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CAN COAL CONTRIBUTE TO SUSTAINABLE DEVELOPMENT ?

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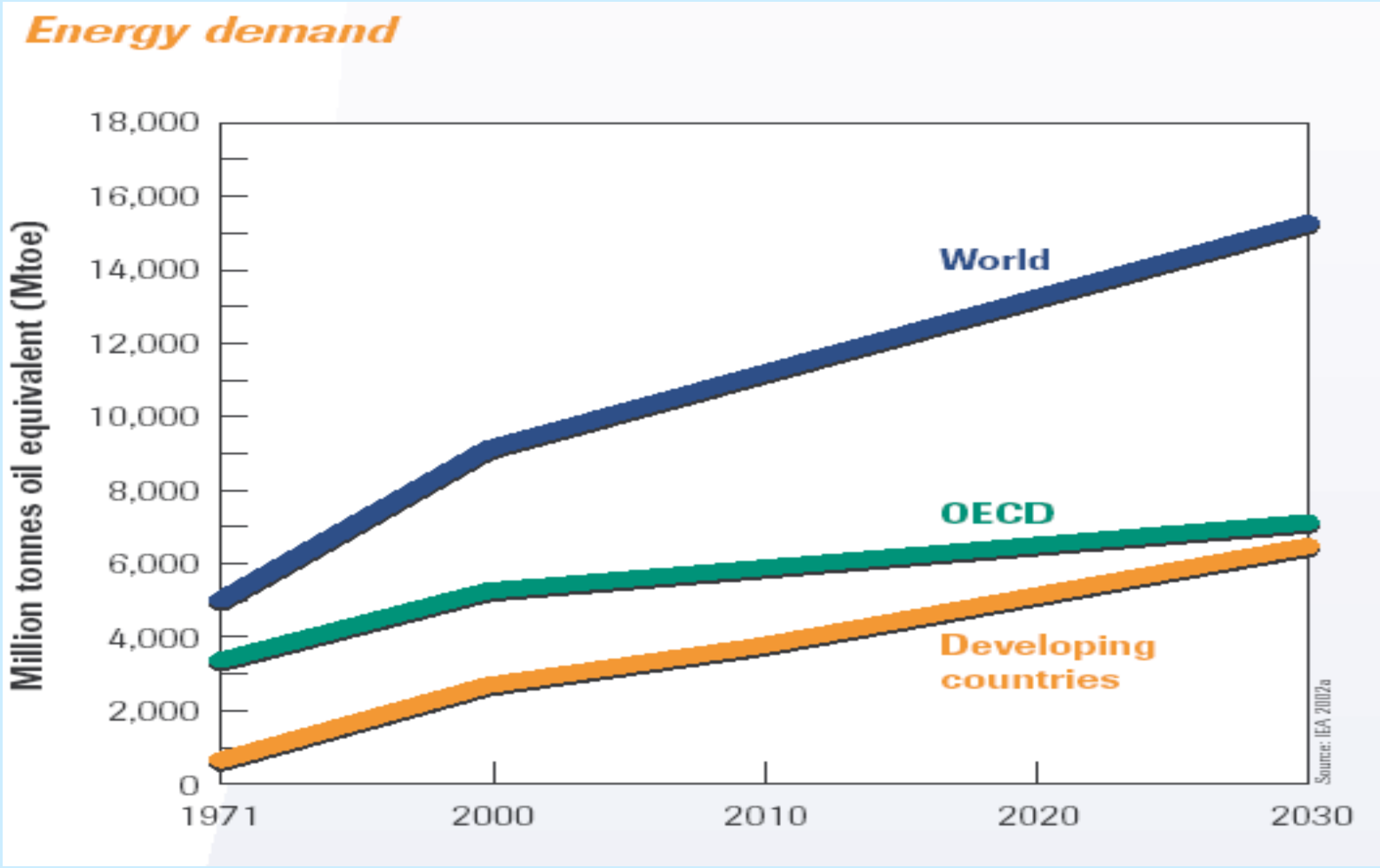
World Coal Institute

The World Needs Energy



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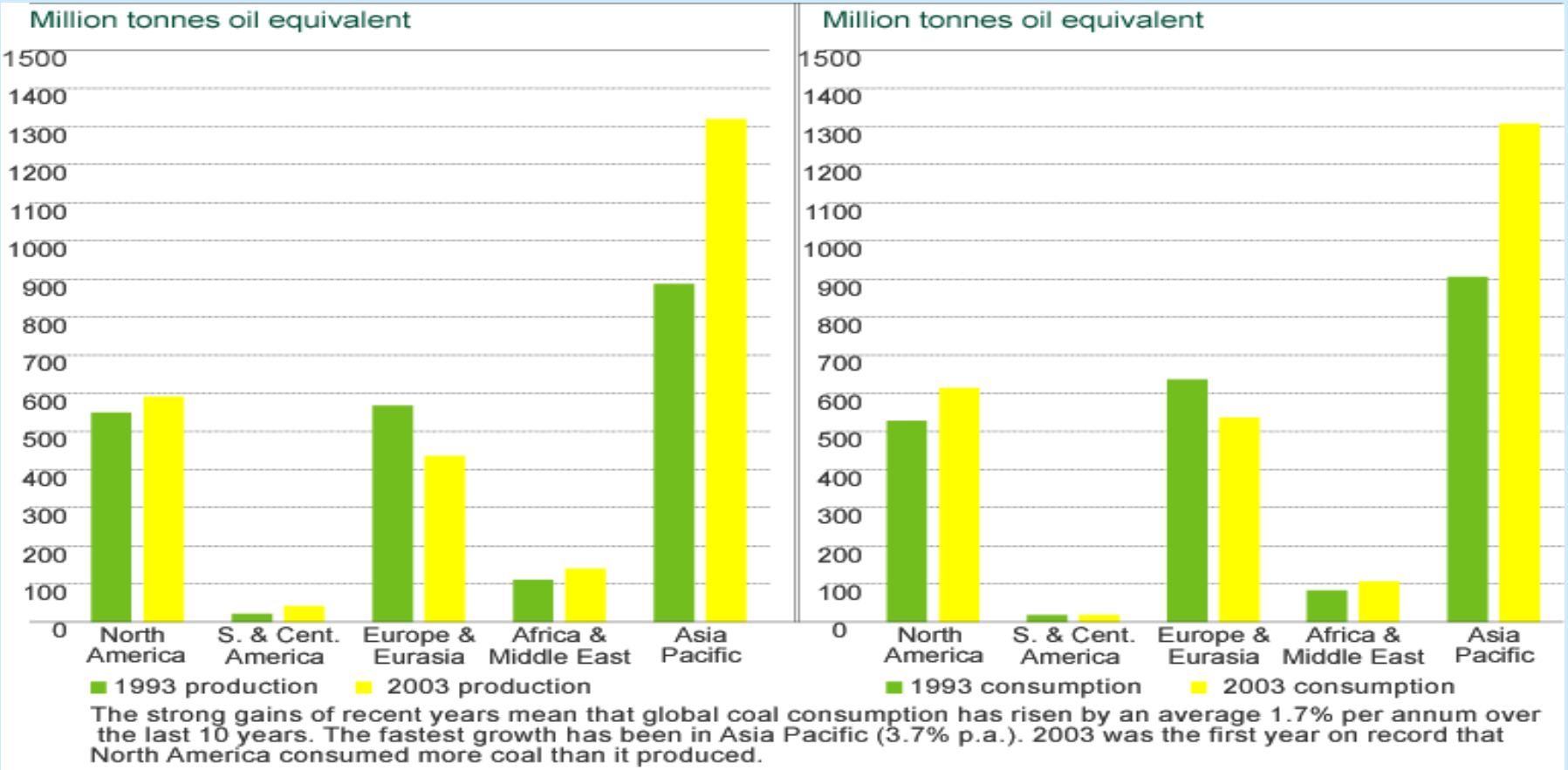
Coal -1993 to 2003
Production & Consumption



The strong gains of recent years mean that global coal consumption has risen by an average 1.7% per annum over the last 10 years. The fastest growth has been in Asia Pacific (3.7% p.a.). 2003 was the first year on record that North America consumed more coal than it produced.

BP Statistical Review 2004

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Challenges

Economic Development

Social Development

Environmental conservation

Public perception

Economic Development

Coal Contributes to Economic Development

Coal drives much of global economic development

- Main fuel for electricity generation in US, Germany, China, India, South Africa, Australia, much of Central Europe etc
- 23% of world's primary energy; 39% of electricity; 70% of steel
- Demand continues to grow steadily - projected to be up 50% in 25 years

Social Development

Access to electricity

China

- 700 million in 2 decades
- 98% electrification
- 84% coal

South Africa

- Doubled electrification rate in a decade
- 90% coal

Environmental Improvement

Environmental improvement through Technology

- Deploy best practice
- Develop and implement advanced technology
- Enhance synergies with renewables
- Ultra low emissions future

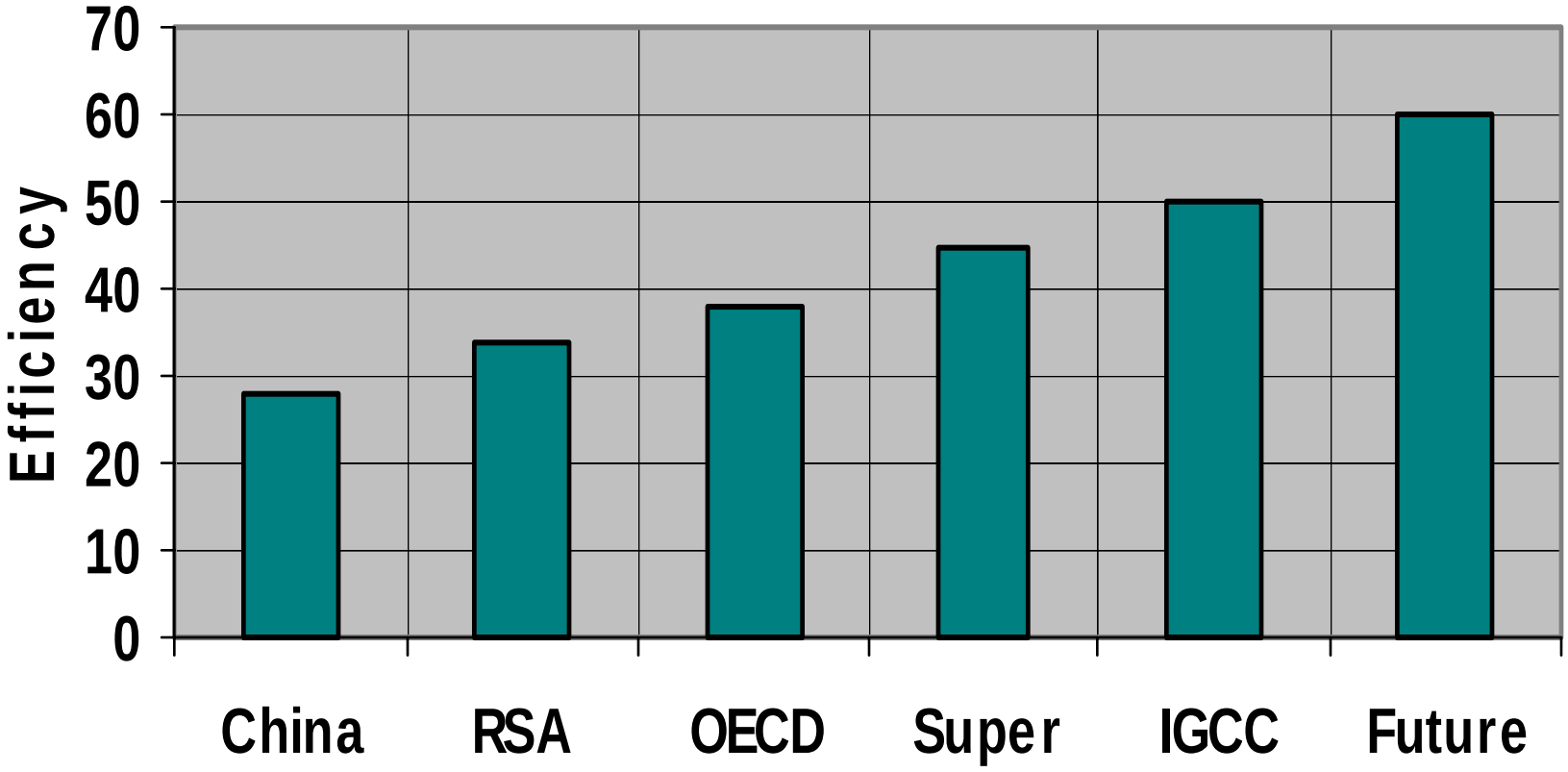
Where are we now ?

- SOx, NOx and Particulates - achieved /achievable
- Increasing thermal efficiency: ongoing
- Elimination of CO_2 emissions: the challenge

Best practice means lower emissions

- Thermal efficiency up eightfold last century
- US - SO_x and NO_x down 60%; coal up 70% since 1980
- Germany - NO_x and particulates down 80%

Power Generation - Coal Efficiency Levels



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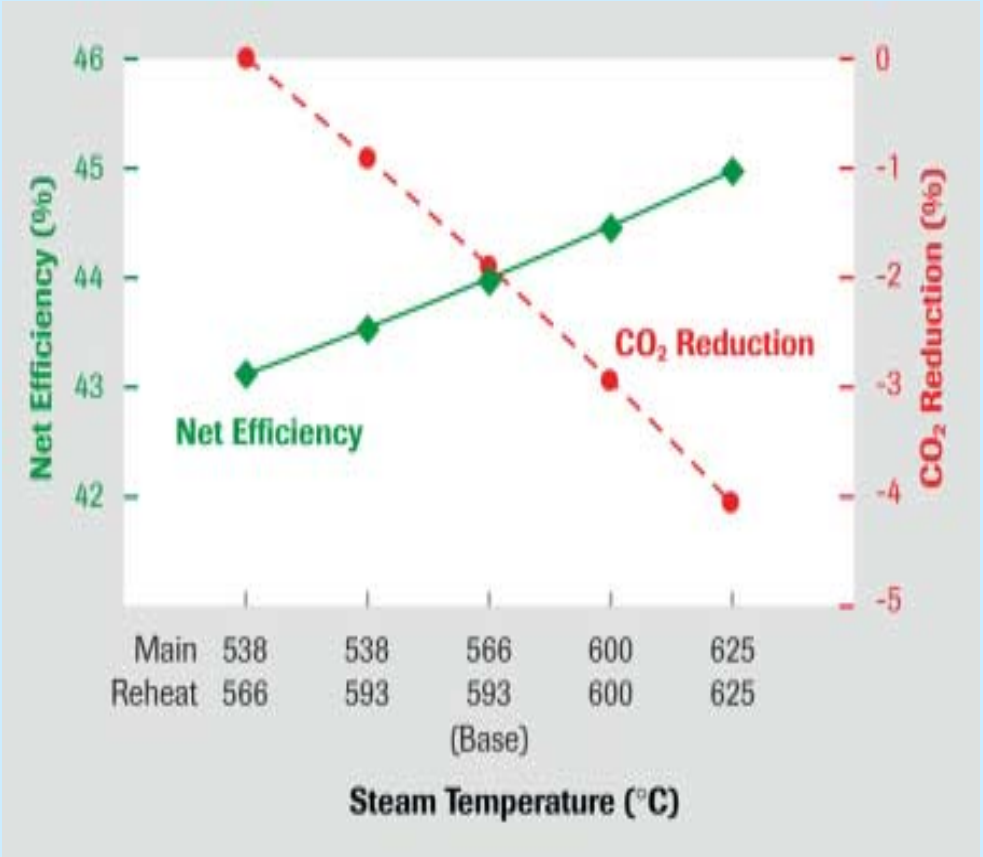
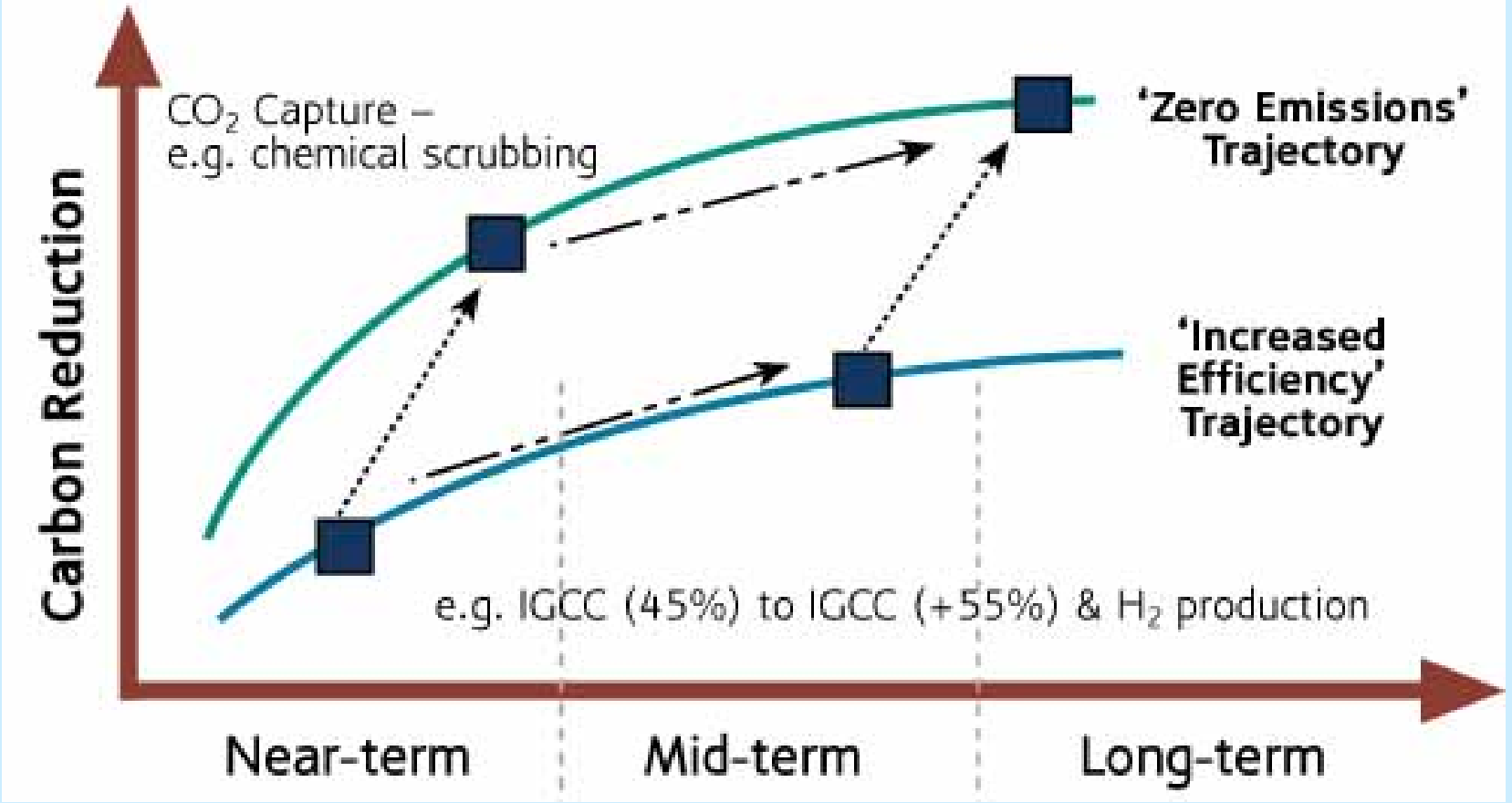
Power Generation – Benefits of efficiency

- World average - c 30%
- European average - c 36%
- BAT - c 43% (15%+ CO_2 reduction)
- 2010 - c 50% (25%+ CO_2 reduction)

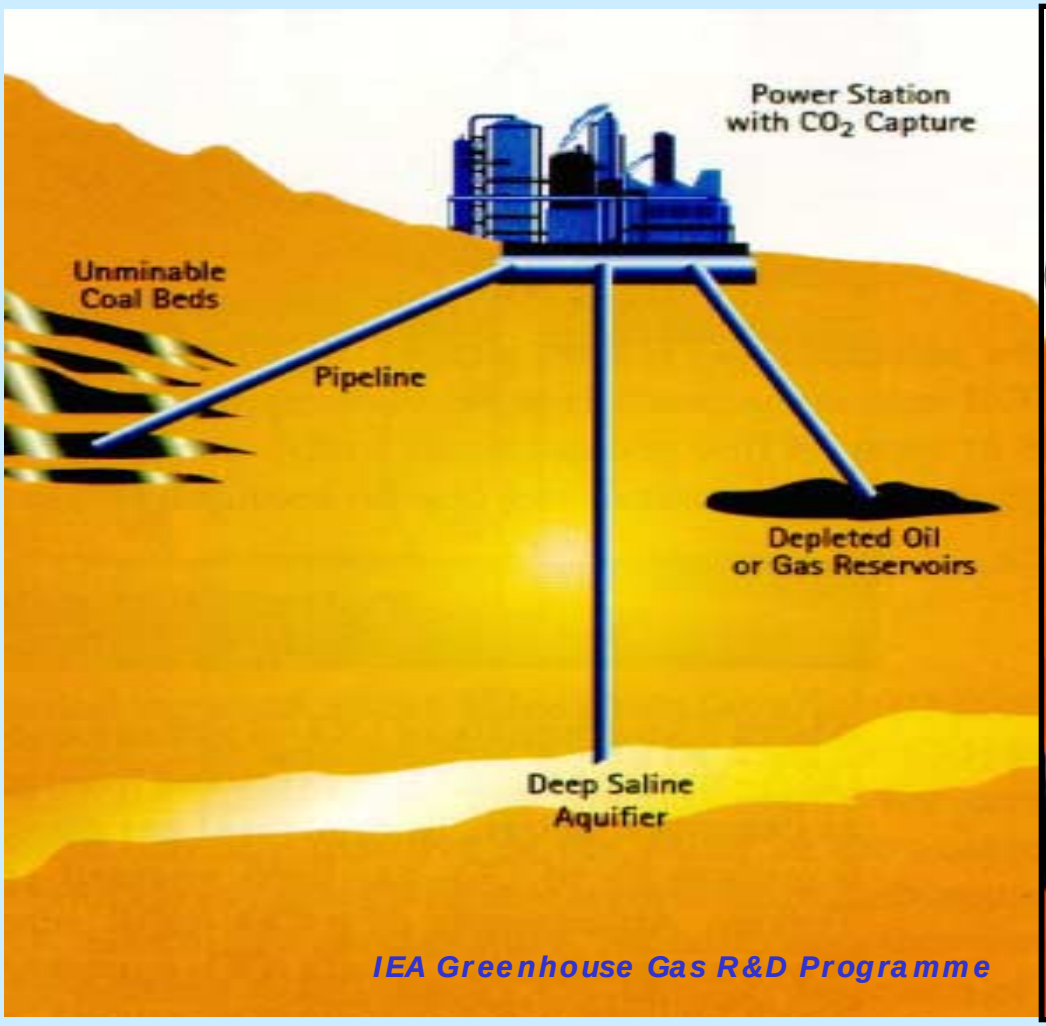


Clean coal technology (CCT)

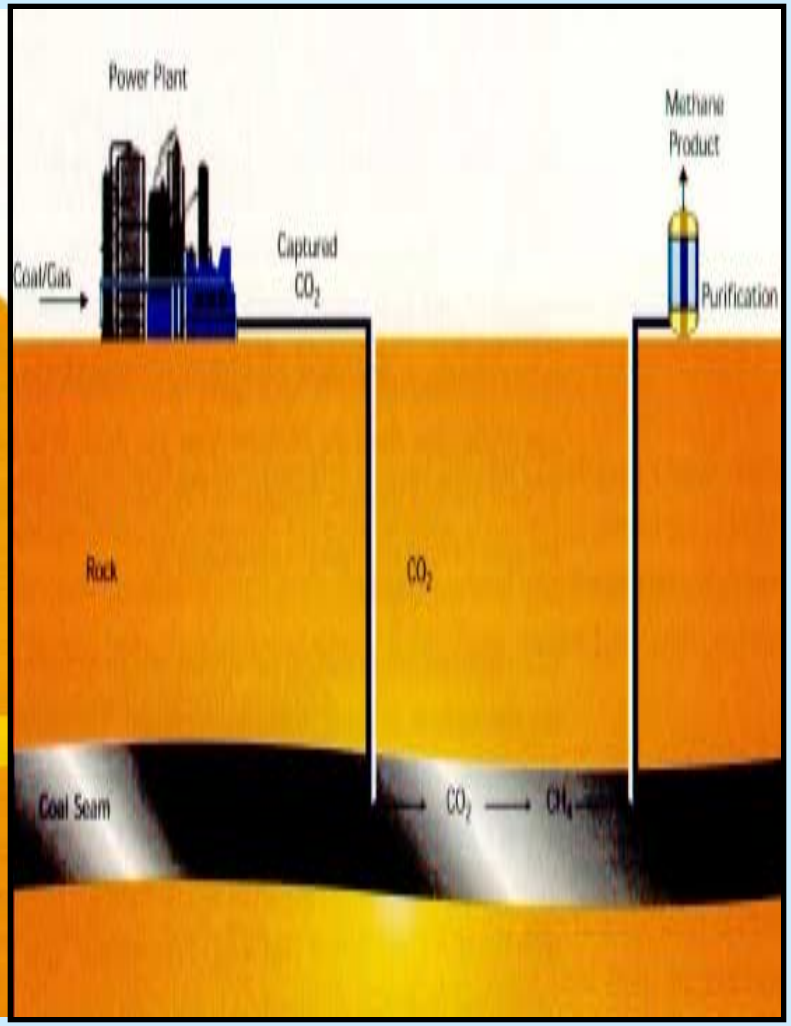
The pathway to near-zero emissions



Geological Storage Options



IEA Greenhouse Gas R&D Programme



FutureGen

- $1bn public/private venture
- 275MW plant: operating before 2010
- 90%+ CO_2 sequestered

Goals: by 2020

- electricity at less than 10% cost premium
- hydrogen at $4.00/mmbtu (c 30p gallon)

Synergy with Renewables

- **Renewables weaknesses**: inflexibility, intermittency, unpredicability
- **Coal strengths**: flexibility, easy to store, transport and supply

Examples:

- Dual Fuel plant at Belle Vue, Mauritius enables bagasse (by-product of sugar production) to be used effectively
- Co-firing of biomass & coal in the UK
- Integration of coal and solar thermal

Conclusions

- Coal is needed for sustainable development
- Coal is compatible with sustainable development
- The coal industry can deliver sustainable development