

The Global Triple Challenge – climate change, security of supply and the economic crisis **and the Road to Copenhagen** **(COP15)**

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Genève – 17 March 2009

The Global Wake-Up Call of China Today

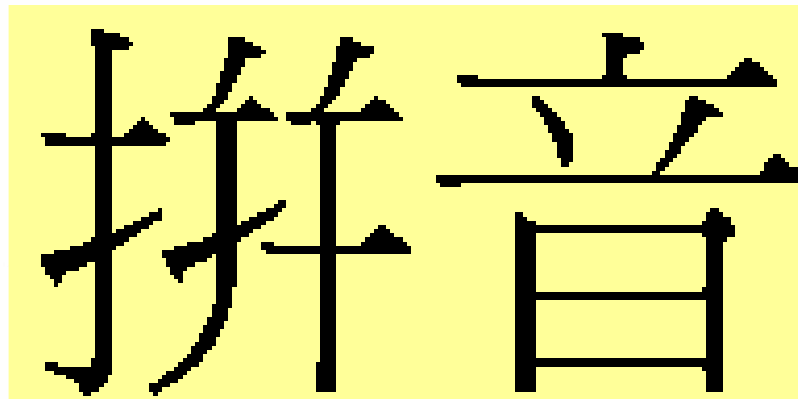
- China's share of the global GDP is 6 % ... but China consumes 40 % of all coal in the world!
- From 2006 to 2030 China's coal consumption will double and the amount of cars will triple.
- China contributes with 48 % of the increased CO₂-emission in the world from 2006 to 2030.
- 21 pct. of the global CO₂-emission in 2007 came from China – the highest share in the world. By 2030 the share will be 29% (IEA)



The Chinese Crisis Signifies Global Opportunities

- The Chinese character for “Crisis” is made by the two characters:

“Danger” + “Opportunity”.



- A symbol for future options and cross roads.
- Solutions are pertinent. Best practices from other countries can be used

United States

- Final energy consumption has increased by 20 percent from 1990 to 2006.
 - The absolute increase (267 Mtoe) is equal to the total final energy consumption of Germany.
- The transport sector is the most consuming sector (42%)
 - The growth in the transport sector 1990-2006: 30%
- The huge energy consumption in the transport sector means that the United States is very dependent on oil. 41 % of energy supply: oil
- Total US oil supply: 937 Mtoe – equal to total energy supply in Latin America and the Middle East.

A Global Triple Challenge

1. The economic crisis – in conjunction with often high and permanently fluctuating fossil-fuel prices
2. Security of supply is threatened by a high reliance of oil and gas from politically unstable regions
3. The Climate Crisis.



Need for a Global Green Deal at affordable prices

Oil price fluctuations:		
1988-2003	15-30	USD/bl
2007	55	-
2008 – mid	140	-
2008 – late	40	-

“Today, Europe imports 54% of its energy. At 2008's energy prices, these imports represent an estimated €350 billion, or around €700 per year for every EU citizen.”
EU Energy Security and Solidarity Action Plan – 2. Review 2008.

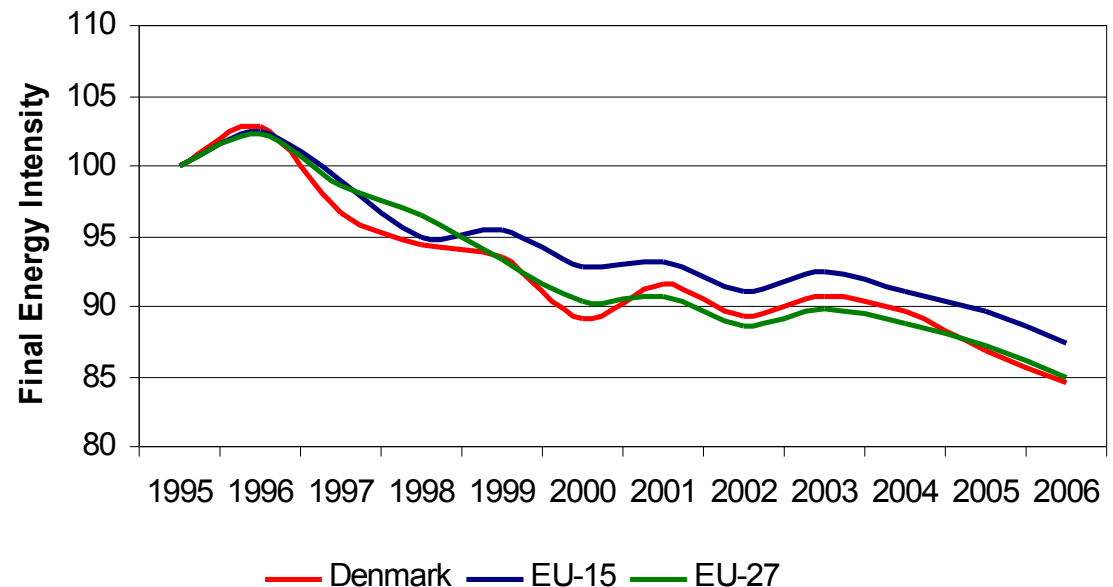
Many Governments Recognize the Need for a Global Energy Revolution

- EU countries have agreed to an ambitious binding target of 20% renewable energy of the final energy consumption by 2020.
- China targets 15% by 2020
- Obama–Biden's *New Energy for America plan* will ensure 10% renewable electricity by 2012 and 25% by 2025.

The major energy consuming countries has adopted targets for the development of renewable energy.

The energy intensity has already improved remarkably in most EU countries.

We are on the right track to pursue more ambitious goals.



A Global Green Deal in the Horizon

- “Forward looking governments can act now to maximize employment and investment opportunities as we move to a renewable energy future”

REN21 Global Status Reports estimate that 2.4 million people were employed in the RE industry in 2006

Barack Obama intends to invest 150,000 million dollars in affordable renewable energy over the next decade – investments that will lead to 5 million jobs

- Some countries has taken the lead as first movers and achieved significant employment

Germany is reporting around 260,000 jobs in RE and related industries
(REN21 Renewable Energy Potentials 2008)

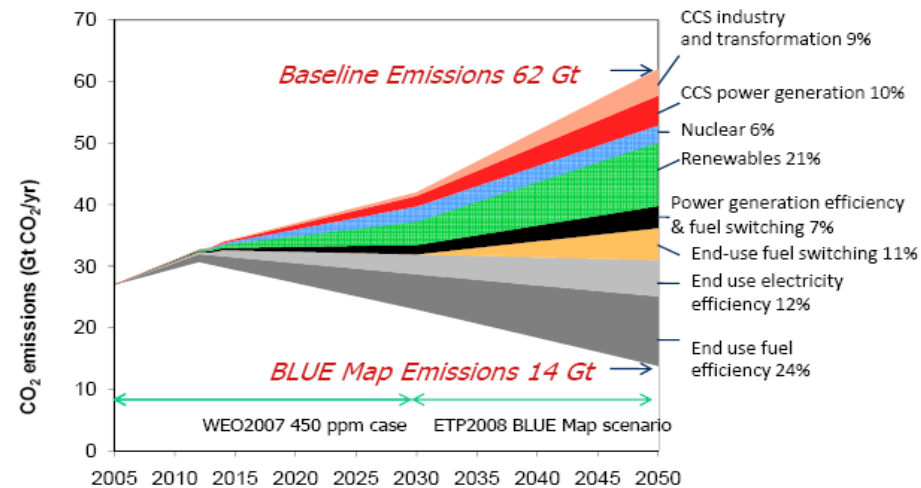
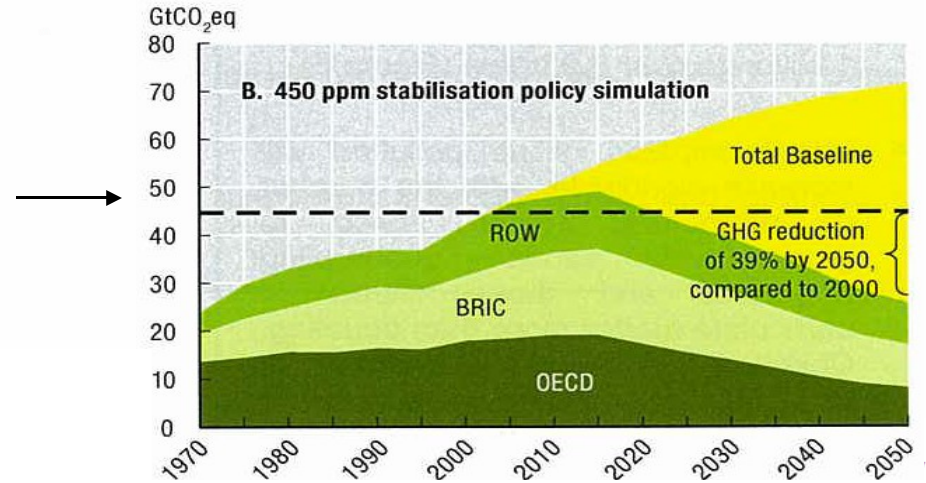
Costs of GHG Reduction by 2050 (450 ppm by 2030 and sustained to 2050)

➤ **OECD (2008):**
Aggregated loss of 0.5% GDP in 2030 and 2.5% in 2050.

➤ **IPPC (2007):**
3% less GDP by the year of 2030 and 5% in 2050.

➤ **IEA (2008):**
0.55% less GDP from 2010 to 2030, and 1.1% less GDP from 2005 to 2050.

All costs cited above are gross investments. Saved costs in form of fuel and externalities etc. are not deducted. The 3 cost estimates are based on different methods.



True Costs Calls for Immediate Action

- The various cost estimates of the 450 ppm-scenario have NOT deducted the cost of inaction. Neither are the dynamic spin-off effects deducted such as higher employment, new industries etc.
- Nicholas Stern: "The benefits of strong, early action on climate change outweigh the costs"
- Stern calls for immediate action: "A 10 year delay almost doubles the annual rate of decline required" (Stern, 2006).

IEA's 450 ppm-scenario for 2005-2050 costs in average 1 Trillion US\$ per year.

The 5 great oil-dependent powers (USA, EU, Japan, China and India) transferred about 2½ Trillion US\$ to oil producing countries in 2008.

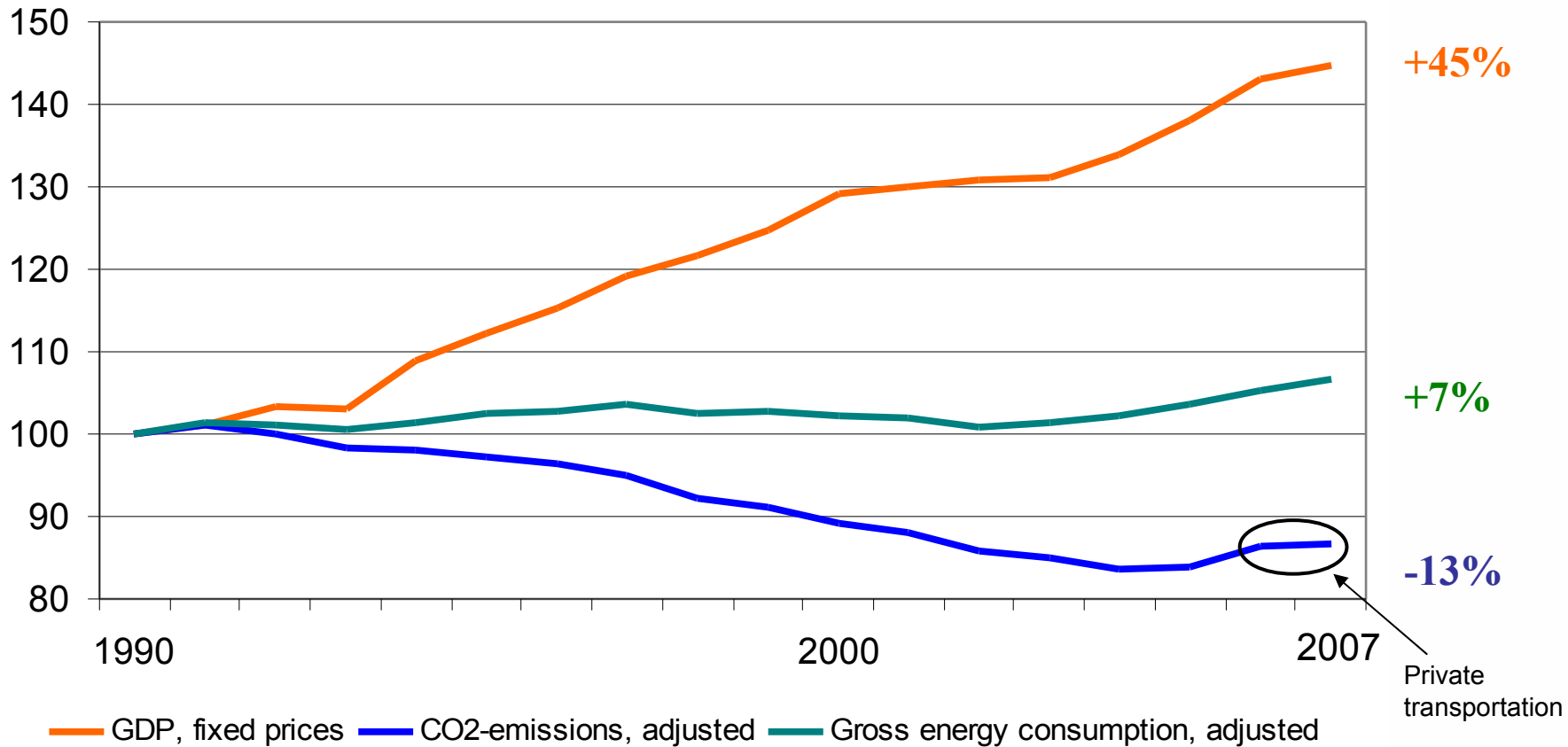


Call for a Global Green Deal.
Need for concerted international action on COP-15

Denmark's Wake-Up Call 35 Years Ago

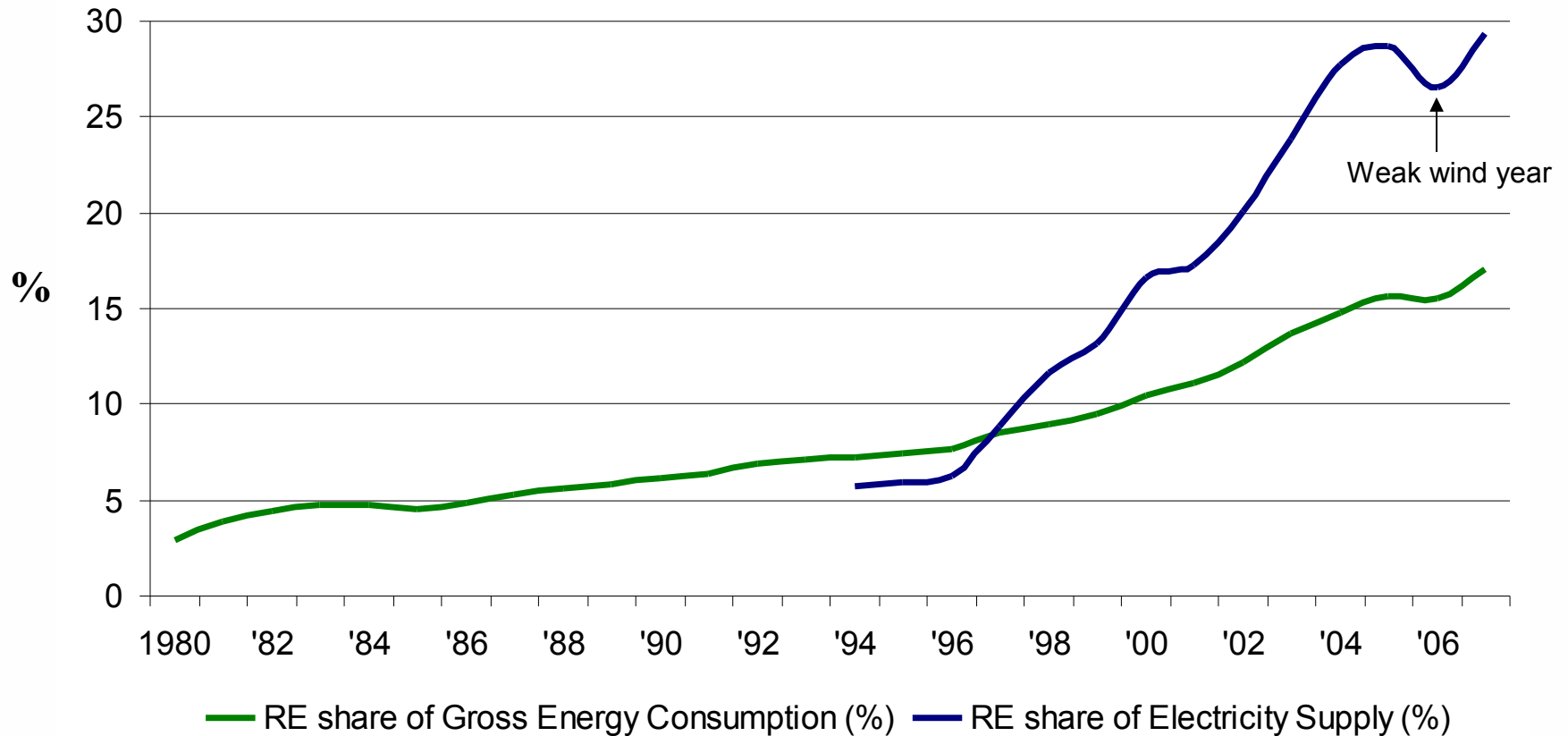
- 1973-74 oil crisis
- 2 countries 99% dependent on imported energy
 - Japan
 - Denmark (oil and coal)
- Supply situation exacerbated by inefficient energy use
- Sharply rising oil prices caused severe economic crisis and high unemployment.

De-linking Growth and Energy Consumption: 1990-2007



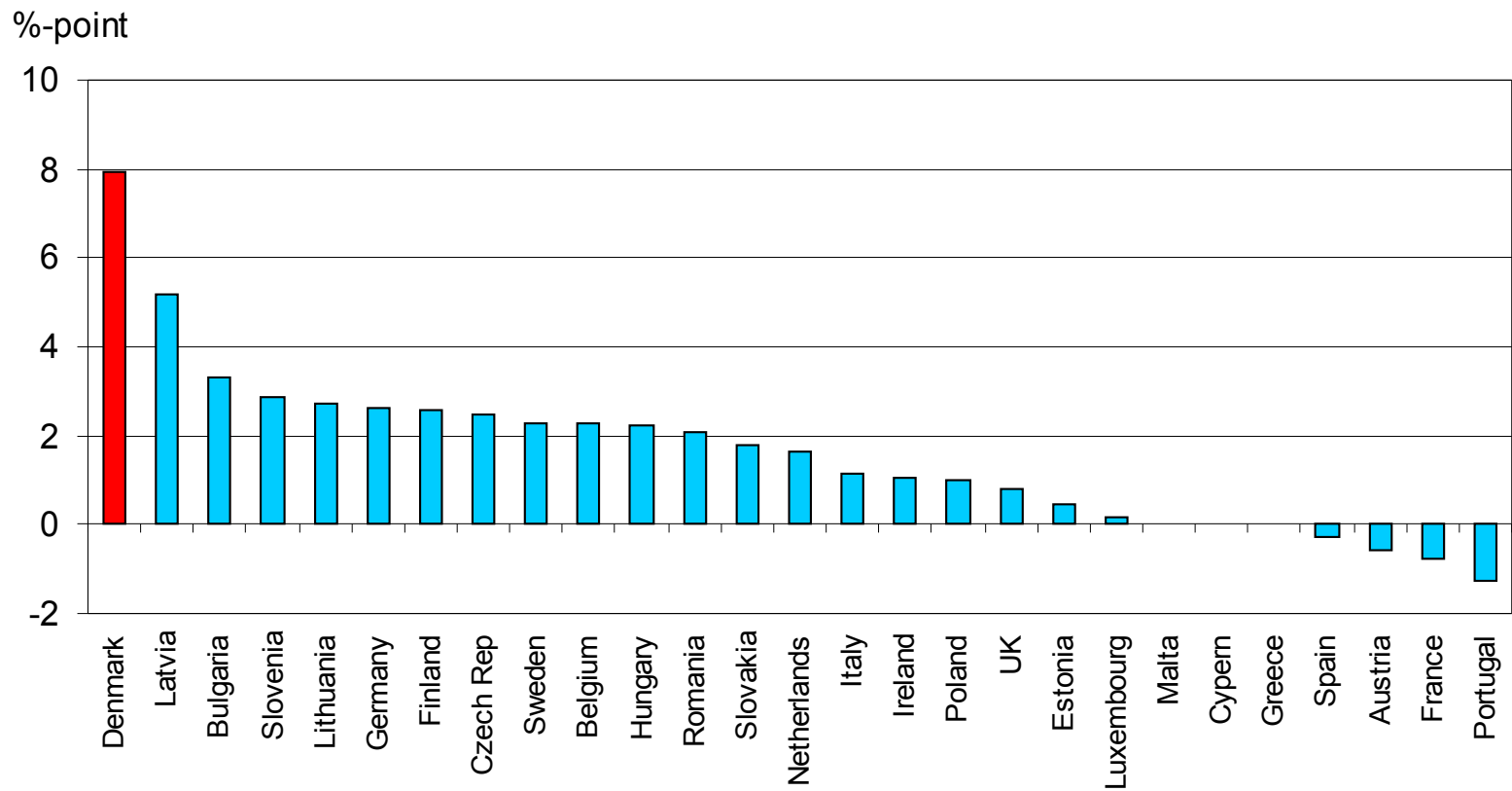
3 reasons: 1) CHP/DH, 2) Renewable energy, 3) Energy savings

Renewable Energy in Denmark

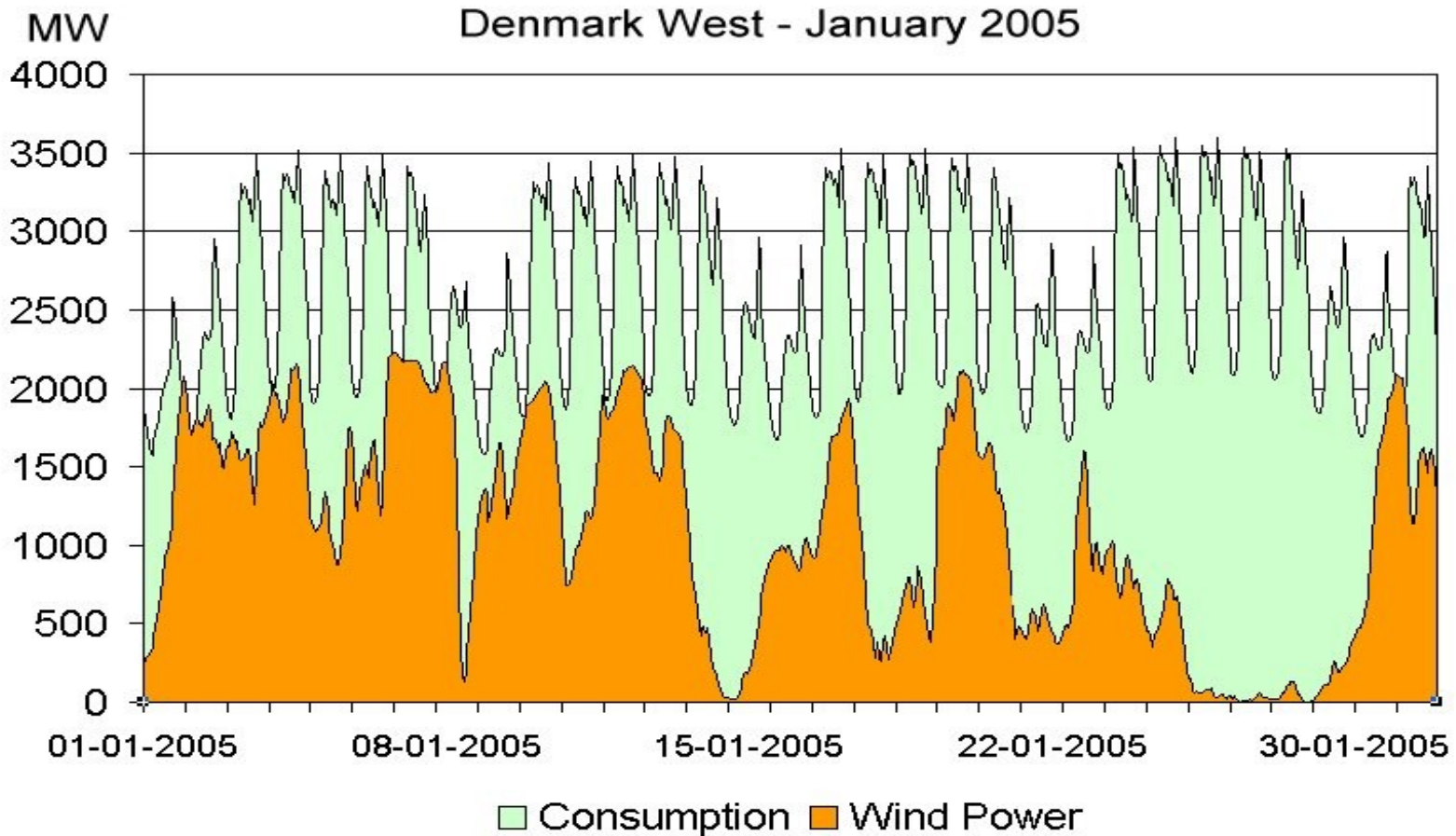


➤ Highest contribution to electricity from **new** renewables in the World

Past Development of RE in EU



Challenge: To Feed the Grid with Wind Power (Western Denmark as an example)



Grid Management of Fluctuating Wind Power

- Large regional grids (only 2 transmission grids in DK) provide access to sale and back-up capt.
- Up to 50% more electricity as needed by DK passes through its grid due to external transit.
- Nord Pool: Fully liberalised market ensures cost-effective back-up capacity in Nordic region
- Trade with closure times as low as 1 hour.
- RE electricity is guaranteed transmission and distribution
- Further integration of wind power is possible

Danish Biomass Plants for District Heating

Wood or straw:

- 200 district heating plants
- 15 CHP plants

Biogas:

- 30 CHP

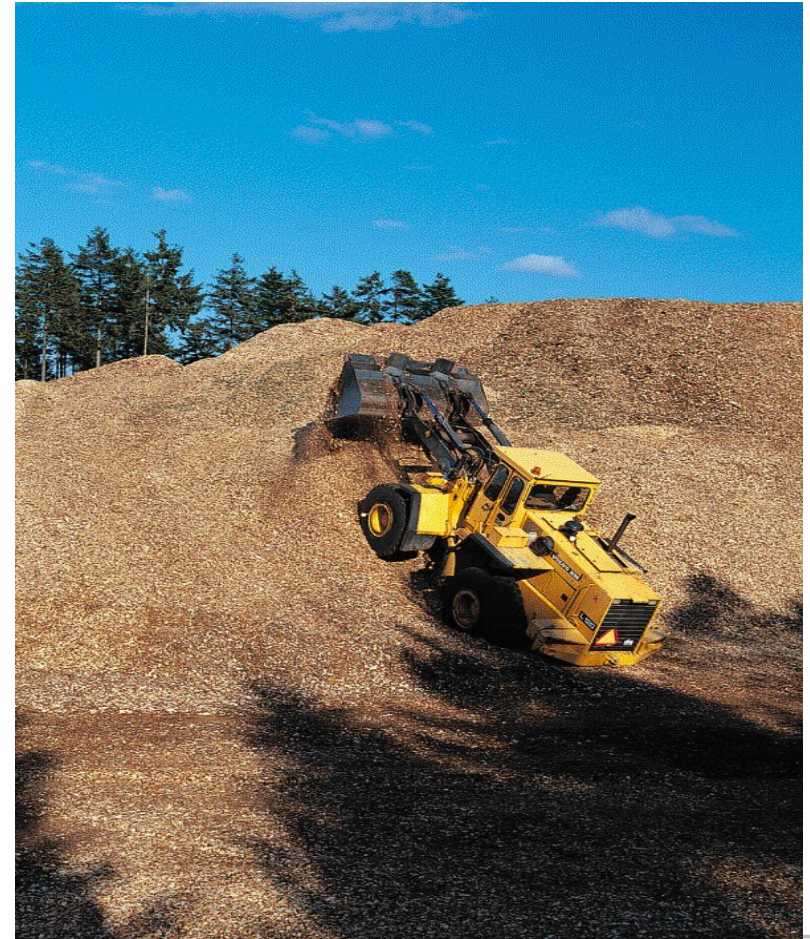
Municipality Solid Waste:

- 18 CHP plants
- 12 district heating plants

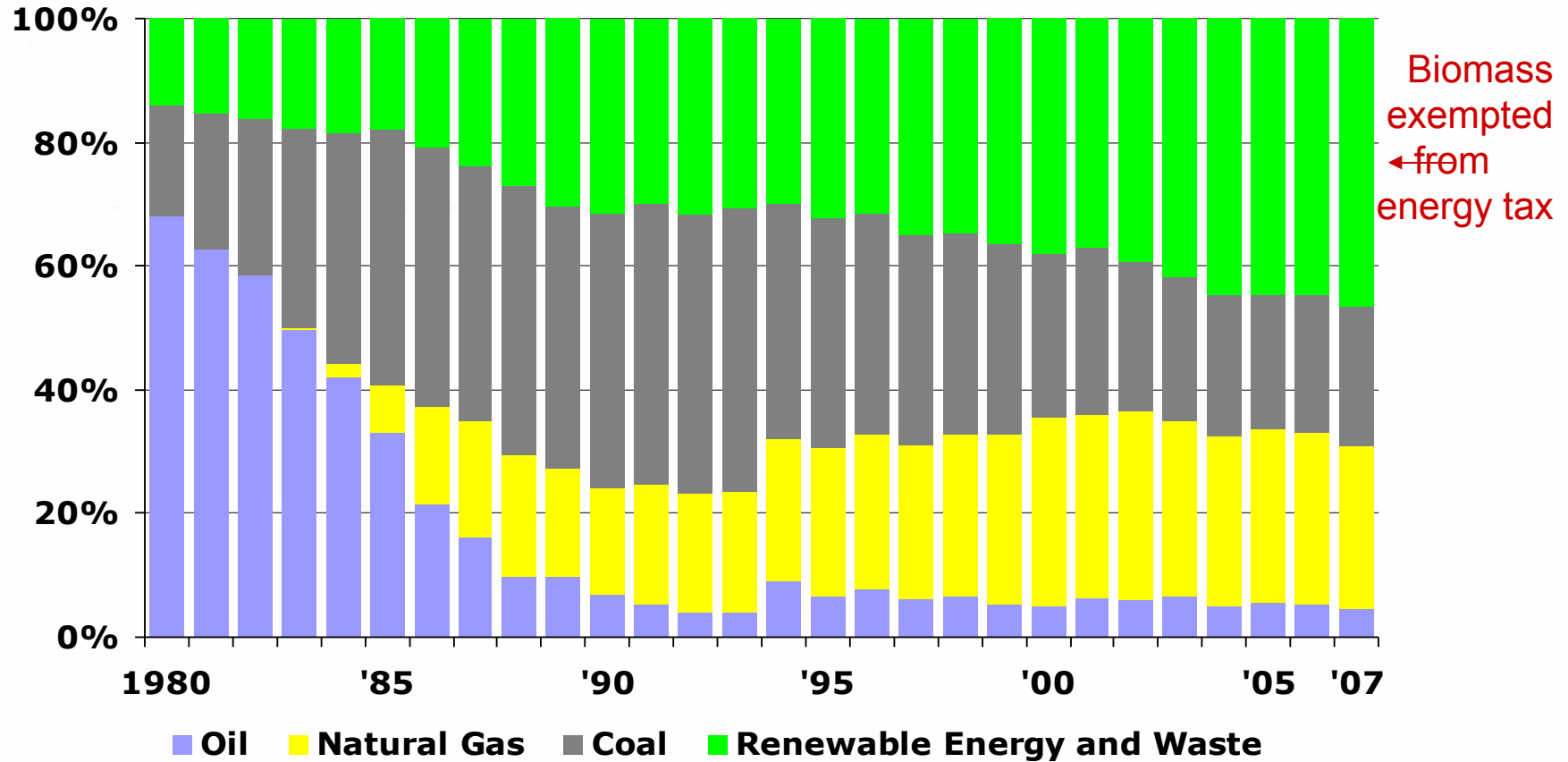
Total: 275 DH/CHP plants



10% of all electricity consumed in DK is produced on biomass plants



District Heating Production by Fuel



District Heating = Heat supply for 60 pct. of all buildings.
25% of all houses in Denmark are heated by biomass-based DH

Need to Diversify Support Mechanisms

- Investment grants (now abolished)
- Fixed feed in tariff (now reformed)
- Market based feed in tariffs:
 - Market price + fixed subsidy for **land-based turbines**
 - Open market tender (fixed market tariff) for **offshore parks**
- The market based system includes confidence building measures for investors = Ensures more stable and predictable prices = Lower risk premium = Lower consumer prices.
- Still fixed surcharge of 3 1/3 Eurocent/kWh for new land mills and 4 1/2 Eurocent/kWh for off-shore wind mills (most recent tender of 200 MW).

DK's Green Energy sectors: Impact on Employment and Export

Wind Power (2007):

- Employment of 28,000 persons in DK (manufacturing industry and related services).
- Export of wind turbines for 7 Billion US\$

District Heat & CHP (2007)

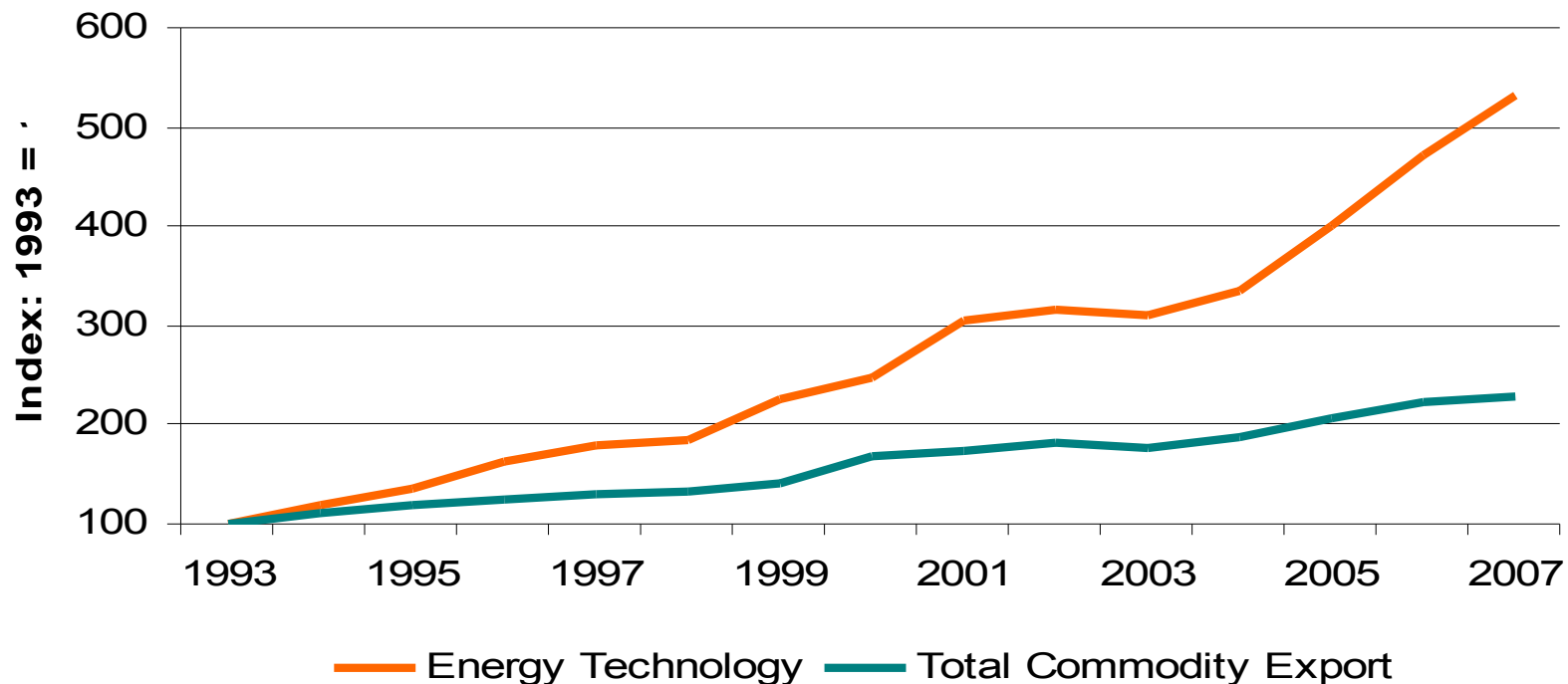
- Employment of 25,000 persons (at manufacturing industry, daily operation at plants and related services).
- Export of technology and services for 2-3 Billion US\$

Source: Danish Wind Industry Association and Danish Board of District Heating



Export of Danish Energy Technology

- Energy technology made up 9.2% of Denmark's total export of commodities in 2007 – an increase from 3.9% in 1993.
- In 2008 the export of energy technology (7 billion €) surpassed the Danish export of oil and gas – first time ever.



New Political Agreement in 2008

- Long term vision: Denmark should in the long term become entirely independent of fossil fuels.
- Reduce the use of **fossil fuels** by at least 15% in 2025.
- The gross energy consumption from **renewable energy**:
 - Increase from 15.6% in 2006 to 20% in 2011
 - and to minimum 30% by 2025.
 - Implication: At least 2/3 of all electricity from RE.
- **EU RE-target** for DK: 30% of final energy demand in 2020.
- **Reduce the gross energy consumption** by 2% in 2011 and 4% in 2020 compared to 2006.

Effects and Costs of the Agreement

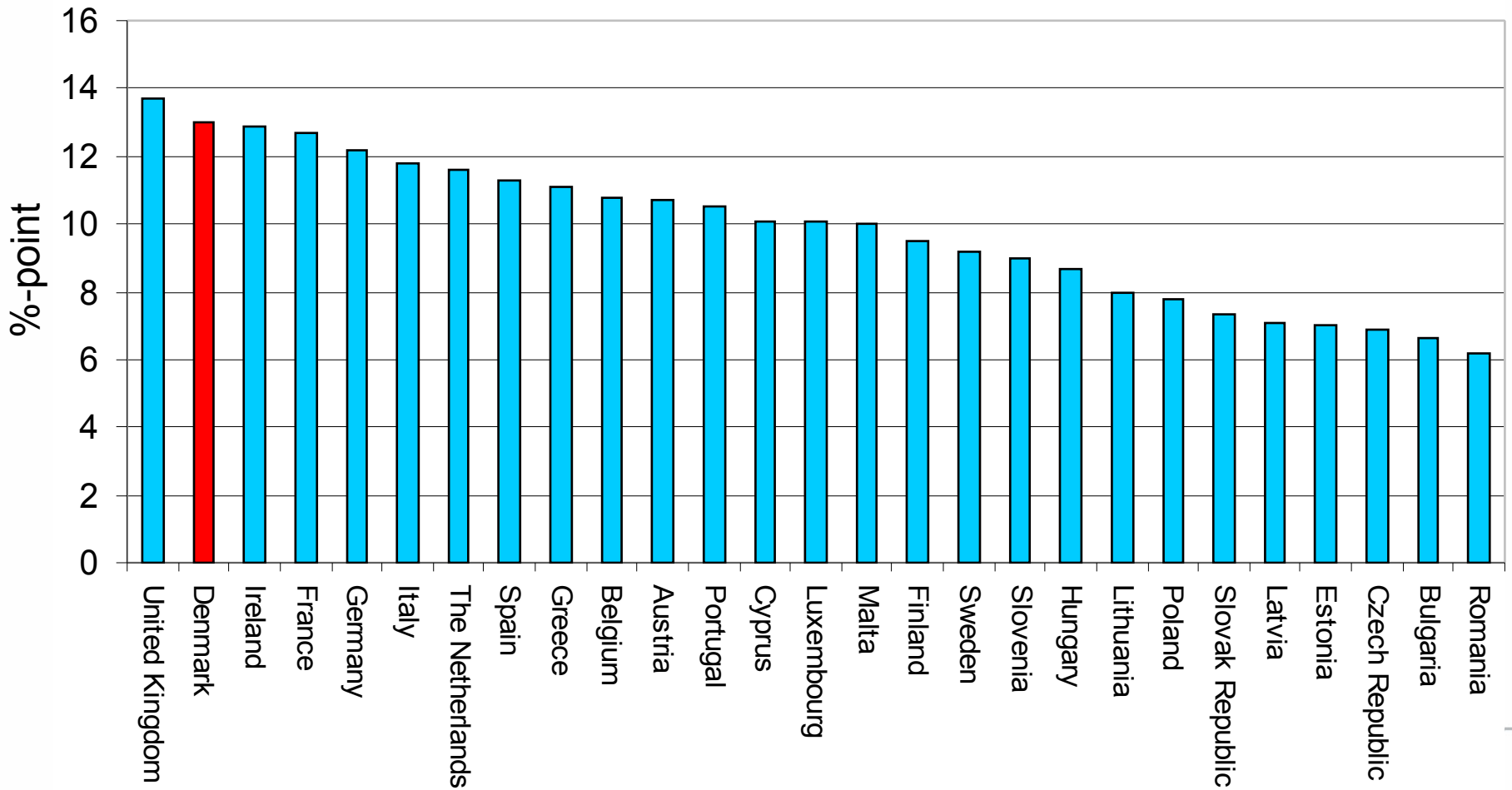
RE-share of gross energy consumption:

- Total costs of 4 pct.point higher RE-share of gross energy consumption = total of 335 mill. € in 2012 = about 60 € per Dane (per year).

RE-share of electricity:

- Increase in RE-based power production amounts to 5.8 TWh in 2012 = 17 pct. of total national electricity consumption.
- Additional electricity cost for typical household: ½ €-cent per kWh = less than 20 € per year.

Future RE-increase in EU



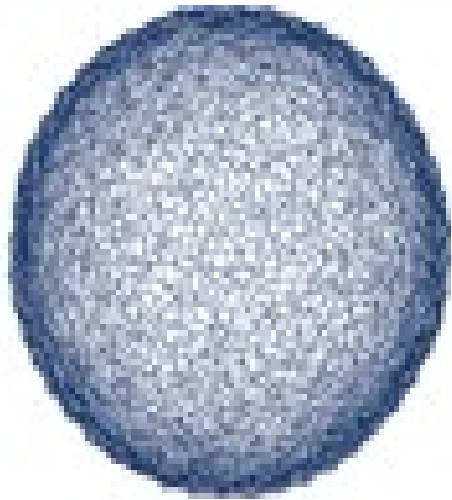
Costs for DK of EU Agreement (2005-20)

Three targets for Denmark

1. RE-share of final energy consumption increased from 17 pct. to 30 pct.



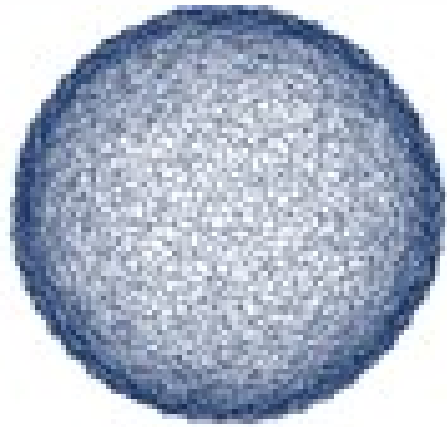
COP15 in Copenhagen 2009: Window of opportunity?



COP15
COPENHAGEN

- **The mandate:** All countries have agreed to the Bali Action Plan, with the objective of a ambitious and fair agreement in Copenhagen
- **Increased political involvement world wide**
- **Public attention:** Climate change is not only on top of the political agenda – it is on everybody's agenda!
- **Science is clear:** We need to act now
- **New US administration:** Willingness to re-engage in the negotiations.

The road to Copenhagen (COP15) The Bali Action Plan – and 2nd Kyoto period



COP15
COPENHAGEN

- **All countries**, including US and China
- **Intensified negotiations:** 4-5 negotiation sessions in 2009.
- **End date:** Copenhagen COP15 2009
- **A shared long term vision and five building blocks** as elements in a future climate agreement

Elements in a future agreement on Climate Change



- **A long-term goal** for the global emissions
- **Enhanced national and international actions to reduce emissions:**
 - Ambitious mitigation targets for developed countries
 - National appropriate mitigation actions by developing countries
 - Support of the poorer countries' reduction efforts
 - Contributions regarding deforestation in developing countries and particular sectors (aviation, ships, cement, aluminum, etc.)
- Adaptation to climate change
- Technology – transfer and development
- Financing and investment

Where do we stand early 2009?

Credible leadership by industrialised countries?

- EU: 20/30 pct. in 2020 compared to 1990 – supported by Switzerland
- Obama: Stabilize in 2020 on 1990 levels (app. 16% reduction from today), 80% in 2050 compared to 1990
- Australia: 5-15 pct. in 2020 compared to 2000 and 60 pct. in 2050
- Norway: CO₂-neutral in 2050
- Russia: Increase energy efficiency by 40 pct.
- Japan: 60-80 pct. in 2050

Ambitious developing countries?

- China: 20% reduction of energy intensity 2006-2010. 15% renewable energy in 2020
- South Korea: 15-30 pct. from BAU
- South Africa: Peak in 2020/2025, reduce from 2030
- Costa Rica: Carbon Neutral society in 2020
- Mexico: Peak emissions now and reduce by 50 pct. in 2020.

Crucial interrelations

- The leadership of developed countries vs developing countries' contribution/flexibility
- The level of ambition of developed vs developing countries
- US' level of ambition vs China's will to commit significantly
- Adequate and new financing vs the level of expectations of developing countries
- Strengthened transfer and dissemination of technology vs commitments by developing countries

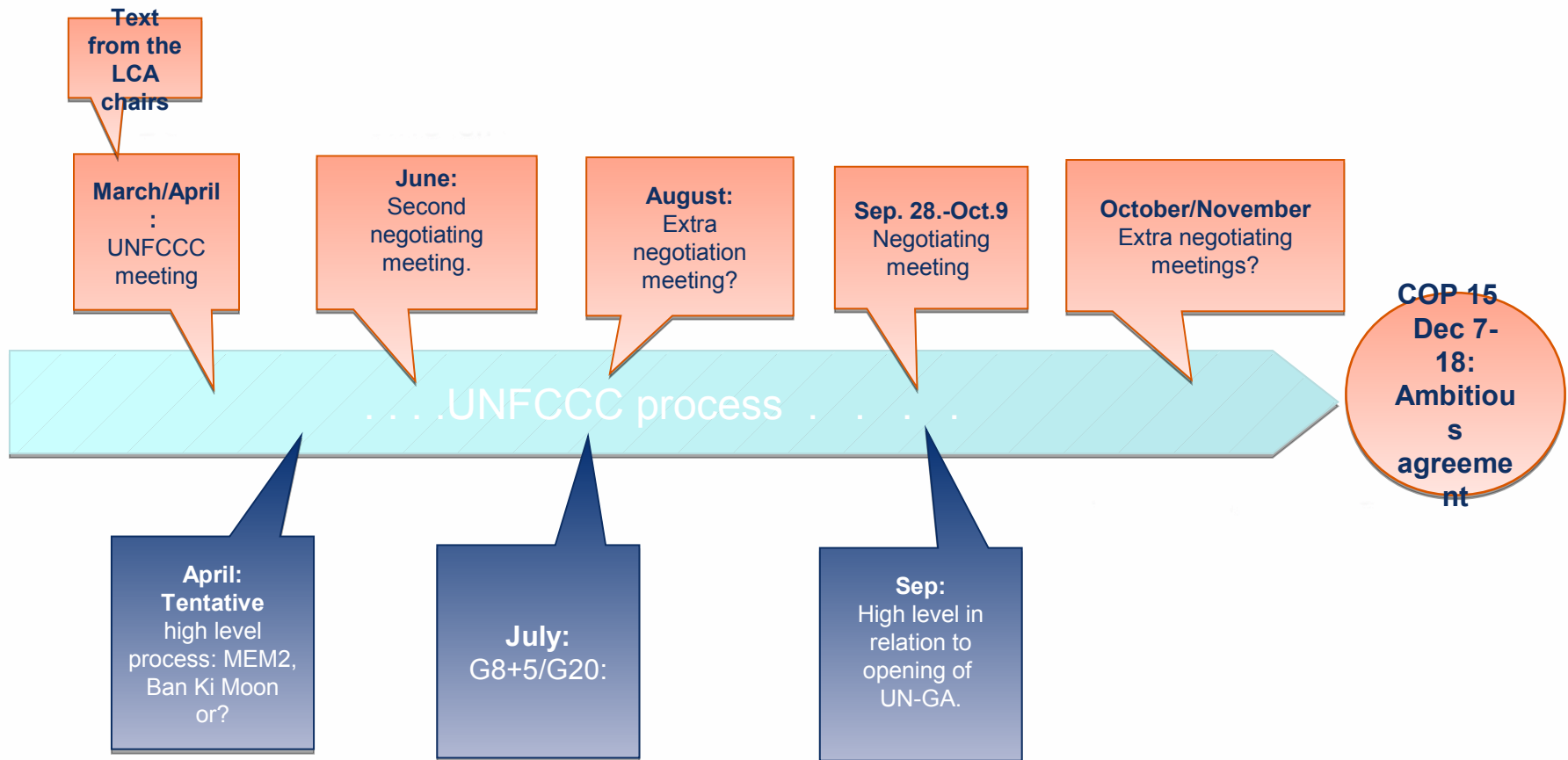
China and India – similarities

- First and overriding priority is economic development and energy security
- Claims that the developed countries must recognise their historical responsibility and take the lead in combating climate change

China and India – differences

- China and India very different from each other, demographically and in terms of urbanisation.
- China: large parts of the economy is industrialised – energy: 3-4 new coal powered power plants every week until recently;
- India: 600 million people without electricity. Traditional biomass (such as dung) primary energy source for cooking for 700 mio Indians.. – and 900 mio survives for less than 2 US\$ per day.
- India has low per capita CO2 emission (1 ton/capita) now and in the future. China around 4 ton/capita and growing.

The story of 2009



Denmark in a new role

Denmark will not be COP President before December 2009. However, as incoming presidency of COP15 we step into a new role:

CODE OF CONDUCT

- High level of ambition
- Listen to all parties
- Staying impartial and ambitious
- Ensure transparency and openness
- Identifying where common ground is emerging
- Ensure other processes feed into the UNFCCC process and in due time

DANISH



ENERGY

AUTHORITY

DANISH



ENERGY

AUTHORITY