

# **A Programme for developing CATS for Fossil Fuels Use The Way Forward and Delivery**

**APGTF Workshop**

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## CAT Strategy - Context

- Energy White Paper

“putting the UK on a path to a 60% reduction in carbon dioxide emissions by 2050”

- UK Climate Change Programme Review

- G8 initiative on Climate Change

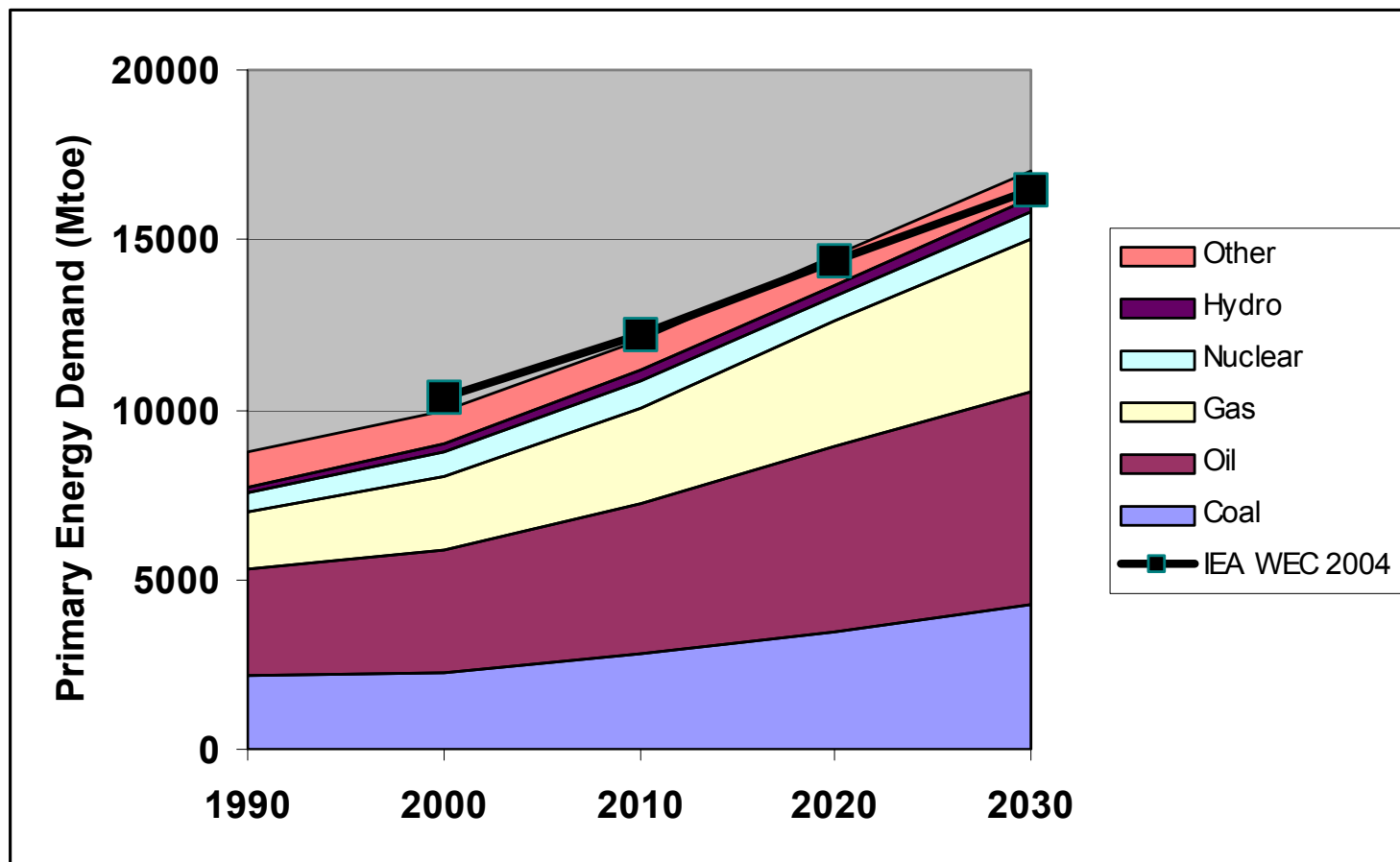
- New Energy Review

# What can CATs achieve?

- Improved combustion efficiency (15-20% CO<sub>2</sub>)
- Fuel switching (5-10% CO<sub>2</sub>)
- Carbon Dioxide capture and storage (90% CO<sub>2</sub>)

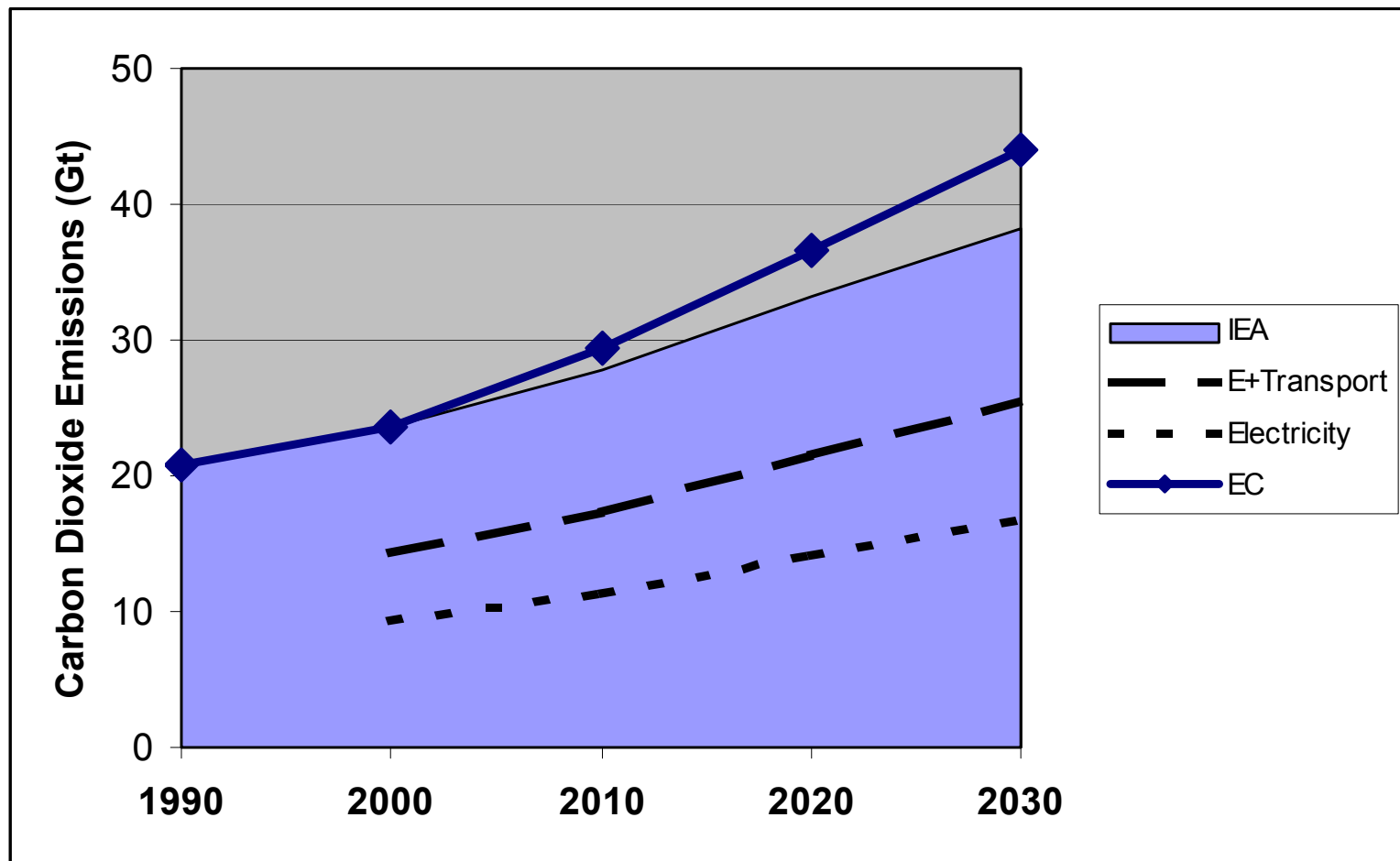
Why do we need CATS?

# World Primary Energy Demand (European Energy and Transport – Trends to 2030)



# World Carbon Dioxide Emissions

(IEA WEO 2004)



# Carbon Lock-in

New and replacement fossil fuel power generation capacity (GW)

	<b>2010</b>	<b>2020</b>	<b>2030</b>
World	520	967	1205
OECD	160	309	363
Developing Countries	343	587	750
Transition Economies	16	72	90
European Union (25)	39	105	132
North America	83	141	171
China	162	210	260
India	24	66	97
Russia	5	27	34

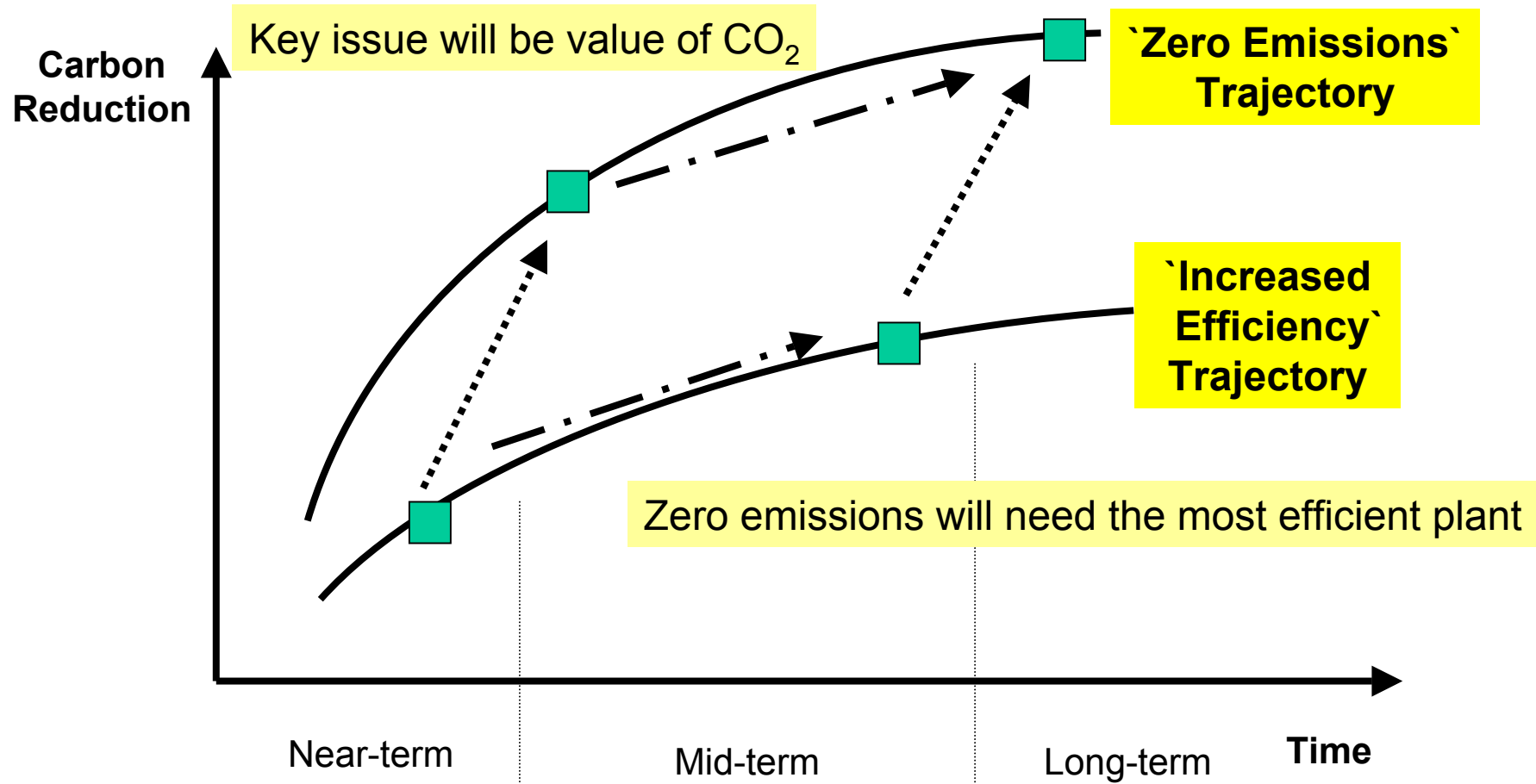
# CATs have a large potential for reducing CO<sub>2</sub> emissions

Potential reductions in CO<sub>2</sub> from different CATs applied to coal fired power plant in 2020 (Mt CO<sub>2</sub>/yr) (G8 analysis)

Country/Region	Retrofit	Co-firing	CCS
World	1176	973	6341
OECD	325	419	2948
Developing Countries	666	490	3087
Transition Economies	184	63	306
China	424	305	1877
India	127	85	515
Russia	120	39	176

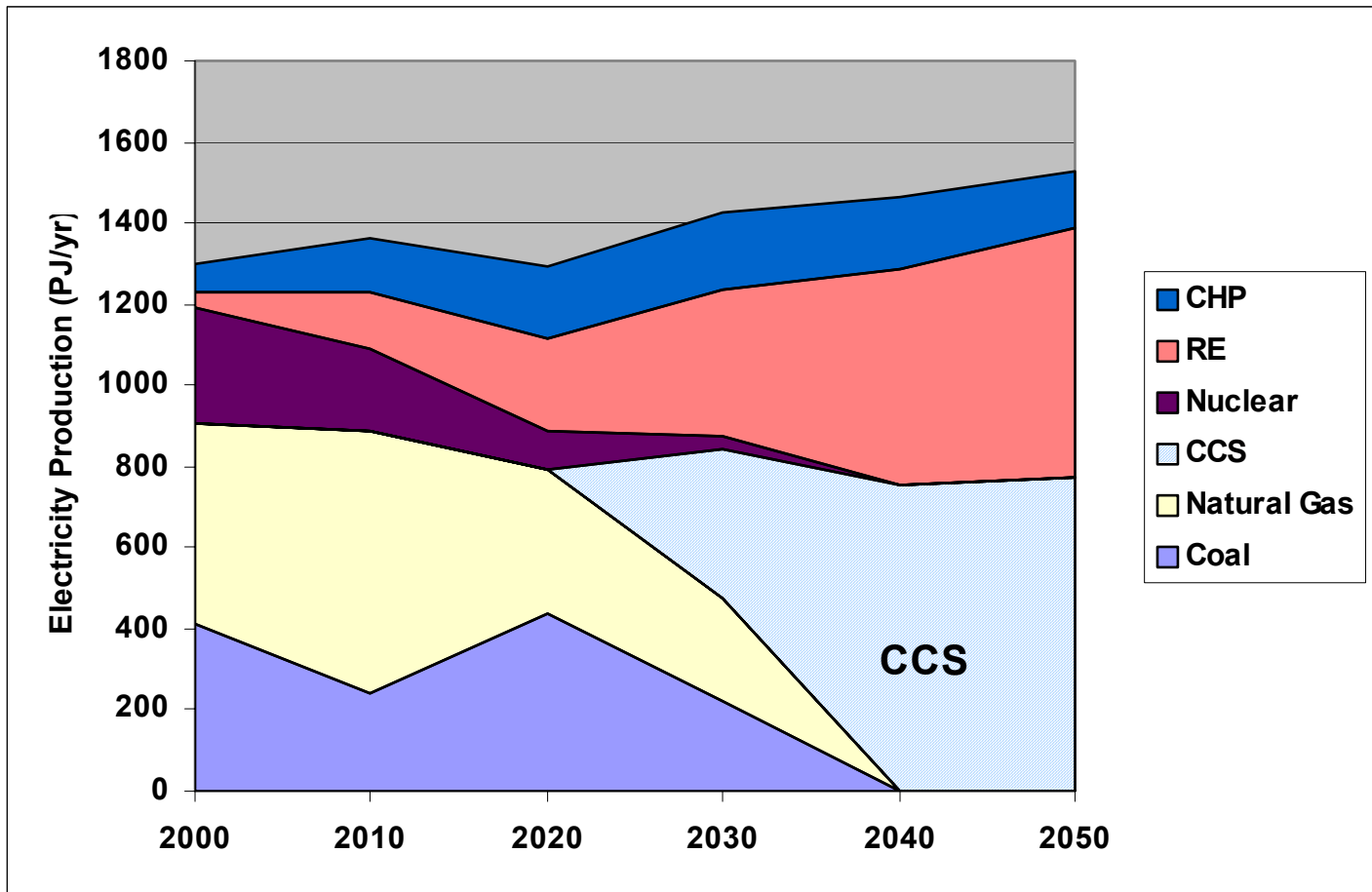


# CAT Options are complementary



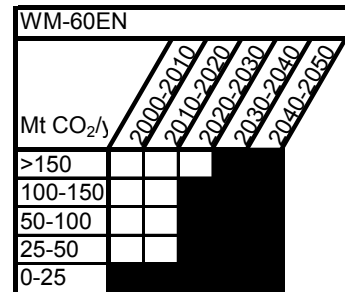
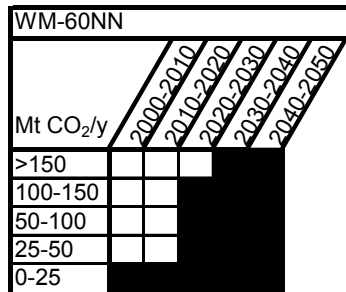
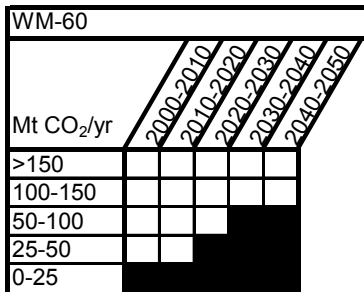
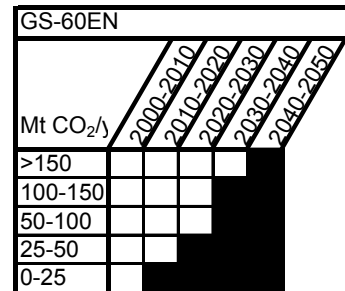
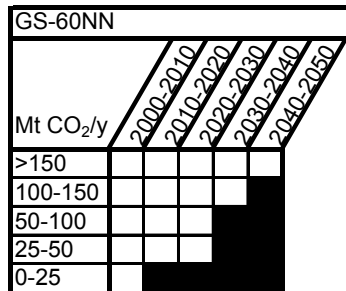
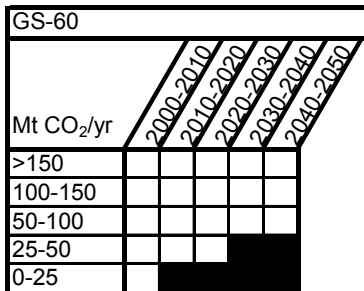
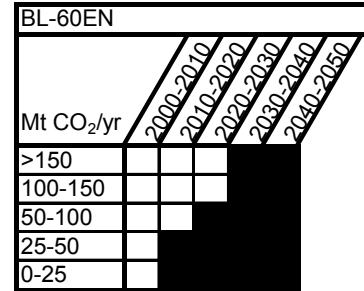
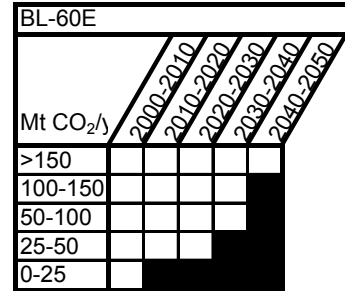
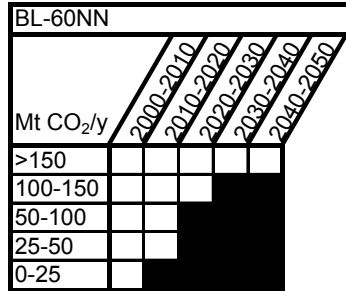
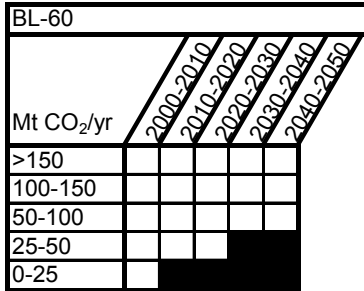
When will we need CATs?

# Fuel Mix in Electricity Generation - 60% CO<sub>2</sub> Reduction in 2050 (no new nuclear)

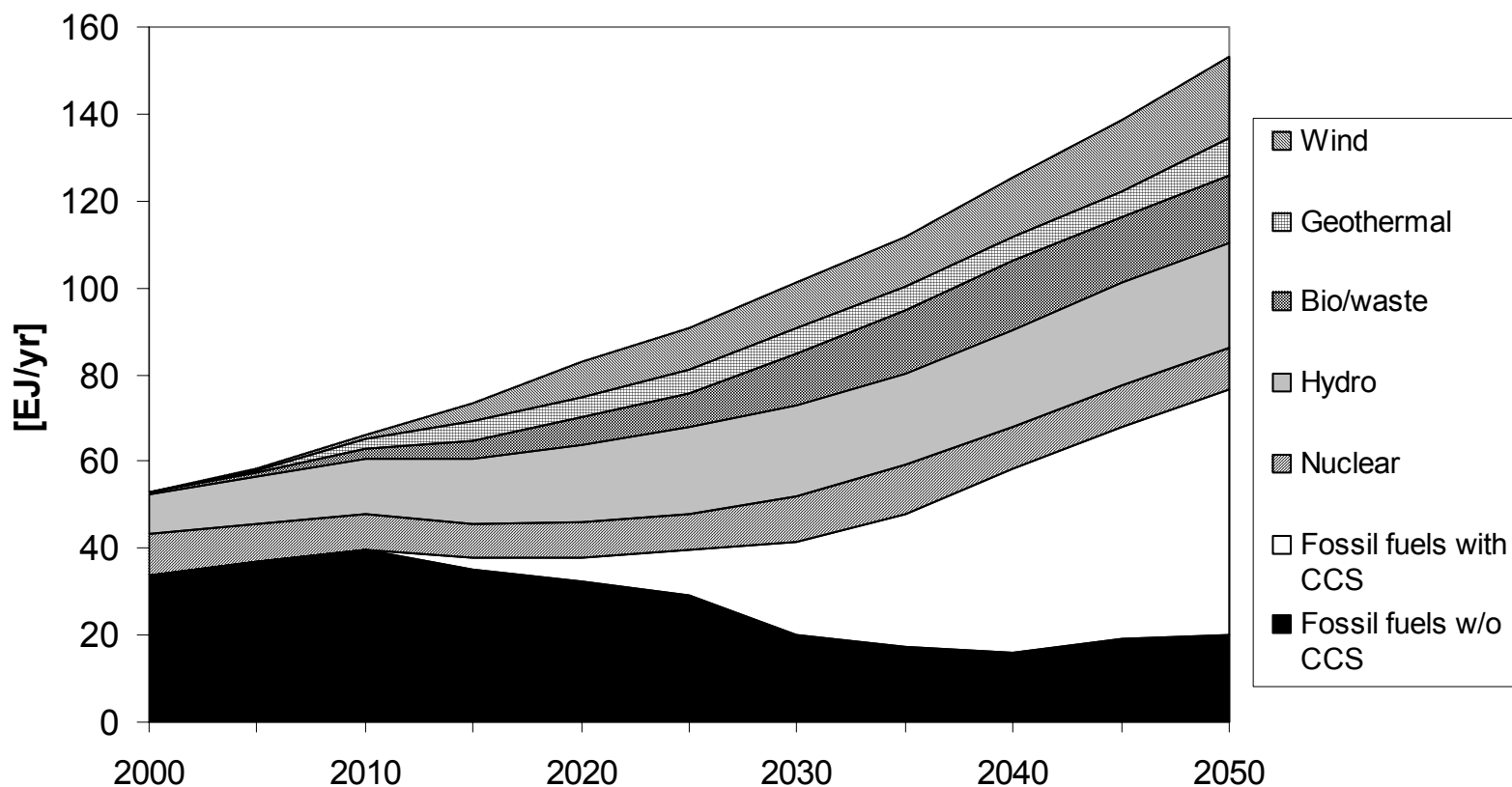


# When will we need CATs?

## Baseline Scenarios



# Worldwide deployment of CCS in electricity generation (IEA, assuming \$50/t CO<sub>2</sub>)



# Market Analysis

- Full market analysis available on the DTI website at:

<http://www.dti.gov.uk/energy/coal/cfft/cct/pub/pdfs/r301.pdf>

# The CAT Strategy

## What is proposed?

# Scope of the strategy

- Ten tasks covering technical development and non-technical issues.
- Industrial uses as well as power
- All fossil fuels.
- Demonstration as well as R&D.
- Ten year programme.
- Industry led



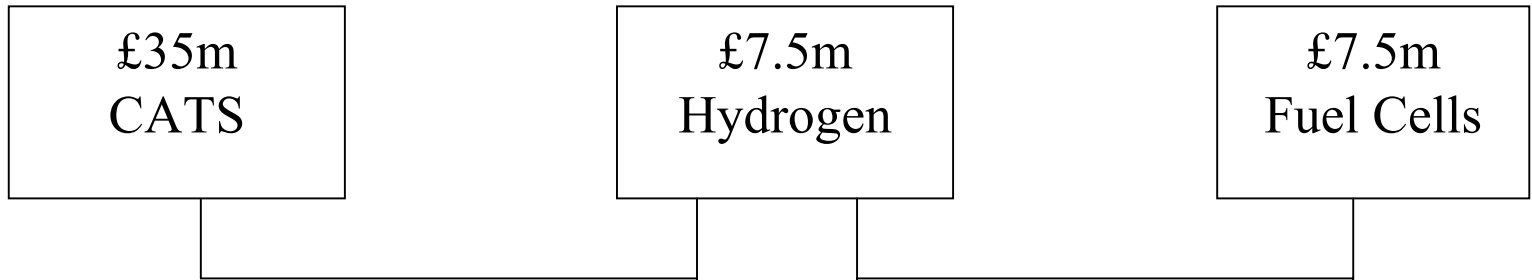
# Programme Management and Timescale (1)

Action		Management
1.	<b>Support research, development and demonstration of CATs.</b>	<b>Technology Strategy Board</b>
2.	Support the demonstration of CO <sub>2</sub> –capture-ready plant.	<b>Cleaner Fossil Fuels Technology Unit with support from expert contractor</b>
3.	Support the demonstration of CO <sub>2</sub> storage.	
4.	Facilitate international collaboration in UK-based CAT development and demonstration projects.	
5.	Facilitate and support UK collaboration in CAT development and demonstration projects based in other countries.	
6.	Examine possible measures to encourage the initial commercial deployment of CCS	
7.	Facilitate the acquisition and transfer of knowledge and know-how.	
8.	Lead in preparing the national and international regulatory frameworks and market systems	
9.	Increase public awareness and stimulate an informed debate on the role of CATs	
10.	To develop and maintain a route map for the development of CATs in the UK.	

# Programme Management and Timescale (2)

Action		Management
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3.	<b>Support the demonstration of CO<sub>2</sub> storage.</b>	
4.	Facilitate international collaboration in UK-based CAT development and demonstration projects.	
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# DEMONSTRATION FUNDING: HOW IT WILL WORK



Detailed design of programme and criteria for assessing proposals to be discussed with industry, other stakeholders.

Possible assessment criteria:

- Potential UK and international carbon savings
- Cost of carbon savings
- Technology and systems innovation
- Impact on UK business
- Security of supply
- Leveraging of other funding: regional, EU international
- International impact (eg is it part of an international demonstration)

# Programme Management and Timescale (3)

Action		Management
1.	Support research, development and demonstration of CATs.	Technology Strategy Board
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# What are we doing now?

Demonstration - £35 million, working up scheme and State Aid case.

R&D - £4 million in the November Technology Call  
Technology Road map being developed.

Sources and Sinks Study started

Communications Strategy being defined

Active in EU's Technology Platform

MoU signed with China

Norway Agreement signed on CO<sub>2</sub> management in CS

Regulatory Working Group established

London/OSPAR

Recommendations on CCS and EU's ETS submitted

# Conclusion

- CAT Strategy is looking long term (10 year programme).
- Includes support for demonstration for the first time - something to build on.
- Aims to strike the right balance between technical and non-technical areas for action.
- CATs involve big investments and the programme emphasises international collaboration.
- Programme will be industry led and its success will depend on industry coming forward with innovative projects
- Already have a number of key tasks launched