

An Innovate UK Perspective on CCS RD&D

For

The Advanced Power Generation Technology Forum (APGTF)

Carbon Capture and Storage Association (CCSA)

Coal Research Forum (CRF)

& Knowledge Transfer Network (KTN)

Joint Meeting on CCS R&D

15th October 2015

Mary Summer House, London

Harsh Pershad

Derek Allen

Michael Priestnall

Lead Technologists (Energy)

Innovate UK

Innovate UK

- UK's Innovation Agency supporting economic growth
- Consistent focus around business opportunities connected to addressing the energy trilemma.
- Work with e.g. DECC, Research Councils, to join up the innovation landscape.
- Diverse mechanisms for supporting business-led innovation
 - Funding
 - Connecting
 - Facilities

Diverse Support Mechanisms

Catalysts

SBRI Government challenges.
Ideas from business.
Innovative solutions.

**Collaborative
R&D**

Smart

Knowledge
Transfer
Partnerships

Knowledge
Transfer
Networks

_connect

CATAPULT[®]

eurostars[™]

Launchpad

**Feasibility
studies**

**Entrepreneur
Missions**

**Innovation
Vouchers**

Why should Innovate UK invest in CCS RD&D?

Market Opportunity

- £100s of billions could be spent worldwide in the 2020s to reduce CO₂ emissions from fossil fuel power generation and energy-intensive industrial processes.

Timeliness

- Rapid market growth driven by emissions regulations and pricing.
- Enable UK supply chain to design, pilot and demonstrate technologies to meet market demand in the 2020s.

UK Capability

- UK has an existing critical mass with academic, government, technology developers, supply chain (and hopefully soon large integrated CCS projects).

Additionality

- Significant market challenges stop private investors capture the full value of investment in CCS R&D

Examples of Innovate UK CCS support

- Pre-2015 Pilot projects e.g. Ferrybridge Capture Pilot, Carbon8
- In 2015, as part of the £40m Energy Catalyst R1 & R2, with DECC and EPSRC support:
 - Charmstar Cambridge Ltd., Combined Energy Recovery & CO₂ Removal (CoERCe)
 - Univ. of Cambridge Direct CO₂ Capture – Industrial CO₂ Mineralisation with valuable materials by-products.
- Cleaner Conventional Fossil Fuel £6m competition, with NERC
 - Industrial CCS with EOR
 - CO₂ transport
 - Fuel switching for a coal power station
 - Further details to be announced mid-November

Funding opportunities at Interact.InnovateUK.org

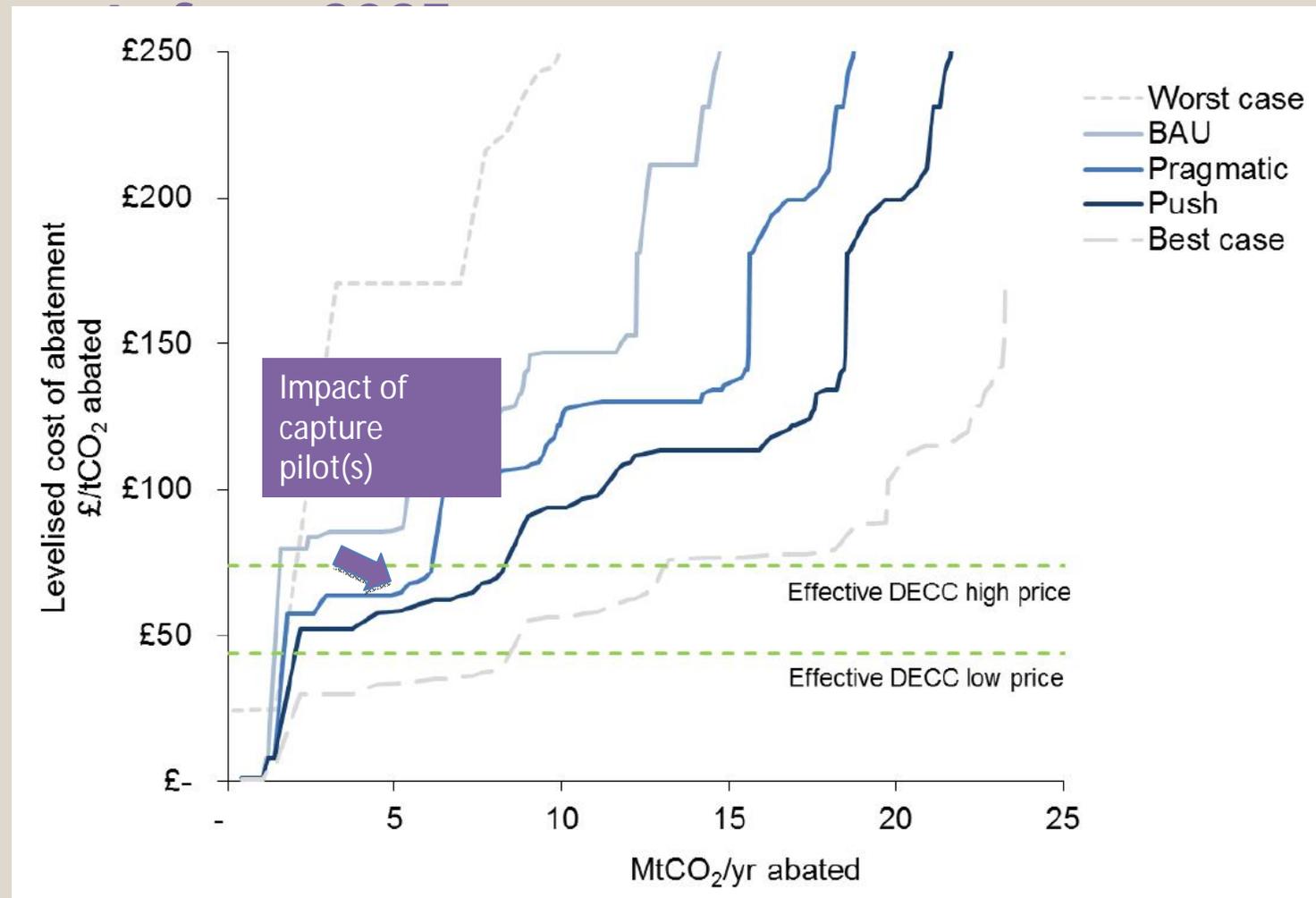
Example Open Competitions :

- Energy Catalyst - Early-stage award - Technical feasibility - Round 3
- Materials for demanding environments
- Software verification and validation for complex systems
- Advancing the commercial applications of graphene
- Brazil–UK collaborative industrial R&D competition
- Mexico-UK Collaborative Industrial R&D Competition

Example Forthcoming

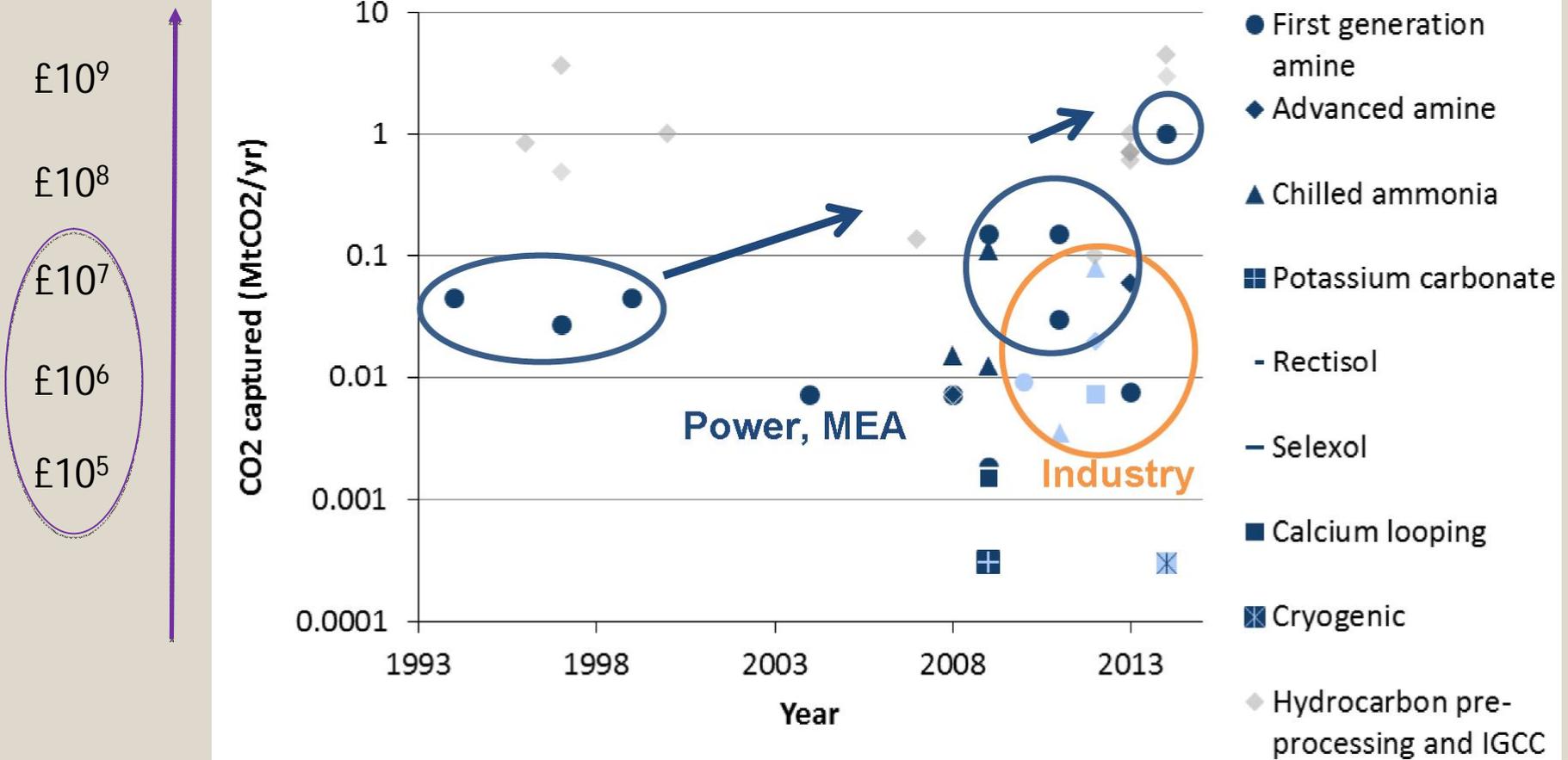
- Energy Catalyst Round 4

Illustrative challenge: Piloting next generation capture technologies by 2020 could reduce CCS deployment



Taken from Element Energy *et al.* for DECC and BIS (2014)
Techno-economic study of CCS in the cement, chemicals, iron and steel and oil refining sectors in 2025

Illustrative costs and timescales for bringing next gen capture technologies for Mt/yr scale demonstration costs



- Market drivers weak - many view costs/risks/hassle as prohibitive
- Difficult for UK to “pick winners” for business growth as uncertain and diverse end markets, technical configurations, development pathways, and supply chains.
- However spreading resources too thinly risks slow progress.

Thank You

For more information please email
Harsh.Pershad@InnovateUK.Gov.U
K

Innovate UK

North Star House, North Star Avenue, Swindon SN2 1UE

Tel: +44 (0)1793 442 700

Email: support@innovateuk.gov.uk

www.innovateuk.gov.uk