 20 000 #/a



Finnish Car Taxation - Features

- Relatively high sales tax, based on CO₂ -emissions
- Rate between 5 % (≤ 50 g/km) to 50 % (≥ 250 g/km)
- “base number” is import price + commissions + VAT (24 %)
- **“Technology-neutral”, does not favour any technology!**
- “Zero-Emission” car like BEV or FCEV will currently get 5 %
- Complete revision since 1.1.2008, and progression adjusted 1.4.2012; no major changes expected



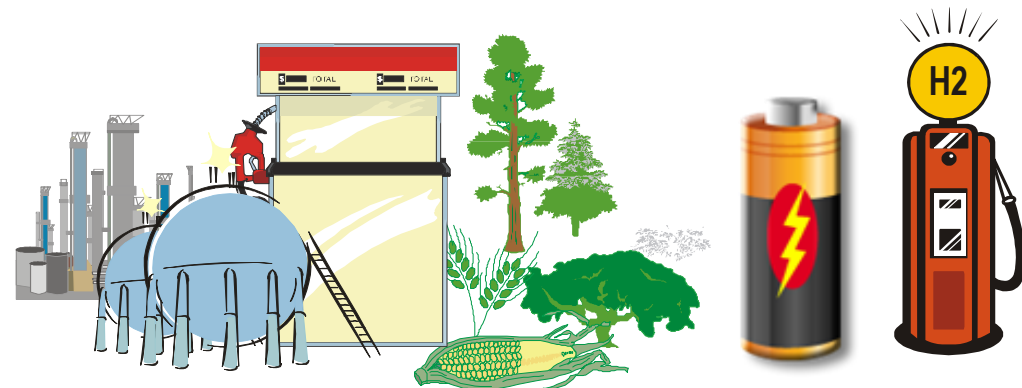
Finnish Car Taxation - Annual Taxes

- After 1.1.2011, annual tax is also based on CO₂ -emissions
- Amounts between 20 to 600 EUR
- In addition, diesel-fuelled cars pay 0.24 €/kg “fuel tax”, typically 500 €/year
- This is due to lower tax on diesel fuel and cost-compensation for heavy vehicles
- BEV/PHEVs also included, but exemptions are expected!



Finnish Fuel Taxation

- Complete revision as of 1.1.2011
- According to the amendment, taxes are based on:
 - energy contents (based on heat value)
 - CO₂ (climate gas), calculated over total fuel cycle
 - local emissions (air quality)
- Aims at **neutrality between fuels**, at least to a certain degree



List of Common Incentives for EV's

INCENTIVE

- Tax rebates and/or other subsidies for purchase
- Rebates or exemptions from annual taxes
- Rebates or exemptions from road tolls
- Rebates or exemptions from parking fees
- Use of priority lanes
- Access to “non-motorized” zones
- etc.

List of Common Incentives for EV's

INCENTIVE	Implemented in Finland
■ Tax rebates and/or other subsidies for purchase	NO
■ Rebates or exemptions from annual taxes	NO
■ Rebates or exemptions from road tolls	NO
■ Rebates or exemptions from parking fees	NO
■ Use of priority lanes	NO
■ Access to “non-motorized” zones	NO
■ etc.	NO

BEV and Plug-in Market


[på svenska](#)
[sivukartta](#)

[MALLISTO](#)
[HINNASTOT](#)
[JÄLLEENMYYYJÄT](#)
[KOEAJO](#)
[INFO](#)
[Tilaa uutiskirje](#)
[C-Zero](#)
[Hinnat](#)
[Tekniset tiedot](#)


CITROËN C-ZERO

Neljän henkilön C-ZERO tekee kaupunkiliikenteestä helppoa ja ympäristöystävällistä. Citroën C-ZERO on tavallisesta verkkovirrasta ladattava täyssähköauto, jonka taka-akselille sijoitettu sähkömoottori tuottaa parhaimmillaan 47 kW:n (64 hv) tehon kierroslukalueella 3000 –6000 rpm.

C-ZERO:n pituus on 3.48 m ja akseliväli 2.25 m, näin se tarjoaa hyvät tilat neljälle henkilölle ja 166 litran tavaratilan. Vakiovarusteisiin kuuluvat ohjaustehostin, lukkiintumattomat jarrut, ajovakauden- ja pidonhallinta, sähkötoimiset ikkunat ja ilmastointi. Suorituskyky riittää myös maantiekäyttöön: huippunopeus on 130 km/h, kiihtytys 0-100 km/h sujuu 15 sekunnissa ja ohituskiihtytys 60 –90 km/h kuudessa sekunnissa.

Citroën C-ZEROn lataus on tehty helpoksi, auto voidaan ladata kaikista 16A sulakkeilla varustetuista tavallisista pistorasioista. Akkujen lataaminen täyteen tapahtuu noin seitsemässä tunnissa



► Lataa tekniset tiedot ja varusteet

► Lataa hinnasto

► Tilaa esite

► Katso hinnat



► Lisää kuvia

Mitsubishi iMiEV * Citroën C-Zero * Peugeot iOn

Prices	no tax	tax	with tax	sales #
i-MiEV	30 305	1 494	31 800	4
C-Zero	30 381	1 497	31 878	12
iOn	30 381	1 497	31 878	8



sales started 2011

Nissan Leaf

Prices	no tax	tax	with tax	sales #
	38 879	1 920	40 800	34
w.spoiler	39 165	1 934	41 100	



sales started 4/2012

Opel Ampera

Prices	no tax	tax	with tax	sales #
Cosmo	47 500	3 411	50 911	41



sales started 4/2012

Toyota Prius PHEV

Prices	no tax	tax	with tax	sales #
Linea Sol	36 470	3 508	39 978	?
Premium	42 860	4 127	46 987	?

*price premium of some 4000 – 7000 EUR over standard version



sales started 4/2012

Fisker Karma



sales #

2

Sales & Park



Think City	19
Mitsubishi i-MiEV	4
Citroën C-Zero	12
Peugeot iOn	8
Opel Ampera*	41
Nissan Leaf	34
Fisker Karma*	2



*non-pure EVs

	2009	2010	2011	2012
sales	?	17	35	77
total	110	127	162	239

Charging Infrastructure Build-up



Slow-Charge Available from Heater Outlets



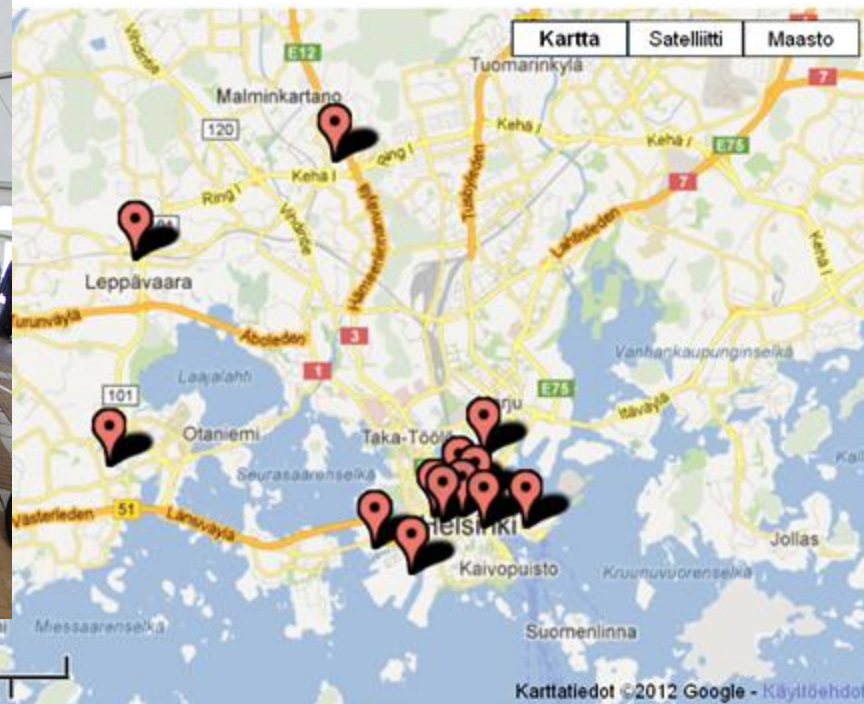
**Up to 1,5 million outlets
with 10 or 16 A capacity**

Slow-Charge Available also at Selected Public Spots



EV Fast Charging Infrastructure Build-up

- Focus on Helsinki Metropolitan Area
- 20 fast-charging stations along main highways planned in 2013



First and Northernmost H₂ Fuelling Station



**Operator: Arctic Driving Center
Rovaniemi**

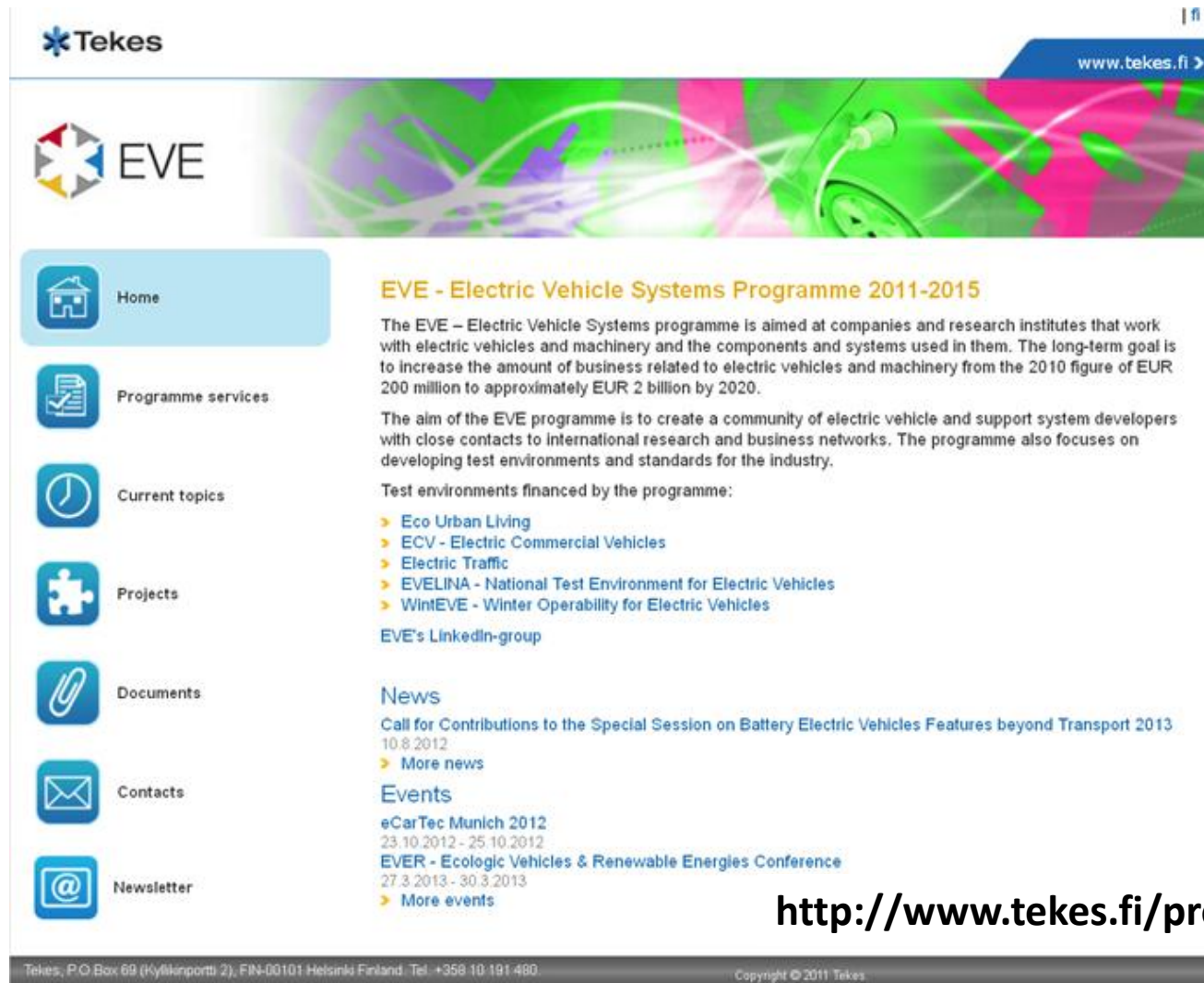
Supplier: Woikoski Oy

Rented from H2Logic A/S, Denmark

Summary & Conclusions

- EV market is slowly starting, but...
- Electric vehicles do not have specific support schemes or subsidies, because ...
- Fully "Technology Neutral" taxation systems since 1.1.2011
- ...but as a "low emission cars" EV's do have an advantage over most regular ICE cars
- Electric vehicle technology is seen as a lucrative business opportunity for the Finnish industry
- Public R&D support for electric vehicles, incl. commercial vehicles and working machinery

Electric Vehicle Systems - Programme by TEKES



The screenshot shows the EVE website interface. At the top, there is a header with the Tekes logo and the URL www.tekes.fi. Below the header is a banner image showing a close-up of an electric vehicle's charging port with colorful, abstract lines. The main content area is divided into a left sidebar and a right main section. The sidebar contains a vertical list of navigation links: Home, Programme services, Current topics, Projects, Documents, Contacts, and Newsletter, each accompanied by a small icon. The main section features the title 'EVE - Electric Vehicle Systems Programme 2011-2015' in orange. Below the title, there is a paragraph describing the programme's aim to increase business related to electric vehicles and machinery from EUR 200 million to EUR 2 billion by 2020. Another paragraph states the aim of the programme is to create a community of electric vehicle and support system developers with close contacts to international research and business networks. Below this, a section titled 'Test environments financed by the programme:' lists five projects: Eco Urban Living, ECV - Electric Commercial Vehicles, Electric Traffic, EVELINA - National Test Environment for Electric Vehicles, and WintEVE - Winter Operability for Electric Vehicles. Further down, there is a link to 'EVE's LinkedIn-group'. The 'News' section includes a call for contributions to a special session on battery electric vehicles features beyond transport in 2013, dated 10.8.2012, with a link to 'More news'. The 'Events' section lists two events: 'eCarTec Munich 2012' (23.10.2012 - 25.10.2012) and 'EVER - Ecologic Vehicles & Renewable Energies Conference' (27.3.2013 - 30.3.2013), both with links to 'More events'. At the bottom of the page, there is a footer with contact information for Tekes and a copyright notice for 2011.

EVE - Electric Vehicle Systems Programme 2011-2015

The EVE – Electric Vehicle Systems programme is aimed at companies and research institutes that work with electric vehicles and machinery and the components and systems used in them. The long-term goal is to increase the amount of business related to electric vehicles and machinery from the 2010 figure of EUR 200 million to approximately EUR 2 billion by 2020.

The aim of the EVE programme is to create a community of electric vehicle and support system developers with close contacts to international research and business networks. The programme also focuses on developing test environments and standards for the industry.

Test environments financed by the programme:

- Eco Urban Living
- ECV - Electric Commercial Vehicles
- Electric Traffic
- EVELINA - National Test Environment for Electric Vehicles
- WintEVE - Winter Operability for Electric Vehicles

EVE's LinkedIn-group

News

Call for Contributions to the Special Session on Battery Electric Vehicles Features beyond Transport 2013
10.8.2012
➤ More news

Events

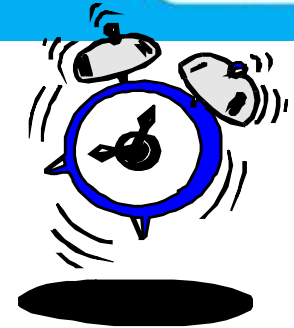
eCarTec Munich 2012
23.10.2012 - 25.10.2012
EVER - Ecologic Vehicles & Renewable Energies Conference
27.3.2013 - 30.3.2013
➤ More events

Tekes, P.O. Box 69 (Kyläkirjasto 2), FIN-00101 Helsinki Finland. Tel. +358 10 191 480. Copyright © 2011 Tekes.

<http://www.tekes.fi/programmes/EVE>



the End



■ Thank You for your Attention!



