



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**



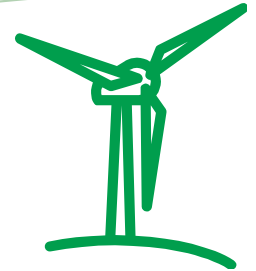
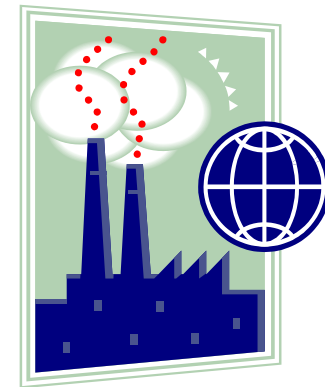
In April 2014 CO2 level in the atmosphere on the northern hemisphere for the first time ever exceed 400 ppm

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 area 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

