

# **AMEC Power and Process Nuclear**

**Capital markets seminar**  
11 December 2008

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Notes

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2

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## Notes

## Introduction

**AMEC  
Power and Process  
Nuclear**

**Capital markets seminar**  
11 December 2008

**Didier Pflieger**  
Chief Operating Officer,  
President, Power and Process

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### Notes

## Agenda



14.30	Introduction	Didier Pflieger
14:50	Nuclear sector: Overview	Mike Saunders
15:20	Clean Up	Gerry McGill
15:50	Q&A/refreshments	
16:30	Reactor Support	Clive White
17:00	New Build	Frank Winter
17:30	Wrap up	Mike Saunders
17:35	Q&A	
	Drinks/informal discussion with management	

4

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## Notes

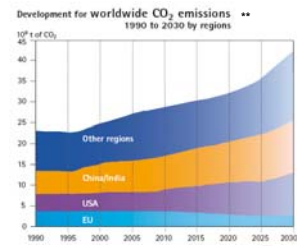
## Climate change

Security of supply  
Affordable power  
Reduction of GHG\* emissions

Energy diversity

Energy efficiency

- Global acceptance of the climate change impact
- Regulatory targets and mechanisms to drive energy policies
- Local solutions defined to achieve CO<sub>2</sub> reduction objectives

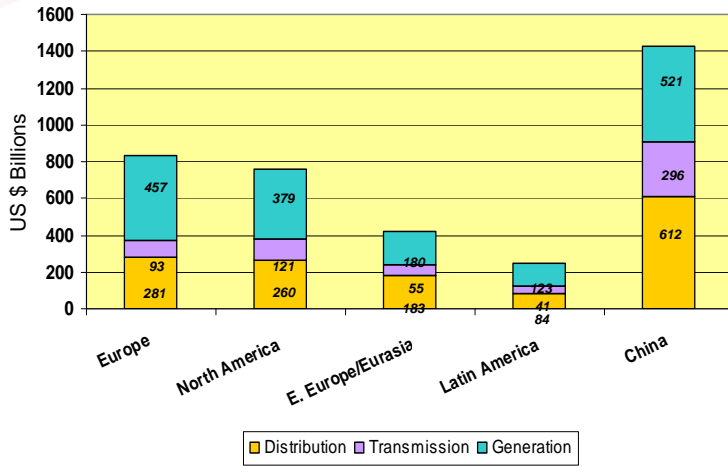


\* Greenhouse gas  
\*\* Source: World Energy Outlook 2008

5

## Notes

## International power investment needs 2007-2015



- Over US\$5 trillion in anticipated global power sector investment is required to 2015
- Annual renewables additions are projected at 59GW out of a total of 188GW (over 30% of total annual additions)

**Huge investments providing large opportunities for AMEC**

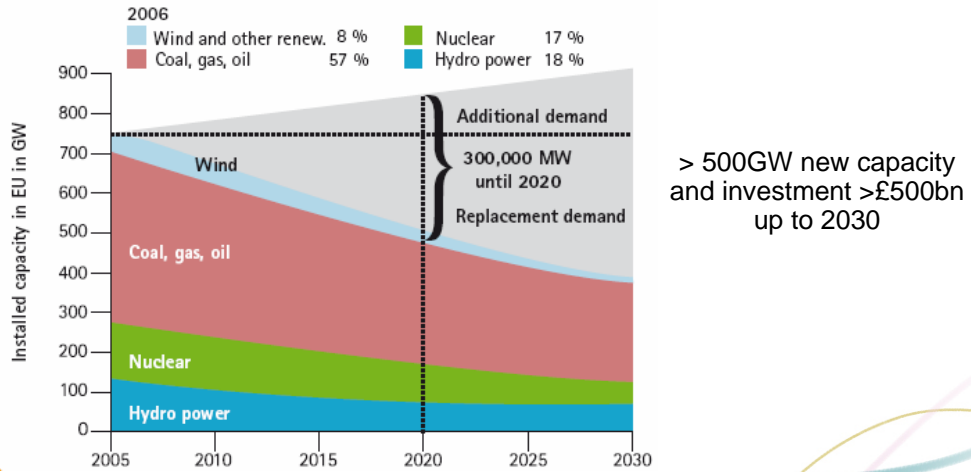
Source: World Energy Outlook 2008

6

### Notes

## Power market in Europe 2020/2030

### Demand for new plant capacity due to ageing of the portfolio and increase of the demand

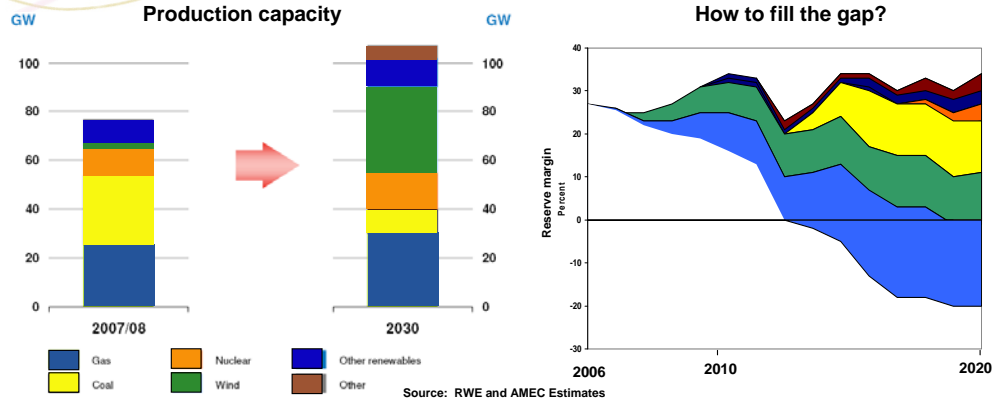


Source: VGB Facts and Figures 2008

7

## Notes

## Power market in the UK: Ambitious targets for 2020/2030



- Difficult challenges: 20% CO<sub>2</sub> reduction target / 20% renewables for 2020
- Capacity gap with shutdowns of nuclear and thermal plants to be compensated

8

### Notes

## Nuclear as part of the clean energy portfolio

### Power and Process division end markets

#### Nuclear

- New Build
- Reactor Support
- Clean Up



#### Power

- Generation
- Transmission



#### Renewables

- Wind
- Carbon Capture
- Biomass
- Marine



#### Process Industries

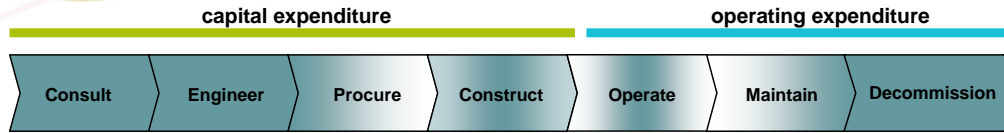
- Gas
- Biotech




AMEC has leading expertise in emerging clean energy markets

### Notes

## Power and Process services



### PROJECT MANAGEMENT

 Blue shading denotes AMEC focus

#### Extensive portfolio of services

- Consulting to construction and decommissioning management
- Better balanced contracting models, with less risky fixed price projects
- Strong delivery record, with comprehensive cross sector engineering and project management capability

**AMEC as full service provider**

10

## Notes

## Innovations in renewables

### **Biofuels: Second generation technology**

- Engineering leader of a Cellulose to Ethanol process with Celunol/Verenium, in partnership with BP
- Currently developing a pyrolysis research and pilot plant project as a consortia member

### **Marine**

- Tidal device installed near Vancouver and proposals for a Bay of Fundy tidal installation
- First 2MW scale monopiles at Blyth
- Marine energy project for the Pentland Firth

### **Carbon Capture and Storage**

- Regional study for the Humber Yorkshire Forward project
- Member of the board of the CCSA (Carbon Capture and Storage Association)

### **Hydrogen**

- Founding member and chairman of the UK Hydrogen Association
- Design for a 4MW wind- hydrogen - electricity project currently in planning approval

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## Notes

## Innovations in power transmission



### Driver

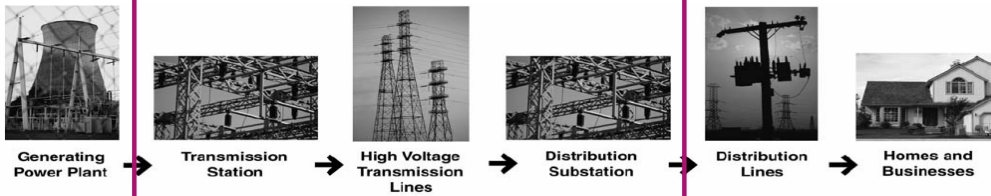
Shifting strategy towards nuclear and renewables

### Driver

Environmental concerns for new overhead lines and substations

### Driver

Demand patterns shifting to service cities with higher summer loads due to temperature shifts



- Super grids – higher capacity required due to renewable source variability
- Smart grids – dynamic load assessment and load shift to maximise asset use
- Under-grounding cables - avoid electro-magnetic field impact
- Energy storage – maximise renewable energy use

### Management of power demand

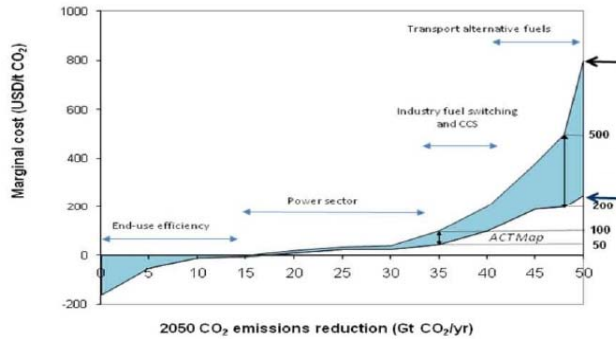
12

## Notes

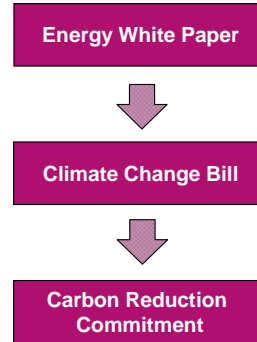
# Energy efficiency



Marginal costs for CO2 reduction



Example - UK policy



Need for behavioural and cultural changes

Source: *Energy Technology Perspectives*, IEA, 2008

13

## Notes

## Conclusion

### Climate Change

- Global problem with local solutions with various energy mix
- Driver of significant long term investments

### Power and Process ideally positioned

- Clean energy portfolio with high potential for growth
- Full service provider with top class resources and skills

**AMEC: the natural partner**

14

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## Notes