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I-CVUE

INCENTIVES FOR CLEANER VEHICLES IN URBAN EUROPE

Co-funded by the Intelligent Energy Europe Programme of the European Union.

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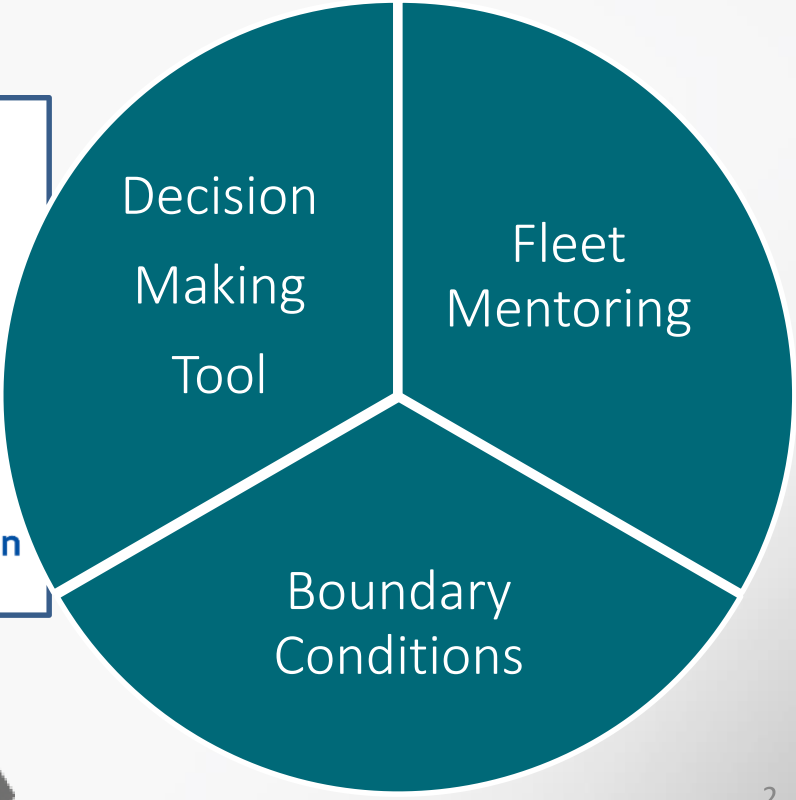
Introduction

Aim

- Support the uptake of plug-in vehicles across Europe
- Reduce CO_2 & other hazardous emissions in urban environments
- Increasing the number of electric vehicles in fleets

Specific objectives

- 1000 EVs
- Business cases for fleets
- Regional authority support
- Decision making tool



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Fleet Mentoring

Goal for mentoring: replace of 1.000 ICE vehicles with EV´s

Currently 51%

0 — 1.000

Currently 59 fleets receive mentoring (each at different stages)

- Large and small company and governmental fleets
- Grey fleets (private cars, compensation for km's by company)
- Professional fleets (Taxi, (small) delivery van's, (light) trucks etc.)

Intensive and flexible approach resulting in a client led service

1 Analyse
2 Typology
3 Calculation
4 Consult
5 Preparation
6 Implemen-tation
7 Monitor



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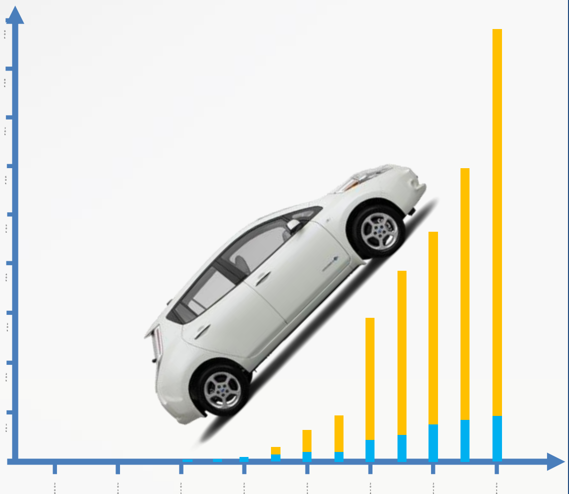
The 4 Boundary Conditions studied

Success of EV uptake



Boundary conditions

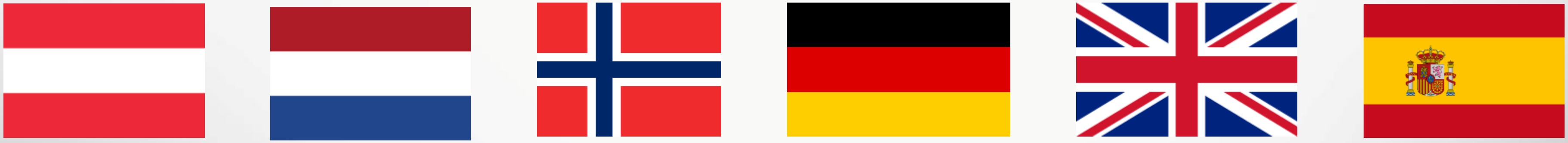
Financial incentives

“Operational” incentives

Public Charging Infrastructure

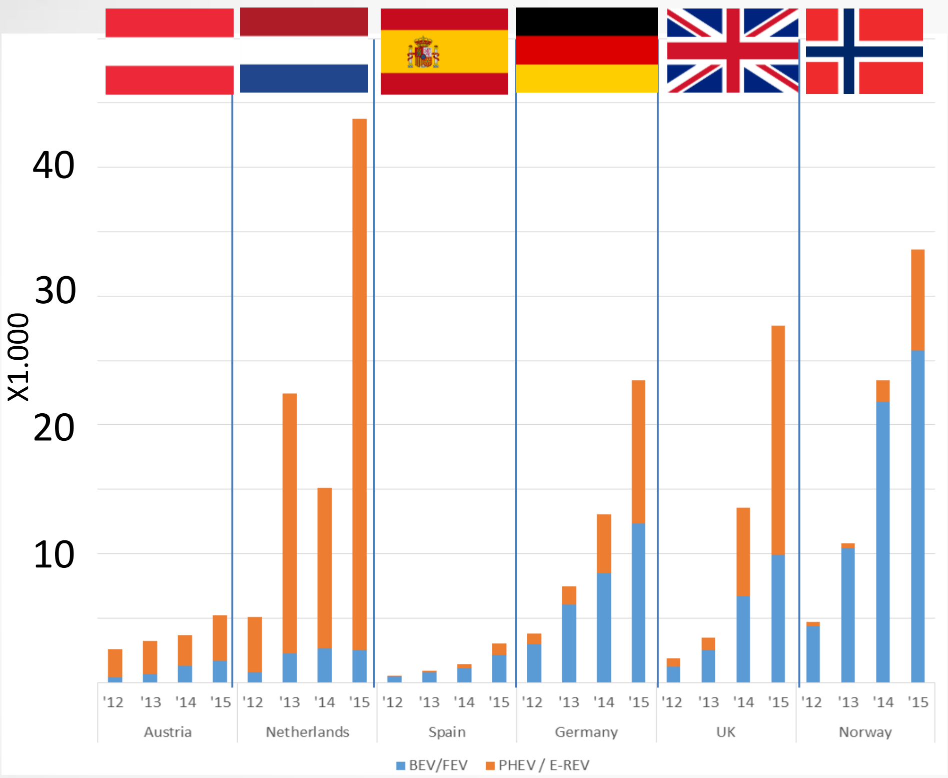
Regional / Local conditions

The analysis of the boundary conditions is focused on the **relationships** between the **success of EV** uptake **and** the **boundary conditions** within each country and the selected regions

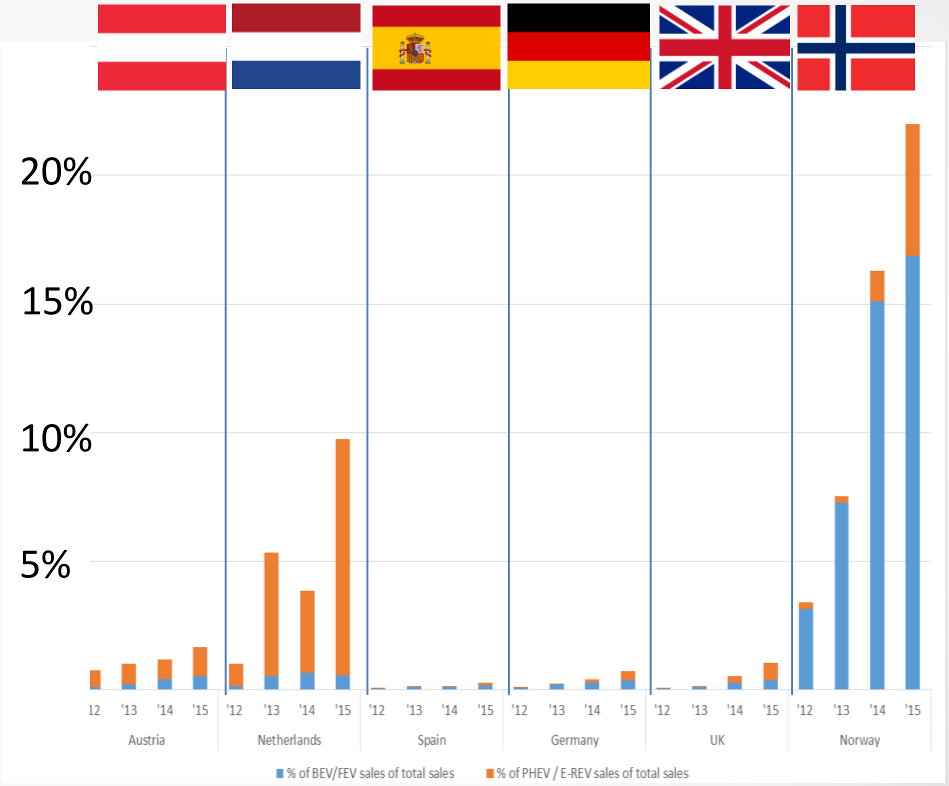


Success of EV uptake

Absolute number of sales of BEV/FEV and PHEV/E-REV per country



Percentages of sales of BEV/FEV and PHEV/E-REV of the total vehicle sales per country



EV's are all electric powered vehicles with a Plug. This includes BEV (Battery Electric Vehicle), FEV (Full Electric Vehicle), PHEV (Plug-in Hybrid Electric Vehicle), E-REV (Extended Range Electric Vehicle)

Source: ICVUE

Examples of National Purchase incentives

Tax break & Subsidy

Fleet buyers: 100% 1st year amortization ➔ corporation tax

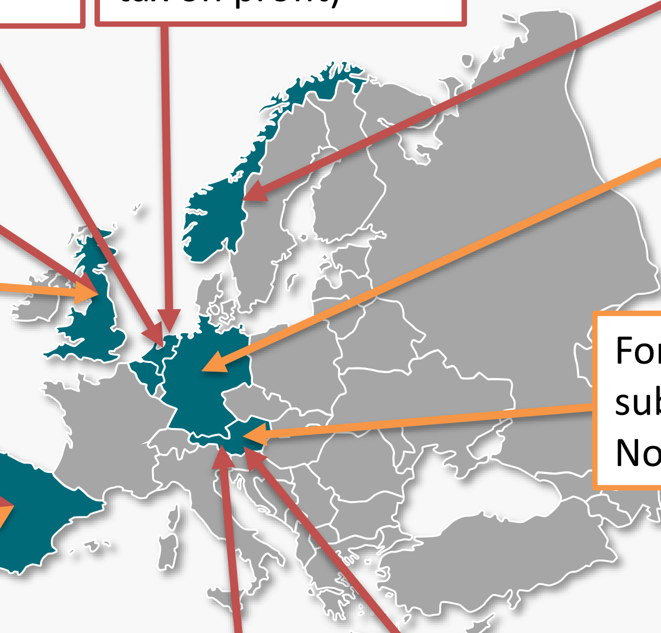
No purchase tax for cars with low CO2 ≈ € 2.900

Up to 36% extra depreciation for companies (lower tax on profit)

No purchase tax for BEV ≈ € 5.700
No VAT (usually 25%) for BEV ≈ € 5.800

7/2016: 4.000 subsidy for BEV and € 3.000 for PHEV

Cars with CO2 emission <75g/km: purchase cost reduction of 35% up to € 6.000



Registration tax: 0% for EV's, normally: 14,75%

For company cars (PH)EV: 4.000€ subsidies purchasing an EV.
No green electricity it is 2.000€

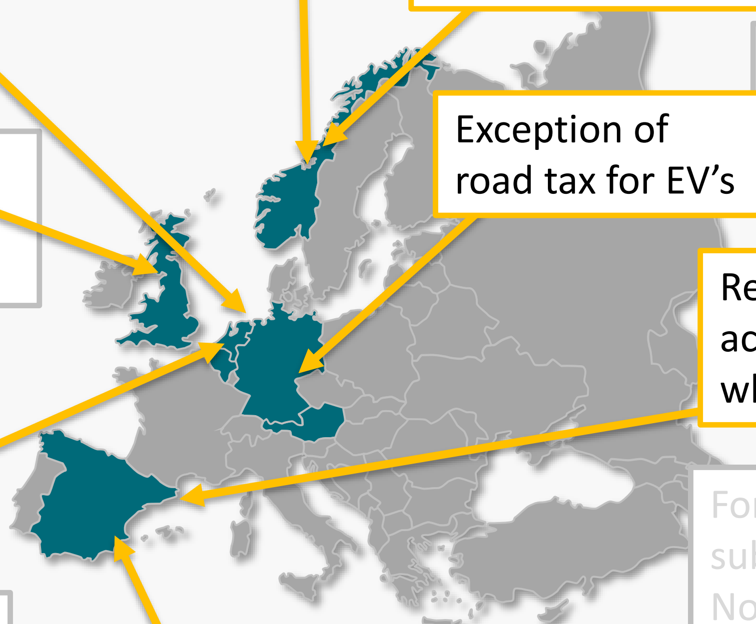
€ 2.700 subsidy for EV < 40 km e-range; € 3.700 between > 40 but < 90 km; € 5.500 > 90 km

No standard fuel consumption tax for (PH)EV, NoVA (registration tax)

For companies VAT on EV's deductible

Financial examples which are given are based on average difference between ICE cars and EV's in the C-segment

Examples of National Operational incentives



Exception of road tax for EV's

Strong reductions of road tax for EV's

No toll payments for BEV (for highways, bridges, tunnels etc.) No public parking fee for BEV

Exception of road tax for EV's

Exception of road tax for EV's

Reduction on economic activities tax for companies which have an EV transport plan

Reductions or exception of Tax op private usage of company EV's.
€ 1.200 yearly in NL

Reductions of road tax for EV's.

No registration tax for ca… ≈ €…

Fleet bu… amortize… Allowance for Corporation tax

…5.700 …V ≈ € 5.800

Since July 2016 a subsidy of € 4.000 for a BEV and € 3.000 for a PHEV

Cars v… <75g/km: purchase cost reduction of 35% up to € 6.000

Re… EV…

For company cars (PH)EV: 4.000€ subsidies purchasing an EV.
No green electricity it is 2.000€

… km in electric mode
€ 3.700 subsidy for EV > 40 but < 90 km in electric mode
€ 5.500 subsidy for EV > 90 km in electric mode

…dard …(NoVA) (is registration tax)

Financial examples which are given are based on average difference between ICE cars and EV's in the C-segment

Segments selected for TCO calculations

Financial incentives	Non-financial incentives
Public Charging Infrastructure	Regional/Local conditions

A: mini cars

B: small cars / supermini

C: medium cars

D: large cars

E: executive cars

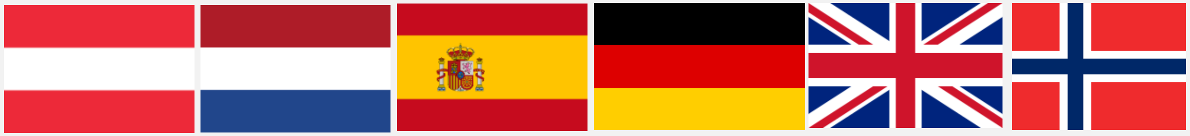
N: delivery van

Decision support model

Difference in purchase and TCO

C: medium cars

4y ownership



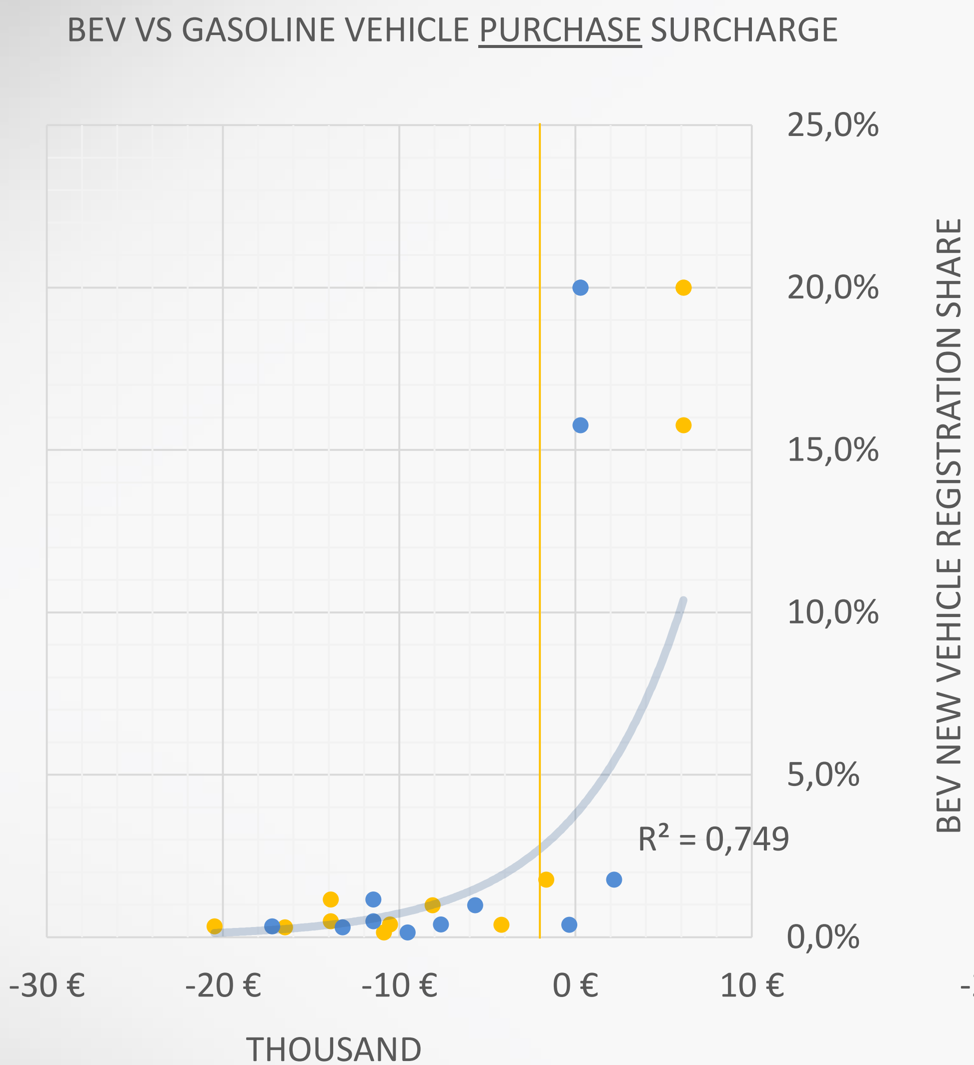
12.000km/y	Purchase	13.879	8.098	10.861	20.479	10.530	6.134
	TCO	5.372	2.564	5.861	12.810	1.583	10.481
24.000km/y	Purchase	11.459	5.691	9.526	17.209	7.642	283
	TCO	8.544	3.442	4.887	9.531	4.467	8.544

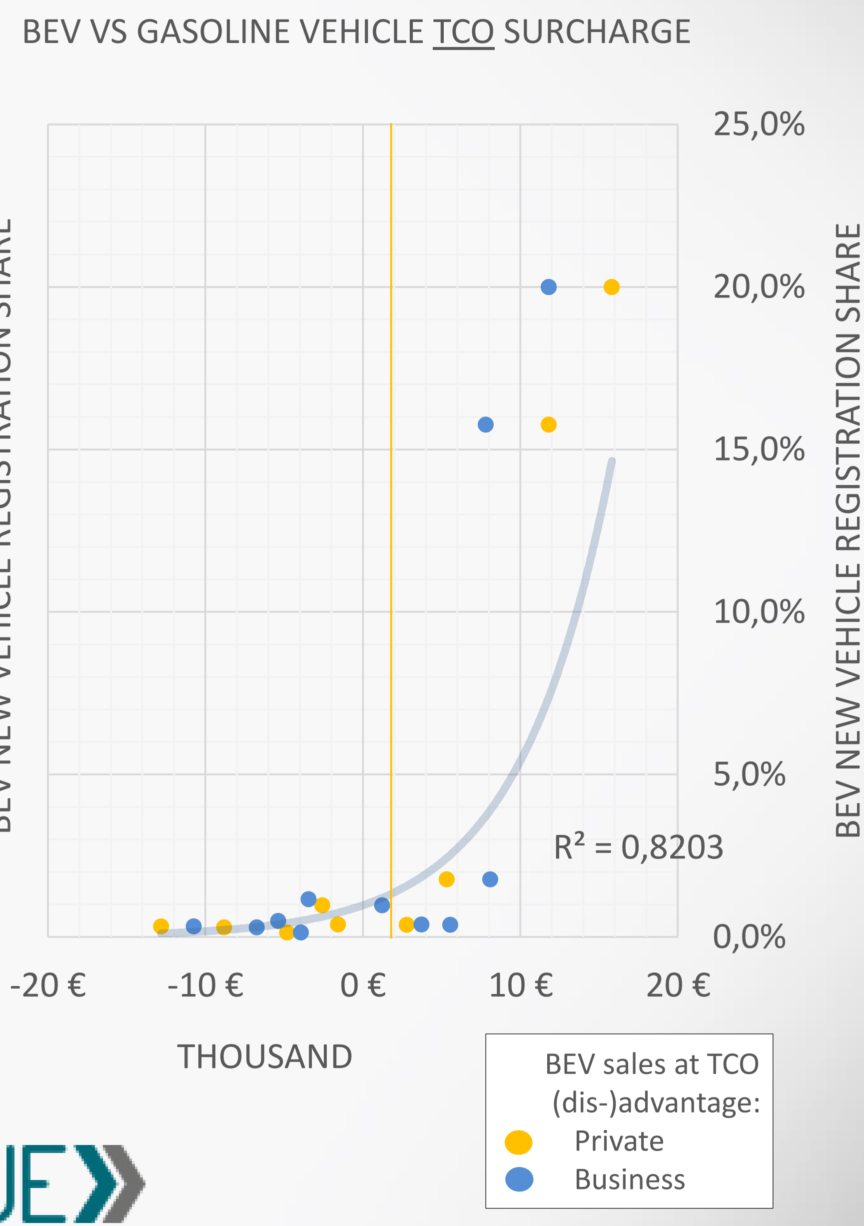
Red means ICE is cheaper than EV

Green means EV is cheaper than ICE

Price elasticity – normal scale

DRAFT!





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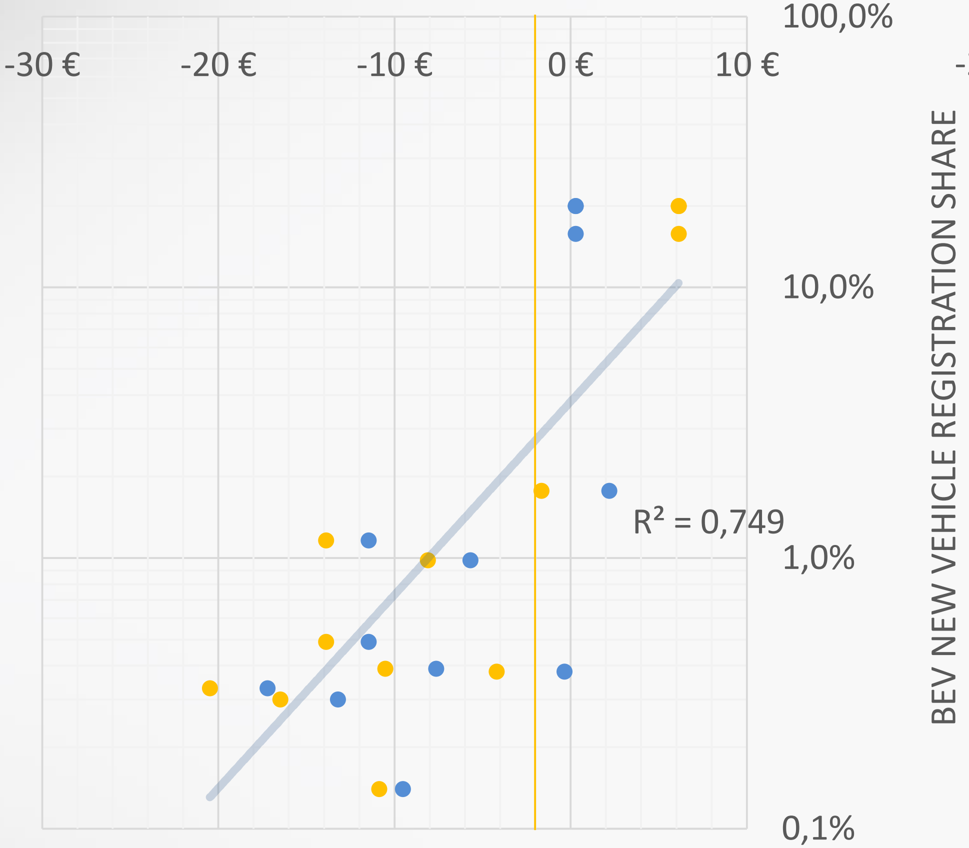
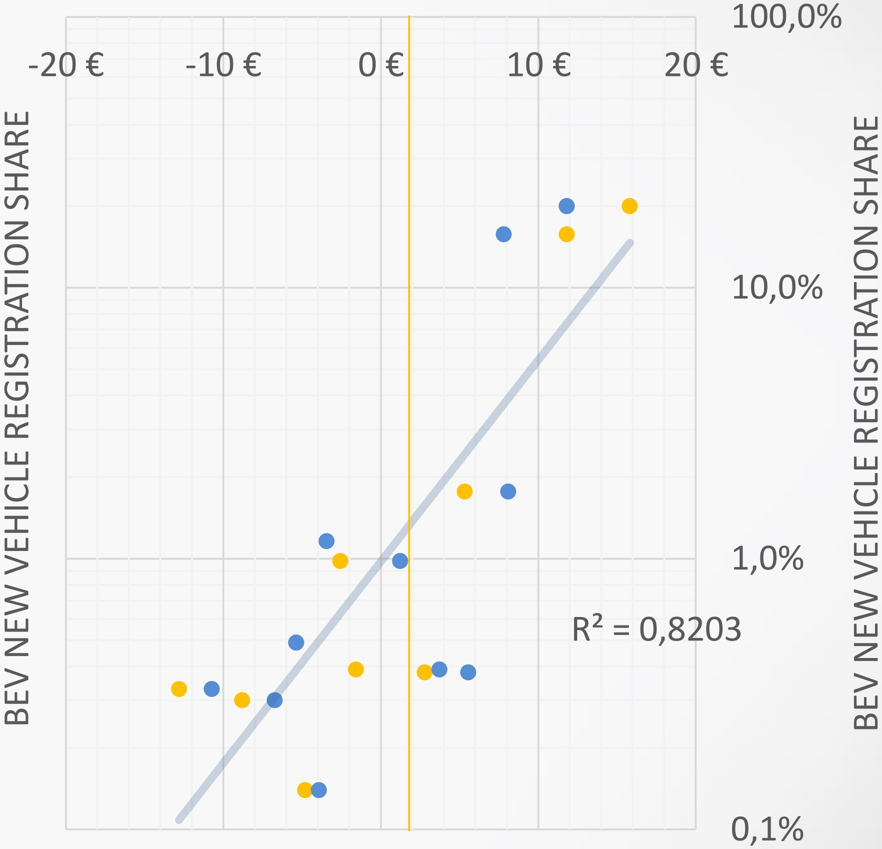
DRAFT!

Price elasticity - Logarithmic scale

BEV VS GASOLINE VEHICLE <u>PURCHASE</u> SURCHARGE



BEV VS GASOLINE VEHICLE <u>TCO</u> SURCHARGE



BEV sales at TCO (dis-)advantage:
- Private
- Business

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Critical success factors

Is a positive business case a guarantee for sales……? No!

- Private buyers decision heavily influenced by purchase price (companies focus on TCO)
- Uncertainties: Battery lifetime (perception); Accelerated technology innovation (more range at equal or lower cost) → Residual value
- Usage needs define the sales hurdle: Inability to do all travels (one-car-fits-all) → Alternative modalities or rentals needed
- Charging infrastructure, in most countries many hurdles still to overcome: Interoperable, right locations / dense network, right speed

Examples where EV's do well::

- 2 car household → replacing 1 car by EV for daily commute
- Car sharing systems. EV has strong advantages over ICE (charging)
- Predictable, stable use, which can be planned: Distribution, company pool cars, etc.

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Source: ICVUE

Analyses of impact of regional/local incentives

Operational incentives

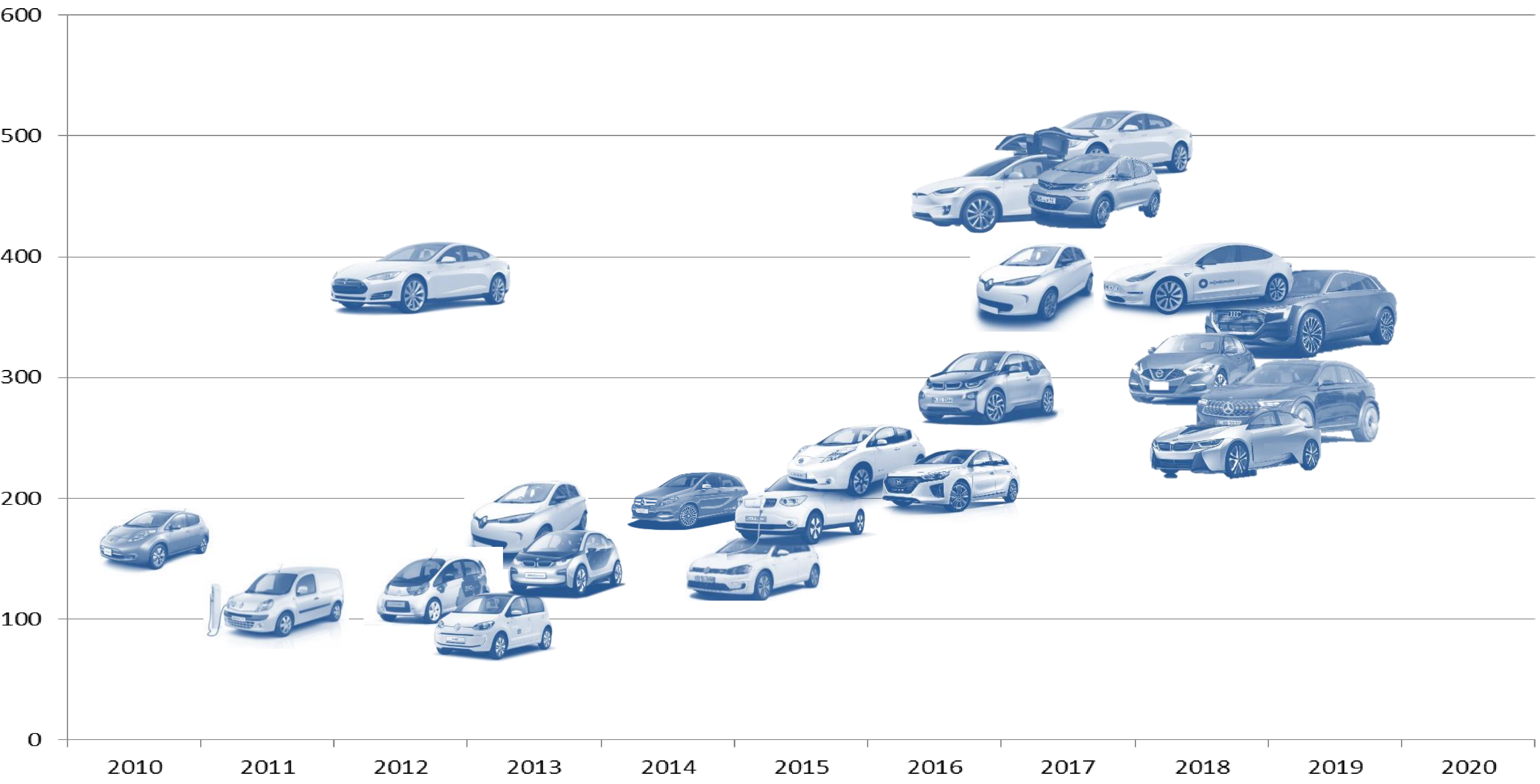
Examples or regional EV incentives

- Grants / subsidies
- Bus lanes/Taxi lanes/HOV Lanes
- Toll payments on Bridge / Tunnel/ Highways / Ferry
- Environmental zones/Congestion tax
- Better / cheaper / free parking spots for EV's
- Cheap / free charging
- Rollout of charging infrastructure
- Support/initiate Electric vehicles scheme's
- Support EV uptake at taxi's (priority pick-up locations)
- EV's in governmental fleets
- Car Allowance Rebate System

- The relation between the uptake of EVs in certain regions and the financial incentives within these regions are not easily linked (EV's are registered at leasing companies)
- The local policies/incentives create micro-environments with a substantial impact on national figures
- The impact will be measured the workshops, interviews & surveys

Growth of available models/range of BEV's

(incl. future expectations):



Main conclusions

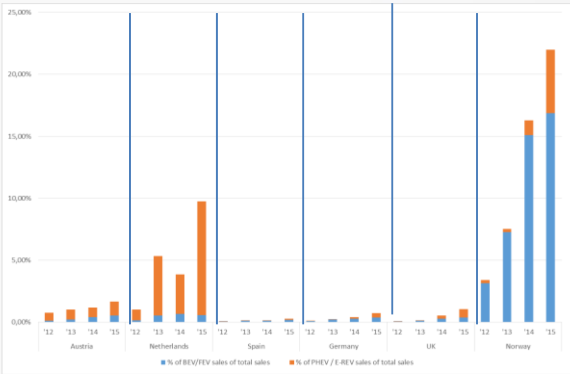
- More room for incentives for countries with high purchase tax
  ➔ The polluter pay principle! (See NO + NL)
- For substantial impact on EV uptake, financial incentives need to:
  - Minimize the purchase price premium (EV – ICE)
  - Create a TCO advantage over ICE (overcome the obstacles and limitations of EV)
- Above threshold uptake-effects of incentives become progressive, below threshold effects are minimal (price elasticity)
- Tremendous impact of daily advantages like road/parking priorities and recurring toll-cost
- Dense network of (public) chargers satisfying the needs of EV drivers and matching the characteristics of their cars: Right locations, available & accessible, affordable prices and right charging speed.


Financial incentives

Non-financial incentives

Public Charging Infrastructure

Regional/Local conditions

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Decision support model

Calculation model to identify business cases for EV's

Fleet managers

Fleet level

- TCO calculation tool including monetary incentives
- Easy to use, fast to access, full of expert knowledge, still flexible to use
- To compare plug-in electric vehicles to conventional reference vehicles

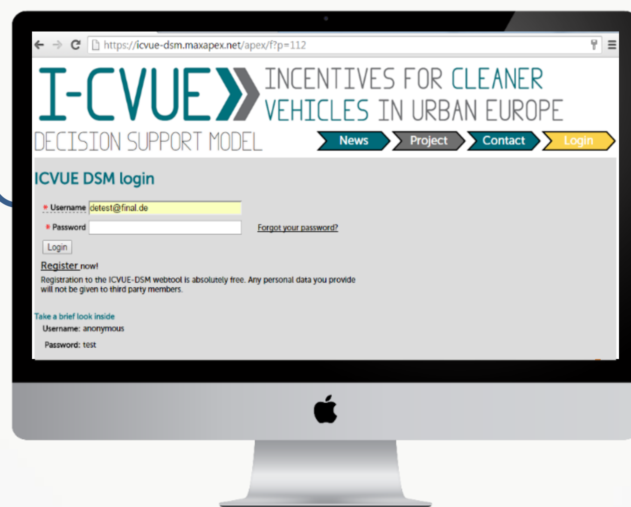
Policy makers

National level

- Possibility to analyze regional conditions for EVs (e.g. free parking etc.)
- Transfer of incentives between regions or countries

Work in progress: Extrapolate the benefits of incentive policies

- Consider first & secondary vehicle market
- Available as web service and report



Please go to the website and register at icvue.eu

Decision support model – fleet managers

Result of one test:
ICE (P) vs EV in A segment
Netherlands
15.000km/y
4 year ownership

TCO EV > TCO ICE (P)
EV is more expensive
Delta: € 2.465

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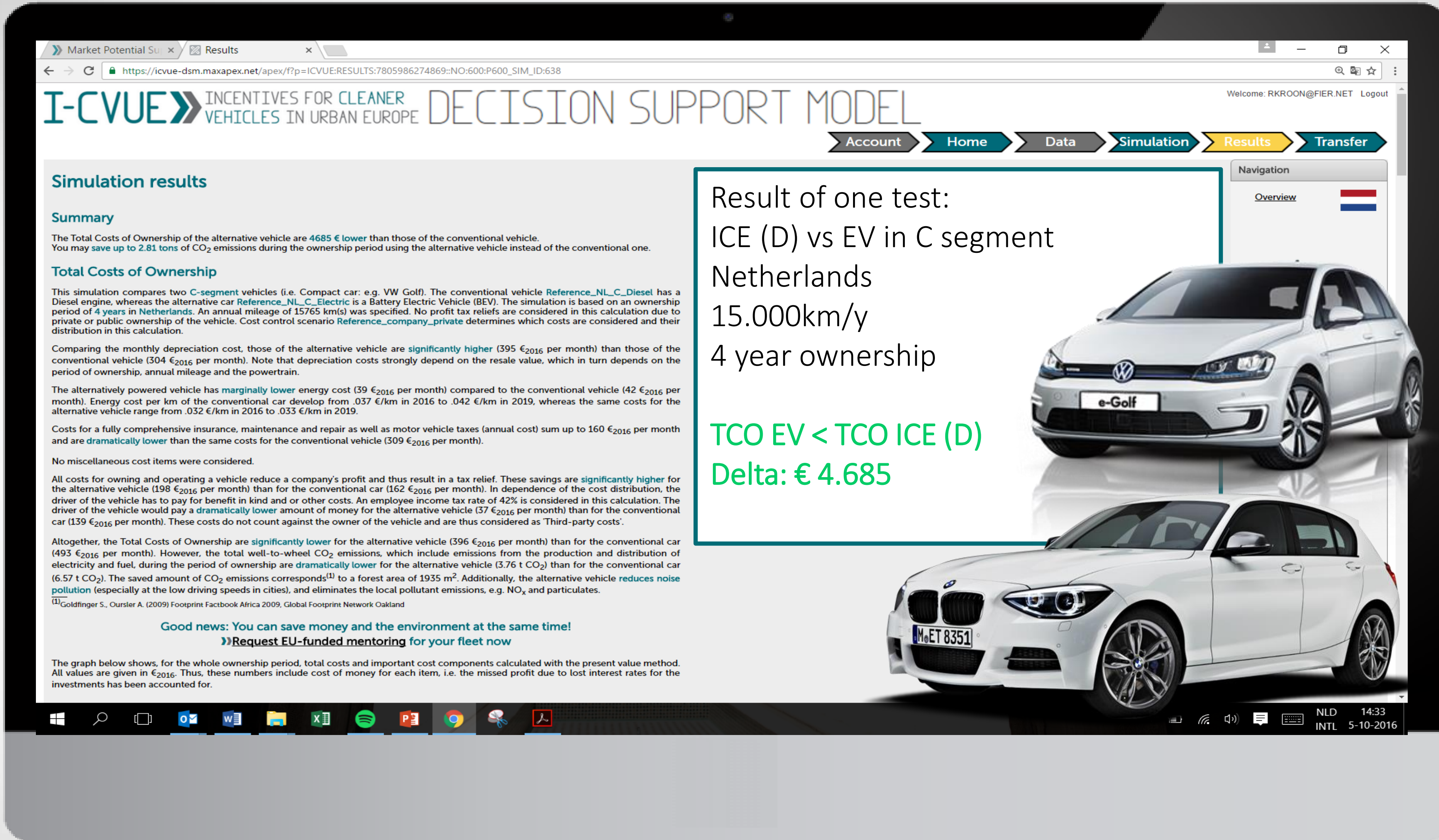
Decision support model – fleet managers



Result of one test:
ICE (D) vs EV in C segment
Netherlands
15.000km/y
4 year ownership

TCO EV < TCO ICE (D)
Delta: € 4.685

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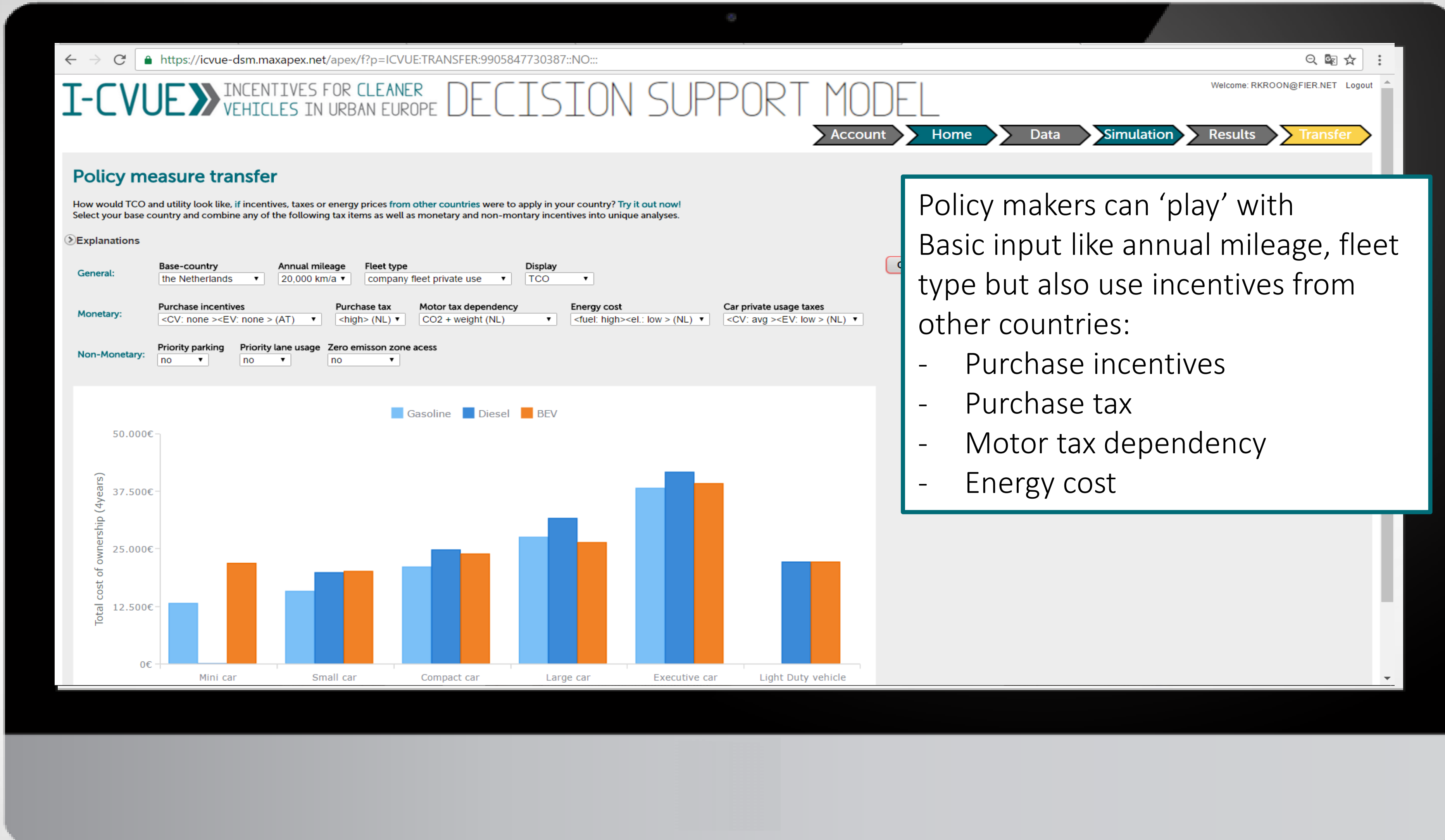
Decision support model – Policy makers



Policy makers can 'play' with Basic input like annual mileage, fleet type but also use incentives from other countries:

- Purchase incentives
- Purchase tax
- Motor tax dependency
- Energy cost

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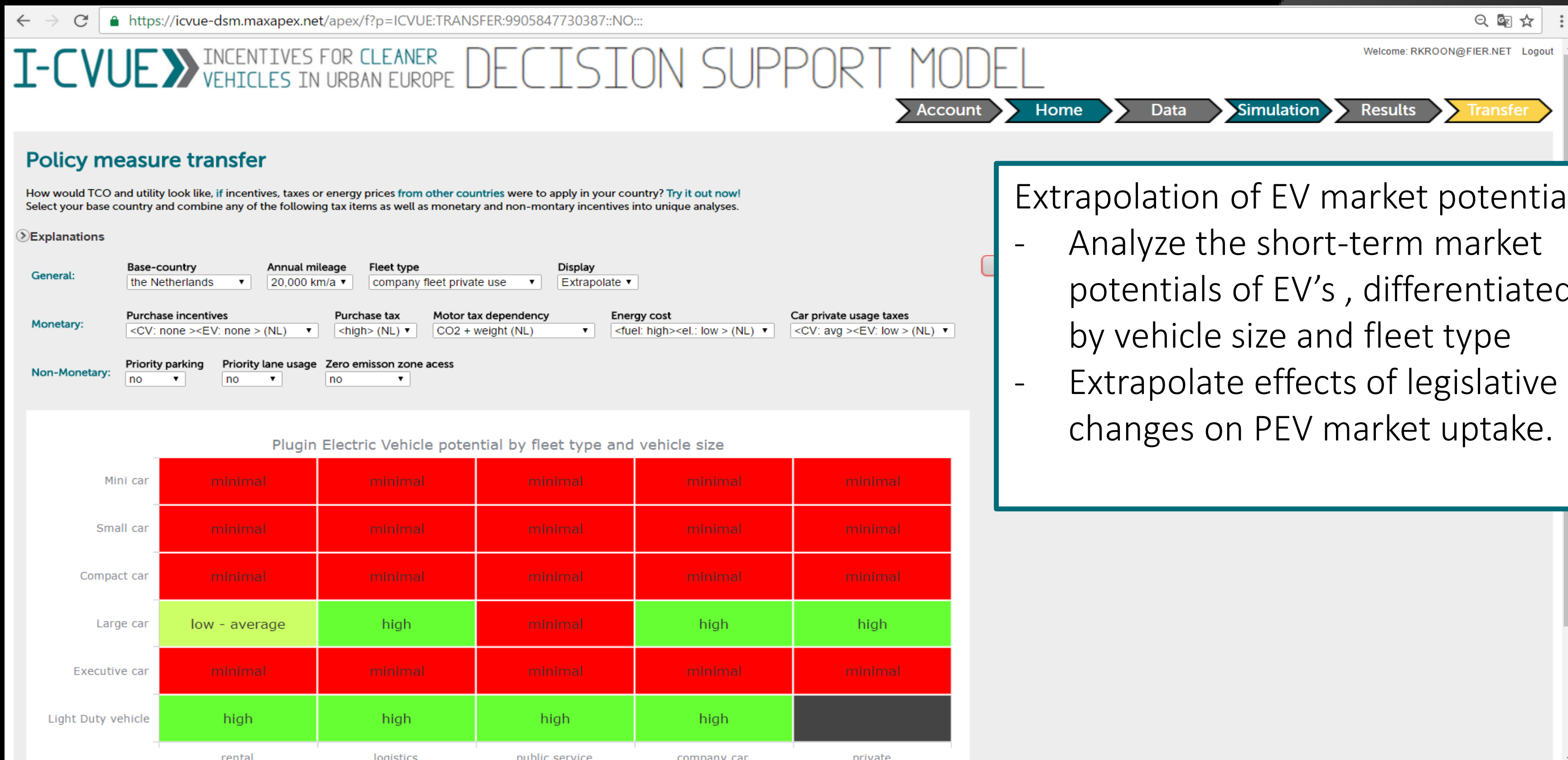
Decision support model – Policy makers



Extrapolation of EV market potentials

- Analyze the short-term market potentials of EV's , differentiated by vehicle size and fleet type
- Extrapolate effects of legislative changes on PEV market uptake.

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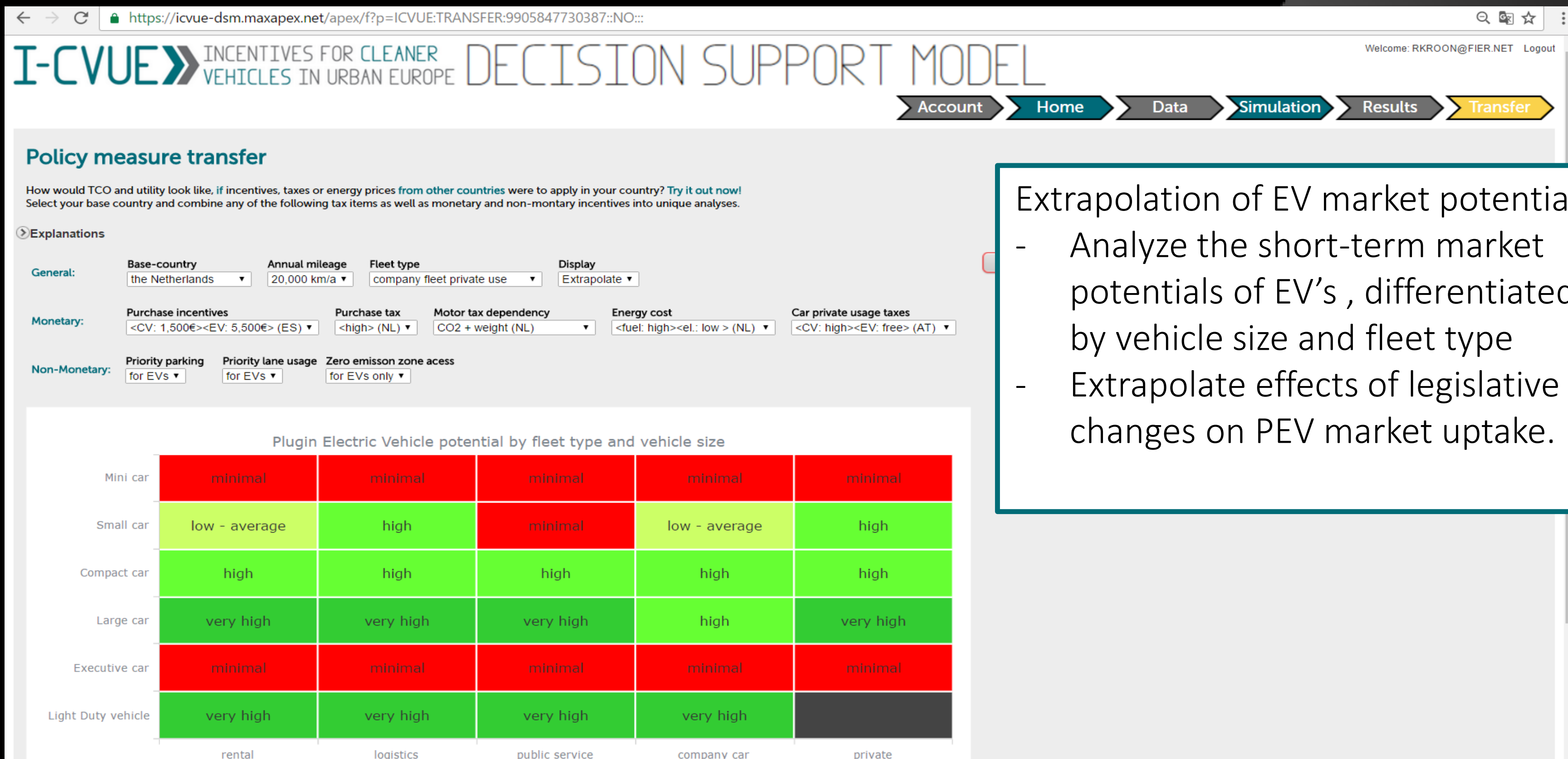
Decision support model – Policy makers



Extrapolation of EV market potentials

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Invitation for cooperation

- Contact us if interested in
  - Further expansion of the study (add your country e.g.)
  - The continuation of DSM tool
  - Interested in EV policy (advice)
  - Etc.

www.icvue.eu
or

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