



CITIES

Centre for IT Intelligent Energy Systems

Simulation and planning for the future smart energy system

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WP6 – Main theme: Coordination



Smart cities and smart energy systems require a **coordinated effort** in terms of:

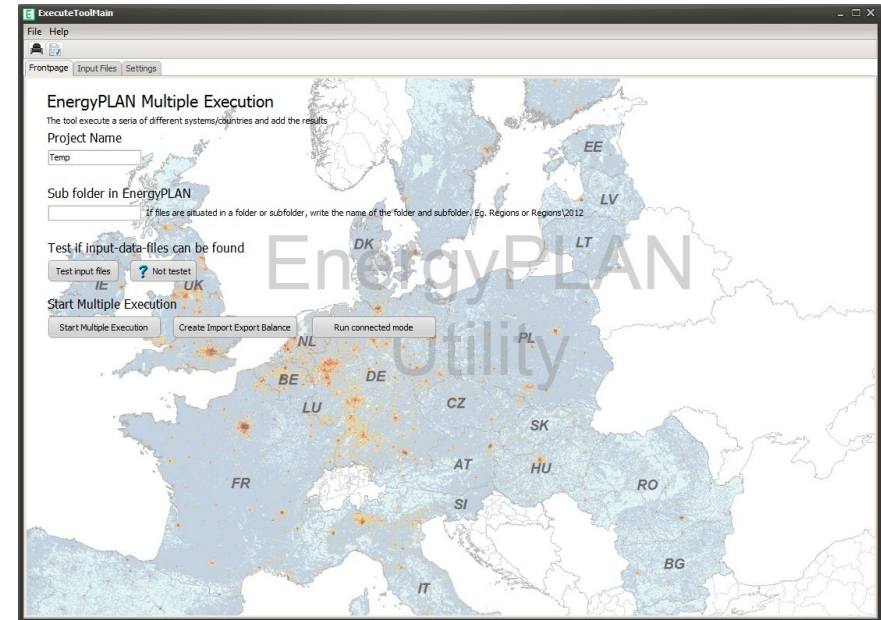
- Coordination between *urban energy systems and the national energy system*, both, technically and planning-wise
 - Coordination of *cross-country solutions* (interconnection between countries) AND *cross-sector solutions* (energy sector integration inside countries)
- *If this is not done, society will be left with potentially very expensive solutions to 100% renewable energy*
- *We have the technologies and CAN develop the right policies and planning framework to achieve optimal coordination – we should make better use of them*



Multi-NODE



- MultiNODE: a new tool for analyzing interconnected energy systems
- Easy to use add-on to the EnergyPLAN model
- Facilitates cross-country energy systems analysis
- Makes it possible to compare interconnection with sector integration in energy systems



Context matters in smart cities' energy systems

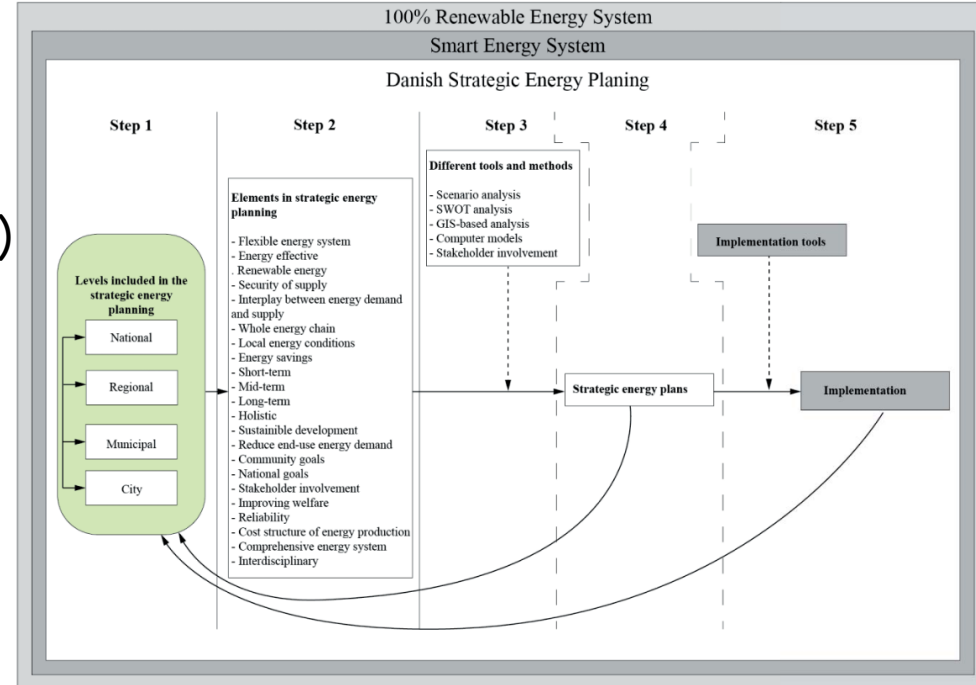


- Benefits of analyzing single technologies in terms of their value in the energy system
- Smart cities should plan keeping the national energy system in mind → potential for system synergies
- It is possible to develop smart local energy systems that do not hinder the development of the surrounding country energy system
- One of the best things smart cities can do (for the country) is to integrate and balance local, renewable energy (at reasonable scales and durations)

Coordinated strategic energy planning



- A new, comprehensive framework for strategic energy planning to support the needed coordination between planning levels
- There are **strategic** (national) and **practical** (local) barriers to coordination
- The new framework can help address these coordination barriers in energy systems planning



Do not exclude local communities



- Local communities, municipalities, NGOs etc. are being excluded from large investments in renewable energy – especially in renewable energy tenders
- There is exclusion *through tender rules* and *through closed and non-transparent political processes*

Therefore increase *Choice Awareness* by:

- Including non-private actors early in tender design processes
- Designing RE tenders so that new organizational, financing and ownership models can be included
- Supporting locally anchored projects in the initial stages of preparing a tender (pre-analyses etc.)

Further work and research



- Facilitate energy modelling at the municipal level that relates to the country targets
- Creation of easy to use models for energy planners
- Coordination of heat demand and heat supply in 4th generation district heating
- Coordination through co-creation?
- The future of citizen energy and energy democracy?

Selected publications

