

# ATEsT WP6 Roadmaps: Suggestions for the future tools development

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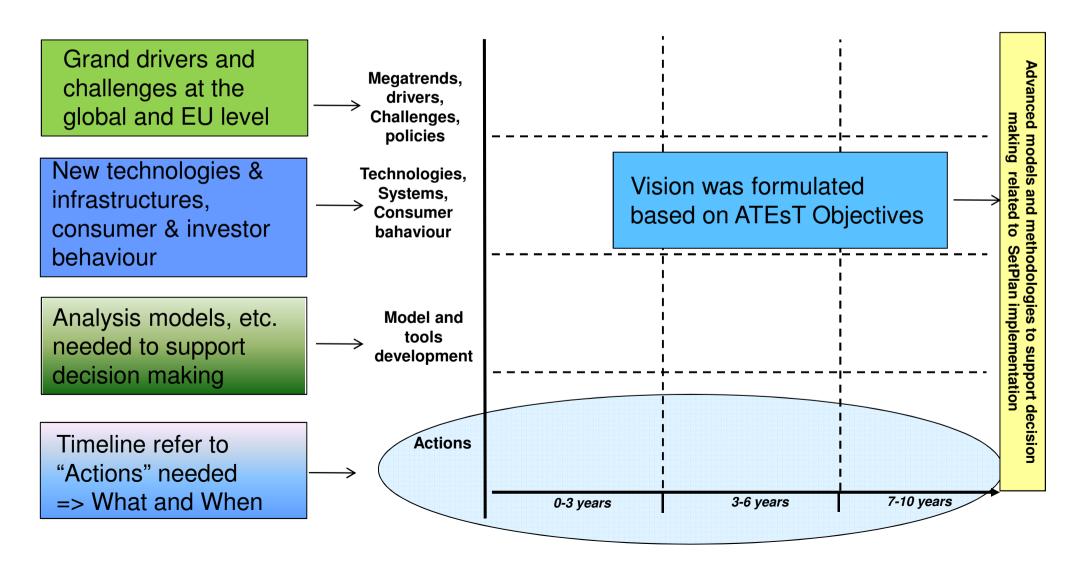


#### Methodology/Approach

- ATEsT roadmap for tools and methodologies development have been verified by filling the roadmap questionnaires followed by a video conference between partners. The ATEsT roadmap especially focuses on the needs for tools, models and methodologies development as well as concrete actions needed.
- The roadmap process:
  - 1. Collection of insights from project partners (internal workshops) + priorisation of actions in a video conference
  - 2. Construction of roadmaps by VTT based on the collected material
  - Discussion in the ATEsT final workshop → editing of the roadmaps based on comments



# Formulation of the ATEsT roadmap for models and methodologies development



0-3 years



7-10 years



VISION: Advanced models and methodogies to support decision making

related to

SetPlan implemetation



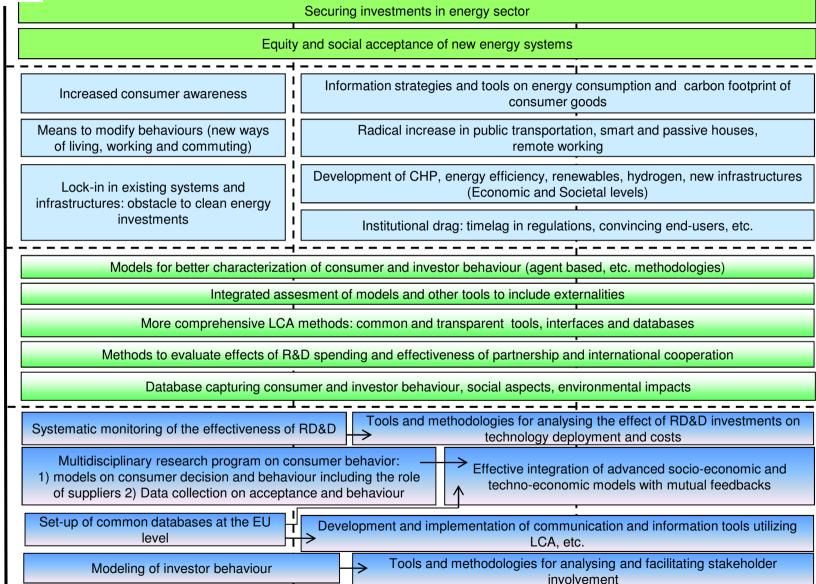
#### Socioeconomic Roadmap

Megatrends drivers, Challenges, policies

Technologies, Systems, Consumer behaviour

Model, tool and methodology development

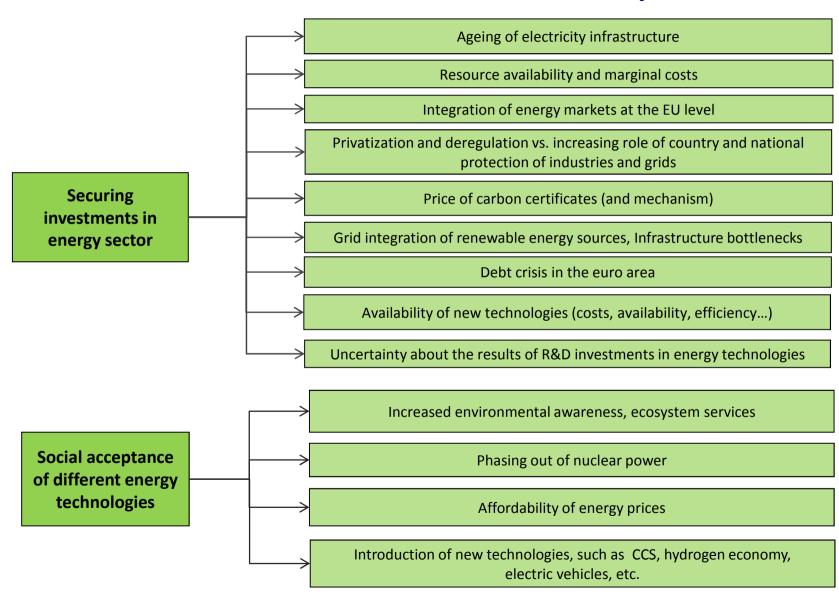
**Actions** 



3-6 years



#### **Drivers: Socioeconomic Roadmap**



0-3 years

7-10 years



## ATEST

#### **Technoeconomic Roadmap**

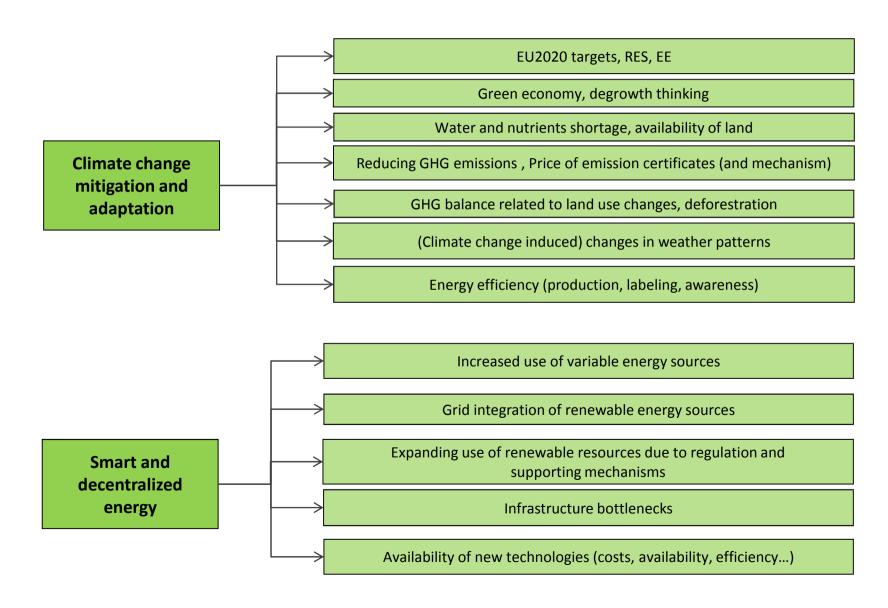
3-6 years

Climate change mitigation and adaptation Megatrends. **Energy Security** drivers. Smart and decentralized energy Challenges. policies Lock-in in existing systems and infrastructures Incremental development of industrial processes New industrial processes and products Technologies. Larger share of intermittent RES (wind, PV) Smart grids, storage infrastructures and technologies, DSM, DSR Systems, Multifuel, flexible generation, CHP & trigen. CCS, gasification, fuel cells Increased use of biomass and waste Consumer behaviour Heat pumps, solar thermal Pumped hydro, CSP III+ =>IV gen, nuclear Tidal, wave energy Large investments in transmission networks Super grids and other new technologies Hybrid vehicles, biofules (1st gen.) Plugin hybrids, biofuels (2nd. gen) Electric vehicles, biofuels in aviation Low energy buildings and AAA+ appliances Smart and plus energy buildings Passive buildings Smart cities Implementation of new technologies and technology shifts (modelling of learning, lock-in, nonlinear step-changes) Modelling of renewables: uncertainties in demand and supply, potentials, smart systems & storage Model, tool and methodology Treatment of uncertainty in models development Enhanced environmental, economic & political modelling => Integrated assessment of models Analysis and implementaion of energy efficiency measures GIS-based tools to manage increasing data complexity, better transparency (models, data, results) More transparent modelling in support of EU R,D&D policy initiatives **Actions** Standardized scenario-based Research program on integrated assessment of models, tools, methodologies and benchmarking of models, common databases 1) model and database coupling techniques 2) better tools for standards of reporting (including assessment of environmental impacts 3) better approaches to link energy system and economic modelling 4) geographic and land use models 5) modelling of uncertainties) infrastructure Set-up of common and transparent databases between models, integration of Effective integration of advanced socio-economic and real time data (i.e. statistics) techno-economic models with mutual feedbacks

VISION: Advanced models and methodogies to support decision making related ಕ SetPlan implemetation

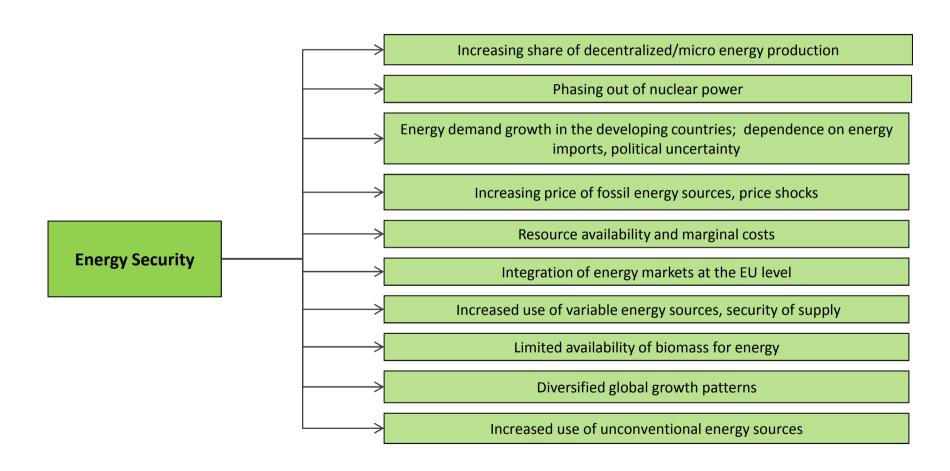


#### **Drivers: Technoeconomic Roadmap**

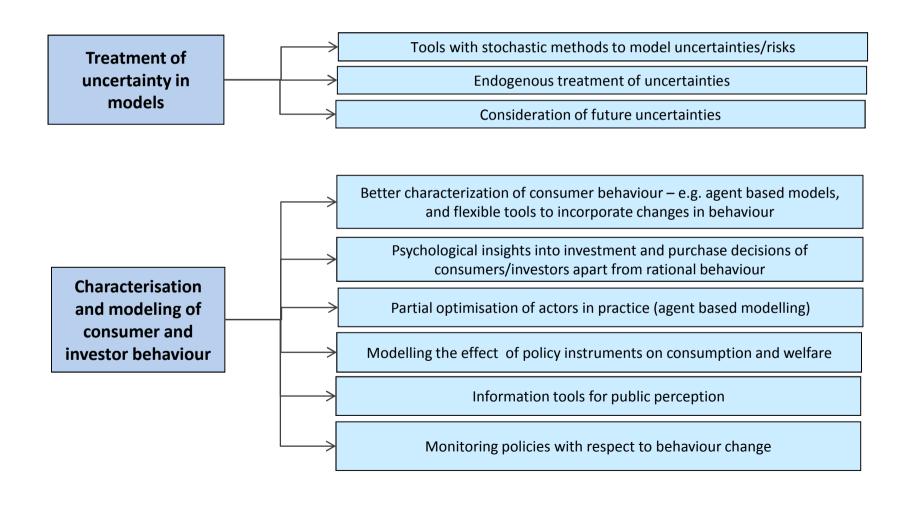




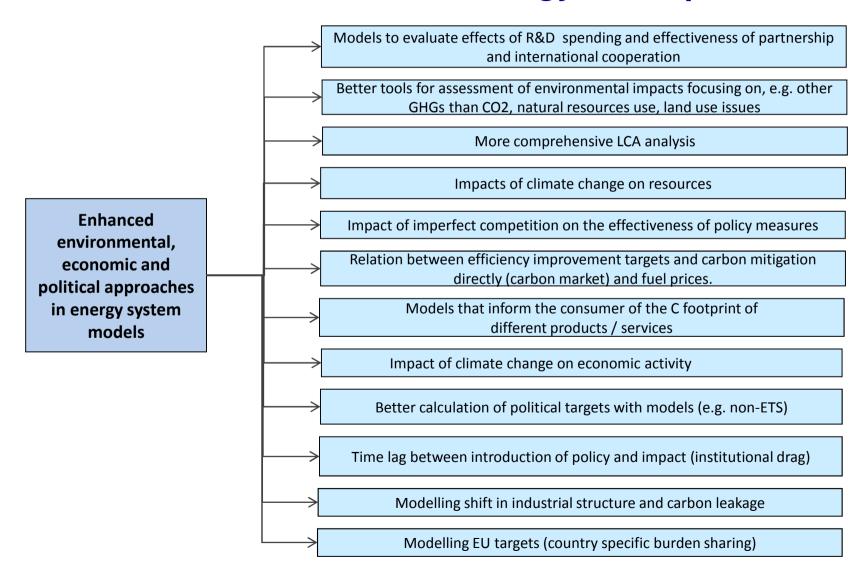
## **Drivers: Technoeconomic Roadmap**



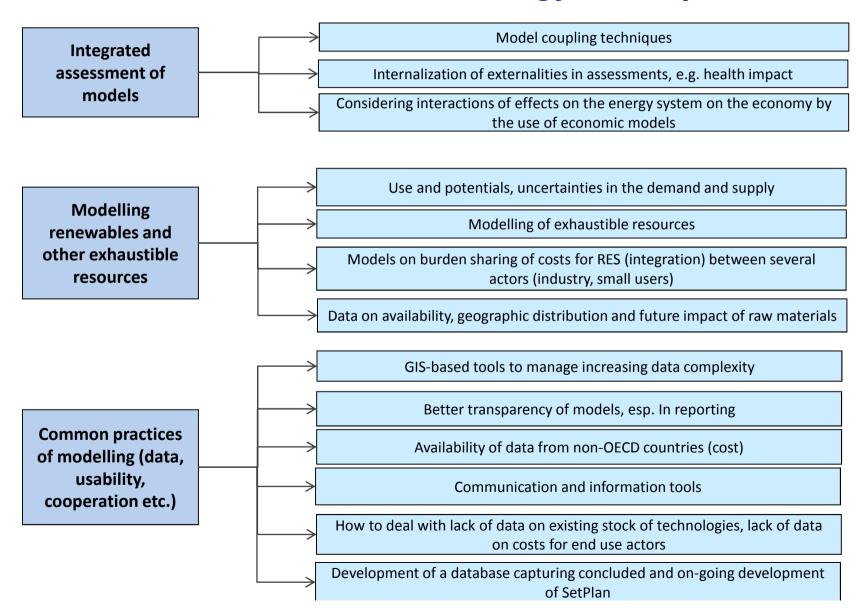




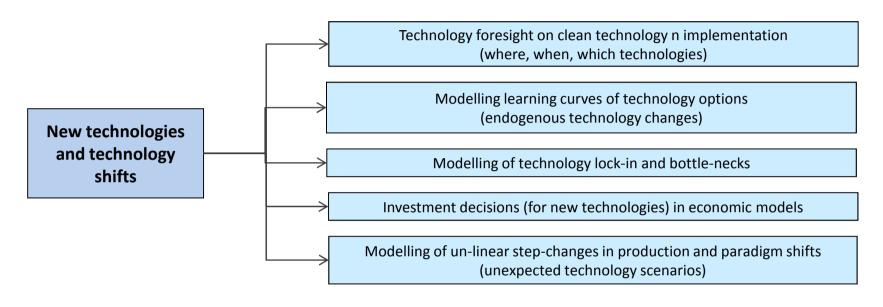


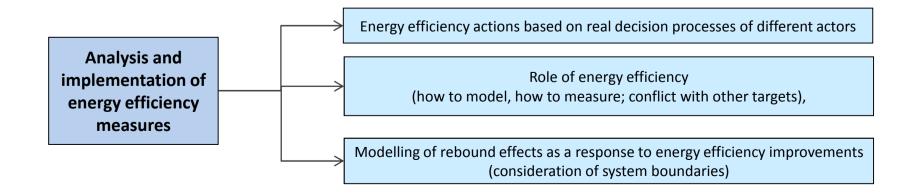














#### **Conclusions**

- The primary focus of existing tools and models is to analyse the (technology) changes in the energy system
- Tools and methodologies focused on analysing the effectiveness of RD&D policies, consumer and/or investor behaviour and institutional factors are nearby missing. On the other hand, energy system modelling barely takes these issues into account
  - Research on the analysis of the effect of RD&D policies
  - Research on system analysis of actor (consumer, institutional, investor) behavior, awareness and public acceptability
- Increasing complexity of tomorrow's energy system requires more complex models and/or integration of several models/tools
  - Research program on integrated assessment of models, tools, methodologies and databases
  - Transparent modelling in EU decision making to set national targets
  - Complete, update and harmonize data for all MS (and if relevant outside the EU)



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