

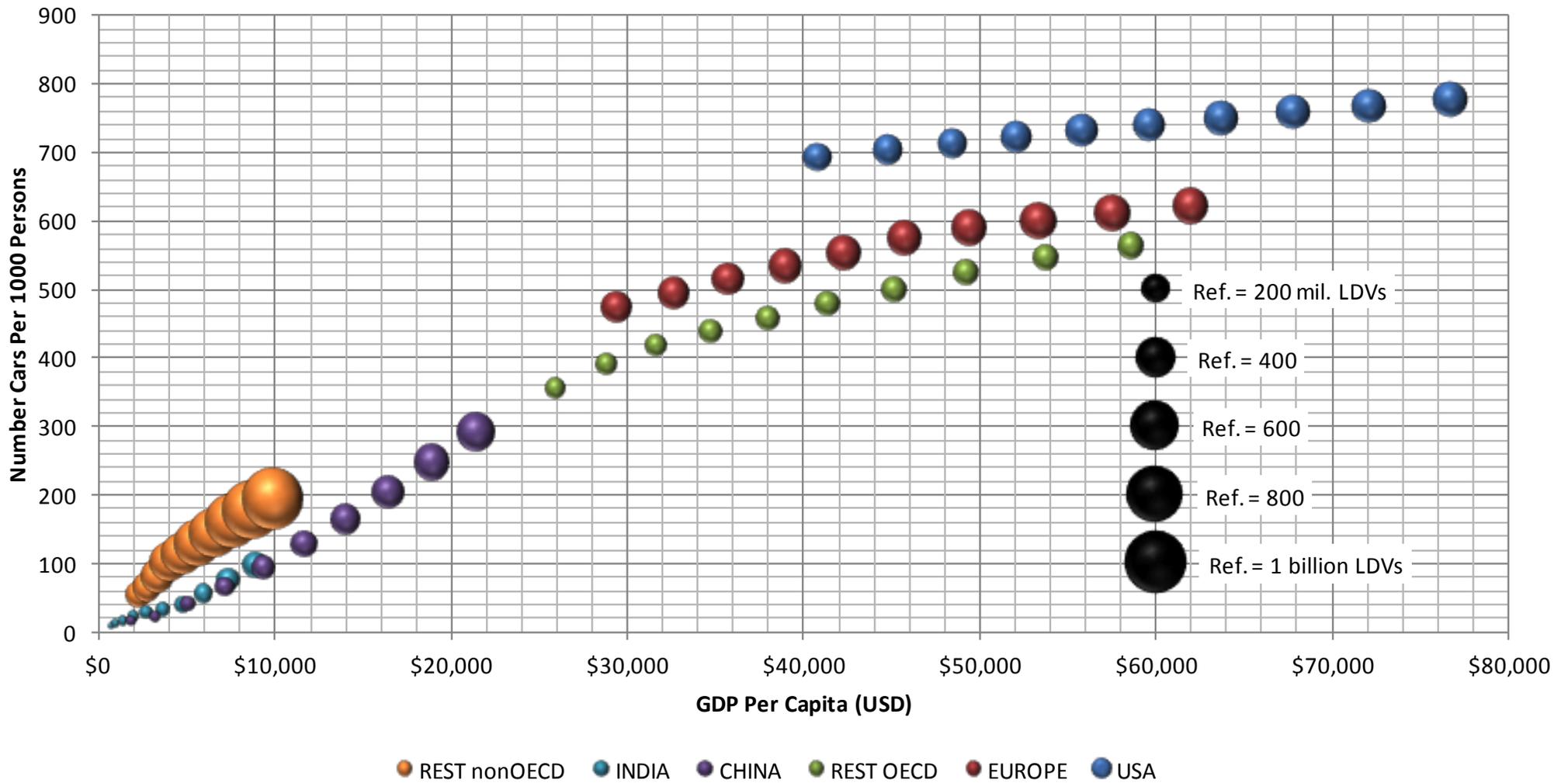


The Transition to Low-Carbon Transportation

Thomas Longden – FEEM/CMCC

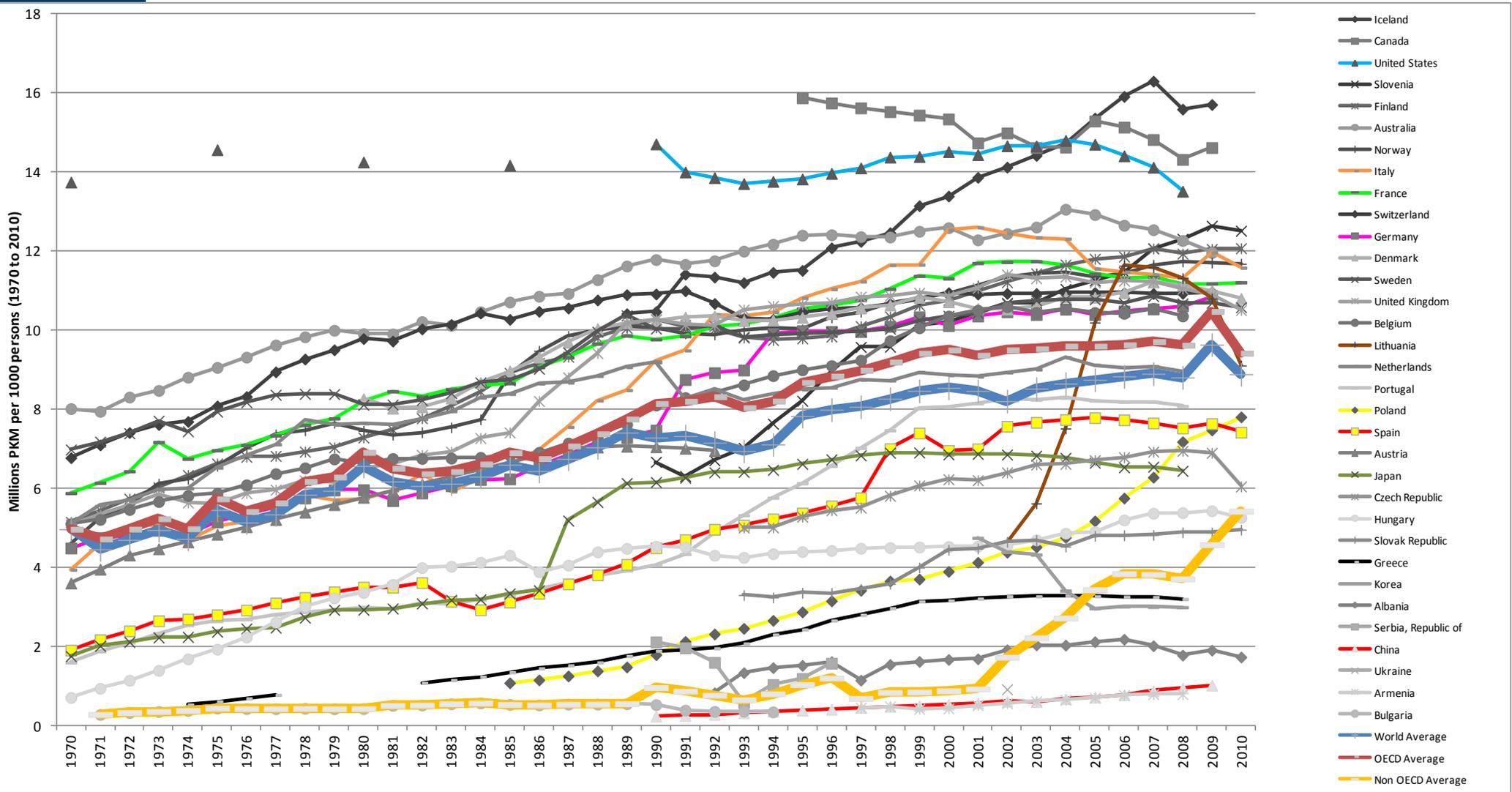
Economic Challenges for Energy– Madrid – 10 January 2013

Key Issue – Forecasts of LDV Ownership

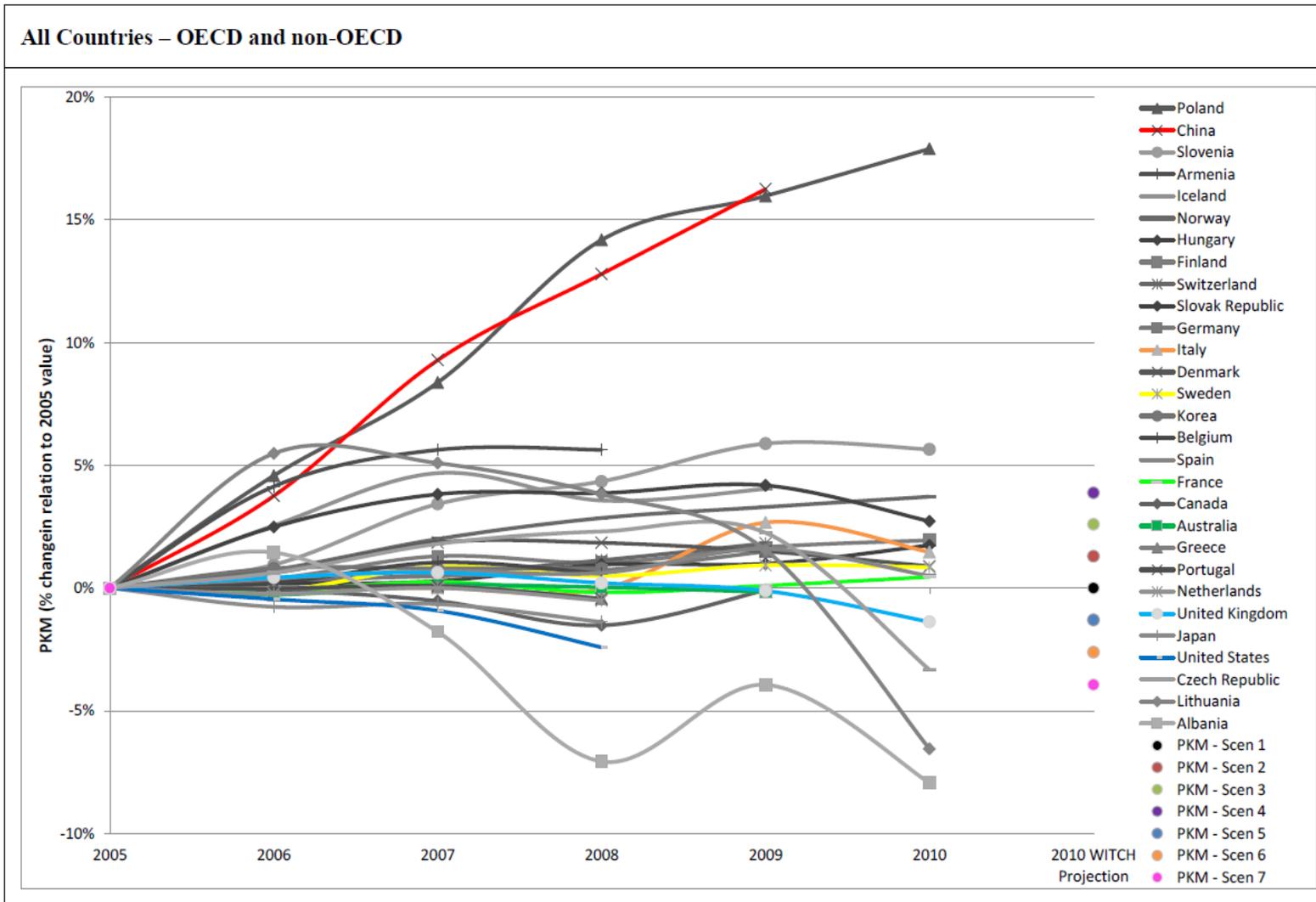


Extracted from Bosetti, V. and Longden, T. (2012) "Light Duty Vehicle Transportation and Global Climate Policy: the Importance of Electric Drive Vehicles." FEEM Note di Lavoro

Historical Trends – Long Term – Mil. PKM per 1000 persons

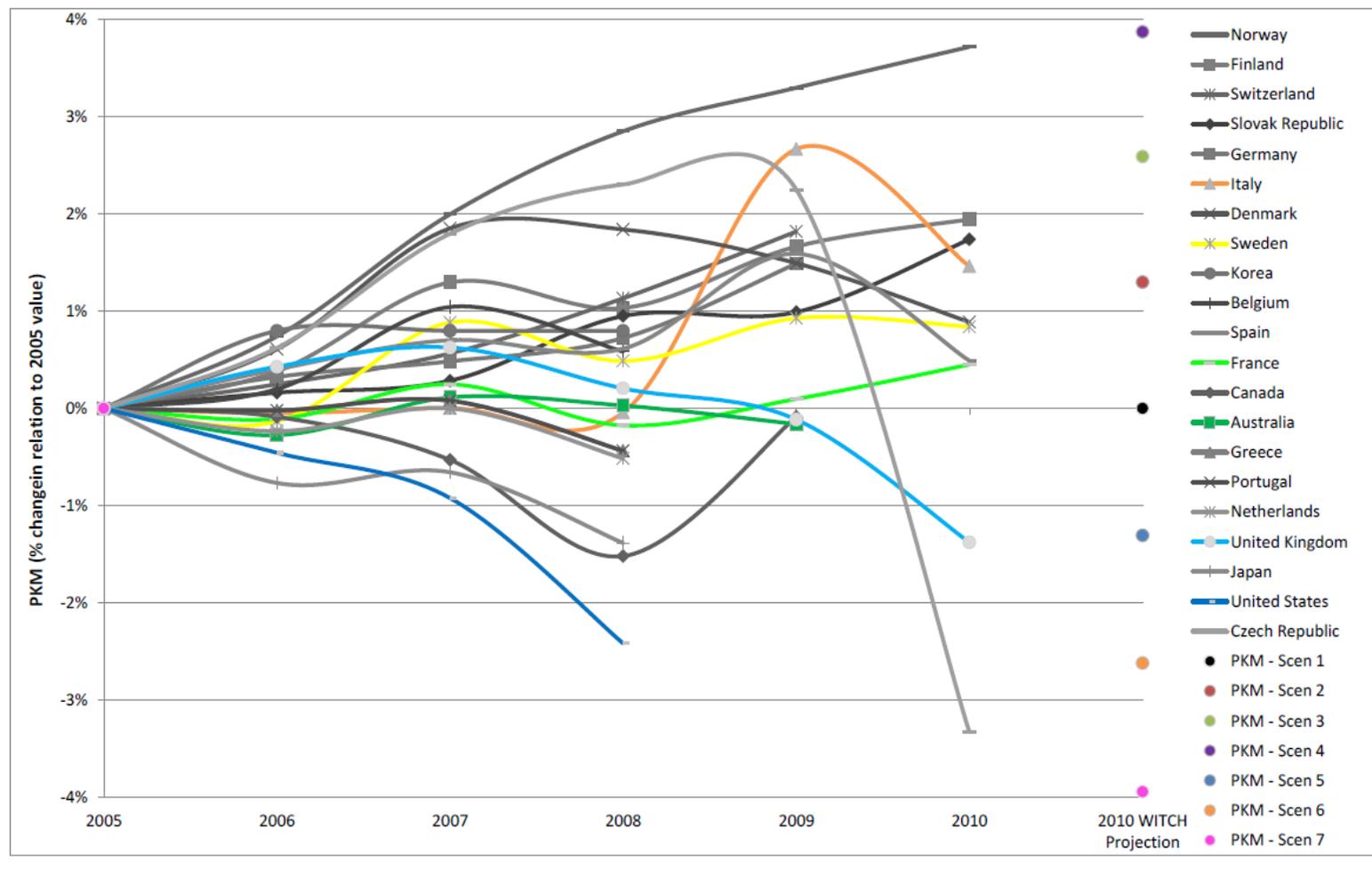


Historical Trends – Short term – PKM (change wrt 2005)



Historical Trends – Short term – PKM (change wrt 2005)

Limited Range of Countries – OECD



ICARUS Survey

Firefox Icarus project

www.icarus-project.org

BBC smh smh Telegraph ABCNews Lateline SPIKE Spike Traduttore FOX Fox NRL WTForum ENN Maps UNEP env-econ jji GEO Data RTenT who? Com ANSA

CONTACT US NEWSLETTER

icarus Innovation for Climate chAnge mitigation: a study of energy R&d, its Uncertain effectiveness and Spillovers

FONDAZIONE ENI ENRICO MATTEI erc

HOME ABOUT PUBLICATIONS EVENTS TEAM

Short Technical Report: Electric drive vehicles

Electric drive vehicles have the potential to change the road as we know it. However their cost is still... [more]

YouTube

0:00 / 0:00

Search this website... SEARCH

erc About
Innovation for Climate chAnge mitigation: a study of energy R&d, its Uncertain effectiveness and Spillovers' is a three-year (2010-2012) European Research Council (ERC) Starting Grant funded by the European Commission under the umbrella of the 7th Framework Programme. The project is coordinated by ... [...]

icarus Icarus, moving forward
This newsletter marks half the lifetime of the ICARUS Project. This newsletter marks half the lifetime of the ICARUS Project. In the past months we reached some important milestones with respect to data collection and analysis, expert elicitation, and modelling innovation and technology transfer. With ... [...]

Browse by technology

5

FONDAZIONE ENI ENRICO MATTEI

ICARUS – Biofuel Diffusion

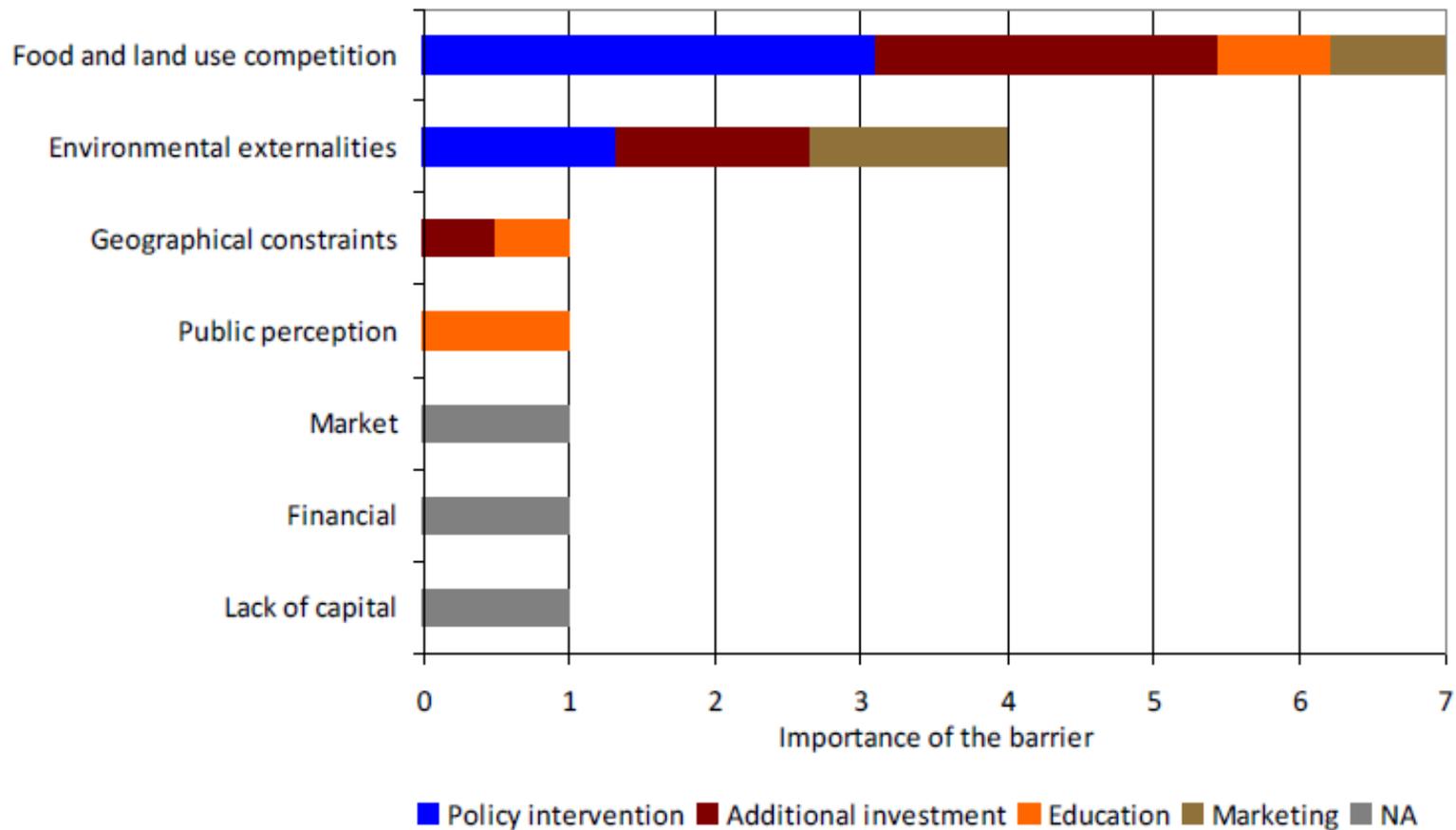


Figure 9: Factors which could represent non-technical barriers to the diffusion of biofuel technologies and potential solutions to overcome the barriers.

ICARUS – EDV Diffusion

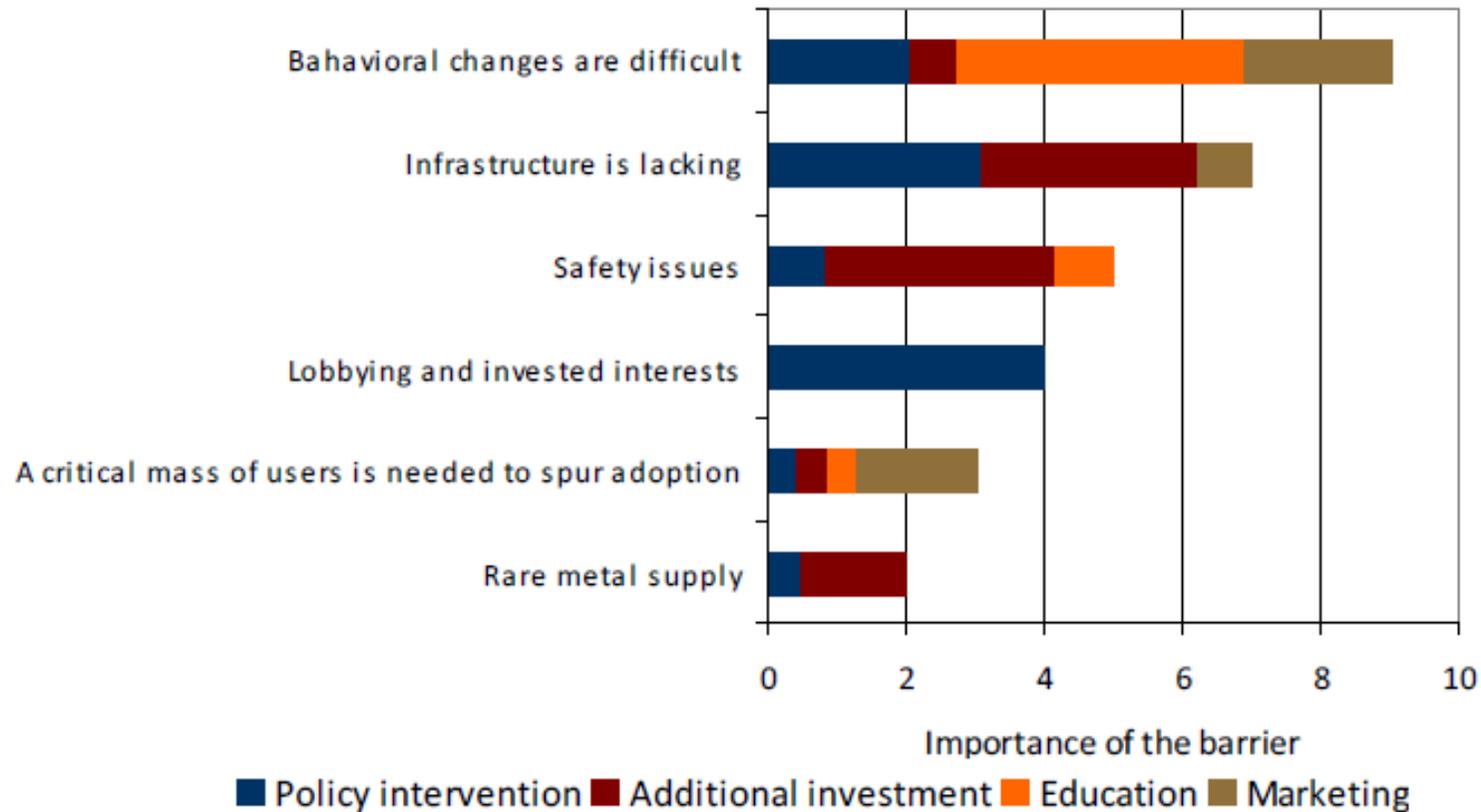


Figure 10: Factors which could represent non-technical barriers to the diffusion of EDVs and potential solutions to overcome the barriers. The importance of the barrier is given by the number of experts who indicated the barriers with maximum importance.

Major Points:

- Modelling long term LDVs projections,
- LDV projections,
- Achieving climate policy,
- Electric Drive Vehicles, and
- Conclusion.

WITCH and Light Duty Vehicle Transportation

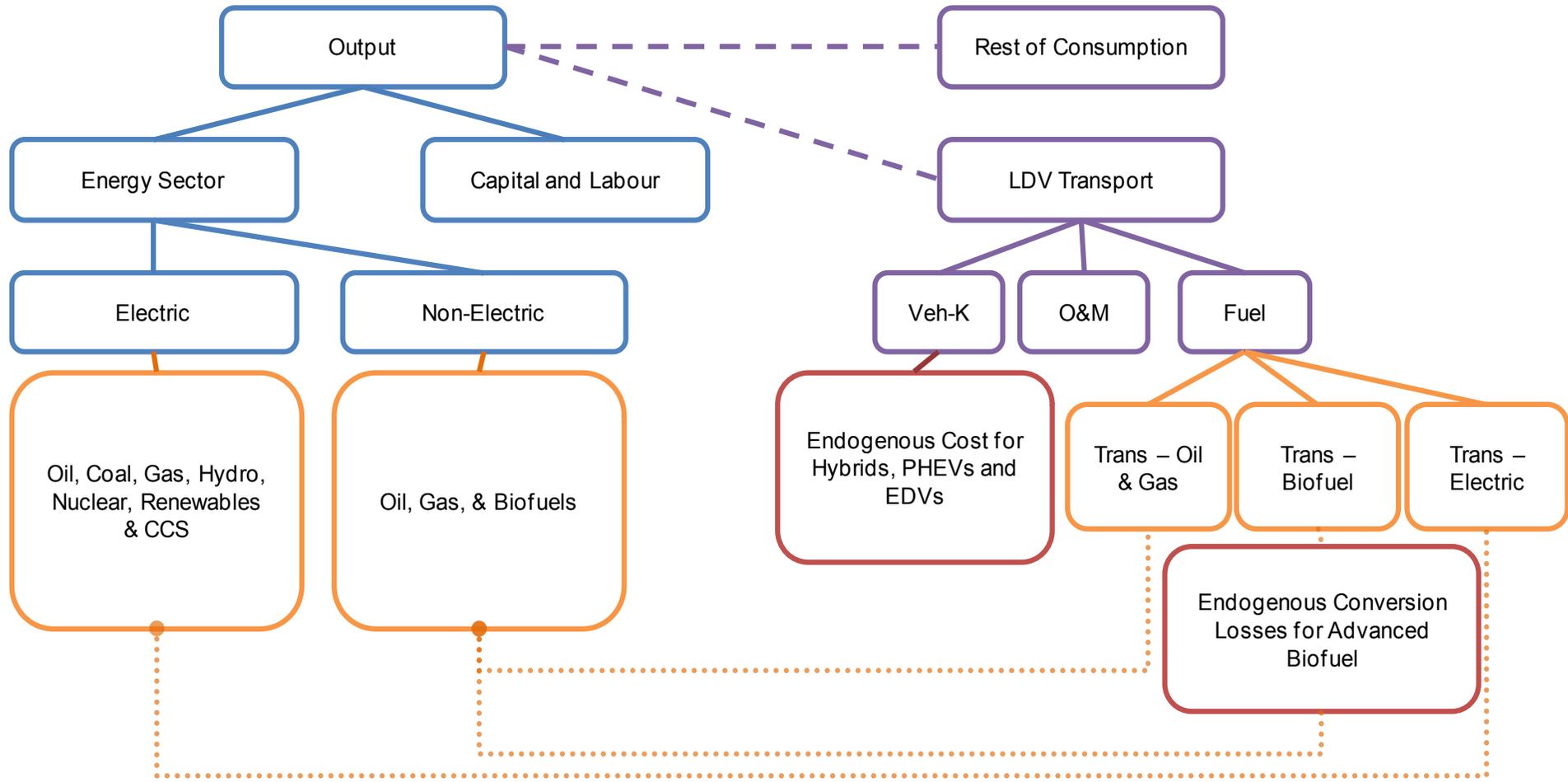
- WITCH – World Induced Technical Change Hybrid model –a regional integrated assessment model.
- Dynamic optimal growth general equilibrium model, WITCH has a detailed (‘bottom-up’) representation of the energy sector and now a light duty vehicle transport sector as well.
- A global model, it is divided into 13 macro-regions.
- The base year for calibration is 2005 and all monetary values are in constant 2005 USD.
- The discussion which follows focuses on the overall model structure and the extensions introduced to incorporate the LDV transport sector into the wider model.

Interesting Dimensions of the Model

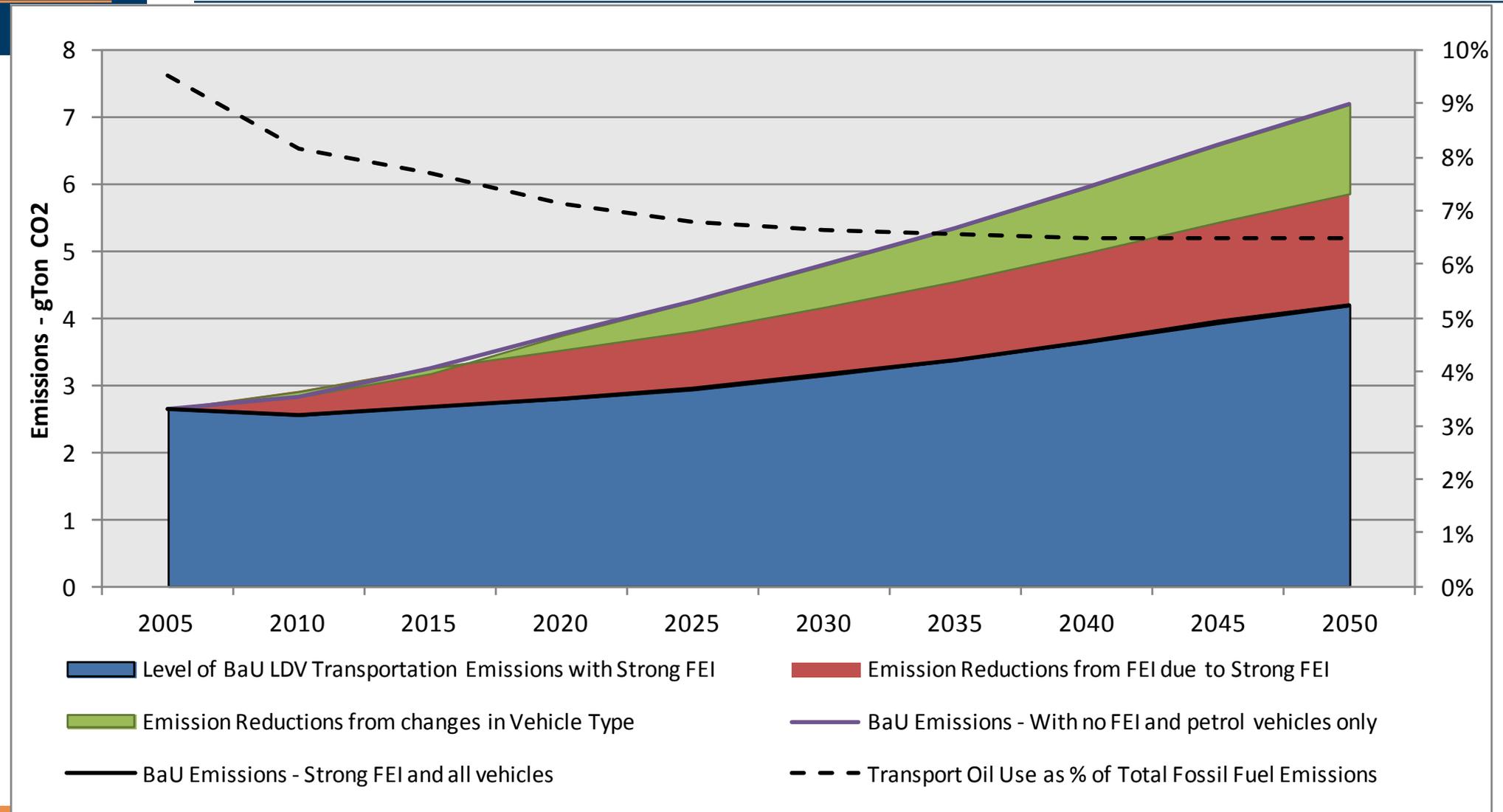
Built in elements:

- type of vehicles and fuel source,
- fuel efficiency improvements,
- kilometres travelled per annum,
- vehicle prices,
- endogenous technical change in the conversion of biofuels from biomass and battery-related technology for hybrids/PHEVs/EDVs.

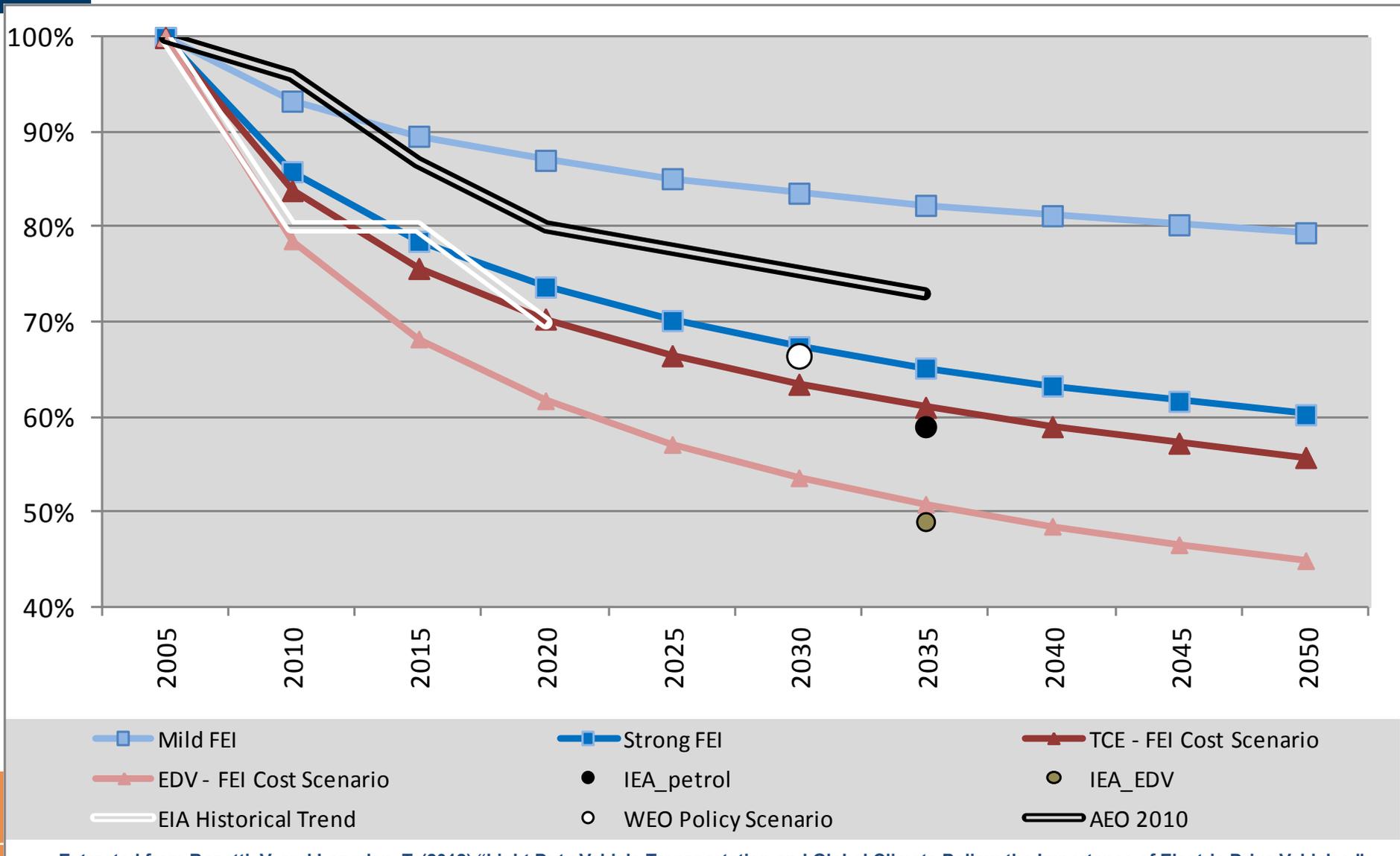
Transport Module



Fuel Efficiency versus Vehicle Switching

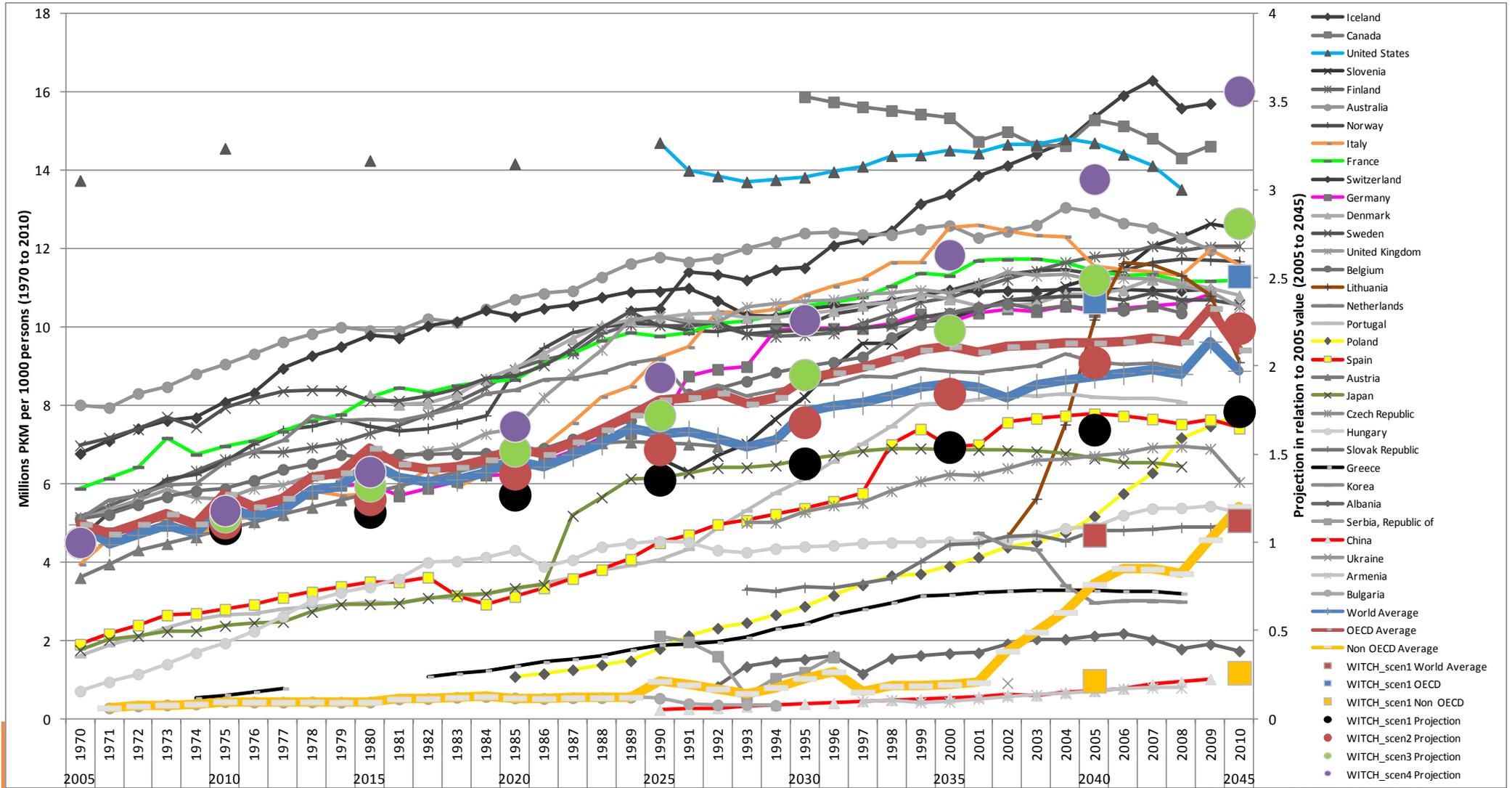


Fuel Efficiency – Light Duty Vehicles



Extracted from Bosetti, V. and Longden, T. (2012) "Light Duty Vehicle Transportation and Global Climate Policy: the Importance of Electric Drive Vehicles." FEEM Note di Lavoro

Mobility in the Future – History versus Hypothetical Trends

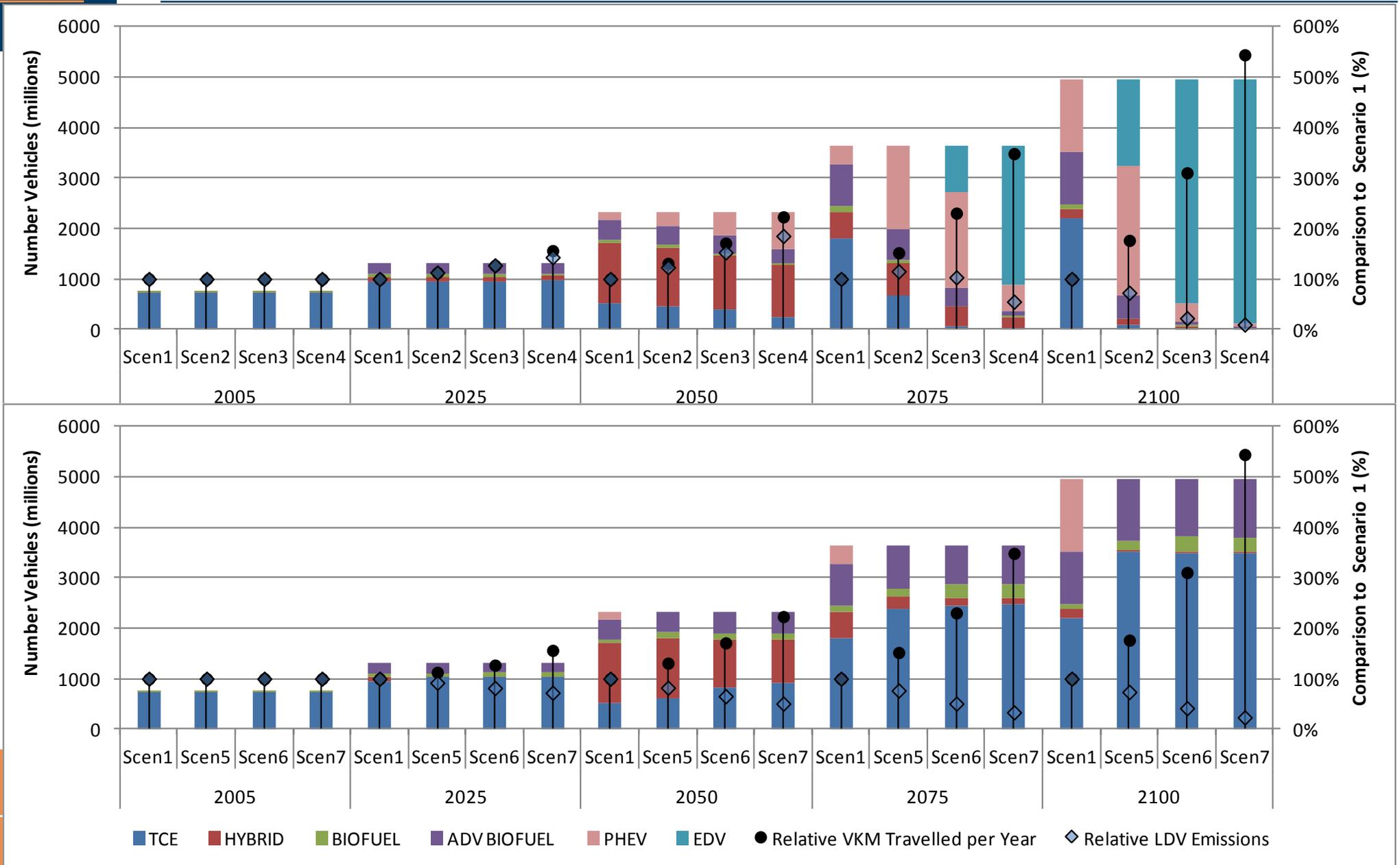


Extracted from Longden, T. (2012) "Deviations in Kilometres Travelled: The Impact of Different Mobility Futures on Energy Use and Climate Policy." FEEM Note di Lavoro

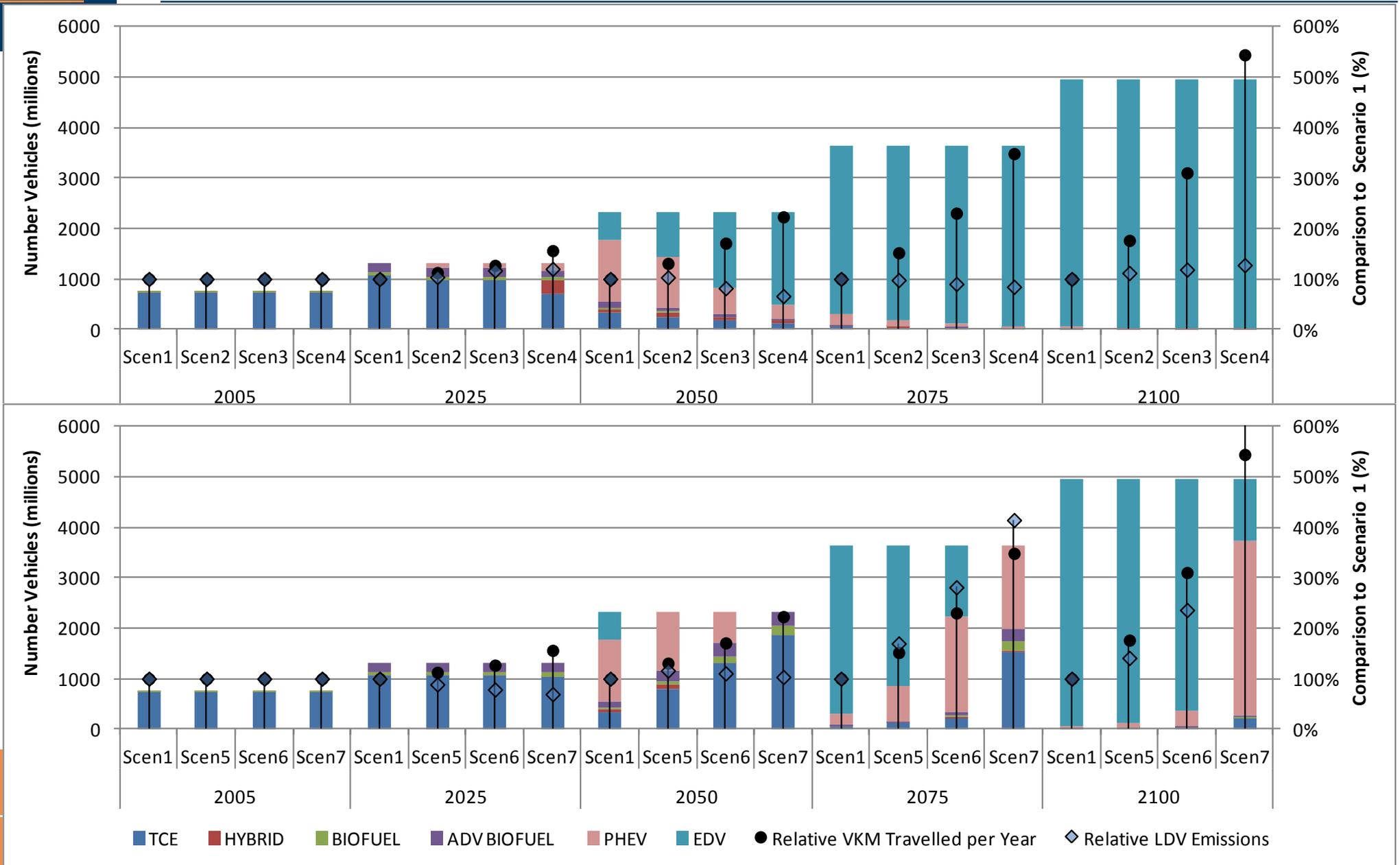
Mobility – Hypothetical trends

<i>Scenario Name and Acronym</i>	<i>Brief Description</i>
Constant VKM (Scen1)	No increase in kilometres driven per vehicle
Increase VKM – 0.6% per annum (Scen2)	Slight annual increase in kilometres driven per vehicle
Increase VKM – 1.2% per annum (Scen3)	Moderate annual increase in kilometres driven per vehicle
Increase VKM – 1.8% per annum (Scen4)	Large annual increase in kilometres driven per vehicle
Decrease VKM – 0.6% per annum (Scen5)	Slight annual decrease in kilometres driven per vehicle
Decrease VKM – 1.2% per annum (Scen6)	Moderate annual decrease in kilometres driven per vehicle
Decrease VKM – 1.8% per annum (Scen7)	Large annual decrease in kilometres driven per vehicle

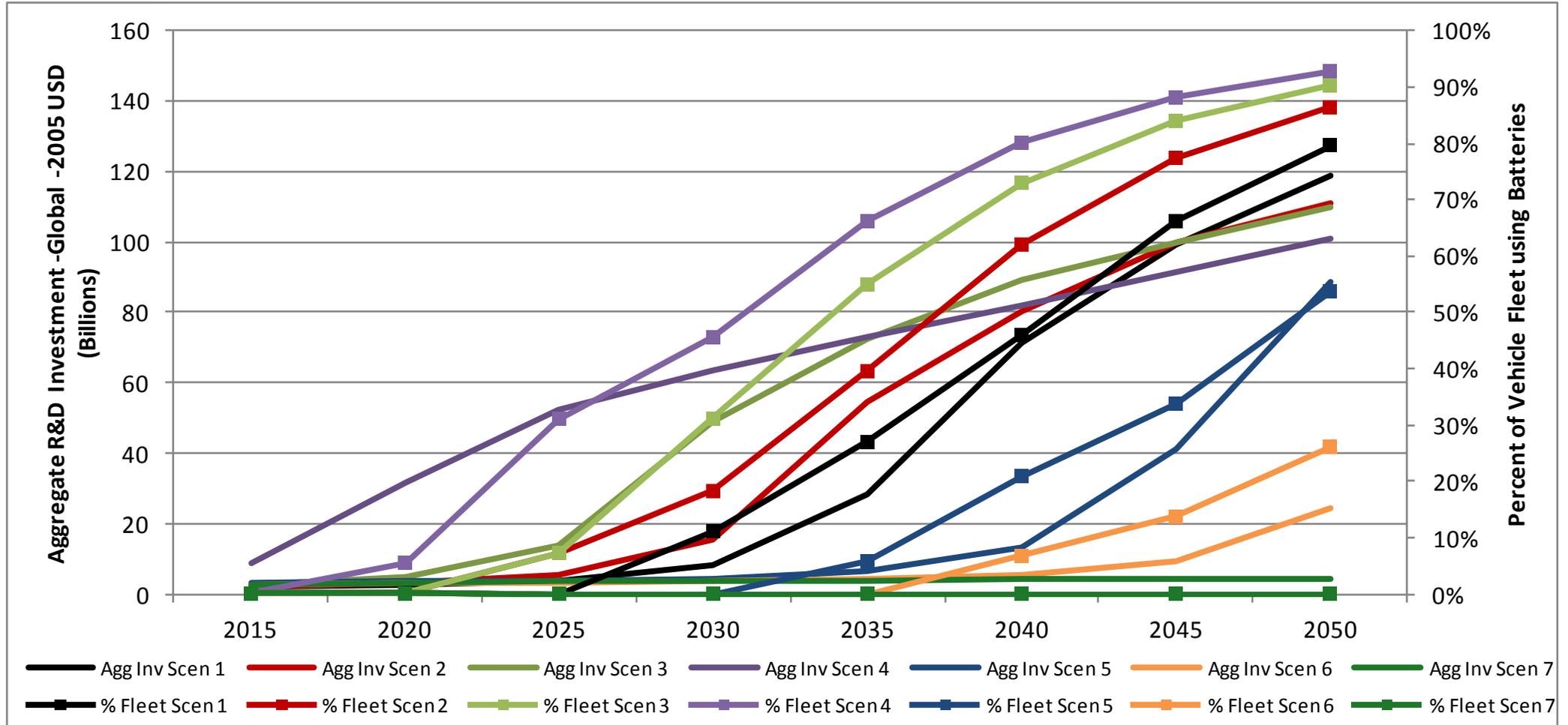
Moderate Policy



450 ppm Policy



A Focus on the 450ppm – 2 Degree



Extracted from Longden, T. (2012) "Deviations in Kilometres Travelled: The Impact of Different Mobility Futures on Energy Use and Climate Policy." FEEM Note di Lavoro

Research Agenda

Early 2012 – Bosetti, V. and Longden, T. (2012) “Light Duty Vehicle Transportation and Global Climate Policy: the Importance of Electric Drive Vehicles.” FEEM Note di Lavoro

Mid 2012 – Longden, T. (2012) “Deviations in Kilometres Travelled: The Impact of Different Mobility Futures on Energy Use and Climate Policy.” FEEM Note di Lavoro

Now – Focus on 2030 and the ICARUS Survey for Batteries

Future – Biomass and the ICARUS Survey on Biofuels

Conclusions

Major points:

- Stable travel trends prevail,
- Deviations in travel do make a difference to the fleet,
- Investments in EDVs are very important to achieving cost effective climate change policy,
- Future of the non-OECD needs further review.

Issues:

- Alternative vehicles and differences in non-OECD,
- Other travel and transport issues.

Introduction of Light Duty Vehicles in WITCH model –

Bosetti, V. and Longden, T. (2012) “Light Duty Vehicle Transportation and Global Climate Policy: the Importance of Electric Drive Vehicles.” FEEM Note di Lavoro