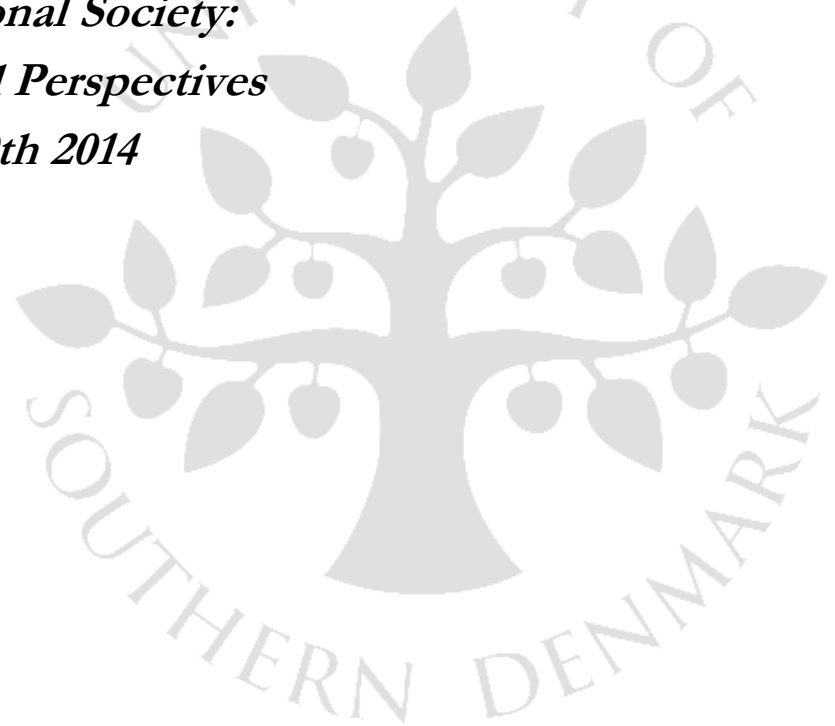


# ***Regulating the use of renewable energy in China and Denmark – two approaches***

*Law and Transitional Society:  
Chinese and Global Perspectives*

*December 10th 2014*



# A phase of transition

- China and Denmark moving from a fossil fuel economy towards more renewable energy
  - Not the first time
  - 17<sup>th</sup> and 18<sup>th</sup> century transition from wood to fossil fuel (coal)
- Energy markets have (partly) been liberalized
- Many sees the access to energy as a fundamental right

# Why promoting renewable energy

Energy politic is based on many considerations:

- Security of supply
- Environmental protection
- Economic considerations (towards industry and consumers)
- Climate change

Promoting renewable energy is one of more strategies



# Chinese-Danish Agreements

- Agreement with China National Renewable Energy Centre of the People's Republic of China (CNREC), 2012
- Agreement with Ministry of Science and Technology of the People's Republic of China (MoST), 2012
- Agreement between the Danish Energy Technology Development and Demonstration programme (EUDP) and The Department of International Cooperation of the Chinese Ministry of Science and Technology, 2012
- Agreement with the National Development and Reform Commission, People's Republic of China (NDRC), 2013
- Agreement with Ministry of Housing and Urban-Rural Development of the People's Republic of China (MoHURD), 2014
- Agreement with National Energy Administration of the People's Republic of China (NEA), 2014
- Agreement with the National Energy Conservation Centre, People's Republic of China (NECC), 2014

# Political background - PRC

- Major changes since the start of open door policy in 1979
  - Breaking of state monopolies and introducing competitive markets
- Published renewable energy targets - 20 % of consumption as renewable by 2030 in connection with China/USA CO2 agreement

# Political background - DK

- Target of 30% renewable energy by 2020 in the RE Directive
- Danish political target: 100 % renewable energy in energy and transport sector by 2050
  - In 2020 include approximately 50% of electricity consumption supplied by wind power, and more than 35% of final energy consumption supplied from renewable energy sources
  - Electricity and heating supply must be met exclusively by renewable energy by 2035
- Developed national support system (different in other EU Member States)
  - Risk of destroying competition as with offshore wind
  - Risk that national support scheme may be contradictory to EU legislation

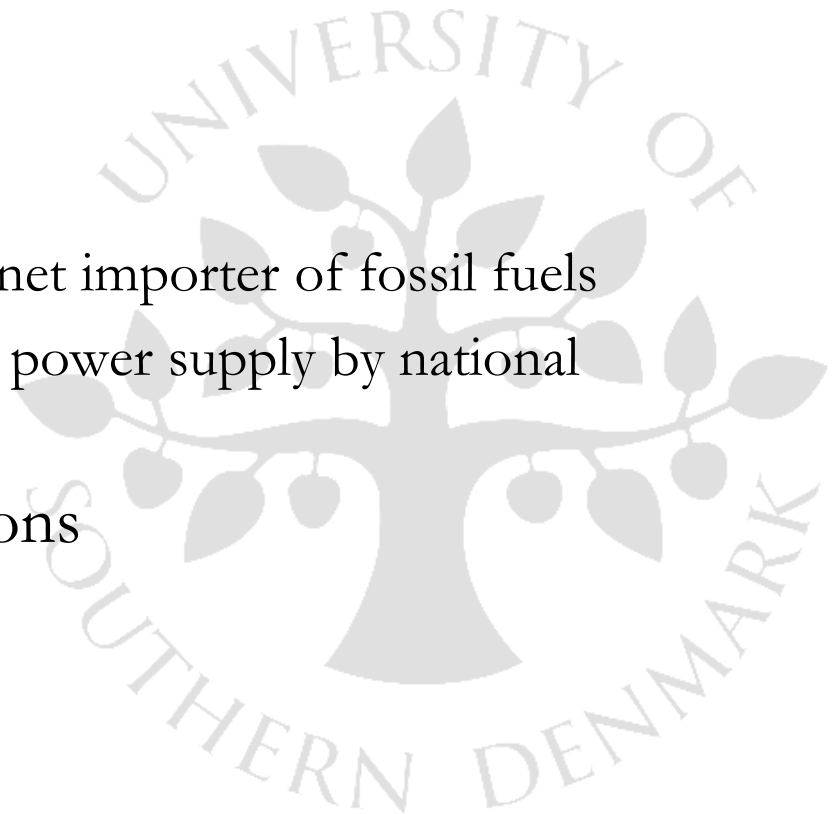
# Future major challenges

China:

- Security of supply
  - Became a net importer during second half of the 1990'ties
- Air pollution

Denmark:

- Security of supply
  - In a few years, Denmark will be a net importer of fossil fuels
  - Denmark can no longer guarantee power supply by national capacity 24/7/365
- Meeting climate change obligations



# Basic legislation

- Both countries have a specific law concerning renewable energy
  - China: The Renewable Energy Law of the People's Republic of China (REL), 2005, revised Dec. 2009
  - Denmark: Promotion of Renewable Energy Act (REA), 2008
    - Part of the regulation previously to be found in the Electricity supply Act
    - Renewable energy has been supported since 1981 due to security of supply (supplementing energy savings and domestic development of natural gas and nuclear power)

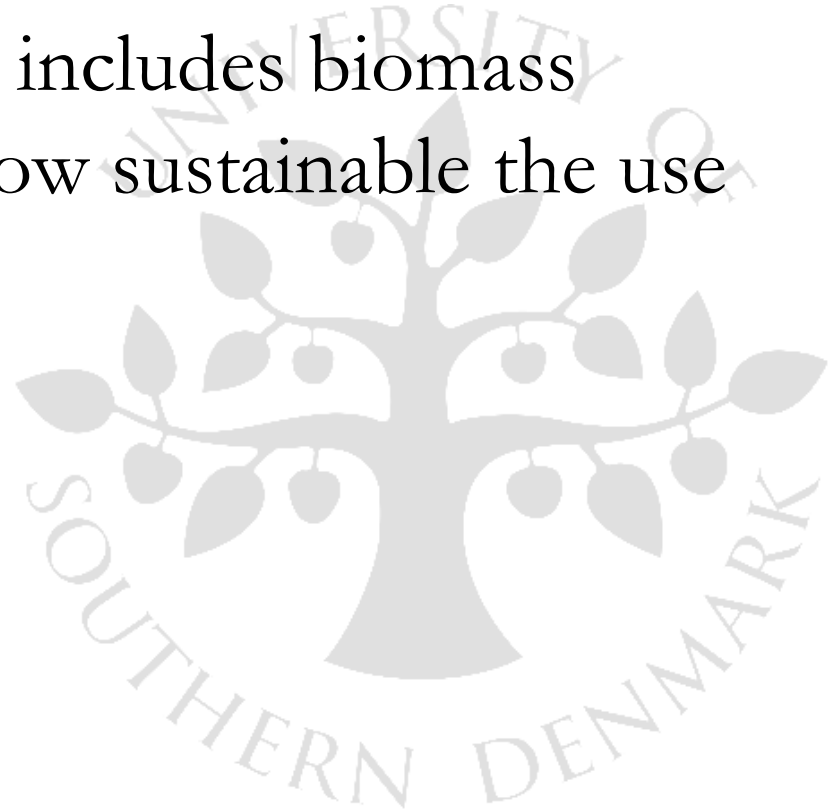


# Defining renewable energy I

- China - The Renewable Energy Law (REL) section 2
  - Includes “non-fossil energy of wind energy, solar energy, water energy, biomass energy, geothermal energy, and ocean energy, etc.”
  - does not apply to the direct burning of straw, firewood and dejecta, etc. on low-efficiency stove
- Denmark - Promotion of Renewable Energy Act (REA) section 2(2)
  - Includes “wind power, hydropower, biogas, biomass, solar energy, wave and tidal energy, as well as geothermal heating”

# Defining renewable energy II

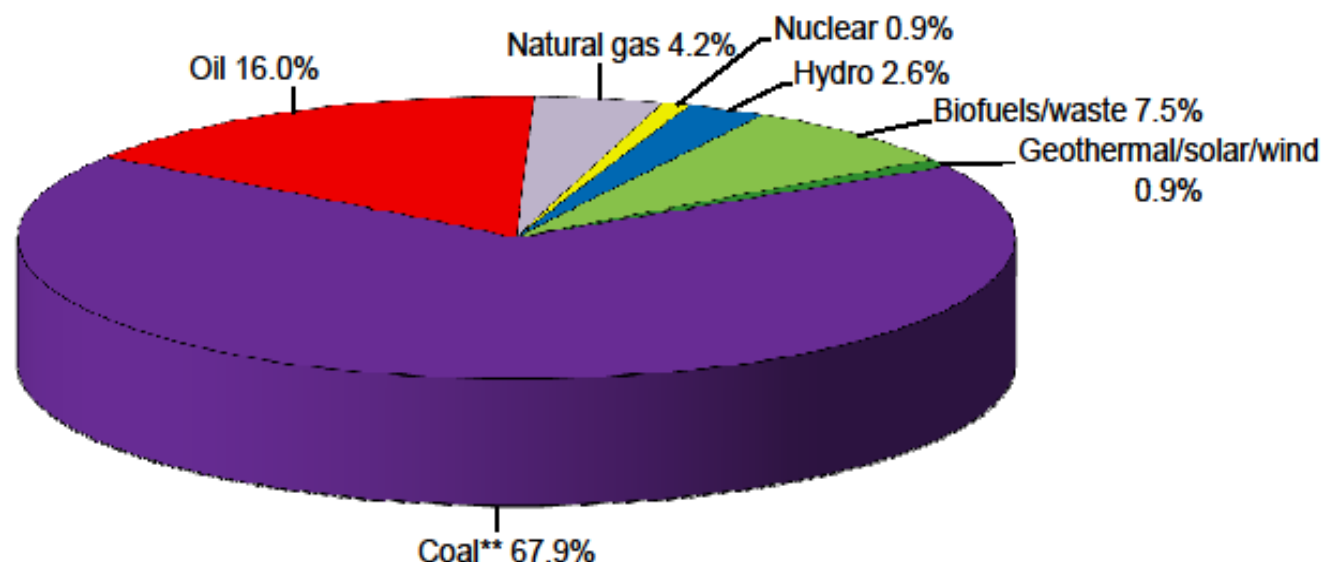
- Both China and Denmark uses broad definitions exemplifying the most common sources
- Both China and Denmark includes biomass although it is a question how sustainable the use of biomass is





## Share of total primary energy supply\* in 2012

### *People's Republic of China*



**2 894 Mtoe**

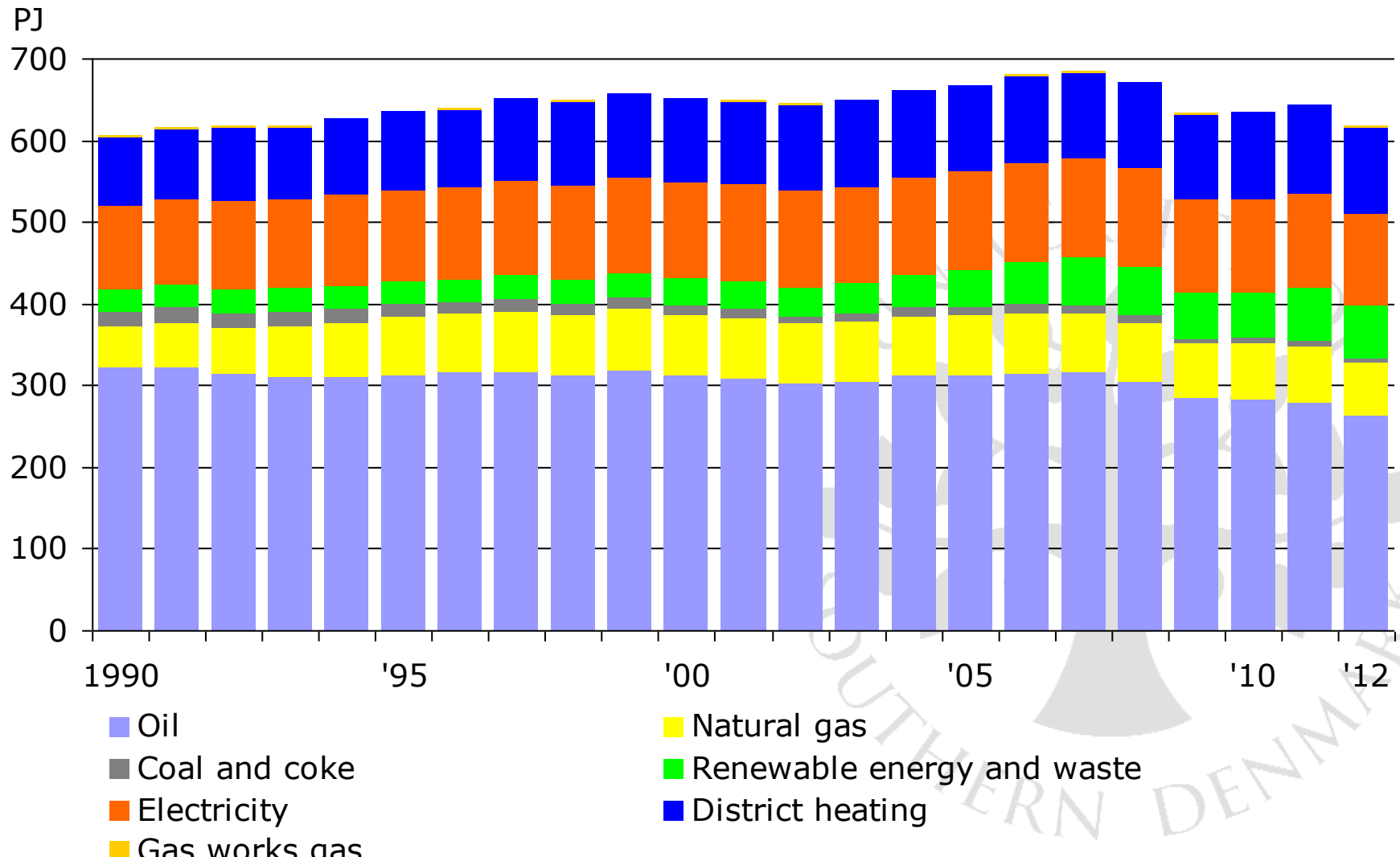
\* Share of TPES excludes electricity trade.

\*\* In this graph, peat and oil shale are aggregated with coal, when relevant.

Note: For presentational purposes, shares of under 0.1% are not included and consequently the total may not add up to 100%.

# Final energy consumption by energy product (www.ens.dk)

Adjusted



# Government level

- China:
  - All levels above county level, REL section 5
- Denmark
  - REA mainly on state level
  - Spatial planning on municipality level
  - The municipalities are to have local energy policy



# Legal instruments

- Planning
- Economically aid
- Quotas
- Capacity demands
- Certificates
- Bands on Technologies
- Location Certificates
- Standards for the effect of energy use



# Example – Planning

## China

- The energy department of the state council shall, set up a national planning for the development and utilization of renewable energy resources
- The local planning needs to be submitted to State Council for approval before implementation

## Denmark

- Government targets for some technologies by political agreements

# Example – Economical Aid

## Wind turbines - PRC

- Region-based fix price mechanism for wind turbines from 2006, market price plus 0.01-0.03 RMB/kWh on the basis of distance of transmission line
- Offshore: Market price will reach coal-fire standard market electricity price around 2020
- Onshore: from 2020, all feed in tariff will only apply for onshore wind turbines



# Example – Economical Aid

## Wind turbines - DK

- Onshore – Market price plus a fixed amount/kWh for a limited period
- Offshore – Guaranteed feed in tariff based on public procurement
  - Depending on the market for producing and erecting offshore wind turbines
  - Depending on the conditions used in public procurement procedure

# Feed In Tariffs or not?

- Security for the investor
- Can be exposed to competition by using public procurement, if the market is efficient
- Feed in tariffs quickly becomes too generous
- Difficult with a market if some technologies get aid, others not



# Financing costs - PRC

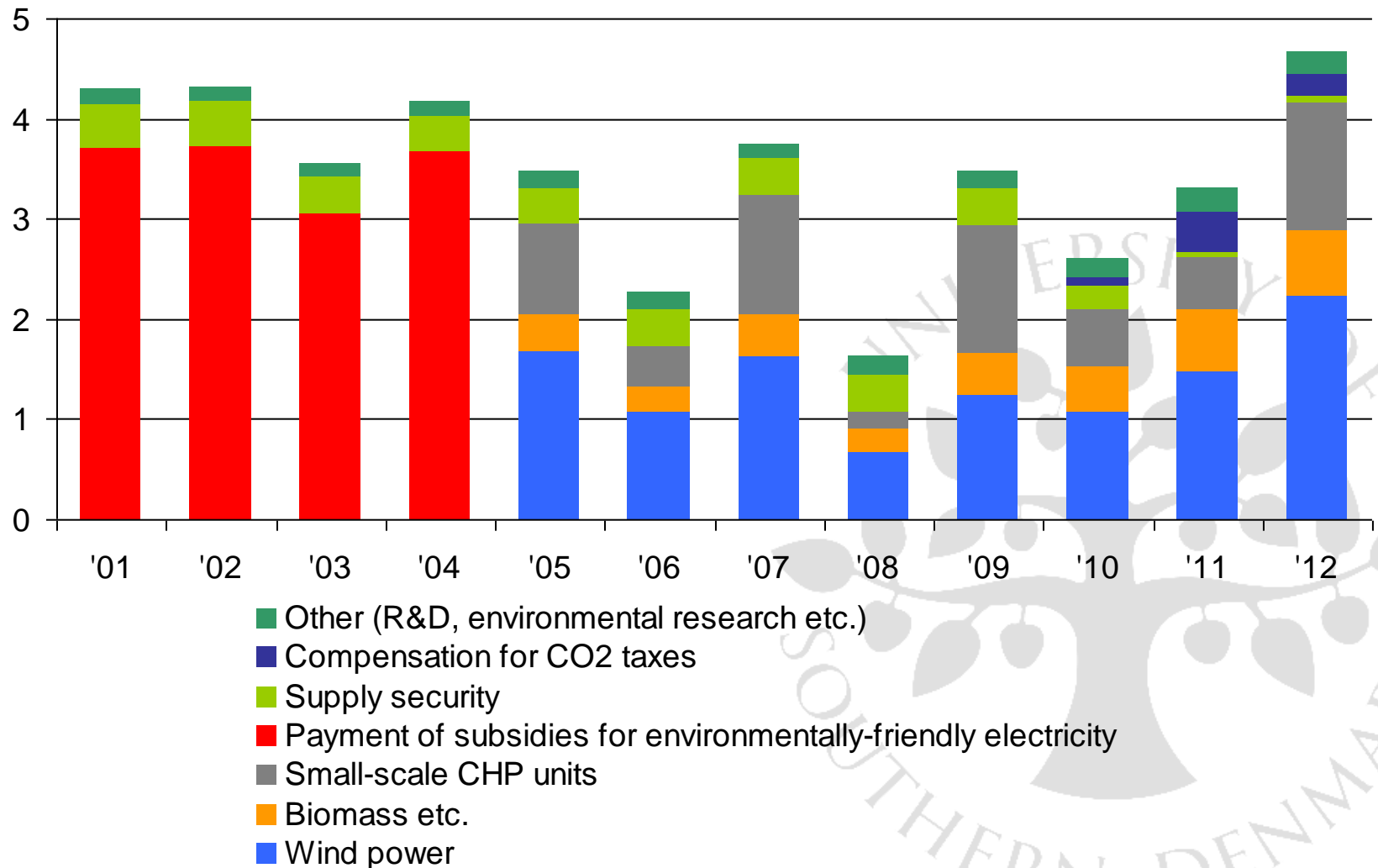
- Additional fee will be charged nation-wide to reimburse the margin price of renewable energy electricity higher than the market electricity price, REL section 20
- The financial authorities of the state shall set up a special fund, including financial special fund and charged additional fee for renewable energy electricity, for the development of renewable energy, which shall be used for supporting (REL section 24)
  - scientific and technological research ...
  - renewable energy utilization or construction projects in rural areas
  - ...

# Financing costs - DK

- Support charged at the consumers as Public Service Obligation (PSO)
- In 2012, the PSO fee was DKK 0.155/kWh on average, corresponding to almost DKK 4.7 billion in total
- Most of the PSO fee goes to covering fixed settlement prices on environmentally friendly electricity production. When electricity market prices fall, the costs for the fixed settlement prices increase and with them the PSO fee. On the other hand, when the electricity market price goes up, the PSO costs fall, all other things being equal

# Expenses for PSO in Denmark in the electricity area ([www.ens.dk](http://www.ens.dk))

DKK Billion, current prices



# Concluding comments

- Both Denmark and China tends to leave the costs for renewable energy to the costumers, not the taxpayers
- Both Denmark and China tries to make the electricity costumers pay part of the bill for security of supply etc.
- Public procurement is used only in Denmark, but can here hardly said to be successful

# **Thank you for your attention**

**Bent Ole Gram Mortensen**

Professor of Law, LLM, PhD

University of Southern Denmark

Department of Law

Campusvej 55 – DK-5230 Odense M

Phone +45 6550 2160 (direct), Fax +45 6593 0726

E-mail: [bom@sam.sdu.dk](mailto:bom@sam.sdu.dk)

<http://www.sam.sdu.dk/staff/bom>