“Klimata mērķu ekonomiskās ietekmes modelēšana un analīze”

Ekspertu panelis: Klimata pārmaiņu politikas modelēšanas pieredze

10.12.2021

VPP-EM-2018/NEKP-0001

VPP
Valsts pētījumu programma

Model-based policymaking or policy-based modelling? Experience on use of simulation and optimisation models.

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VPP-EM-2018/NEKP-0001
ENERGY AND CLIMATE MODELLING TOWARDS NET ZERO EMISSIONS

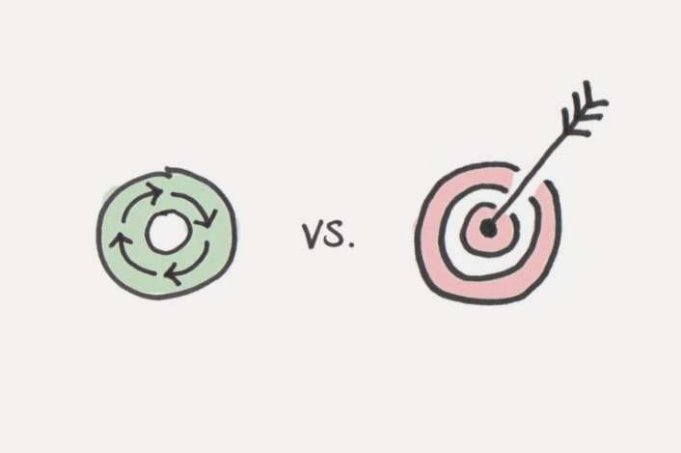
Modeling Approaches – classes of models used in RTU

A SIMULATION MODELS

To calculate the performance of possible future systems and to find a set of solutions for an open evaluation process.

OPTIMISATION MODELS

To identify the optimal solution (e.g. energy system with least costs.)



https://crossfitop.com/say-your-goals-backwards/

The various roles of politicians, planners and people

Title	Politicians	Planners	Society
Commander model	Make decisions and give orders	Execute orders using planning tools	Voters and taxpayers
Optimisation model I (economistic)	Satisfy consumer preferences on the basis of efficiency calculations	Survey, aggregate and satisfy consumer preferences	Sovereign private consumers
Optimisation model II (scientistic)	Follow advices from the planners	Scientific computation of the correct (or necessary) police	Objects of scientific management
Dialogue model	Issue guidelines, make final decisions	Advisors, initiators, and communicators	Actively involved

H.Lund, F. Arler, P.A. Østergaard, F.Hvelplund, D.Connolly, B.V. Mathiesen, P. Karnøe, Simulation versus Optimisation:Theoretical Positions in Energy System Modelling , *Energies* **2017**, *10*, 840.

Simulation v.s. optimisation

- **Witch approach is better?**

Strive for results in one optimal solution	Results in several alternative solutions

- **How to model also socio-behaviour and socio-technical aspects in energy system modelling?**

- In IESE models are not competing – they are supplementing each other

Energy efficiency in buildings

Soft-linkage of systemdynamics and optimisation tools TIMES

Support for energy efficiency measures in buildings

Linear policy programming

Retrofit of buildings:

- Planning period: ***A* years**
- Support: ***X* mEUR**;
- Specific costs: ***Y* EUR/m²**
- Renovated area:
  ->*X/Y* = *Z* m² (or number of buildings)
- Specific energy savings:
  n kWh/m² year
  =>*N* MWh/year
- Accumulated energy savings: ***AxN* MWh**

The future will not be "optimal" if policies are designed in a linear way:

- Today we decide (e.g. building renovation policy)
- Today we renovate (e.g. the building renovation process and technology)
- Today we reach results (e.g. reduced energy consumption in buildings)

Optimisation tool will make projections in similar way –> apparent optimum.

• Support for energy efficiency measures in buildings

Reality

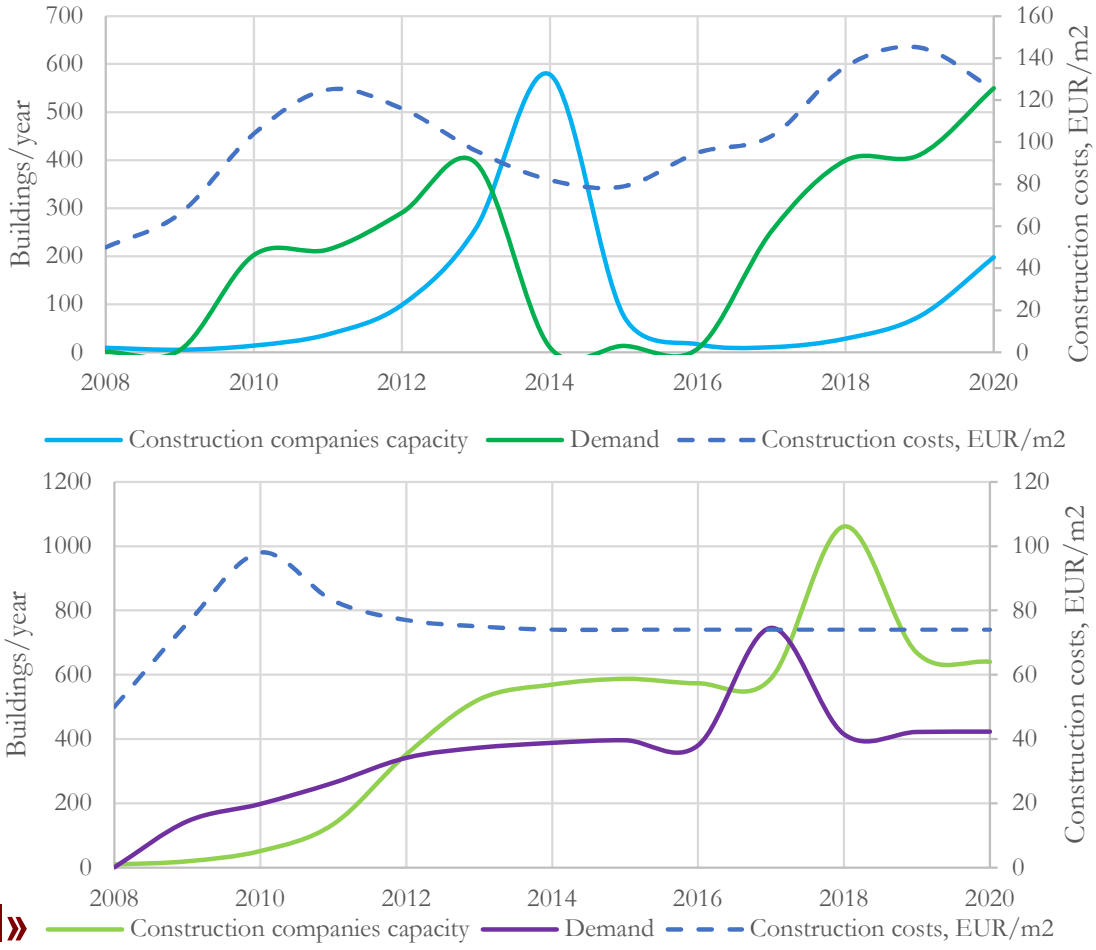
Delays in:

- Policy implementation (regulations and support mechanisms)
- Action from all stakeholders

Too much in too short time:

- Mismatch between demand and supply
- Parallel support programs for energy efficiency
- **-> higher costs, lower quality and energy savings**

-> Stop & go approach is not «optimal»



How to deal with it?

Refine policy making process

Avoid *Stop&Go* approach:

- Support: better smaller, but stable and predictable

Take full advantage of the invisible (and untapped) benefits of energy efficiency:

- Renovation industry and ecosystem (~20..30 000 buildings => 1000/year -> 25 years of work)
- Focuss on local resources (wood and timber, insulation materials etc.)
- Prefabricated building renovation solutions
- Employment and development of economy

Final remarks

- Developed policy should not be approved by models
- There always will be challenge between “better suited” and “more complex” model

- **Ongoing and open peer review process (incl., scientific publications and wide cooperation with energy system modellers community):**
  - The best way how to improve models, increase adequacy of the model and ensure transparency and wider engagement of society

Thank you!

https://videszinatne.rtu.lv/

This research is funded by the Ministry of Economics of the Republic of Latvia, project "Energy and climate modelling towards net zero emissions", project No. VPP-EM-2018/NEKP-0001