



EnergyVille

SmarThor envisioning

EnergyVille business day

May 23rd, 2017



Problem with current energy transition instruments

🍃 Energy efficiency = legislation

🌱 energy performance of buildings

🌱 emissions of cars

🌱 eco-design

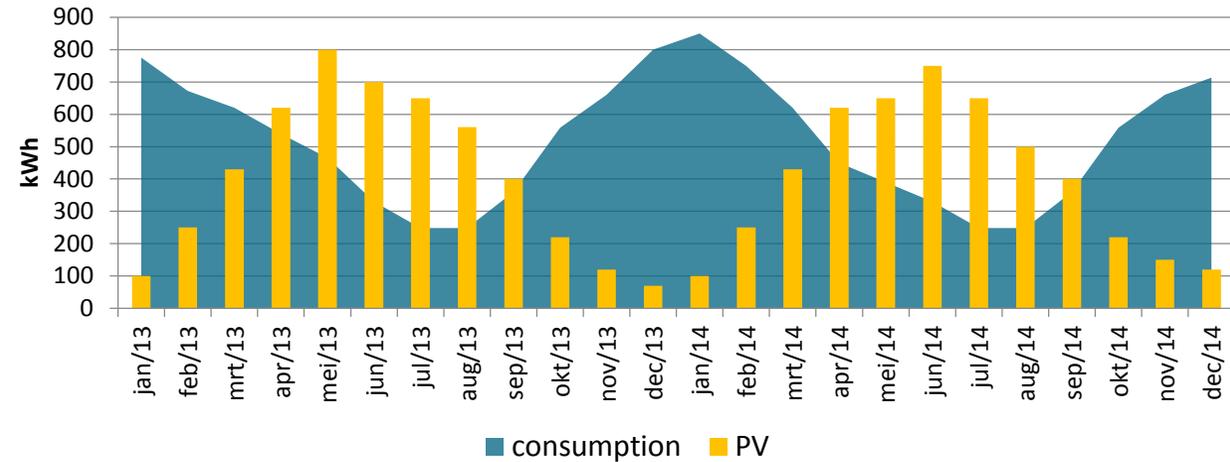
🍃 Renewables = subsidies

🌱 technology push via subsidies

🍃 Integration of renewables = legislation + markets

🌱 priority access, targets

🌱 flexibility



EFFICIENCY, RENEWABLES and FLEXIBILITY are not pursued from a systems perspective
@system level: reduce CO₂-emissions while keeping the balance

Innovation challenges for multi-energy systems: European roadmaps

🌿 Sources:

- ✦ ETIP SNET R&I roadmap 2017-2026
- ✦ EASE-EERA European Energy Storage Technology Development Roadmap Towards 2030
- ✦ BATSTORM project
- ✦ ETIP RHC Common Implementation Roadmap for RHC Technologies

🌿 Multi-energy and energy storage closely related

- ✦ Energy storage as a means to achieve integration of multiple energy vectors
- ✦ Additional flexibility in the energy system

Common innovation themes

- 🍃 Integration of renewable energy
 - ✦ E.g. multiple renewable energy sources in smart, low temperature thermal grids
- 🍃 Valuation of system services
 - ✦ E.g. for balancing, congestion management, self-sufficiency etc.
 - ✦ Optimal spatial distribution of storage systems (centralized / decentralized)
- 🍃 Network planning and operation
 - ✦ E.g. reliability and stability, network planning tools, standards for electrical and hydraulic interconnections
- 🍃 ICT infrastructure for monitoring and controlling storage and multi-energy carriers
- 🍃 Market design principles and tools
 - ✦ E.g. multiservice business models, multi-energy market simulators
- 🍃 Regulatory aspects & social acceptance
 - ✦ E.g. storage ownership, double taxation
 - ✦ Perception of potential security and environmental impacts of storage

SmarThor: connecting ideas and systems

Envisioning

- bring stakeholders together
- translate visions on multi-energy services, to roadmaps and experiments
- Low Regulated Site (*regelluwe zone*)

Energy cluster

- New innovation policy instrument
- Bringing innovative multi-energy operation schemes to the market
- 5 thematic areas



Innovation challenges from a stakeholder perspective: Results of energy cluster round tables (1)

Climate neutral business parks

Opportunities:

-  ESCO formula for non- energy intensive industry
-  Clustering of companies with matching demand profiles
-  Wealth of technological solutions for multi-energy services

Barriers/challenges:

-  Additional regulation (e.g. climate neutrality)
-  Easier ways to claim climate neutrality (e.g. buying certificates of origin)
-  Regulations on private networks

Sustainable energy for new districts

Opportunities:

-  Project developer as responsible for the energy services concept
-  “Future-proof” energy services provide added value to the project developer
-  Cooperative ownership => cooperative as ESCO?

Barriers/challenges:

-  Optimisation of electricity distribution system (IOT solutions, smart demand side management, integration of storage)

Innovation challenges from a stakeholder perspective: Results of energy cluster round tables (2)

District renovation

Opportunities

- 🏠 Social housing sector
- 🏠 District heating:
 - Spread of heat demand profiles
 - Modularity of network approach
 - Flexibility for heat sources

Barriers/challenges

- 🏠 Budgetary constraints for social housing companies
- 🏠 Distribution of costs/benefits
- 🏠 Technology costs (e.g. battery storage)
- 🏠 Regulatory framework (e.g. PV panels for rental market)

'Deep' renovation of individual buildings

Opportunities

- 🏠 Minimise the transition period
- 🏠 Explore windows of opportunity (e.g. change of ownership)
- 🏠 Emphasis on added value

Barriers/challenges

- 🏠 ESCO formula difficult for private market
- 🏠 Costs of deep renovation must decrease
- 🏠 Special attention for rental market

Conclusions and next steps

- Multi-energy services/operations is seen as a great opportunity for many stakeholders.
- Besides technological challenges (cost concerns, integration); main challenges are related to business models, regulatory constraints, and user acceptance.
- Energy cluster stresses collaborative effort (bringing stakeholders together) and bringing new concepts to the market.
- Synergy with SmarThor Envisioning:
 - Deepening insights on opportunities/barriers for different thematic areas
 - Recommendations for new demonstration experiments