

# District Energy in Denmark Moving Beyond Fossil Fuels

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# Why Move Beyond Fossil Fuel?

- **Combustion of fossil fuels for any purpose have an adverse effect on the climate is to day accepted knowledge – Global problem**
- **However not to use fossil fuel can have an adverse effect on the economy – Local problem**
- **In broad outline that is the complex of problem for policy makers**



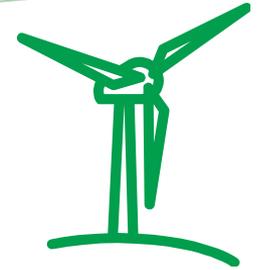
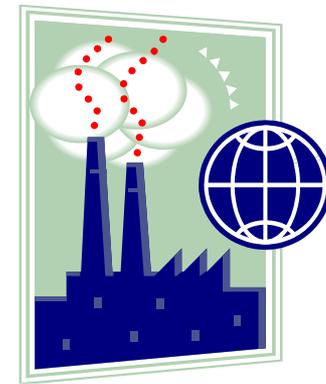
In April 2014 CO2 level in the atmosphere on the northern hemisphere for the first time ever exceed 400 ppm

A wake up call



# Actors involved in the process

- Policy makers, state and local level
  - NGO
  - Government official
  - Project developers
  - Building owners
  - Contractors
  - End users
- 
- Focus of interest is not the same



# The Basic Dilemma of any policy maker, company or private person

- Can we reduce the use of fossil fuel without spoiling the economy ?
- How much can we afford to spend on behalf of the environment – future generations ?
- In Denmark and in particular in the Greater Copenhagen Region we say **YES** to both questions



Being a small country  
gives you a good  
opportunity to export  
new technology

# Recommendations for CO2 reduction

- **UN**
- **EU**
  - 40% reduction before 2030 (base 1990)
- **Denmark**
  - CO2 neutral by 2050
- **Copenhagen**
  - CO2 neutral by 2035
  - Heating and electricity **CO2 neutral by 2025**
- **In 2013 46% of energy consumption CO2 neutral**
  - 98% of all buildings in city area connected to DH
  - CHP production form the basis
  - Primary tool is waste and biomass



Green Economy Leader Report  
*Copenhagen leading, role model*



# Change to Renewable Energy in Denmark in 2050

- **Four different scenarios for the change**
  - Wind
  - Biomass
  - Bio+
  - Hydrogen

**Extra cost for Denmark in total 1 to 5 billion \$ every year – little less than 6 million inhabitants – about 200 \$ per person**

**That is political acceptable for Denmark**



# Why is large scale district thermal energy the solution in Denmark/Copenhagen?

- **DH is monopoly business, no competition**
- **Consumers has to pay the cost and can be forced to connect to DH**

**BUT BUT BUT**

**It has to be a better and cheaper solution**

- **Responsibility of policy makers**
- **Heavy tax on fossil fuel**
- **Subsidy on RE technology, energy savings**



**You can not have a energy policy,  
where you wish energy to be as  
cheap as possible on behalf of  
the economy and at the same  
time expect investments and  
initiatives in energy savings**

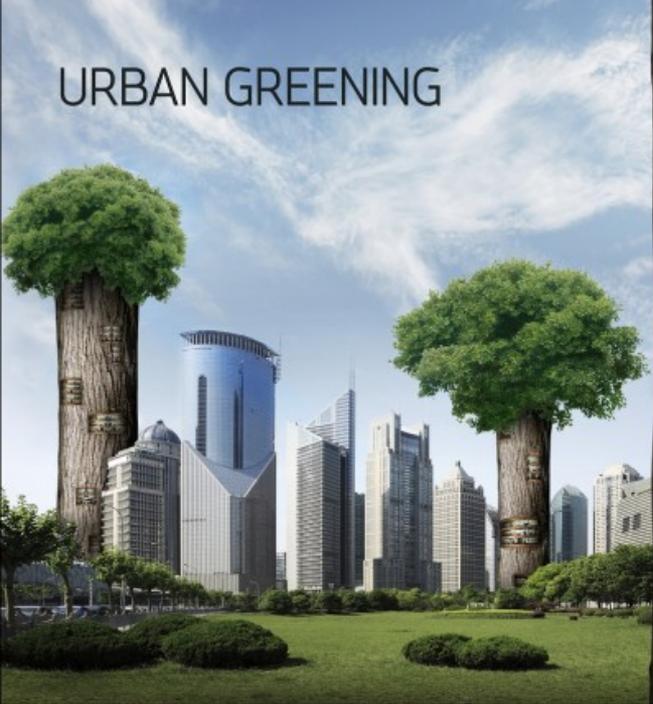


# Where is the policy “Beauty” of CHP/DH

- **Investment in stead of running energy cost**
  - Bigger employment
  - Money stays in the local society
  - Stability in price
- **Energy saving production technology**
  - Better image
- **One big effective stacker in stead of many small**
  - Less pollution
  - Easy to make changes - higher flexibility
- **Community system**
  - Better equality in society
  - Better possibility for utilizing surplus heat



# URBAN GREENING



## Many view of URBAN GREENING



# Is it possible to maintain 98% DH connection ???

- **New urban areas are the problem**
- **Local development plan is the corner stone - is the solution DH or local RE?**
- **Many urban planners, building developers, private tenants and NGO prefer visible RE technologies**
- **In Denmark Building code rewards local building RE compared to DH based RE, despite much bigger investments**
- **Local municipal urban planners must be convinced**
- **Accept a share of visible RE together with DH**

