

EV-STEP :

Sustainable Technology and Economic Pathways for Electrified mobility systems in EU-27 by 2030

EV-STEP REGIONAL WORKSHOP , COPENHAGEN, DENMARK – 17 NOVEMBER 2014



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Electromobility +

The Electromobility + frame

Electromobility +

- Transnational research framework (FP7) involving 11 European countries and regions
- Aiming at “creating long-lasting conditions for the roll-out of electric mobility in Europe on the horizon of 2025”
- 5 thematic scopes:
 - Energy and environmental policy approach
 - Usage patterns, economic models, actors involved
 - Technical dimensions of the recharging systems
 - Testing, trials and normative standards
 - Technology based Innovation
- 18 research projects

EV-STEP in Electromobility +



A project focusing on the long-term strategic analysis :
technology choice, energy balances, emissions, economics

Assessing the conditions and implication of an enhanced
development of pure or plug in hybrid electric vehicle through
modelling.

- The partners behind EV-STEP



ARMINES-CMA



USTTUT-IER



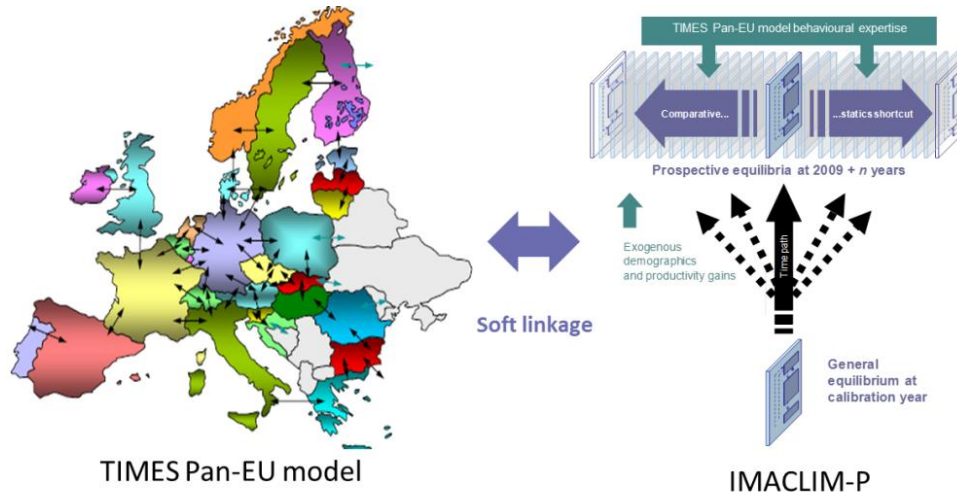
RISOE-DTU



SMASH-CIRED

EV-STEP's R&D approach

○ Strategic EU wide focus :



✓ Technical assessment

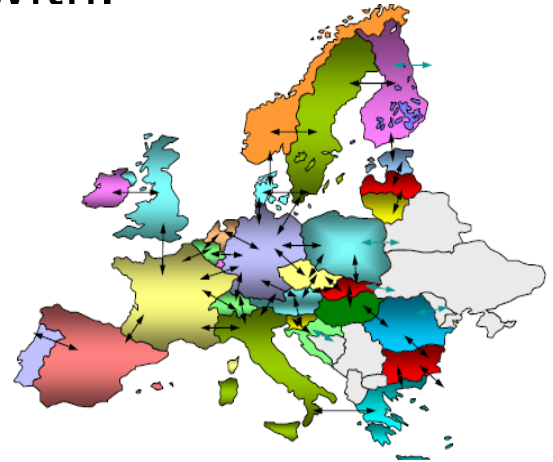
✓ Economic impact

○ Specific insights

- ✓ Mobility patterns & load curve at local scale
- ✓ Renewable and balancing issues
- ✓ Models and case studies for Denmark, France, Germany

The Pan-European TIMES model

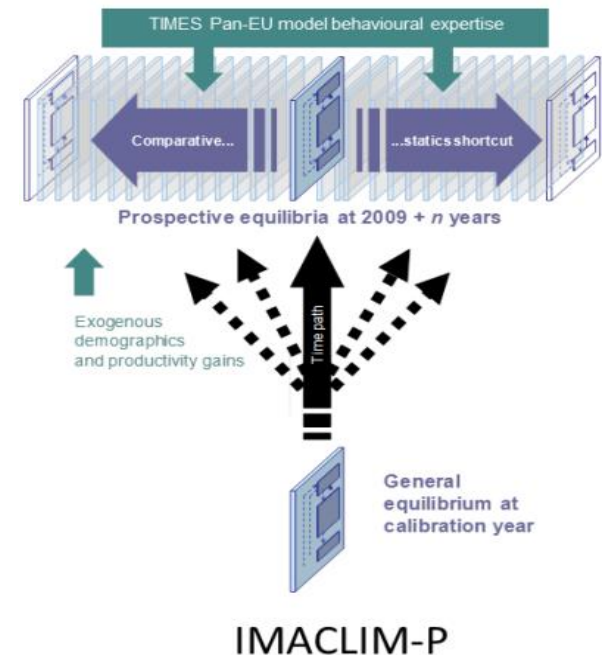
- A technology oriented bottom-up model with:
 - ✓ 31 regions (EU 28 + NO, CH, IS)
 - ✓ Time horizon: 2000-2050
 - ✓ 12 time slices (4 seasonal, 3 day levels)
 - ✓ GHG: CO₂, CH₄, N₂O, SF₆
 - ✓ Others pollutants: SO₂, NO_x, CO, NMVOC, PM_{2.5}, PM₁₀
- Partial equilibrium of the energy system and cost minimization



“The role of Electrical vehicles in Europe”, Markus Blesl

The IMACLIM-P model

- A recursive, computable general equilibrium model:
 - ✓ Exogenous growth through labour productivity
 - ✓ EU28 as a whole, horizon and time steps consistent with PEM
 - ✓ Balanced economic flows of 11 goods, labour and capital
 - ✓ Exogenous firms' input and households' consumption trade-offs



“A TIMES Pan-EU/IMACLIM bottom-up/top-down linkage: application to a prospective Outlook of electric vehicle penetration in EU28, Frédéric Gherzi

TIMES-CGE Workshop: Wednesday

Specific insights and case studies

- Paris IDF region and the EV-CAP model
 - ✓ Local mobility survey + MIP optimization + price signals
 - ✓ 15mn time step load curves

“Model based analysis of the deployment of electric vehicle in the Paris Ile De France Region”, Jérôme Houël

- Electric vehicles, renewables and balancing
 - ✓ Hourly time step TIMES model for Germany
 - ✓ Balmorel + TIMES based analysis for Denmark

“Choice of aggregated parameters for integration of electric vehicles to grid in a TIMES model for a region dominated by wind power”, Poul Erik Grohnheit et al.

- Invited insight: electromobility in India

“India case study - Future of Electric Vehicles in Road Passenger Mobility of India”, Subash Dhar