

An isometric illustration of a town. In the upper left, there are several small houses with red roofs and Danish flags on poles. A road winds through the town. In the lower right, a blue tram is on tracks, and a yellow bus is on the road. There are also power lines and a car. The scene is set in a green landscape with trees.

# EU Trends in Energy Efficiency and Danish Experiences

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# International Network for Sustainable Energy

**Network of 150 NGOs worldwide, 80 in Europe**

**An international voice to NGOs promoting renewable & energy efficiency**

**→Active on EU & Climate policies**

**→Sustainable energy visions**

**→Sustainable Energy News**

**→Strengthening NGOs in promoting energy for local development and protection**



# The climate challenge

We now live in “antropocene”, the geological period, where humans governs the earth & the climate by our actions

The countries of the world have committed to limit human climate change to 3.5°C, equal widespread catastrophes

We must limit global warming to 1.5 – 2°C: reduce all greenhouse gases to net zero also until 2050, go to 100% renewable energy until 2050



**EU has set target of 40% greenhouse gas reduction 1990-2030,  
27% renewable energy in 2030, 27% increase in energy efficiency  
2005-2030**

**Denmark has target of 100% renewable energy economy-wide in  
2050 and we expect that in 2020 more than 50% of Danish power  
will be windpower (it is 40% today)**

**SustainableEnergy and Friends of the Earth Denmark promotes  
100% renewable energy economy-wide by 2030  
– 16 years from now**





# EU's Plan for 40% Reduction

**Updated renewable energy directive:** effective support

**Updated Energy efficiency directive:** energy companies must save at users, planning for district heating and others

**Ecodesign Directive** requiring energy efficient equipment

**Energy labelling Directive**

**Updated Energy Performance of Buildings Directive**

**Reduced emission-allowances** under the **EU Emission**

**Trading Scheme** (2,2% reduction per year

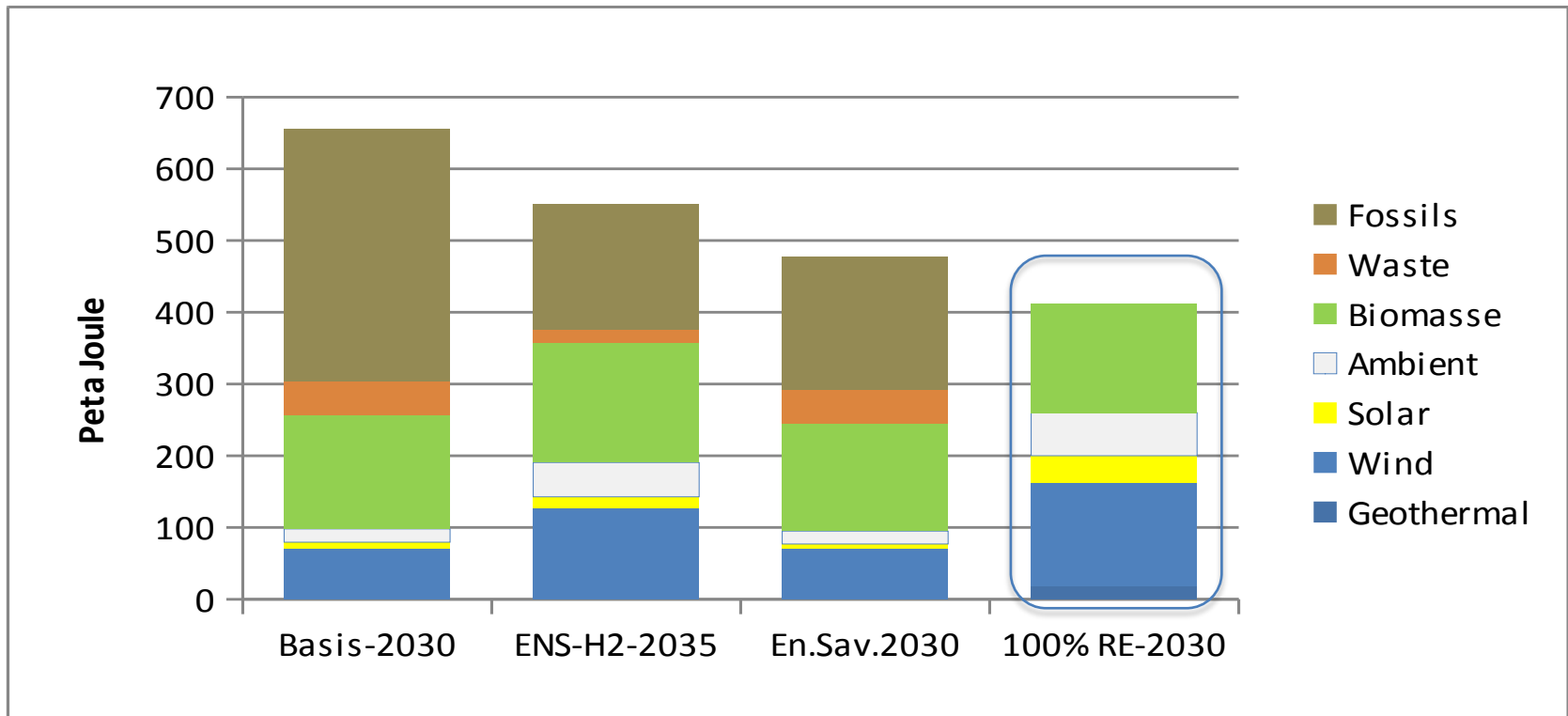
not 1,7%, 12% Banking per year)



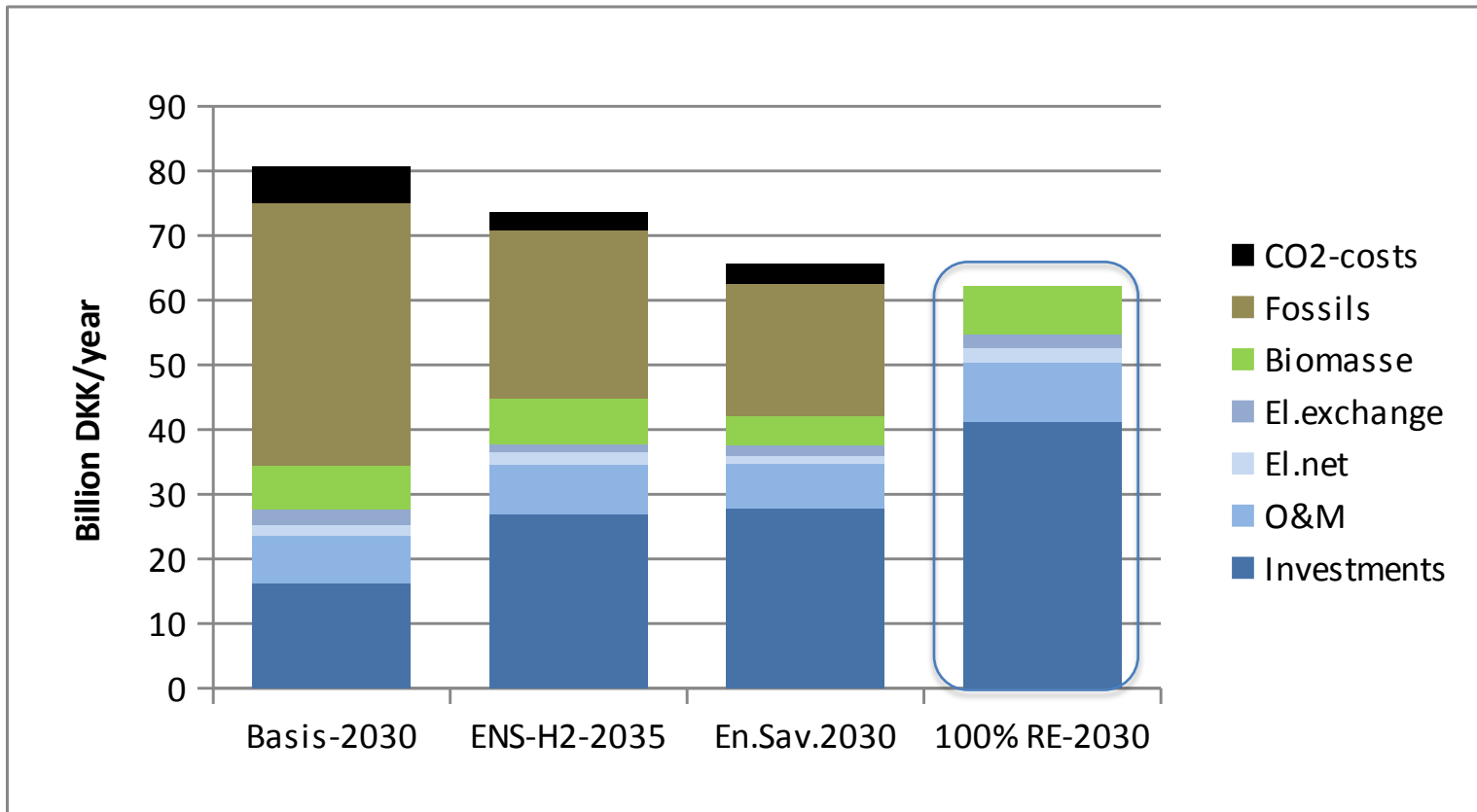
# Energy Transition until 2030 is realistic for Denmark & the economy can benefit

- Analysis of energy system – hour by hour with the EnergyPLAN programme shows that an electricity system with 84% windpower and 7% solar can supply in all hours of the year.
- Compared with continued use of fossil fuels, renewable energy supply can be cheaper in 2030, if we also save energy and make a transport transition





# Danish Primary Energy Supply, 2030



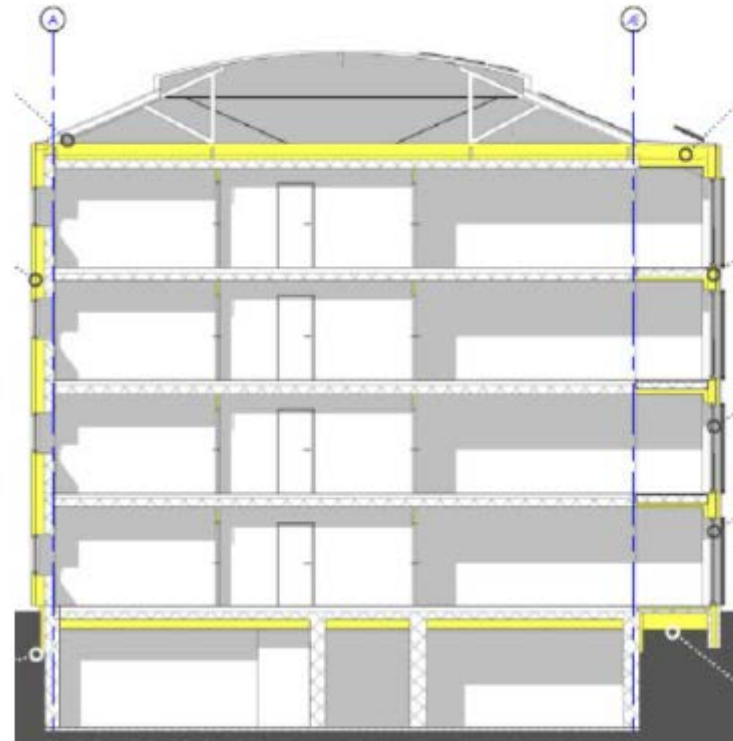
Danish Energy System Costs 2030, with Energy Efficiency Invest.



# Low-energy Renovation in DK 2016



*Apartment block after renovation*



*Cross-section of building after insulation (insulation is yellow).  
Former balconies are to the right. Observe also roof and floor insulation.*



**Thank you**





VERSGO!  
100%  
VEDVARENDE  
ENERGI

# Expand renewable energy

**11000 MW windpower in 2030, half on land (today 4855 MW)**

**4000 MW solar PV in 2030 (today 530 MW)**

**1800 MW heat pumps in district heating (today ca. 5 MW)**

**850 MW bio-CHP and 3000 MW biogas peak power**

**20 PJ solar heat (11 mill. m<sup>2</sup> = 1100 ha), 19 PJ geotermi**

**Sustainable biomass – 150 PJ in Danmark**

# Large variations in power flows can be managed

RES12: Windpower

RES34: Solar PV

Flex: Flexible power demand

HP: Heat pumps

Wasteheat/Geo: geotherm. Heat

CHP: Combined heat & power

