

PlanEnergi

Independent non-profit consultancy established in 1983

Purpose: To promote the use of resource-saving systems through activities in renewable energy & energy planning

3 offices in Denmark: Skørping, Aarhus, Copenhagen

www.planenergi.eu

DIGITAL HEAT

ENERGY SECTOR COUPLING



Sector coupling shows the way...!

New study prepared as a part of the IEA ECES Annex 28

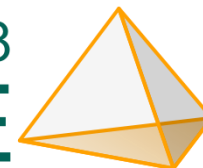
DESIRE – *Distributed Energy Storage for the Integration of Renewable Energy*

Conclusions:

- + **District heating, with low-CO₂ emitting heat generation**
enables inexpensive thermal storages and flexibility
- + **Thermal energy storages**
- + **Heat pumps**
individual + large ones for DH
- + **Electric vehicles with smart charging**
introduces cost-effective distributed electrical energy storage
- + **Flexible electricity demand**
- **Interconnections** between countries helps only to a certain extent
- **Less (inflexible) nuclear power**

More info at planenergi.eu/DESIRE

ECES Annex 28
DESIRE



Recommendations

- Much more RE is needed to displace fossil fuels for the current *and* the future energy demand (transport, chemical industry, data centres etc.) – we need to speed up!
- This increasing amount of fluctuating RE requires flexibility
 - DH + thermal storages can provide a lot of that flexibility
 - Flexible demand for HPs, EVs etc. can "make room in the system" for more RE
- Ambitious long-term goals together with a favourable and stable investment environment for RE and RE-supporting technologies (!) should be ensured e.g.
 - increased CO₂ emission costs (compared to current levels)
 - stopping all fossil fuel subsidies
 - implementing the right incentive schemes for RE technologies
 - create incentives to supply flexibility services also on local level
- ICT hardware + software + incentives can engage smaller consumers



Environmental
Economic
Social
Legal

BAU is not really an option

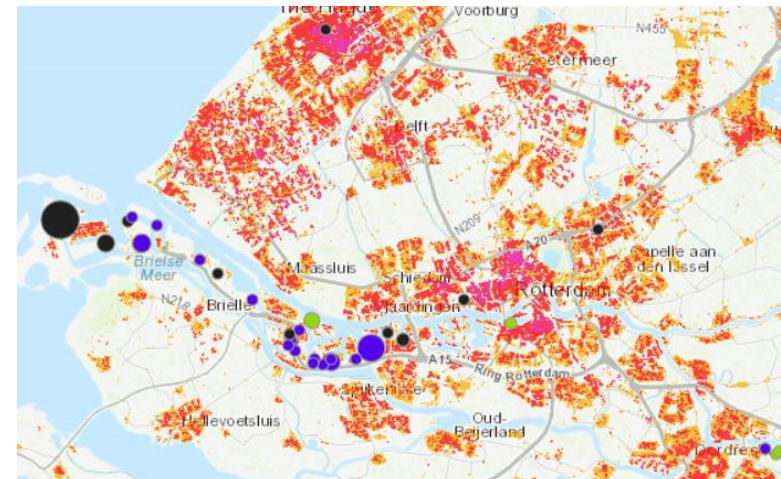
- 100 % RE *is* achievable and it does not have to be too expensive
- ...It *will* require huge investments, but the alternative will be "xxxx" costly
- Important to take care about which path we choose towards the goal!
- Digitalisation required for operation but also planning
 - ICT is required to optimise operation across sectors and interact with many (also smaller) consumers/prosumers
 - Easy access to available data (assessment of possibilities) e.g. the Pan-European Thermal Atlas (PETA) with interactive layers for demand and various supply options

Stable conditions
Job creation
Synergy options

"equally"
"much more"
"too"



www.heatroadmap.eu/peta4.php



Future perspectives

- Sell the service not the unit
 - Many more consumers/prosumers means that we will see a more decentralised and diverse energy system interacting across both sectors and the traditional stakeholder groups (new ICT solutions required)
 - Previously: focus on OPEX with low CAPEX
Now/future: focus on CAPEX with low OPEX
 - FLEXYNETS takes these points to the next level
 - Focus on CAPEX + use of local (cheap) resources
 - Flexible/interacting across sectors (heating, cooling, electricity)
 - Possibly heating/cooling as a service where the network manager chooses operation strategy for all to optimise on a general level
 - (EU project, but not a concept limited to Europe)
- "Growing demand for air conditioners is one of the most critical blind spots in today's energy debate."* (Fatih Birol, Executive Director, IEA)

