

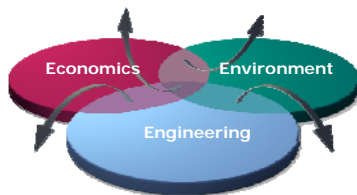
The road to a sustainable energy future
Energy efficiency and district energy

Michael Davidsen
Manager, Washington, COWI Group



COWI is a leading
Northern European-based Consultant

COWI provides consultancy services of **highest quality** within **engineering, environmental science and economics**



- 6,000 employees
- Established 1930
- Active in 100+ countries
- 6,000 active projects

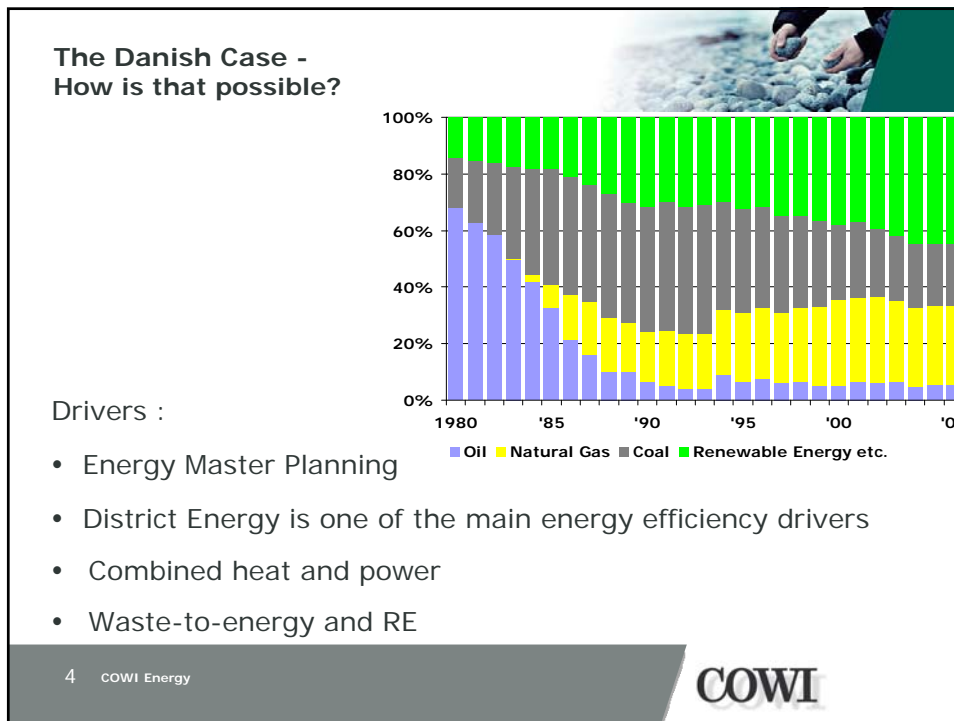
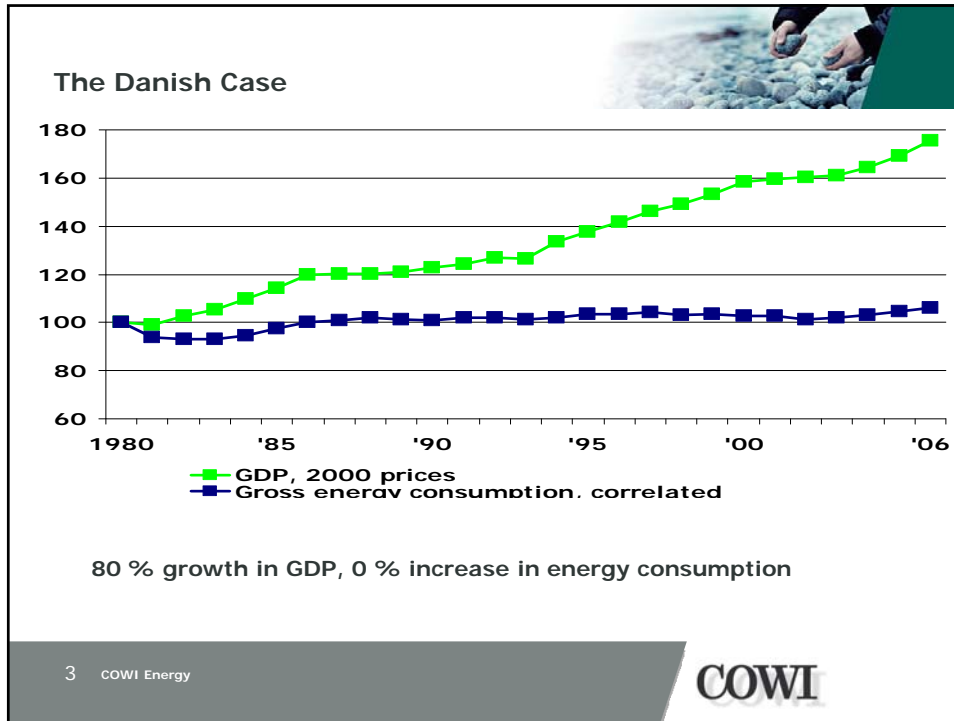
COWI Worldwide

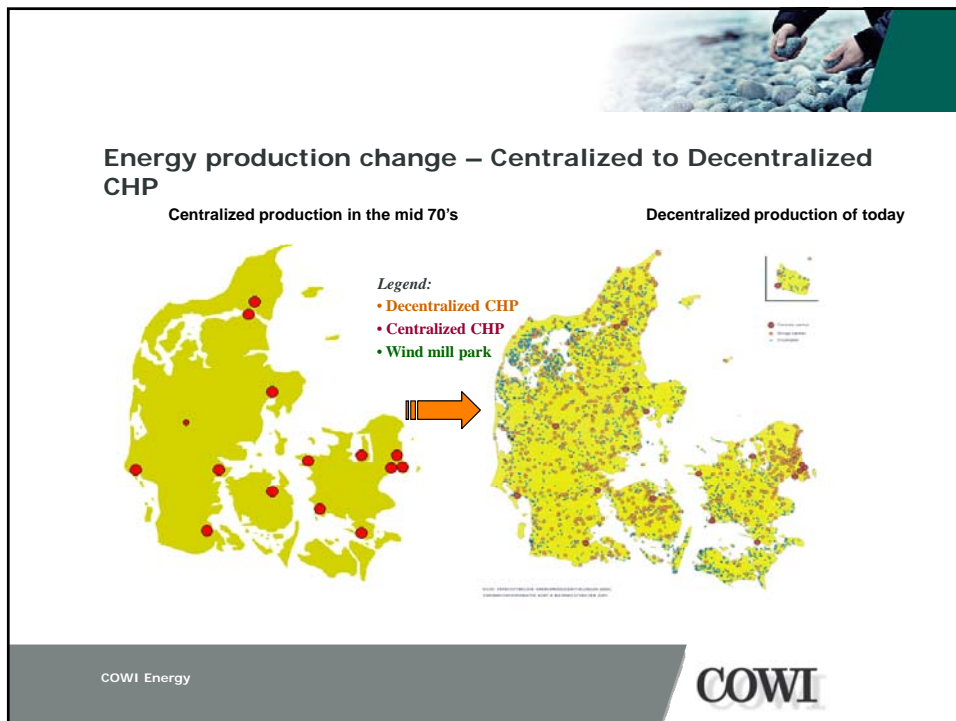
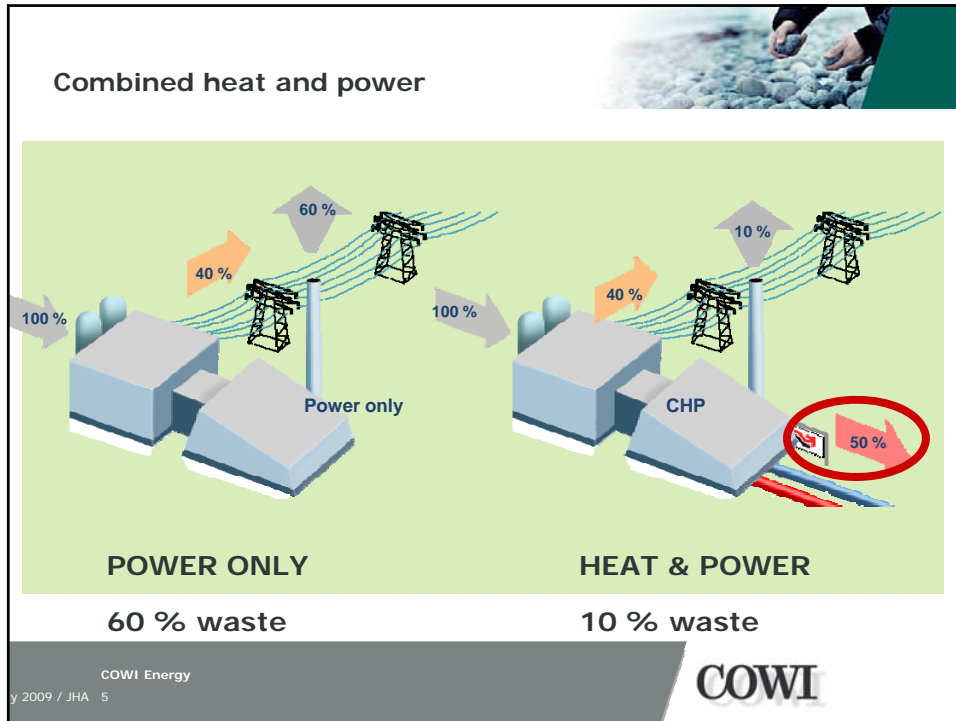
- 25 Subsidiaries in 5 continents
- Large project offices



COWI in the USA

- Representative office in DC
- Ocean & Coastal Consultants, Trumbull, CT
- Ben G. Gerwick, San Francisco, CA





Combined heat and power

- Only 9 % of all power production in the world utilizes the waste heat in combined heat and power (CHP)!
- If the CHP utilization of waste heat is increased from 9 % to 12 % the saved amount of annual energy is similar to the annual production of wind energy!



The District Energy Plant St. Paul. MN

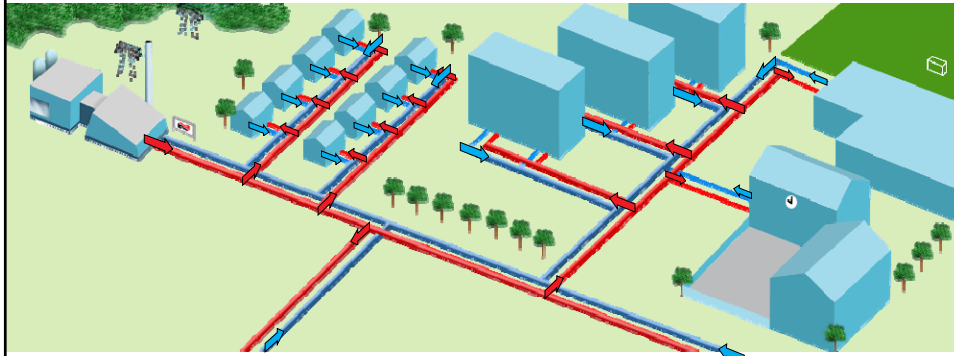
Waste-to-energy



Danish waste-to-energy plant

- Capacity 24 t/h, power output approx. 18 MW, district heating output approx. 55 MJ/s

District Energy an Illustration



Countrywide about 18,750 miles or 30,000 km pipes.

60 % of all Danish households have DH. Source DBDH

COWI Energy



District Energy – In the Greater DC



White House

US Capitol and related buildings

National Cathedral

About 22 Military Installations:

The Pentagon, VA

U.S. Air Force Andrews Air Force Base, MD

U.S. Marine Corps, Quantico Marine Base, VA

U.S Naval Academy, Annapolis, MD



DH the best hidden secret



1984:

District Heating and Cooling in the United States.

– **Prospects and Issues.**

NATIONAL RESEARCH COUNCIL *OF THE NATIONAL ACADEMIES*

2009:

**Evaluation of Future Strategic and Energy Efficient Options
for the U.S. Capitol Power Plant.**

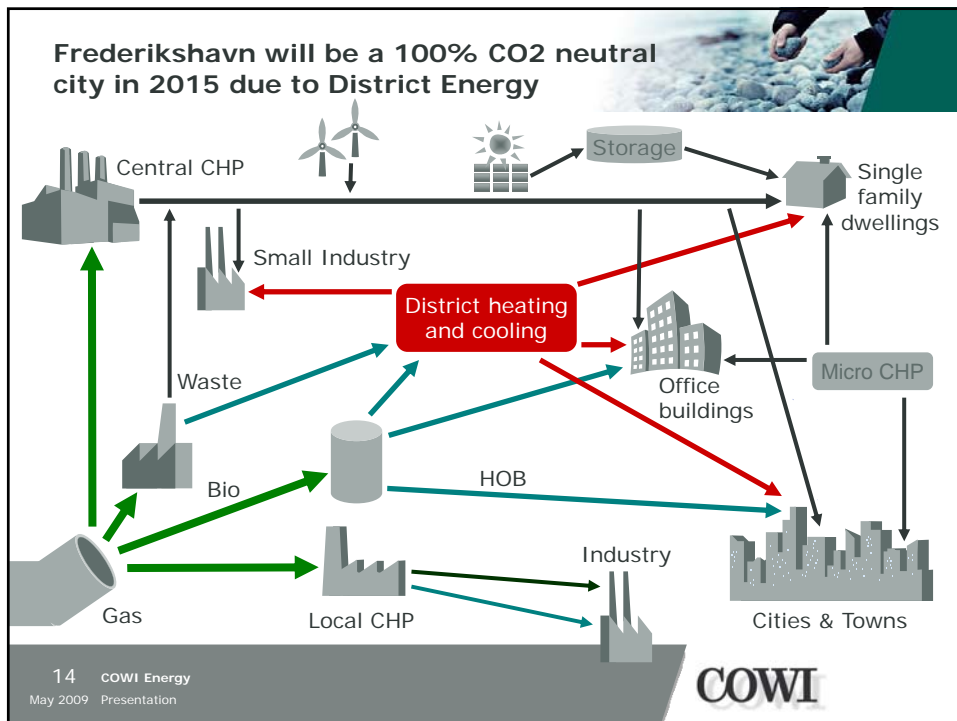
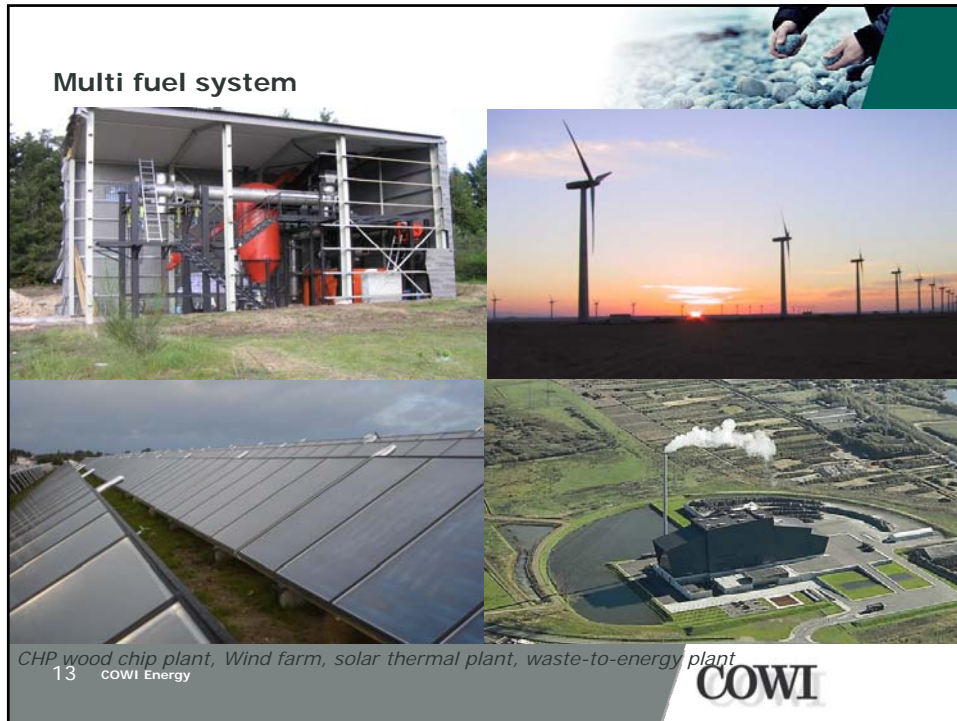
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District Energy – the key infrastructure

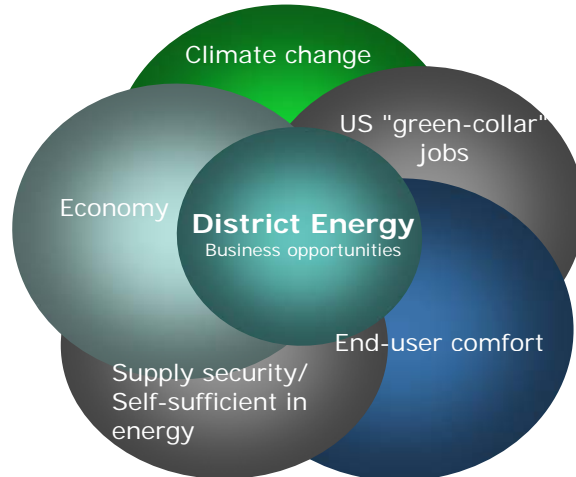
- Accept any fuel the next 100 years including surplus heat and renewable energy
- No noise, no smell or visual hazard...it is invisible
- Reliable, proven technology
- Can be used for energy storage



In 2008 Kronborg Castle – the home of Hamlet – finally got district heating.




The US energy issues



US "green-collar" jobs

- District energy is a local production method
- District energy can be fuelled by local by-products: biomass, waste, etc.
- District energy is an ongoing developing sector attracting R&D as it produces heat (and power) in a cost- and climate- effective way
- 23,400 job-years would be created per \$1 billion in district system construction (US Department of Housing and Urban Development)



If there's a **SOLUTION**
we'll find it...

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Thank You

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