

Community Power and Renewable Energy Storage in Denmark and in the EU

Community power og vedvarende energi lagring i Danmark og i EU

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The Potential of Community Power in Denmark and EU

Community Powers potentiale i Danmark og EU

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Organizers:



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Alliancen for Community Power in Denmark

www.noah.dk

www.communitypower.eu





Henning Bo Madsen

- Work on energy / energy policy since 1979 as a grassroots and in various projects in Municipalities and organisations.
- previously NOAH Friends of the Earth Denmark on Community Power Project
- Chairman of West Jutland Energy and Environment Association
- Member of the Energy Council in Ringkøbing-Skjern
- Active in Renewable Energy
- Board Member Energy Service Midtjylland
- Board Member INFORSE Europe

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Community Power – FællesEnergi

- ✦ NOAH believes
- ✦ the future energy supply must be both **environmentally** and **socially sustainable**
- ✦ the future energy supply, which is based 100% on renewable energy sources, should be owned and controlled by consumers or municipalities.
- ✦ Local ownership and yield of plants using renewable energy sources.
- ✦ It requires better conditions for joint-owned plants using renewable and renewable energy sources





Community Power – FællesEnergi

Some of the features of Community Energy – Power

- Local citizens are involved in the operation of the facility
- There is a democratic structure
- The project contributes to the phasing out of energy production from fossil fuels and other unsustainable fuels
- People who live or work close to the project have benefited.
- Any surplus goes back to members or the community or reinvested in other local community energy projects





Potential for Community Power

- Study by CE Delft institute
 - commissioned by Greenpeace, Friends of the Earth Europe, European Renewable Energy Federation (EREF) and REScoop
- Conclusion: 264 mio. citizens in EU can produce about 45 pct. of electricity in 2050





Potential for Community Power

Study of four different energy citizen categories:

- ✦ individuals or households producing energy individually,
- ✦ individuals or households producing energy collectively,
- ✦ public entities and small enterprises.

Renewable energy sources investigated

- ✦ solar photovoltaic (PV) and wind energy,
- ✦ demand side flexibility focussed on the potential for electric vehicles, el-boilers and stationary batteries



Potential for Community Power

Results of study

- ✦ **83% of EU's households - about 187 million** - could become an energy citizen and contribute to renewable energy production, demand response and/or energy storage, which amounts to households.
- ✦ About **half of EU households, around 113 million**, may have the potential to produce energy;
- ✦ even more could provide demand flexibility with their electric vehicles, smart el-boilers or stationary batteries





Danish experiences with community ownership

Once upon a time in Denmark

- ✦ all electricity utilities were consumer-owned cooperatives or municipal - both production and supply.
- ✦ All district heating companies were consumer-owned cooperatives or municipal - both production and supply. This still applies to supply and almost all production companies.
- ✦ Virtually all wind turbines were owned by locally based wind turbine cooperatives





New ownership 2004-2005

- changed with the implementation of the EU internal energy market

Energy Agreement in 2004 (all parties except the EL).

2005 DONG acquired most of the Danish power plants, Vattenfall and E.ON a small handful



Ownership today

- Guild owned windmills number unknown - estimates about 250
- Consumer-owned district heating plants about 300
- 2 solar guilds + 2 small hydropower
- But over 90,000 PV systems among consumers - prosumer
- Municipal heating utilities buy power plants back (HOFOR, VEKS, Odense, Aalborg)





Ownership Models RE



Solar energy: common solar - consumer-owned cooperatives

Biomass collectively: consumer-owned cooperatives or municipal corporations own heating / CHP production + DONG and E-on

Offshore wind farms, DONG, Vattenfall (Pension funds partial ownership)



Ownership wind on land

- Land based windmills
- - Private investors
- - Windmill guild (I / S)
- Some municipal, fund owned, utility owned
- **Vattenfall is expanding with big parks
(Klim, Tønder, Nørrekær Enge)**





International tendency

- Community Energy – growing number of plants owned by local cooperatives in several European countries

Germany, Belgium www.ecopower.be , Scotland, UK

(www.communitypower.eu + www.rescoop.eu)

- In Germany Municipalities buy power supply and plants from commercial owners on demand from the people

- Friends of the Earth are working for it in Europe and global

(www.foeeurope.org)

Reclaim Power movement (www.reclaimpower.net)





Germany - Energiewende

- ✦ The expansion of renewable energies is accompanied by a shift in the ownership structure of electricity production
- ✦ Almost half of all renewable power capacity so far installed in Germany is in the hands of private individuals, according to a study by trend:research released in 2013. This is evidence that citizens can actively take part in the growth of renewable energies.
- ✦ Those ownership structures point to the decentralized character of the Energiewende. Studies have shown that the increase in renewable energy production can generate double digit billion Euro benefits in terms of value added on the local level.



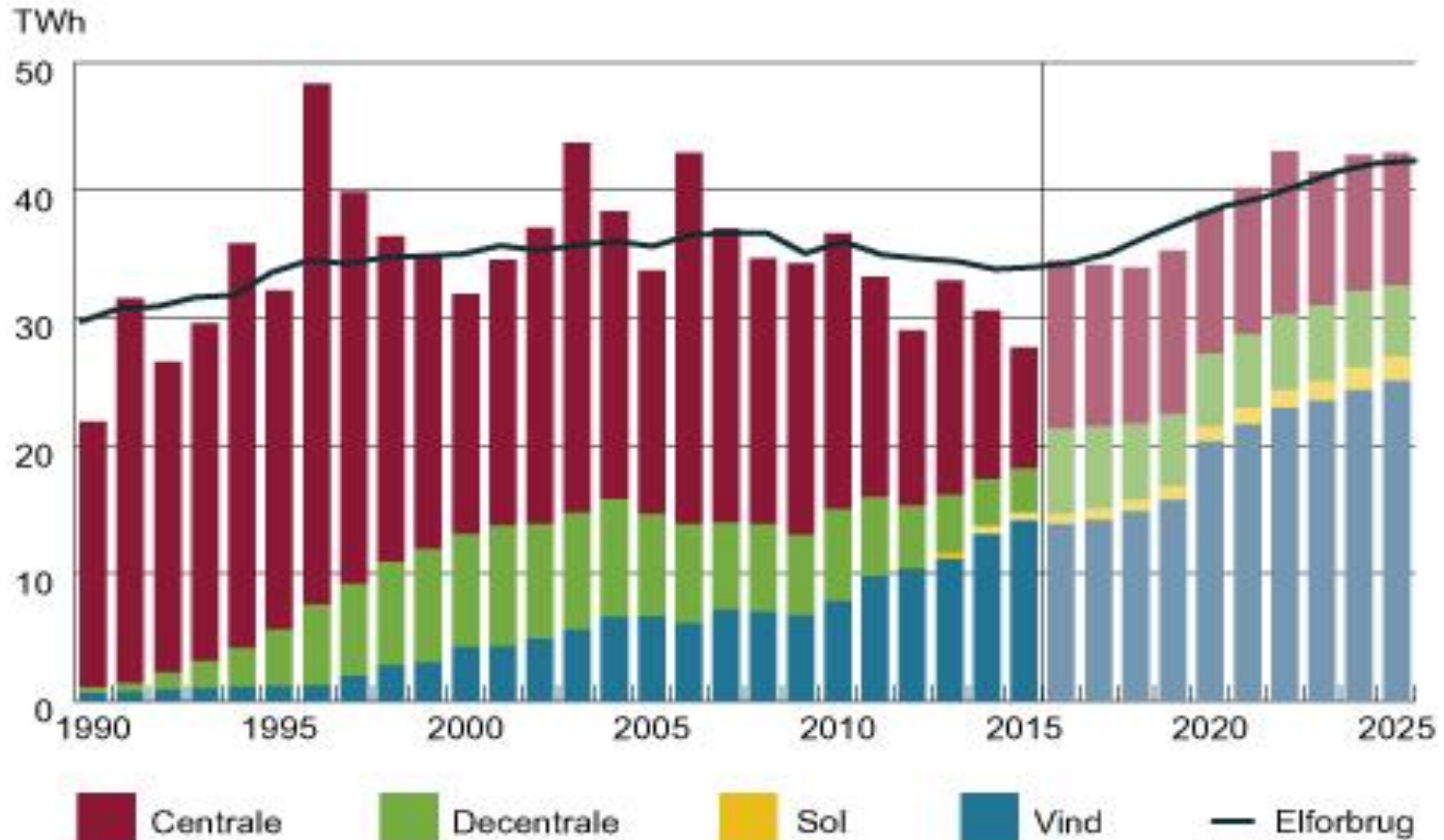


Status of RE transition

- ✧ Expansion with wind on land are slowed down
- ✧ Photovoltaics has slowed sharply down
- ✧ Solar heat: large expansion in smaller consumer-owned district heating companies
- ✧ Biofuel: individual furnaces, heating plants, power plants "running fast" Biogas: farmers and gas companies are building



Status RE in Electricity in Denmark



El-production in 2014-2015

Development in el-
production in
Danmark (GWh)

	2014	2015
Nettoelproduktion	30.615	27.704
Nettoimport	2.855	5.912
El consumption (incl. Grid loss)	33.471	33.616
El from centrale plants	13.281	9.493
El from decentrale plants	3.643	3.454
El from land based windmills	7.913	9.300
El from off-shore windmills	5.165	4.833
El from solar cells	597	605
El from hydro power	16	19



Centrale questions

- ❖ Economic gain – Who and how big ?
- ❖ Democratic control – direct or indirect / hierarcic ?
- ❖ Centralised or decentral produktion ?





Alliance for Community Power



Vestjyllands Energi-og Miljøforening
Ærø Energi-og Miljøkontor

Høje Taastrup Miljø-og Energicenter
Himmerlands Energi-og Miljøforening

Vendssyssel Energi- og Miljøforening



Community Power – FællesEnergi

- **Der er behov for**
- fjernelse af lovgivningsmæssige barrierer
- attraktive økonomiske vilkår inkl. lånemuligheder og afregningsregler
- støtte til organisering af lokale andelsfællesskaber
- information om muligheder for fælles forbrugerejede anlæg
-
- Derfor deltager vi i et fælles europæisk projekt med Friends of the Earth Europe og en række andre partnere. Projektet hedder Community Power.





RE in Ringkøbing-Skjern Municipality

- Has a vision / strategy for covering 100 pct. of energy consumption in 2020 with local RE production
- In 2015 reached 56 pct.
- In 2016 addition of the PV plant in Hjortmose, biogas plant near Spjald, at least 5 new 3 MW wind mills at Vognkær



SOLAR CELLS PV at Hjortmose

- ❖ 31 km cables and 16,000 poles
- ❖ 10 Investors each hold between 3 and 16 per cent.
- ❖ 69,000 panels spread over 38 transformers
- ❖ Investment 125 million. kr
- ❖ Estimated production: ca. 17 million. kWh / year
- ❖ 2.7 per cent. of the municipality's electricity consumption







COMMUNITY



Nogle konkrete barrierer

Kommuner

- ❖ - må ikke dække eget energibehov med VE som f.eks. Solceller og vindmøller, men skal danne særligt el-selskab, som sælger til nettet
- ❖ - skal betale del af gevinst ved f.eks. Kommunalt ejede vindmøller til staten
- ❖ - må kun anvende overskud til begrænsede formål



Nogle konkrete barrierer

Private forbrugere – *Prosumers*

- ✦ **Pristillæg til solceller og husstandsmøller begrænset (20 MW solceller – 1 MW h-møller)**
- ✦ 2 års stilstand p.g.a. EU – lavere støttesats + mere bureaukrati
- ✦ Kun søges i begrænsede perioder + kræver købskontrakt betinget af tilskud + dokumentation for at tilskud er nødvendigt tilskud gives i begrænset antal år (solceller 10 år, h-møller 12 år)
- ✦ Restriktioner for lav – bopæl inden for 2 km, lige ejerandele kombineret med alt ovennævnte



Nogle konkrete barrierer

Store vindmøller

- Lokale initiativer overhales af professionelle *developer*-firmaer + store energiselskaber – udpegede arealer købes
 - - organisering tager tid og projektering koster
 - - der skal findes over 50 mio.kr. i finansiering
 - - lokal og velorganiseret modstand gør projekter usikre



