New Energy Policies and Technologies – Chinese and UK Perspectives

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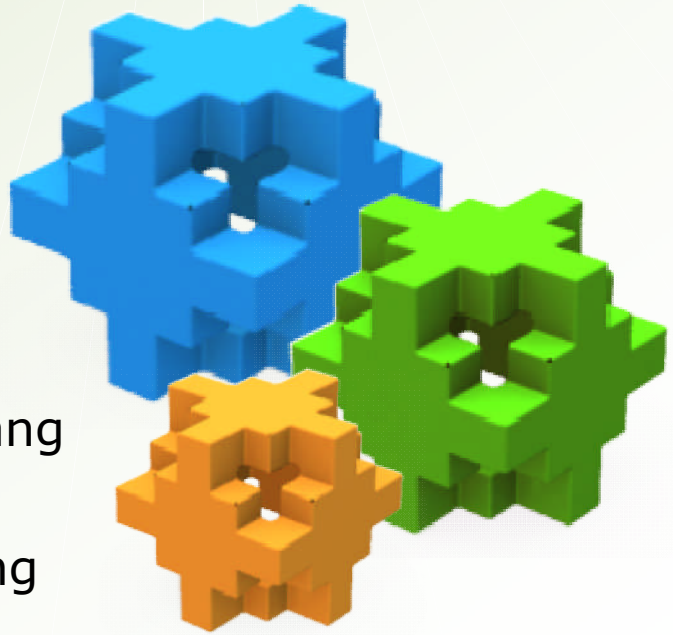
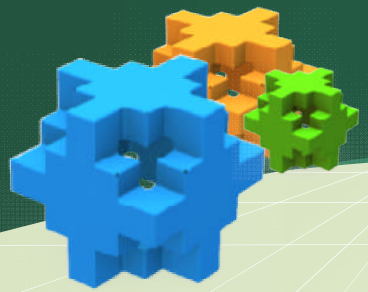


China & UK

- Tony Blair in China



Challenges and demands in China

Increasing economic growth	VS	increasing energy demand
Relying on fossil energy coal	VS	Considerations on CO_2 reduction
Huge energy consumption in industry	VS	Improving energy efficiency & adjusting industry structure
Great shortage of fossil fuel	VS	Energy saving awareness in public

Governmental Policies in China

Changes in development strategy

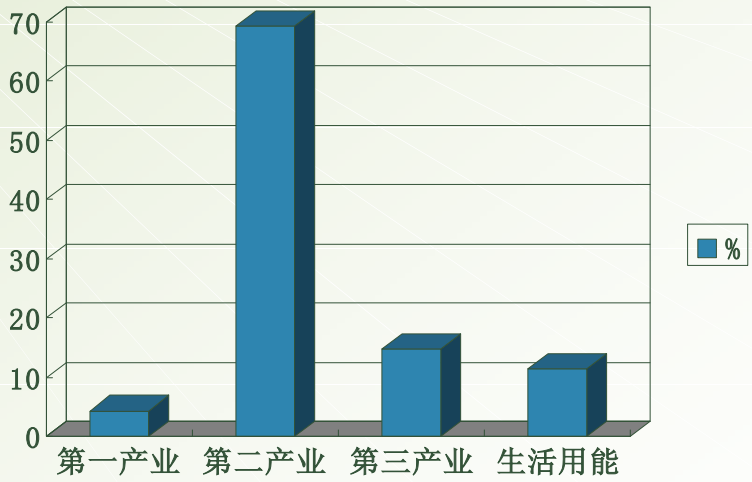
- Adjusting the structure —— limiting the rapid expansion of high energy intensive sectors;

Adjusting industry structure

Iron	6,059,000	t
Steel	4,347,000	t
Cement	140,000,000	t
Coke	64,450,000	t

Total reduction in CO_2 emission —166 Mt.

(2006~2008)



Energy consumption distributions in China

Governmental Policies in China

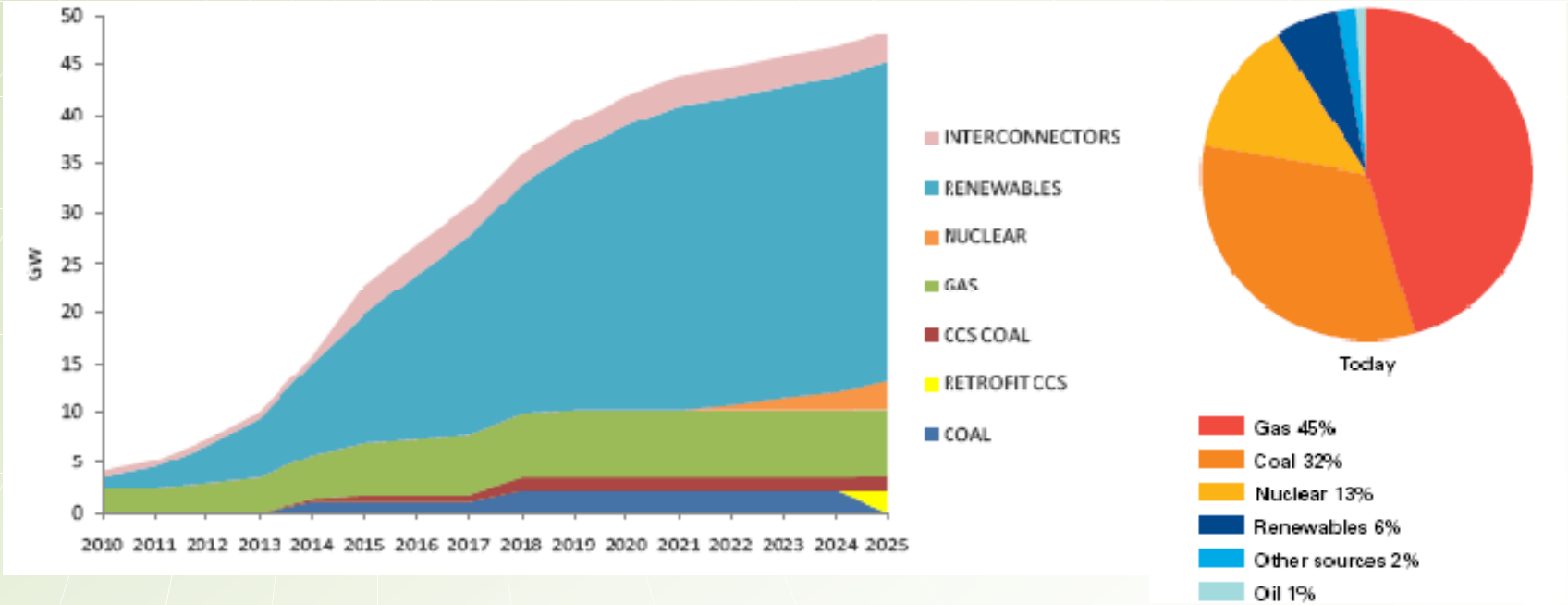
❖Encouraging the development of new and high-tech industrial sectors

1. Making laws and regulations, including energy conservation law, renewable energy law, building energy saving standards, car exhaust standards etc..

2. Tax and cash allowance to new energy companies and individuals, such as renewable energy power plant, hybrid-power vehicles, electrical vehicles etc..

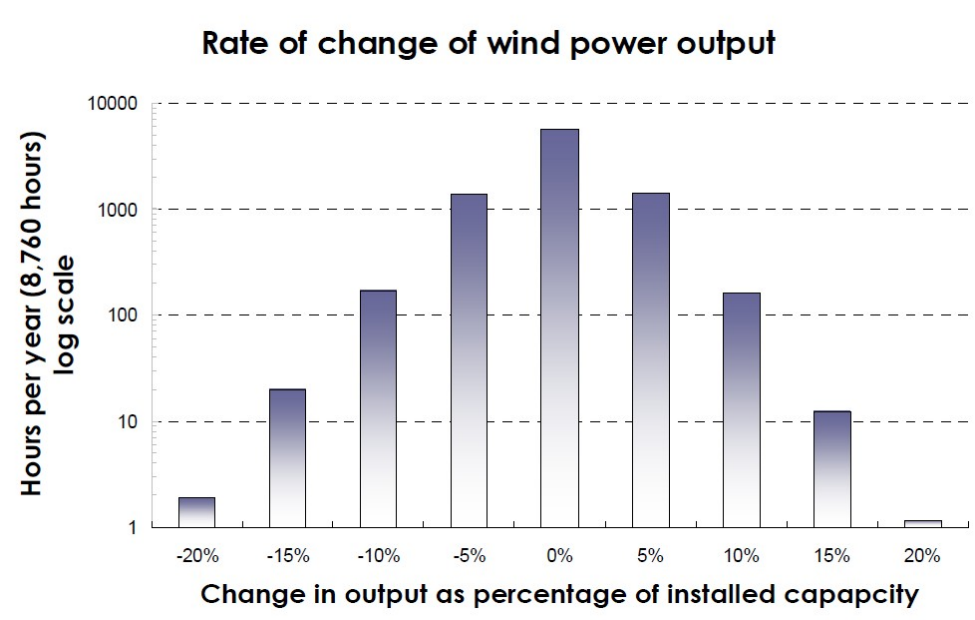
Energy Challenges in UK

- Meeting projected increase in demand
- Reliance on coal and gas without local supply



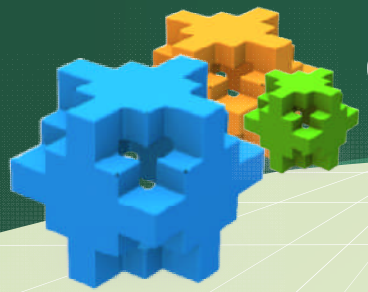
Energy Challenges in UK

- Reliability of current renewable energy sources
- Public opinion of fossil fuels



Source: Environmental Change Institute, University of Oxford

Governmental Policies in UK



- Low Carbon Transition Plan
- Carbon "Budgets"
  - Reduce CO_2 emissions by 34% by 2020 and 80% by 2050
- Office for Renewable Energy Deployment
  - Increase renewable electricity to 30% by 2020
- Increase National Grid capacity to meet extra demand

Governmental Policies in UK

- Energy efficient housing
  - Warm Front scheme
  - Clean Energy Cash-Back
- Transport
  - Scrappage scheme
  - Low carbon public transport
  - Increased cycle storage

Advanced coal technologies

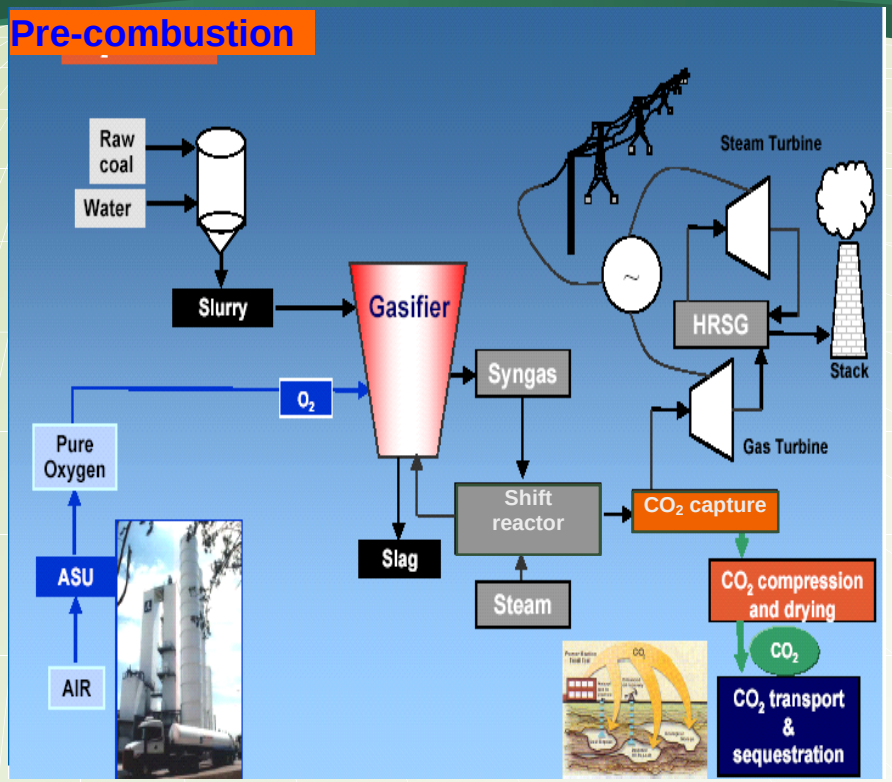
Efficiency Improvements

- Supercritical power stations
- Ultra-supercritical power stations
- Combined cycle turbines

Yuhuan power plant in Zhejiang Province
Ultra-supercritical 4×1000MW

Technology	Efficiency	Theoretical CO_2 Reduction
Subcritical	36 %	0
Supercritical	44 %	16-24 %
Ultra-Supercritical	> 47 %	22-33 %
Combined Cycle Turbine	54 %	36-54 %

Developing CO_2 capture technologies



IGCC system structure

Technology	Efficiency	Theoretical CO_2 Reduction	Cost increase
PC	33 %	85%	57%
IGCC	35 %	86%	33 %
Oxyfuel	35.4 %	91%	39 %

Renewable energy technologies

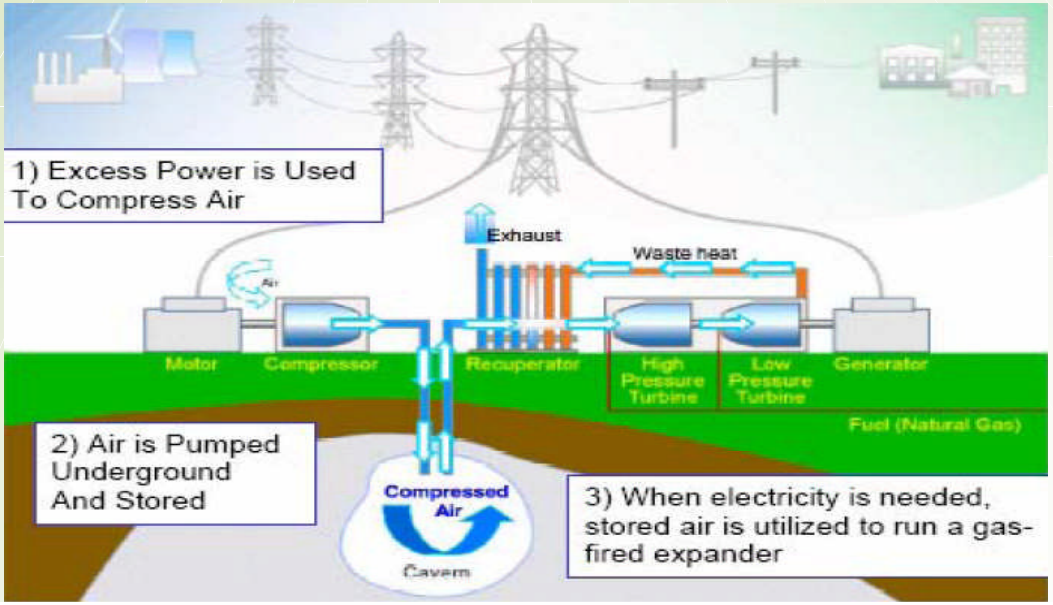
Hydro

Wind

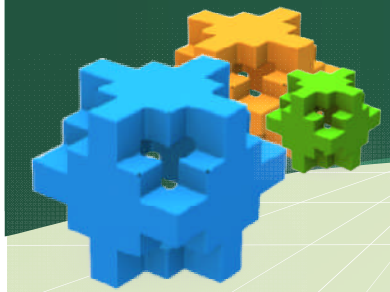
Nuclear

Solar

Annual available renewable resources in China equivalent to ~7.3 billion t of coal.



Hybrid renewable energy plant with compressed air energy storage.



Society's Role

- Changing Public Opinion
  - Improve awareness of climate change
  - Instil an environmentally-friendly way of thinking
- Public Activities
  - Community low carbon activities such as tree planting
  - Cycle to work days etc.
- Academia/Education
  - Promotion of low carbon research
  - Teach children the merits of sustainable living

Thank you for your attention!