Electric vehicles: key facts and figures

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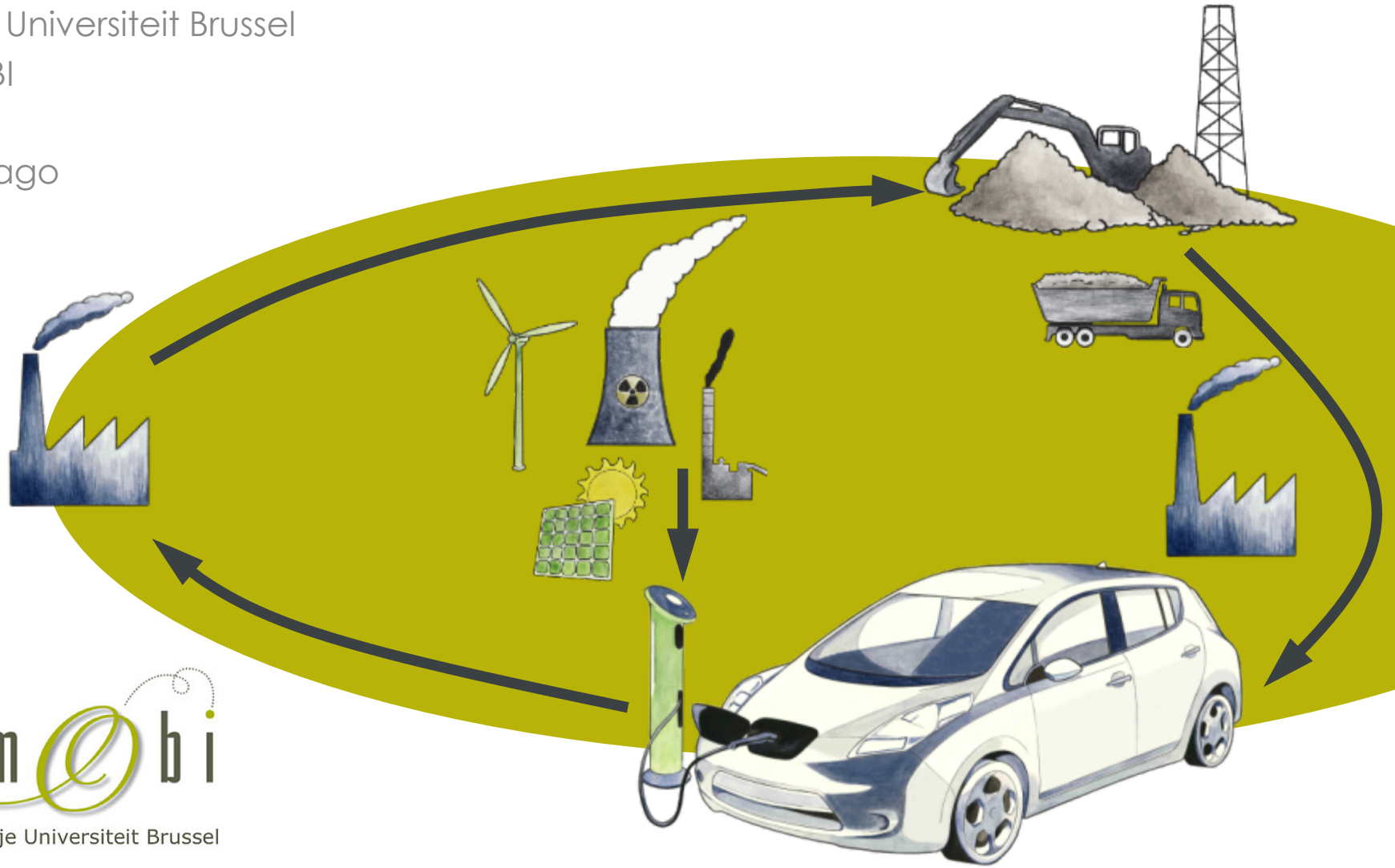
MOBI

Partago



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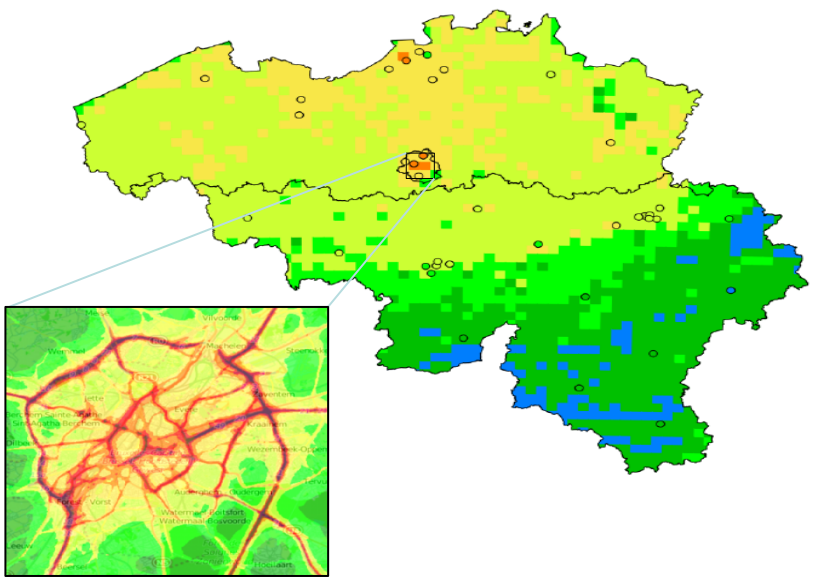
Strong foundations

Climate change (25%)

Air quality

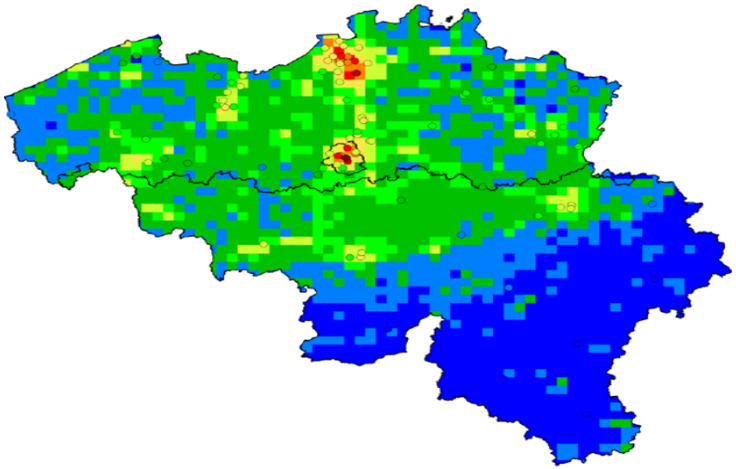
Particulate matter:
BE average :12 µg/m³

BHG, Antwerp, Ghent:
higher than 20 µg/m³



NOx:
BE average :23 µg/m³

BHG, Antwerp:
places higher than 40 µg/m³



Bron: (VMM 2012), (EEA, 2014)

1 Billion Euro's per Day
for import of Oil in Europe
Jonathan C. Wheeler

mobi
Vrije Universiteit Brussel

Thinking in systems

Avoid...

...solving a problem...

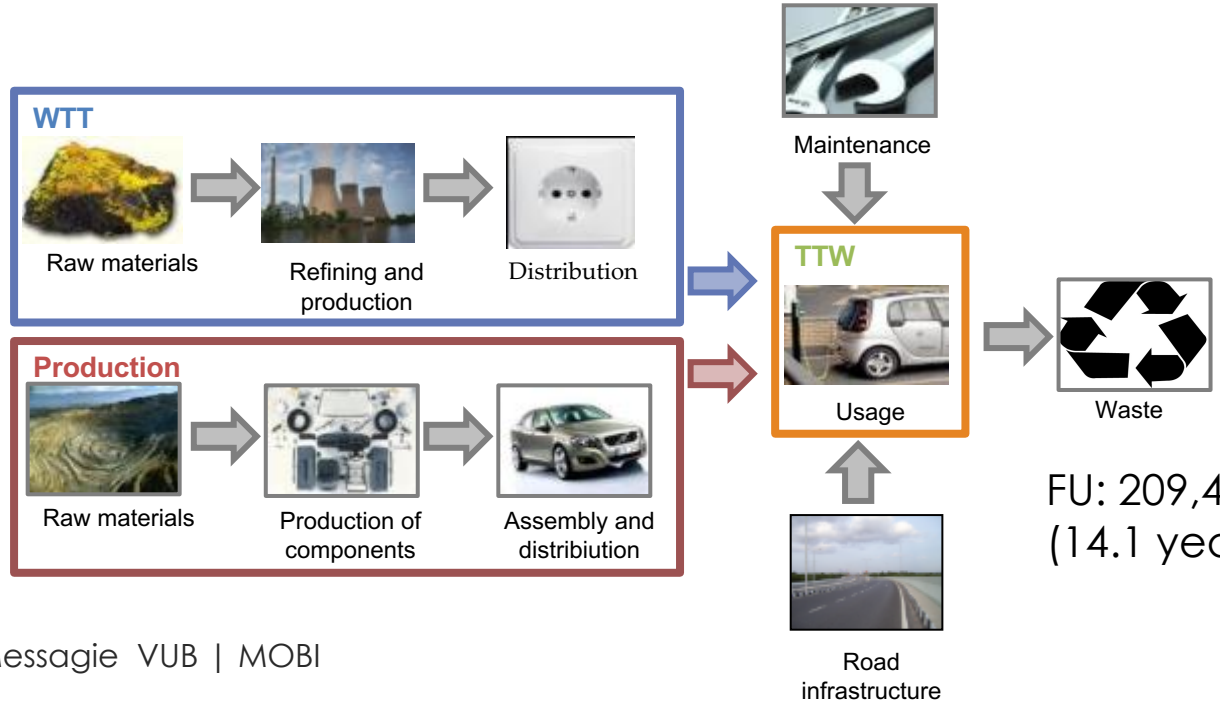
Thinking in systems

Avoid...

...solving a problem...

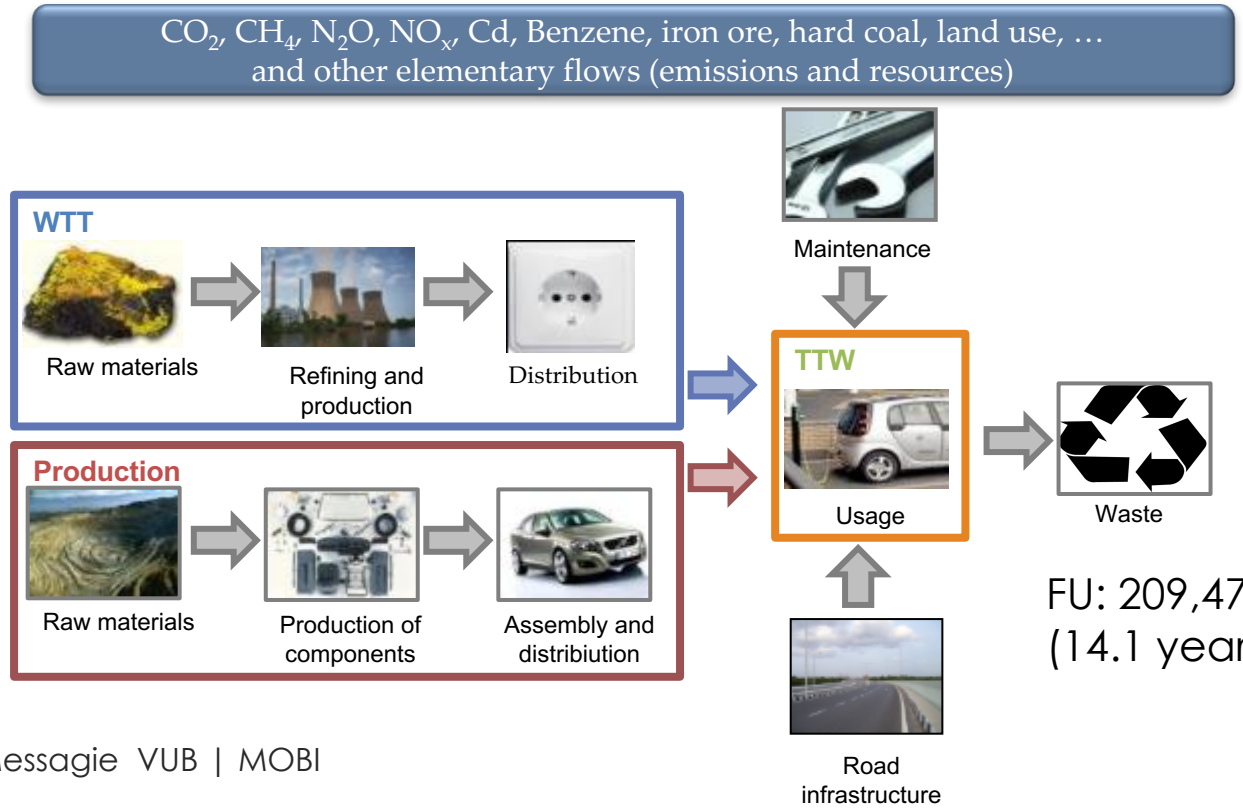
... by creating

a problem.



Inventory model

FU: 209,470 km
(14.1 years, 14,856 km/yr)



Elementary flows

Inventory model

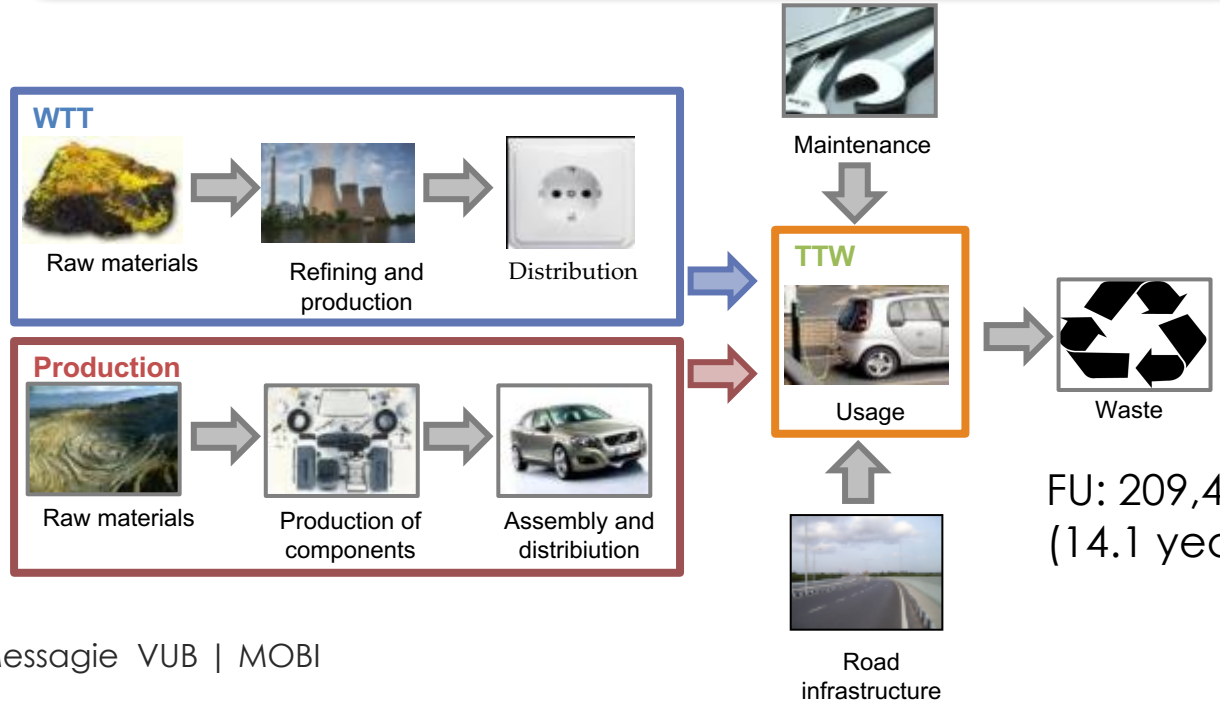
FU: 209,470 km
(14.1 years, 14,856 km/yr)

Radiation
Climate change
Human toxicity
Ozone formation
PM formation
Eutrophication
Ozone depletion
Eco toxicity
Acidification
Land use
Water use
Mineral depletion
Fossil fuel depletion

Midpoint impacts

CO_2, CH_4, N_2O, NO_x, Cd, Benzene, iron ore, hard coal, land use, …
and other elementary flows (emissions and resources)

Elementary flows



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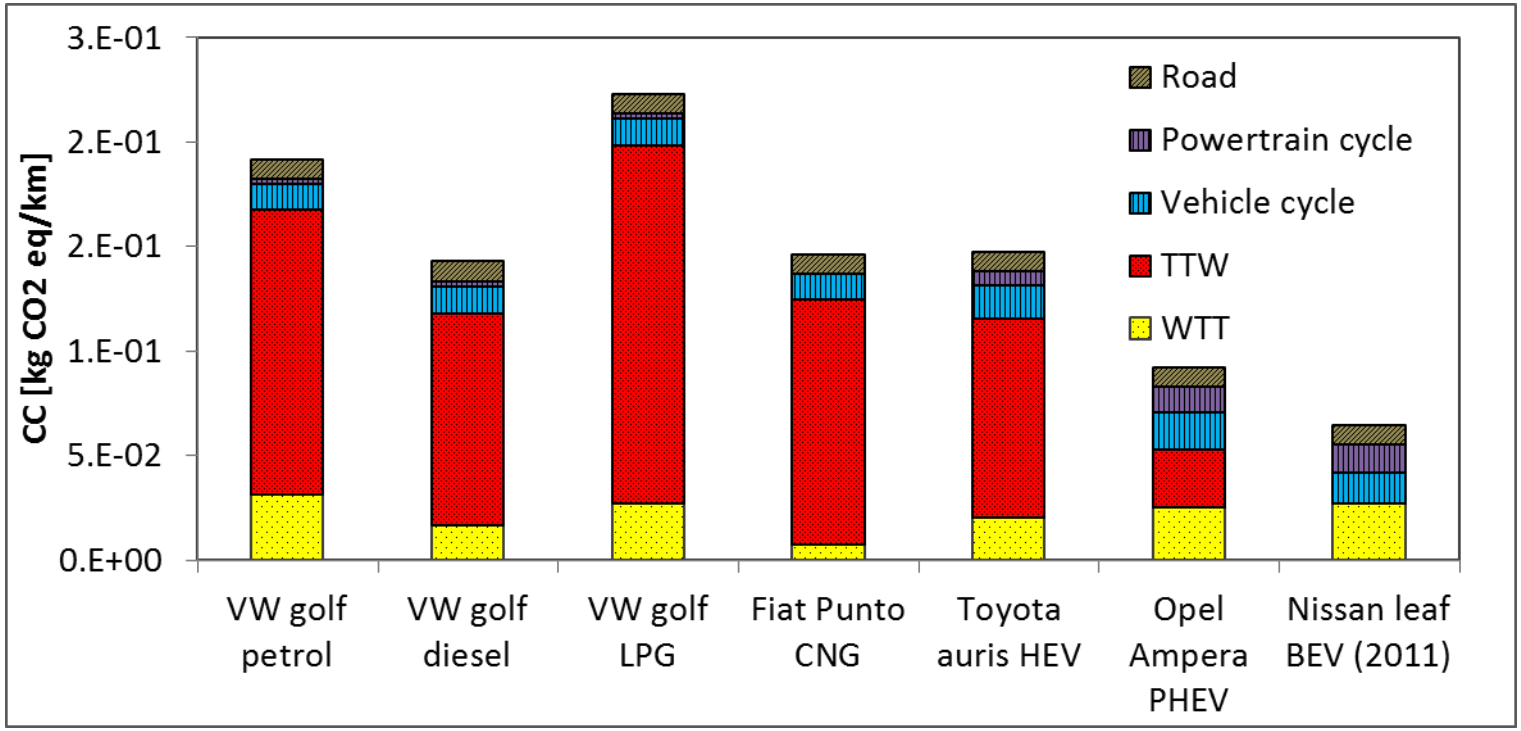
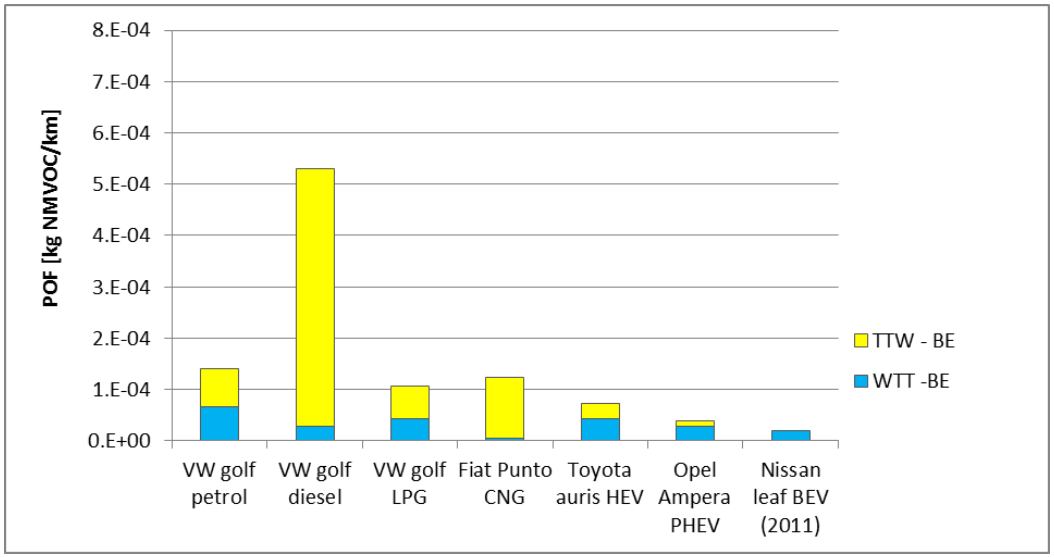
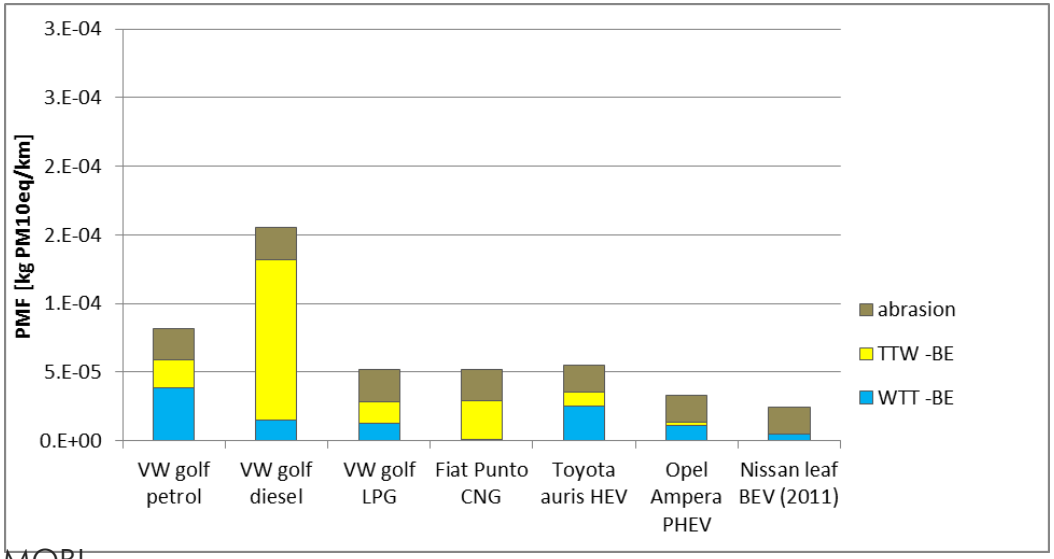


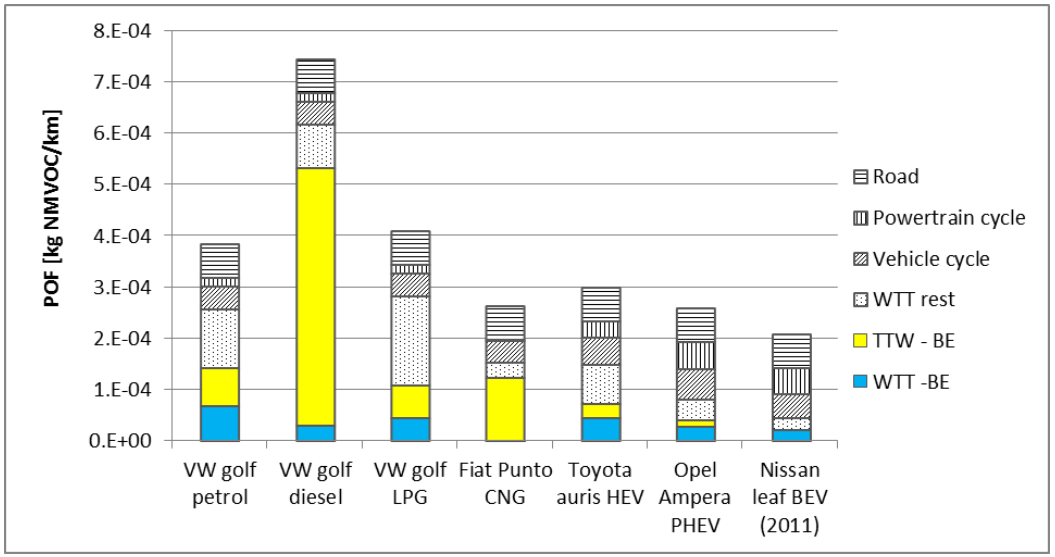
Messagie, M., Lebeau, K., Coosemans, T., Macharis, C., Van Mierlo, J. (2013) Environmental and Financial Evaluation of Passenger Vehicle Technologies in Belgium SUSTAINABILITY Volume: 5 Issue: 12 Pages: 5020-5033

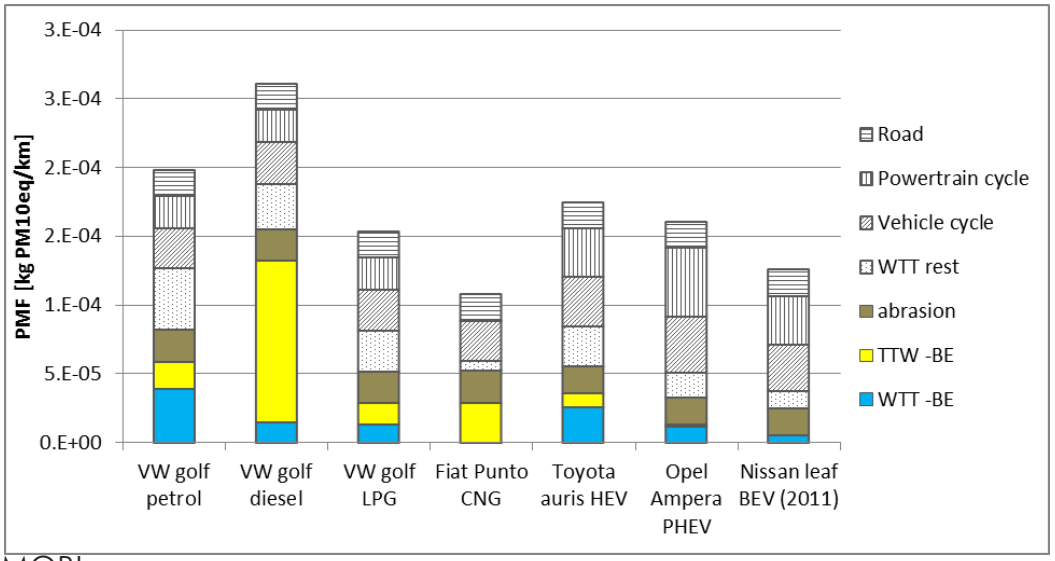
Air quality in Belgium



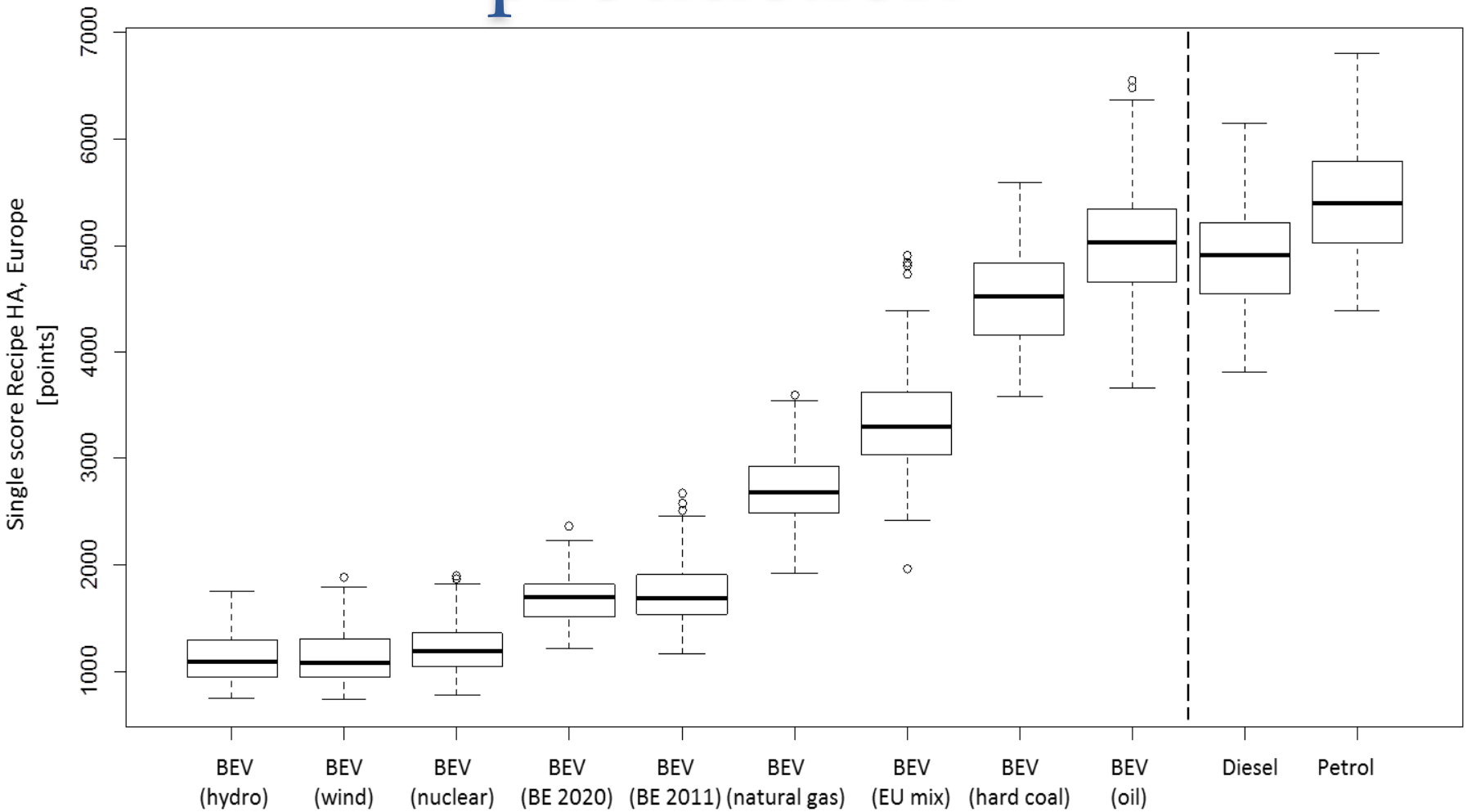


Life cycle air quality





Influence of electricity production



Messagie, M., Boureima, F., Coosemans, T., Macharis, C., Van Mierlo, J. (2014) A Range-Based Vehicle Life Cycle Assessment Incorporating Variability in the Environmental Assessment of Different Vehicle Technologies and Fuels. ENERGIES Volume: 7 Issue: 3 Pages: 1467-1482

Doesltellingen Vlaanderen 2020

	2015	2020
Aandeel BEV		7,5%
BEV-vloot	2000	60500
PHEV-vloot	2300	13600
laadpunten	430**	7400

	2015	2020
Aandeel CNG		5%
CNG-vloot	2000	41000
CNG-tankstations	50	300

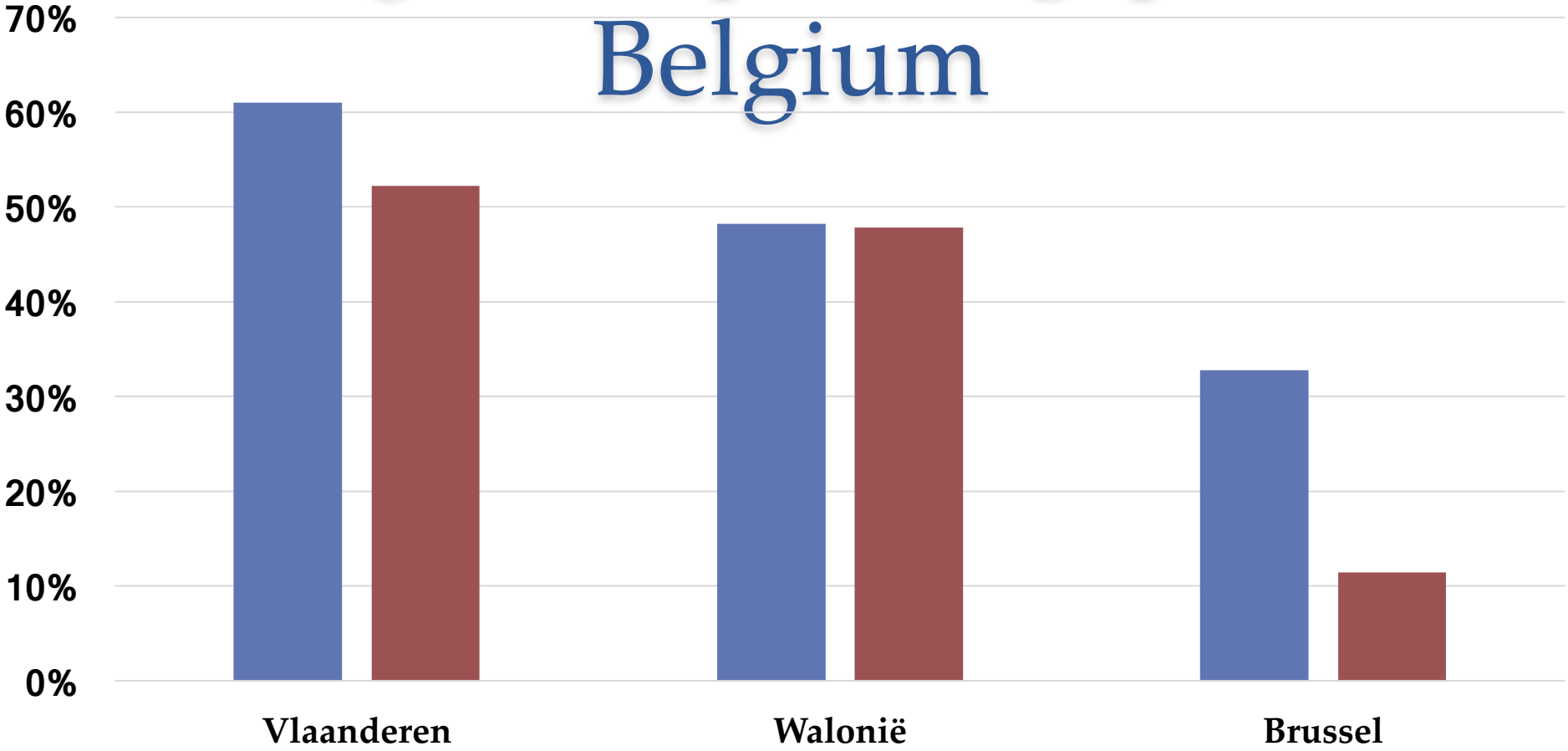
Top 3 Barriers for EVs

High purchase cost

Limited driving range

Limited charging infrastructure

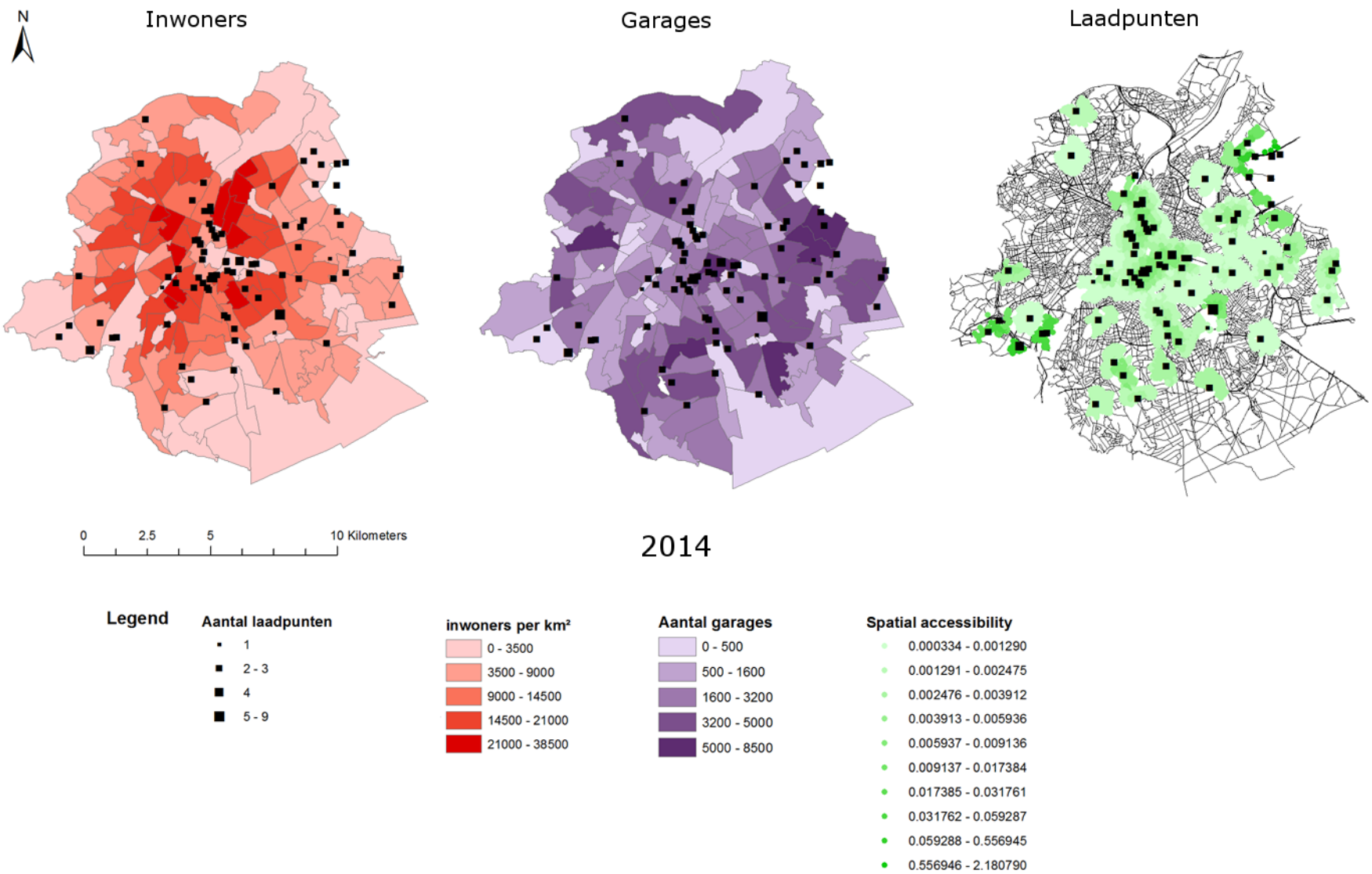
Garage and parkingspots in Belgium



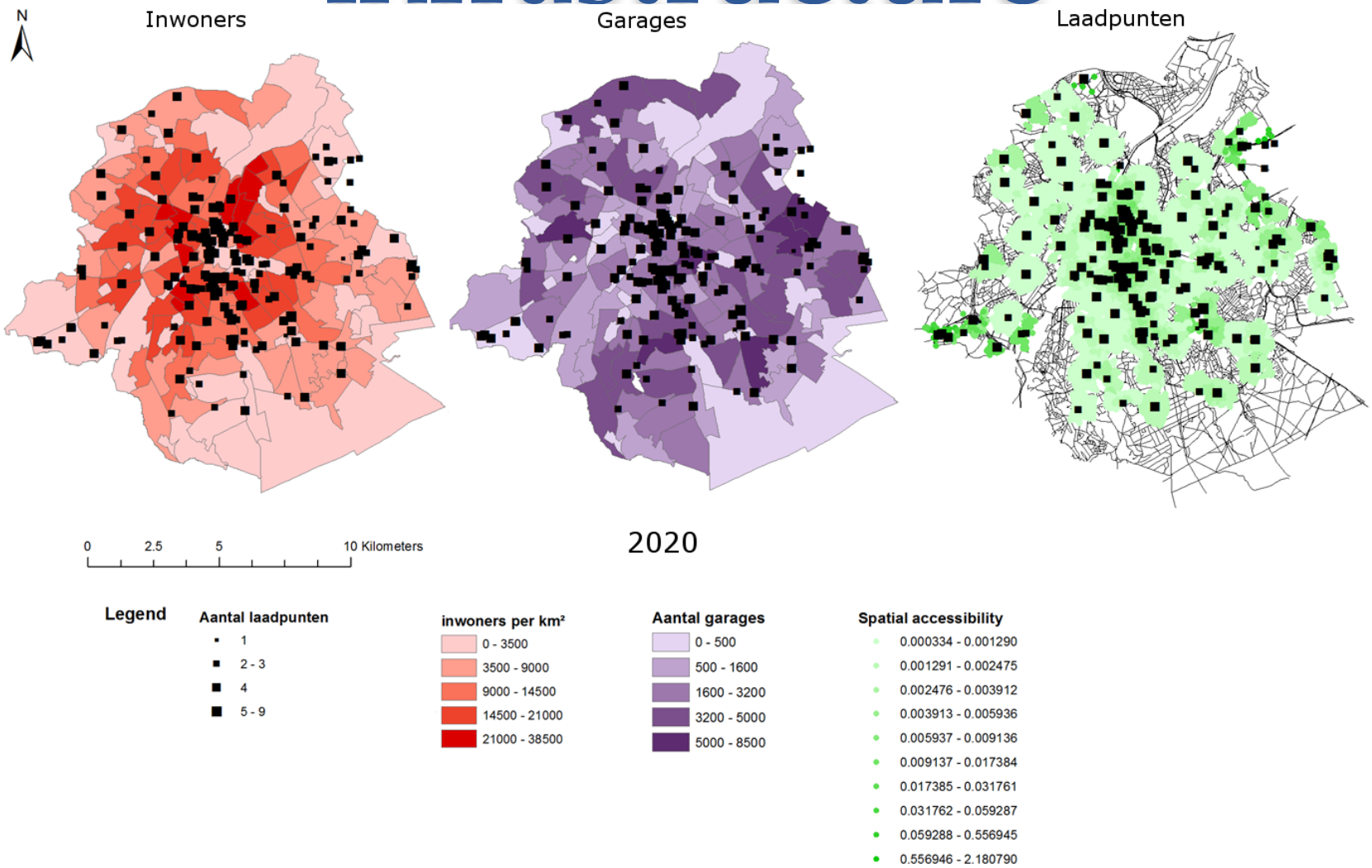
% aantal gebouwen met garage, parking of overdekte staanplaats / aantal gebouwen

% aantal gebouwen met garage, parking of overdekte staanplaats / aantal woongelegenheden

La situation en 2014



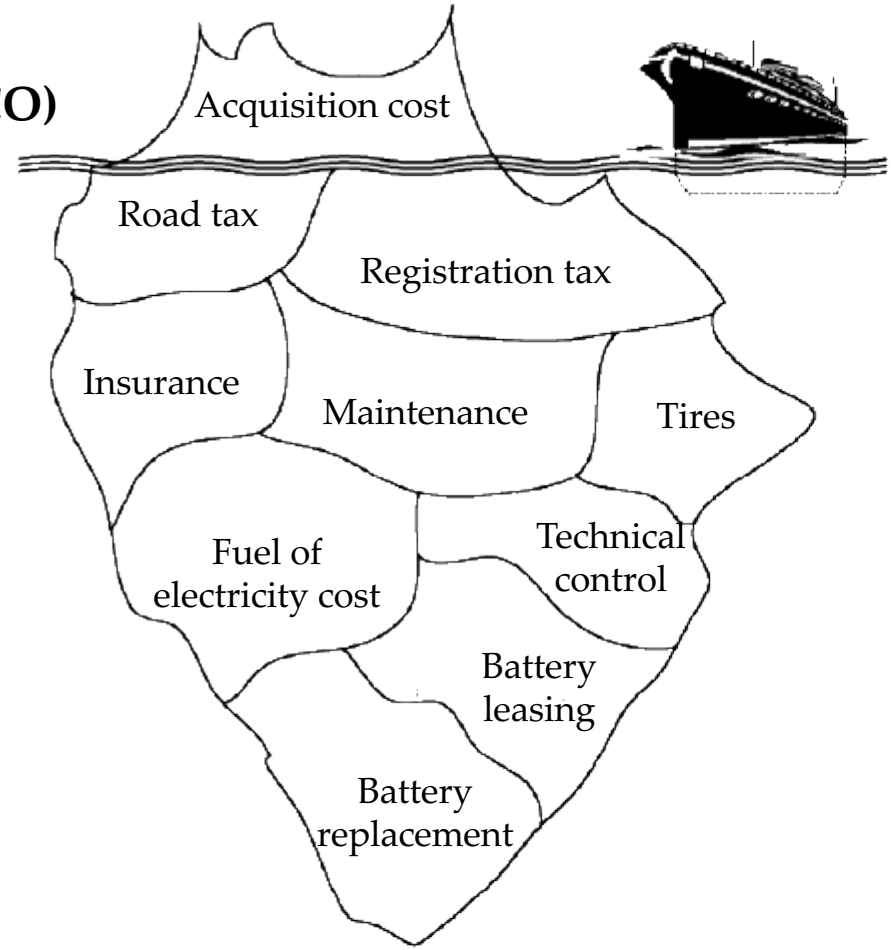
Intelligent roll-out of infrastructure



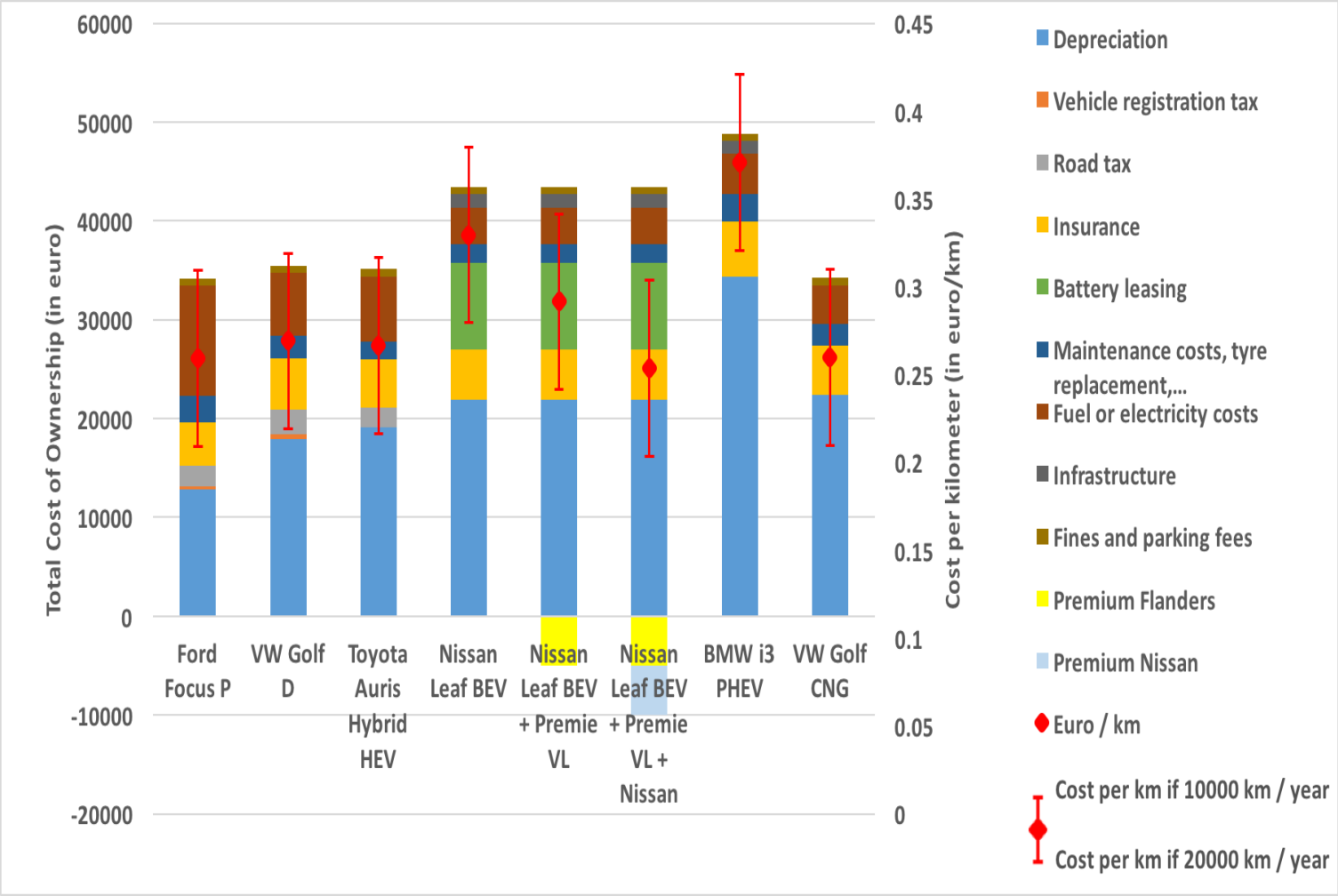
The cost barrier

Total cost of ownership (TCO)

(Iceberg effect)



TCO voitures familiales



Q&A

Make your future

Info @ maarten.messagie@vub.ac.be

http://mobi.vub.ac.be/mobi/research-tool/lca

Awareness and Training

Learn how to capitalize on the economic benefits of life cycle thinking

Mapping Insights

Evaluate product impacts in line with a variety of methodologies and standards

Creating Opportunities

Compare alternate eco-design scenarios and define indicators, dashboards and actions

Communicating Benefits

Make results understandable and easily accessible to all stakeholders