Interreg
North Sea Region
SEEV4-City
European Regional Development Fund

EUROPEAN UNION

SEEV4-City

Oslo: The Energy of parking storage in the Vulkan project

Fredrikstad, 14. June 2018

SEEV4-City at a glance

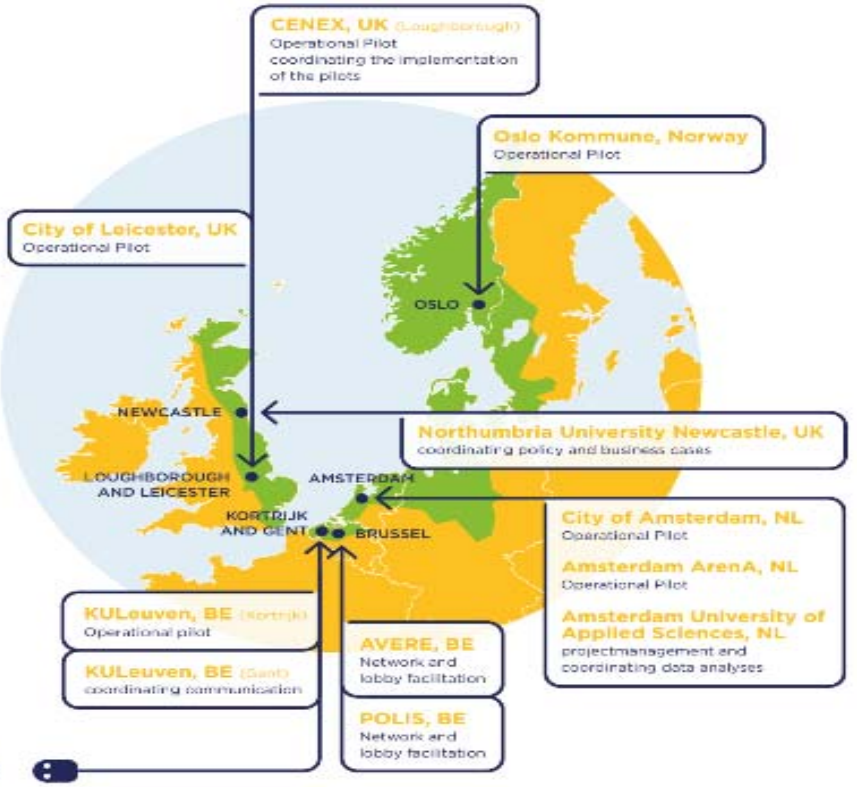
Funding
EU - Interreg North Sea Region
Priority 4: Promoting green transport and mobility

Duration
Sep 2016 → Oct 2019

Budget
5 Million

Consortium
10 partners

Project Coordinator
Amsterdam University of Applied Sciences



SEEV4 City - Goal

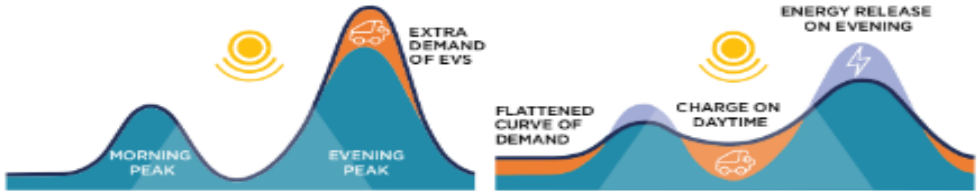
The core of the SEEV4-City project is making a huge step forward in green city development by a *smart* combination of electric vehicles, renewable energy sources and ICT solutions.

It contains *7 operational, long term pilots* in 6 cities in 5 European countries aiming for:

- An increase in ***energy autonomy***
- An increase of ***ultra-low emission kilometres***
- Avoiding extra investments to ***make existing electrical grids compatible*** with an increase in electro mobility and local energy production
- More information is available here: http://www.northsearegion.eu/seev4-city/

Charging **electric vehicles** in the evening creates a peak demand when renewable electricity production is lower. As a result:

→ Electric vehicles do not charge with electricity from renewable-energy sources
→ Expensive grid reinforcement is required to limit peak demand.



Information and Communication Technologies help to structure and maximize the synergies between electric vehicles & local renewable energy and **optimizing the electricity grid**

A smarter electricity grid for people, planet & profit
The energy grid is energy buffer, on a daily and a seasonal scale. Large amount of local energy and EVs cause grid-stress. SEEV4-City aims to provide solutions

7 SEEV4-City Operational Pilots demonstrate:

1 Reduction of CO2 emission
2 Increased energy autonomy
3 Optimized grid performance

The SEEV4-City "State of the Art" report is a reference document for local authorities, energy suppliers, shared mobility operators, transport planning practitioners, and energy management professionals who want to deploy smart electric mobility solutions and optimize electrical networks. Three levels of detail are distinguished:

→ For **specialist**, the reference document (about 200 pages)
→ For **generalists** and other stakeholders the summary report (about 35 pages)
→ For **managers** this brochure

Operational Pilot Amsterdam ArenA

The Amsterdam ArenA OP, a large multi-event stadium with different energy services. The ArenA works on sustainable energy services in the stadium, neighbourhood and at national scale. Replacing traditional energy plants for unbalance management is main contribution beside V2G, load-shifting and back-up services, required <u>hardware:</u>

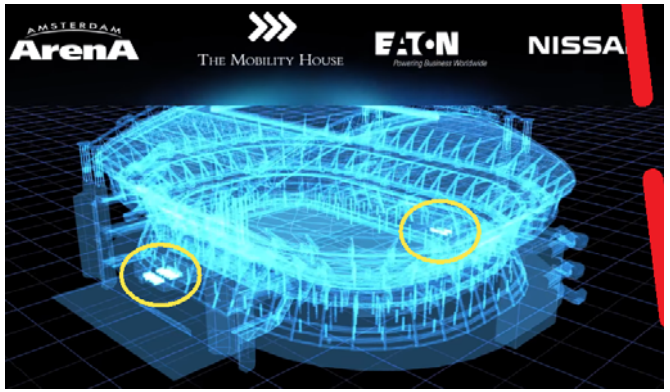
- PV panels (1,128 MWp);
- A stationary storage (3 MWh);
- 9 bi-directional EV chargers connected to the EV charging stations in the parking place;

<u>Energy services:</u>
- Wind energy storage;
- CO_2 neutral national grid (PCR) services;
- Out-phasing diesel back-up generators.

Contribution to KPI's	Before	After	Result
CO_2 Emissions (tons)	-	1500t	Up to 1500 tonnes
Energy Autonomy (%)	8%	15%	To Be Calculated
Avoided grid investments (€)	-	-	To Be Done

Vehicle to Business

Vehicle to Street / Neighbourhood



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Operational Pilot: City of Amsterdam

Overview:
A district level OP in the city of Amsterdam city; focus is to optimize interaction between prosumers and EVs. The City is the initiator of the pilot together with the city's grid operator. Now static smart charging is experimented reducing the demand peak (between 17-20 hrs) in 10 towards 52 Charging points. This is the first public smart charging implementation in The Netherlands. Next steps will focus on other smart charging related to PV production and household demand in the neighbourhood.

Specifications:

- Static adapted Public chargers in (52) selected locations: 1) Amsterdam Zuid, 2) Amsterdam Centrum, and 3) Nieuw-West.
- PV systems connected TBD

Contribution to KPI's	Before	After	Result
CO_2 Emissions (tons)			Up to 19t per annum
Energy Autonomy (%)			Up to 15%
Avoided grid investments (€)	TBD	TBD	In progress

Responsible parties	
Building Owner	Multiple owners; neighbourhood level
vehicle owner	Multiple owners; public
Local grid owner/operator	Liander
Charge point operator	NUON and Heijmans
Charge point owner	City of Amsterdam

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City of Amsterdam

Operational Pilot Vulkan Estate building, OSLO

Overview:
The Vulkan Estate is a large parking development building of 29,000 m2. This project is led by Municipality of Oslo; mixed EV users of private apartments and offices.

Specifications:

- All energy renewable (hydro)
- Charging points: (100*3.6-22kW AC) & (2x22kW DC)
- Estimated number of EVs : 300-400
- Static storage of 50kW

Contribution to KPI's	Before	After	Result
CO_2 Emissions (tons)			Up to 90-120t p/a
Energy Autonomy (%)			Up to 10%
Avoided grid investments (€)	TBD	TBD	In progress

Responsible parties	
Building Owner	Aspelin Ramm Eiendom AS Norwegian Parliament Private Individuals
Vehicle owner	Postal, service and taxi companies
Smart gird owner and operators	Aspelin Ramm Eiendom AS and Fortum Charge & Drive
Charge point operator	Fortum Charge & Drive
Charge point owner	Aspelin Ramm Eiendom AS

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Oslo – The EV Capital of the World

The share of EVs and Plug-in hybrids has increased to **50% in 2017**. So far in 2018 share of EVs is 53,5%.

Not rocket science. **Green taxes are actually working**, but you have to make it **affordable for people** to take green choices!

Sky is the limit or trouble in Paradise?

Exponential growth creates challenges.

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In order to catch up we also need to:

- Establishing **fast chargers** in cooperation with private actors in the corridors in and out of the City
- **Indoor parking garages** for EVs (Akershus, Vulkan). The World's first dedicated P-houses for EVs only
- Build large "**Centre of excellence" for professional users of EVs** with flexible charging and pre-booking opportunities.
- **New green mobility houses** incl. tailor-made solutions for professional users of EVs and smart-grid
- **Fossil-free public transportation** (2020)
- **Making sure that everybody can charge at home** (61 % lives in apartments and town houses)
- More focus on **Mobility as a Service (MaaS)**
- **Autonomous Vehicles** and **public transportation on-demand**

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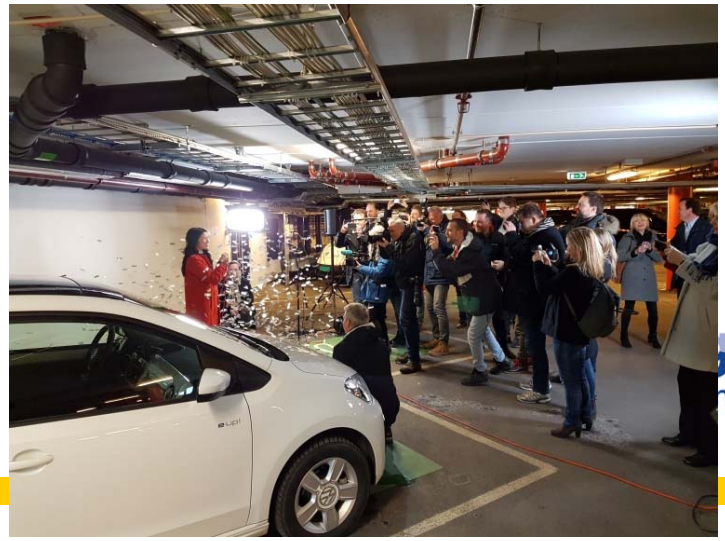
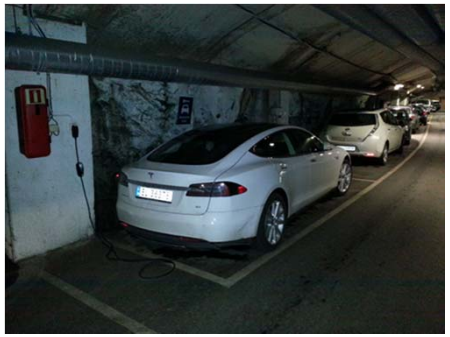


Oslo – The EV Capital of the World



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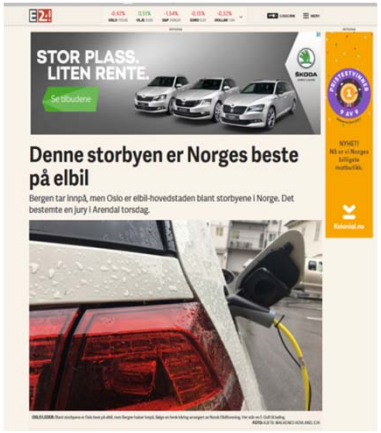

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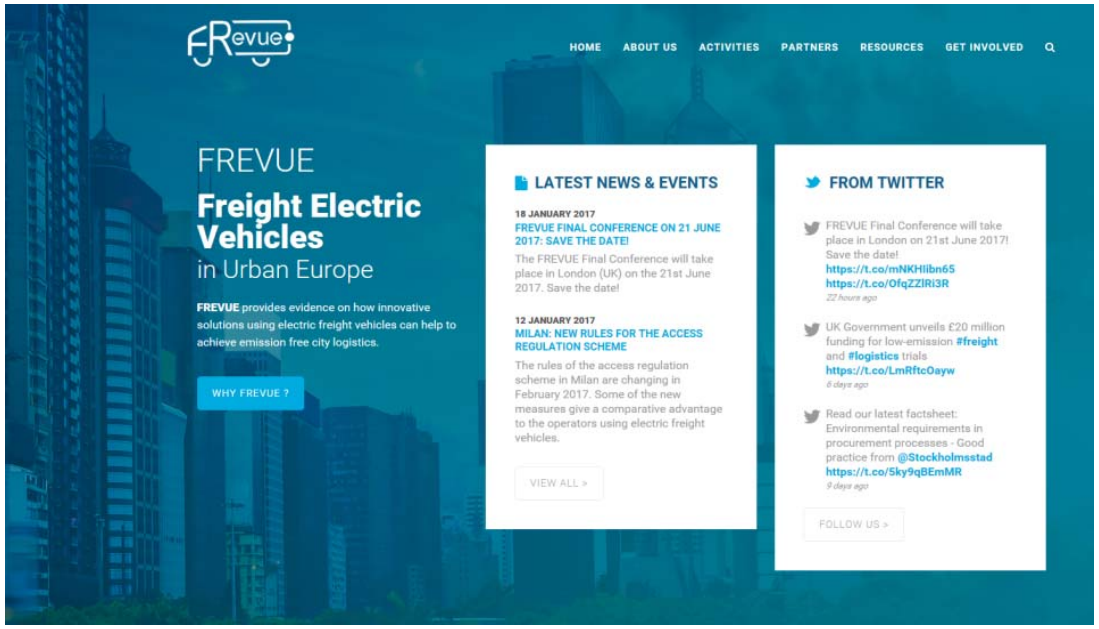
Important EU-project; SEEV4 City and FREVUE

Two important EU-project is leading the way as “first movers” for green freight distribution in Oslo; FREVUE and SEEV4 City



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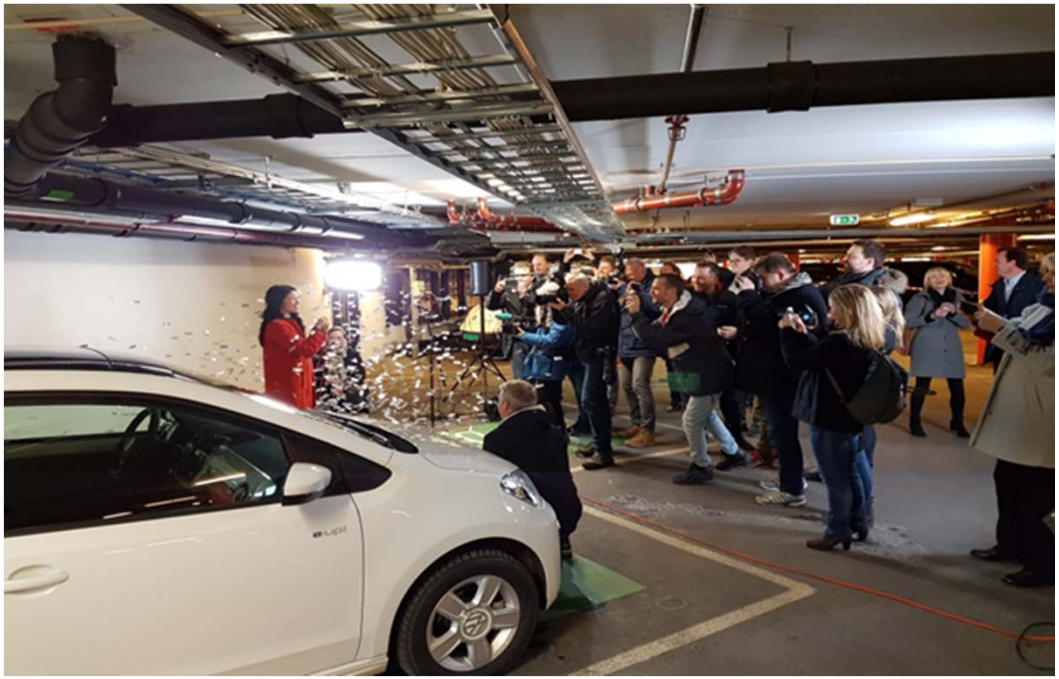
SEEV4 City – The Vulkan project: a center for professional use of zero emission vehicles

In Oslo, Norway the local SEEV4 City project is named *The Vulkan Project*.

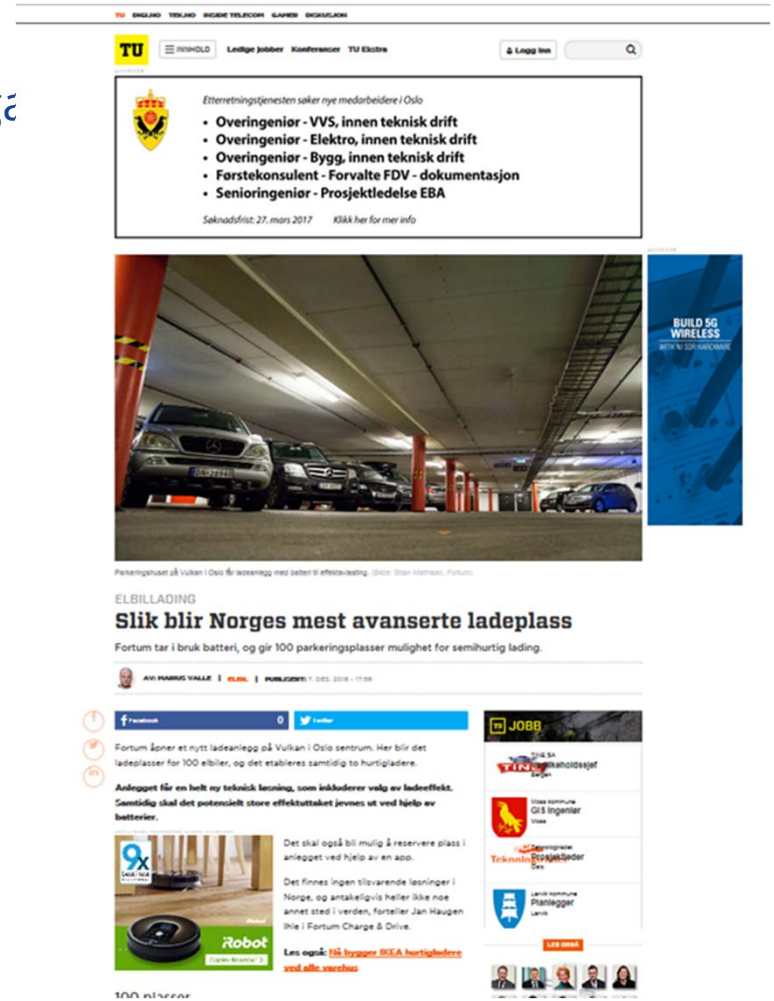
The site opened 6th of March 2017 and is Norway's largest and most advanced charging garage for EVs

A *dualistic* structure;
- a ***center of excellence for professional users of EVs*** at day-time
- ***free residential parking*** in the evening- and night time



SEEV4 City – The Vulkan project: a center for professional use of zero emission vehicles at Mathallen, Vulkan

Vulkan is Norway's largest and most advanced charging ga
a the goal is to boost the professional market for EVs,
incl. zero emission freight vehicles, craft and service
with EVs, EL-taxis, green car sharing etc.,
as well as maximizing the use of expensive
charging infrastructure. The site has 104 flexible
and smart chargers



TU

Etterretningstjenesten søker nye medarbeidere i Oslo

- Overingeniør - VVS, innen teknisk drift
- Overingeniør - Elektro, innen teknisk drift
- Overingeniør - Bygg, innen teknisk drift
- Førstekonsulent - Forvalte FDV - dokumentasjon
- Senioringeniør - Prosjektledelse EBA

Søknadsfrist: 27. mars 2017 Klikk her for mer info

BUILD 5G WIRELESS

ELBILLADING

Slik blir Norges mest avanserte ladeplass

Fortum tar i bruk batteri, og gir 100 parkeringsplasser mulighet for semihurtig lading.

JOBB

SEEV4 City – The Vulkan project: a center for professional use of zero emission vehicles at Mathallen, Vulkan

The Vulcan project is characterized by:

- **A fusion between future buildings and transport**. That is a pre-request for a green shift in mobility
- **Future built** project/ premises with zero emission and green building sites
- **Geo-thermal heating**
- **Smart grid and loading systems**. All grid connections and supervised and balanced by computing
- **Flexible charging** (first of its kind)
- Charging **systems streamlined for professional users** of EVs
- **Pre-booking possibilities** for professional users (first of its kind)
- **Battery storage** and rack shaving the peak hours and reducing investment and operational costs
- **Use of second-hand batteries**
- Residential parking during evening and night time for **optimization of expensive infrastructure**
- Preparation for the next generation **super quick chargers**, >150 kW (first of its kind)
- **Preparation for bi-functional charging**, Vehicle-to-grid
- **New innovative business models**, including private-public models for cooperation, and V2G solutions

Partners

The Netherlands

Hogeschool van Amsterdam

City of Amsterdam

AMSTERDAM ArenA

Belgium

KU LEUVEN

AVERE The European Association for Electromobility

POLIS

United Kingdom

cenex

Leicester City Council

northumbria UNIVERSITY NEWCASTLE

Norway

Germany

e energy. moving the future now

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Thank you for your attention!

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