

UKCCSRC

Virtual Autumn Conference
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Topics

- **Perspective**
- **Long(ish) View 2011 vs 2021**
 - **Need for CCS in the UK**
 - **CCS Project Design**
 - **Perceived Risk**
- **Final thoughts**

Perspective

Previously:

- Worked on CCS since ~2008 (partly at SSE) (including the 2011-2013 Peterhead option)
- Ran a ~40-50 person consultancy whose projects included technologies for oil and gas exploration, downhole tools, hydrogen conversion, fuel cells and energy efficiency

Currently:

- R&D and commercialisation consultancy including monitoring 5 of the larger CCS projects funded through Innovate UK and a raft of other novel energy technology projects.
- Monitoring some of the larger CCS projects funded through BEIS / Innovate UK
- Independent chair of UKCCSRC

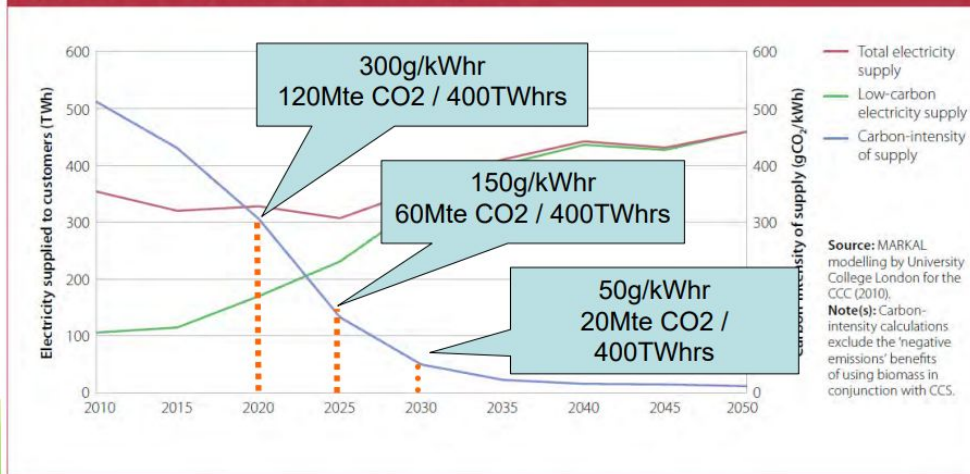
Longish View: 2011 vs 2021

Source:
CCC 4th Carbon Budget, Fig 6.5
~Dec 2010.

Estimated demand ~450 TWhs
by 2050

CCC 4th Carbon Budget: Reducing CO₂ through the 2020s

Figure 6.5: MARKAL trajectory for the power sector (2010-2050)



The Long(ish) view

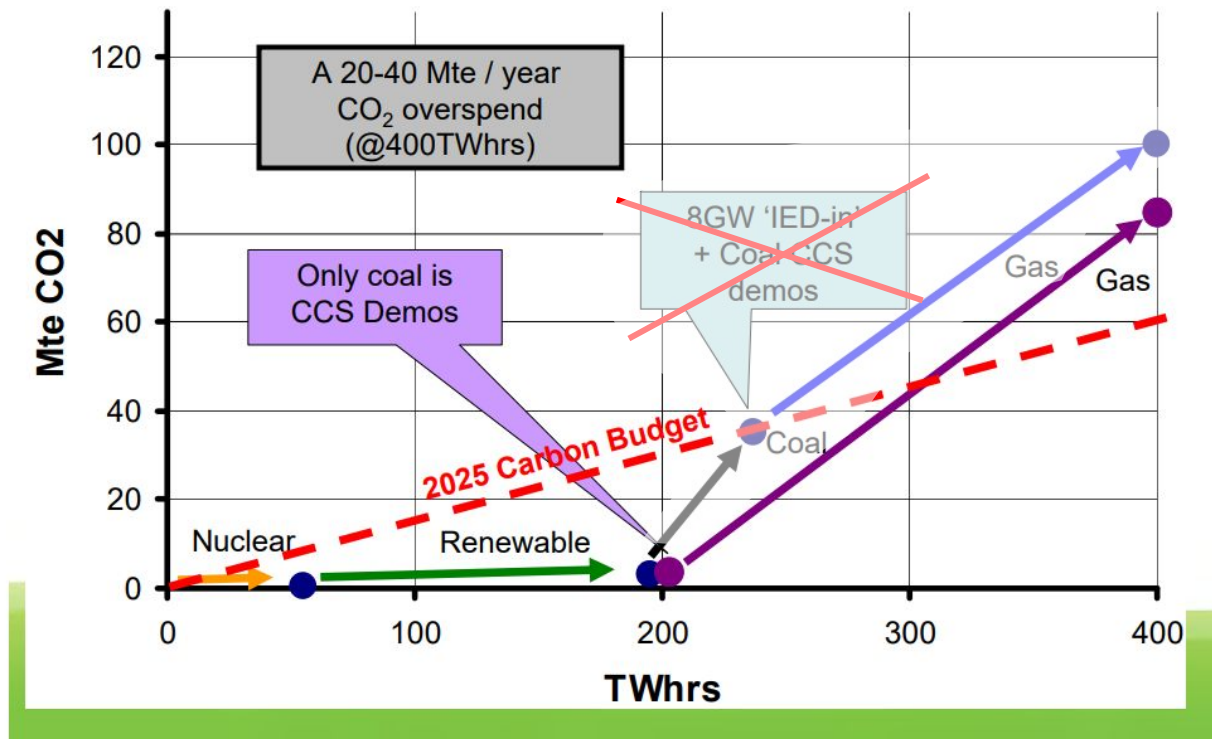
2011 vs 2021

Source:
CCS in the next decade,
IMechE 20th June 2011
Jeremy Carey

The "Carbon budget"
derived from CCC 4th
Carbon Budget



GB Generation 2025 (Hi / Lo Coal)



The Long(ish) view

2011 vs 2021

Source:
Gridwatch

12 months to 6th Sept
2021

Carbon Budgets from
CC

Data interpretation by
me... Caveats apply!

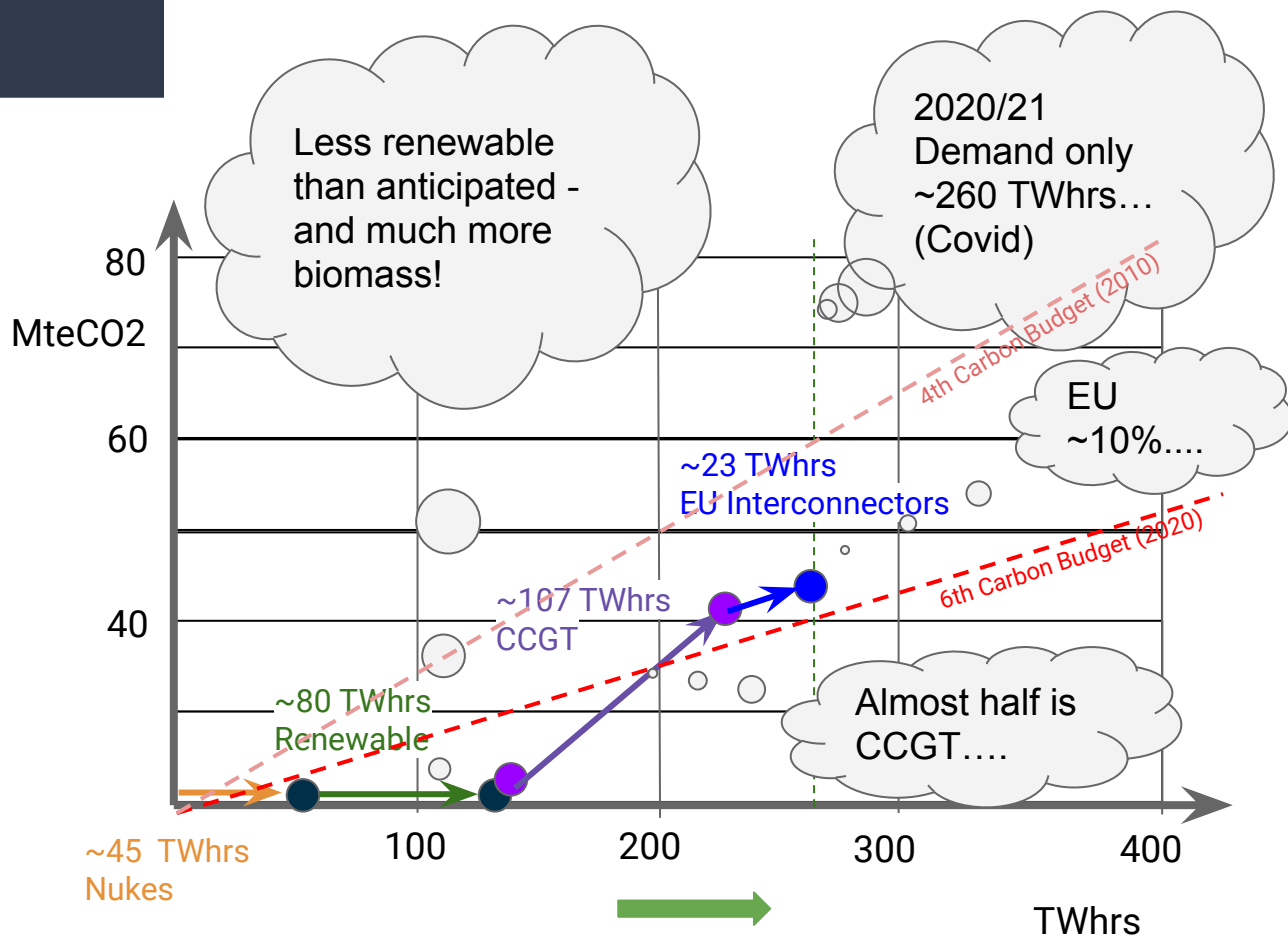


Figure 3.4.b Carbon intensity in the Balanced Net Zero Pathway (2010-50)

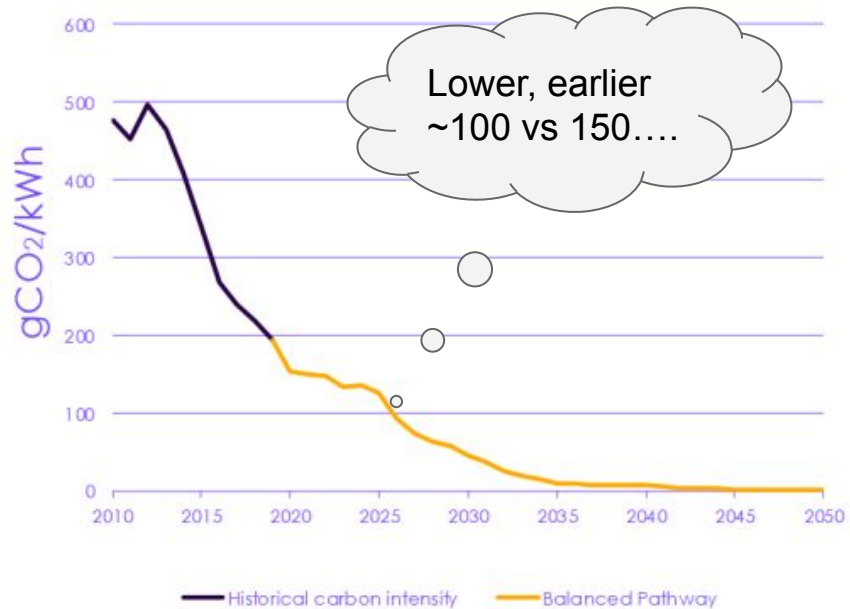
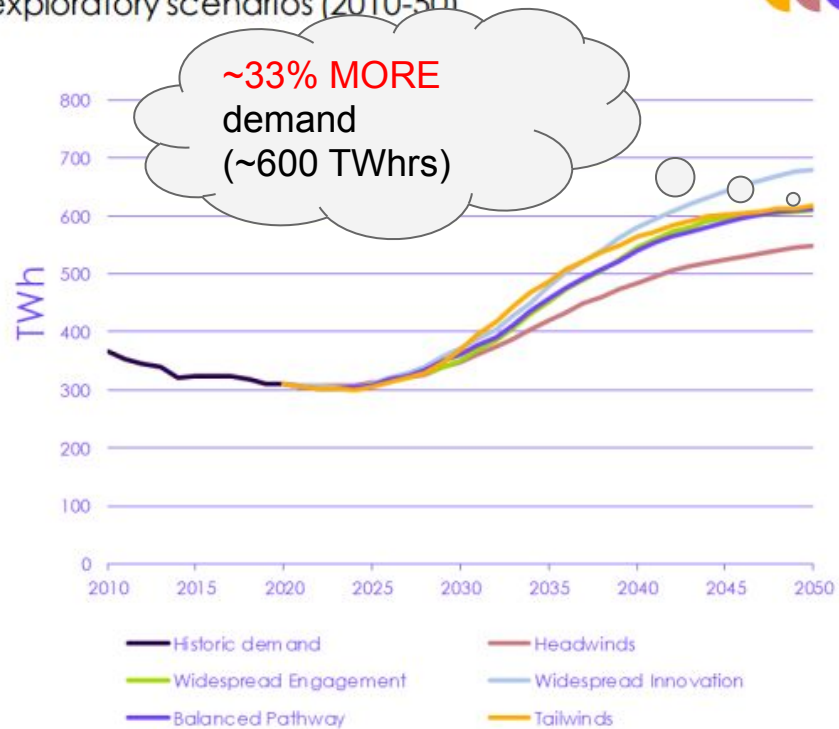


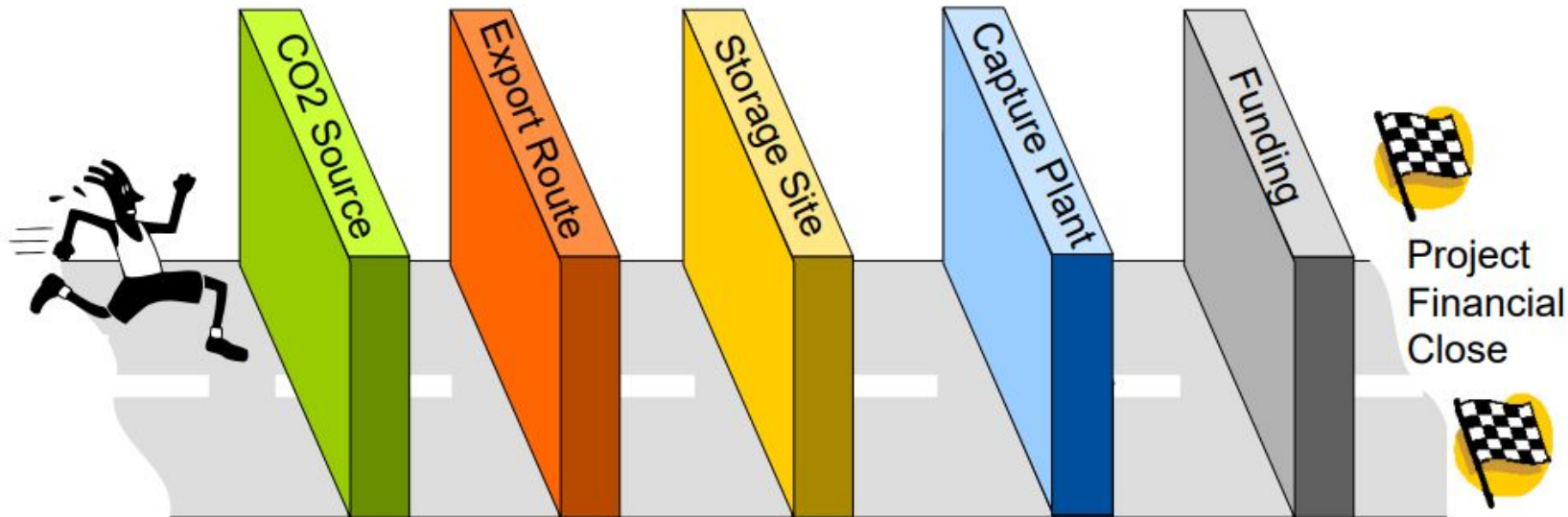
Figure 3.4.d Electricity demand across the exploratory scenarios (2010-50)



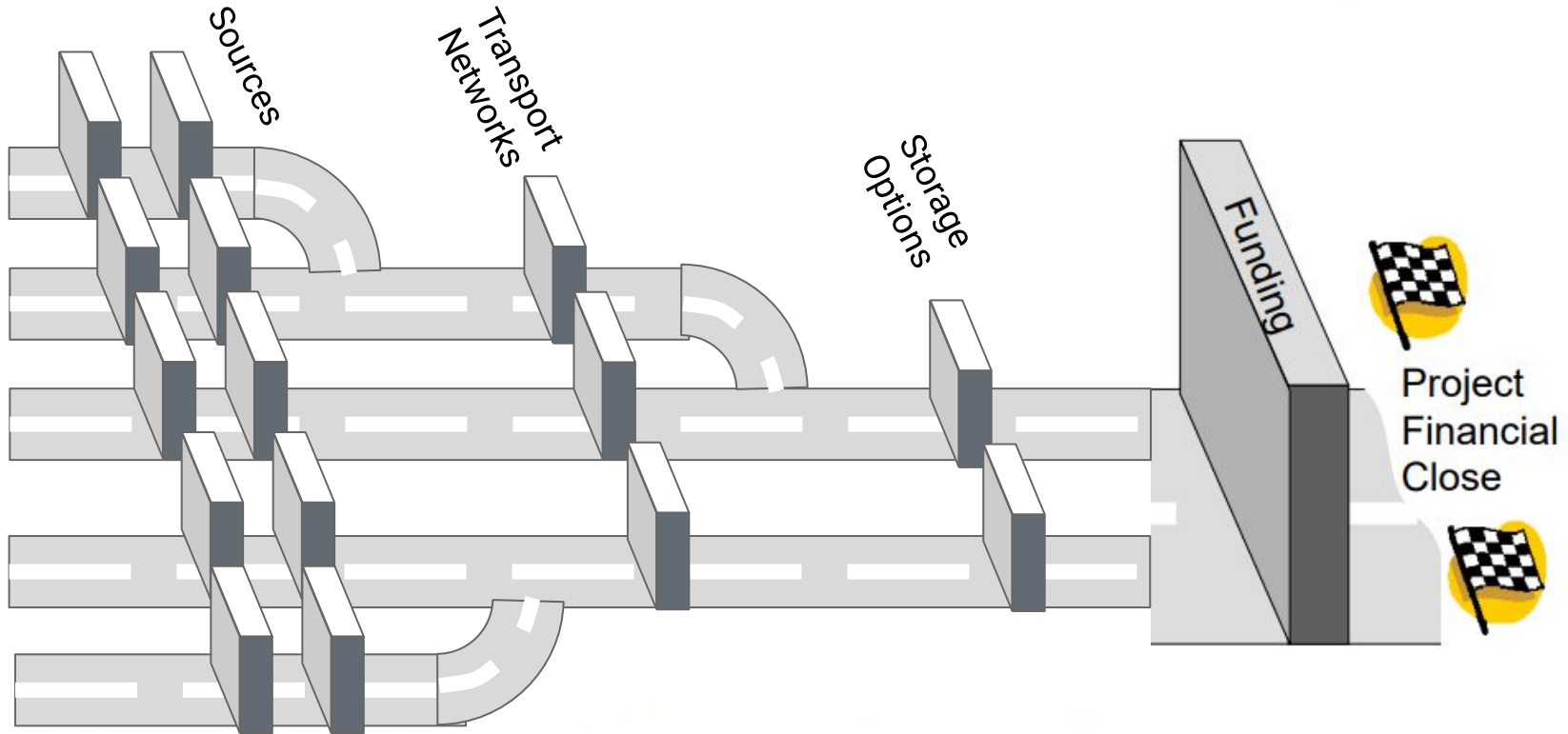
A Different Trilemma?

| Parameter | 2011 | 2021 | Impact |
|--------------------------------|--------------|---------------|--|
| 2050 Electricity Demand | ~450 TWhrs | ~600 TWhrs | Bigger, more expensive problem to solve. Can't just be yet more interconnectors! |
| 2050 Grid emissions | 10Mte / TWhr | ~0 Mte / TWhr | Technically more challenging problem to solve. |
| Years Remaining | <40 | <30 | less time. |

Barriers to CCS Deployment (2011)

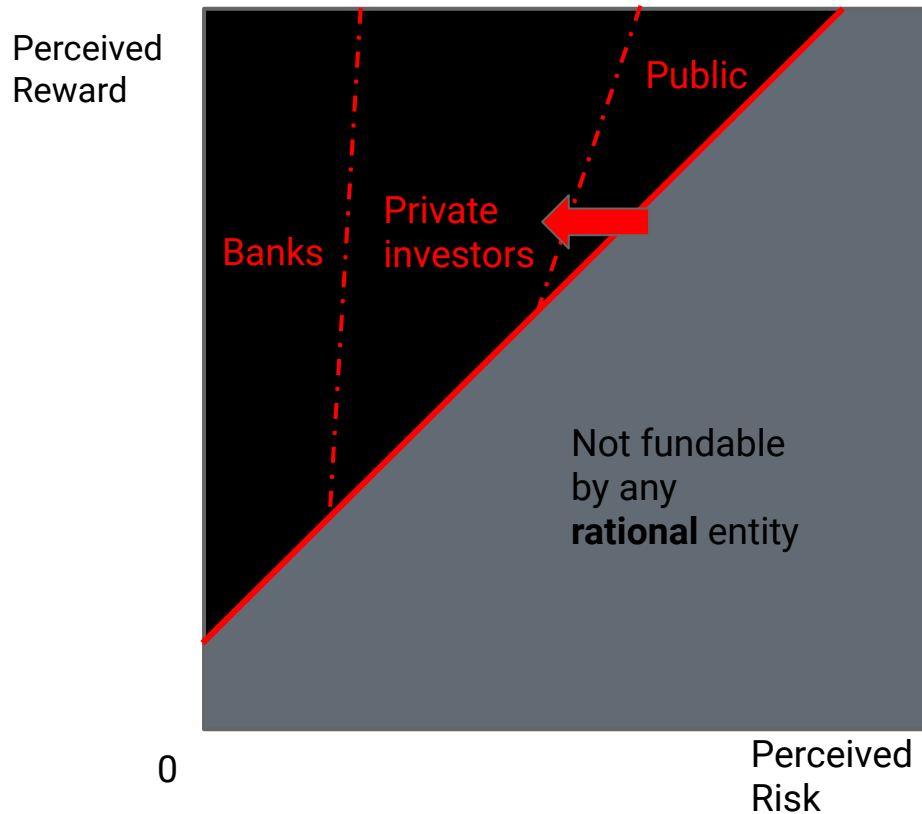


Pathways to CCS Deployment (2021)



Good News !

CCS is moving
in the right
direction!



Caveat...

There is still probably reasonably high perceived political and commercial risk TODAY.

Will this abate in the next 12 months?

Perceived Risk is a combination of

Technical Risk +
Project Risk +
Construction Risk +
Operational Risk
Social risk +
Legal risk

Broadly under
project control
(Hopefully!)

Commercial Risk +
Political Risk

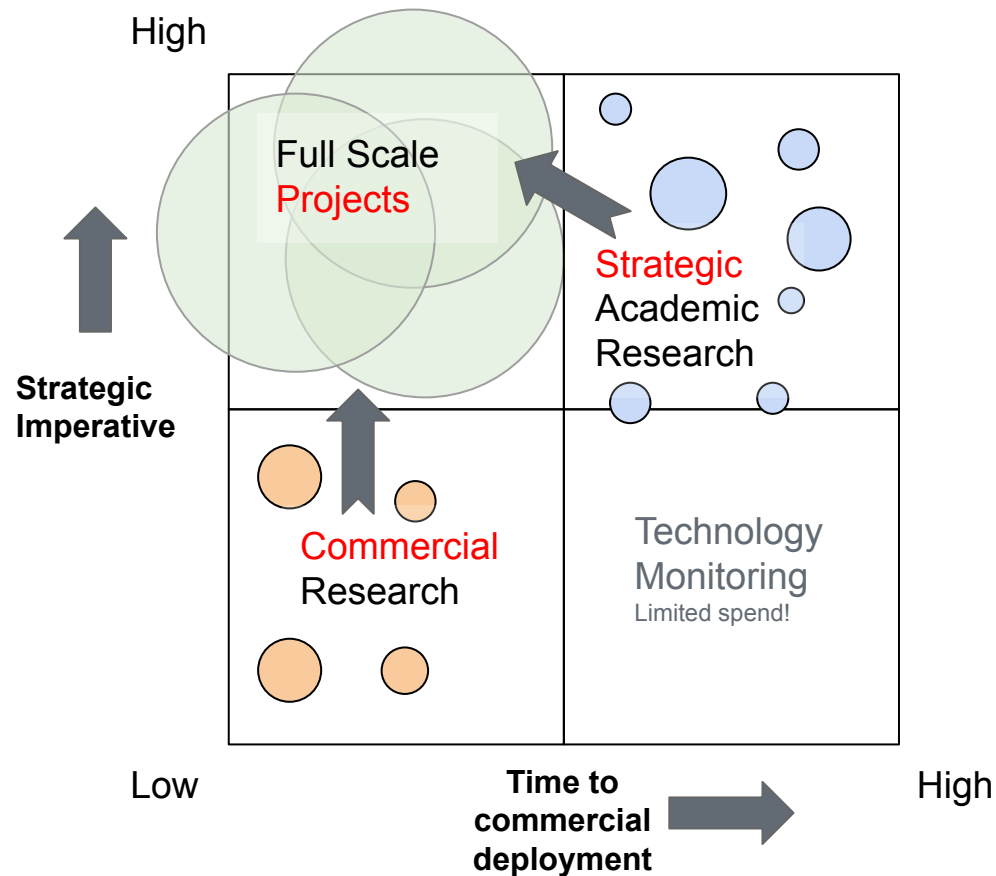
Difficult for projects
to control

Role of Academic Research.

There will be value in academic and industrial research for many decades to come...

Its **strategic** if and only if it supports the industrial deployment strategies co-developed by industry and policy makers.

We need to keep talking!



Questions ?