



# CCS after Paris

The role of CCS in climate scenarios and securing investment

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CSLF Policy Group meeting, Abu Dhabi 05 December 2017

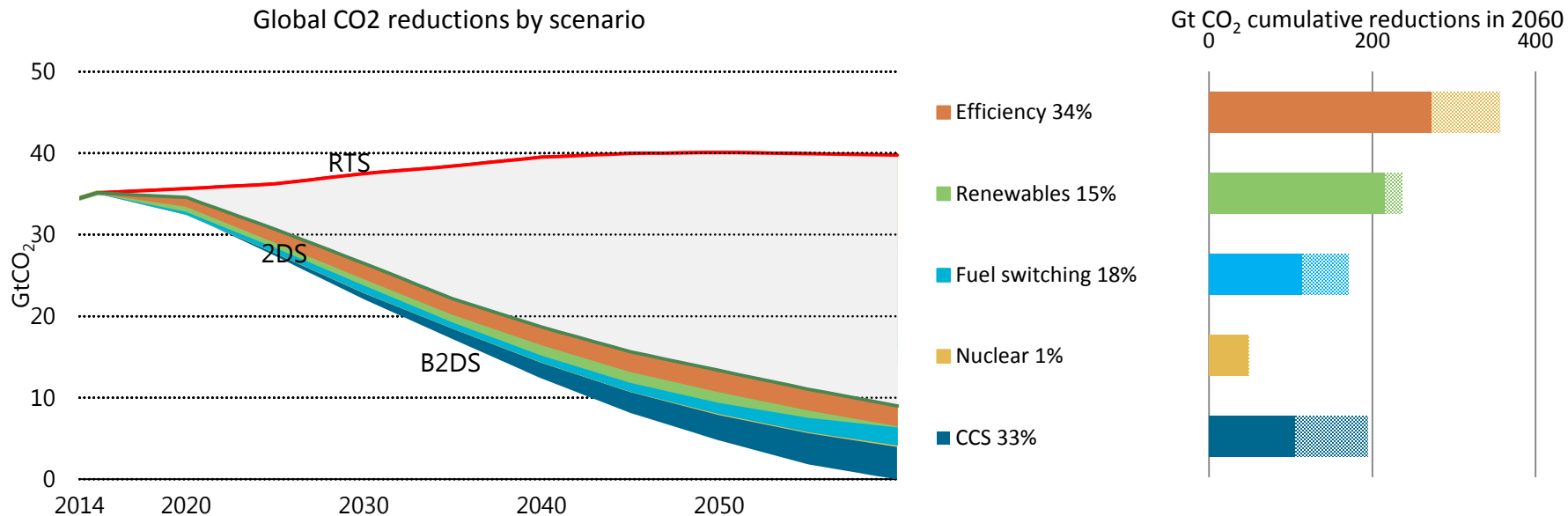
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# CCS in the 2DS and beyond

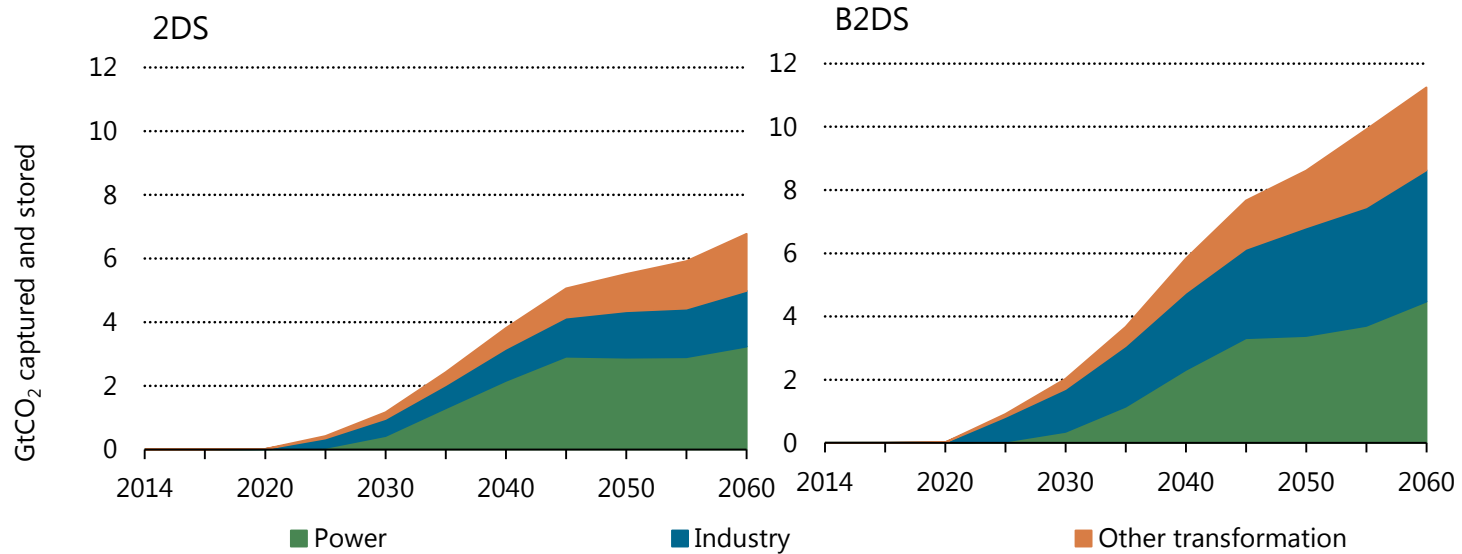
Energy Technology Perspectives 2017

# What does going 'well-below' two degrees mean?

...first, for emissions

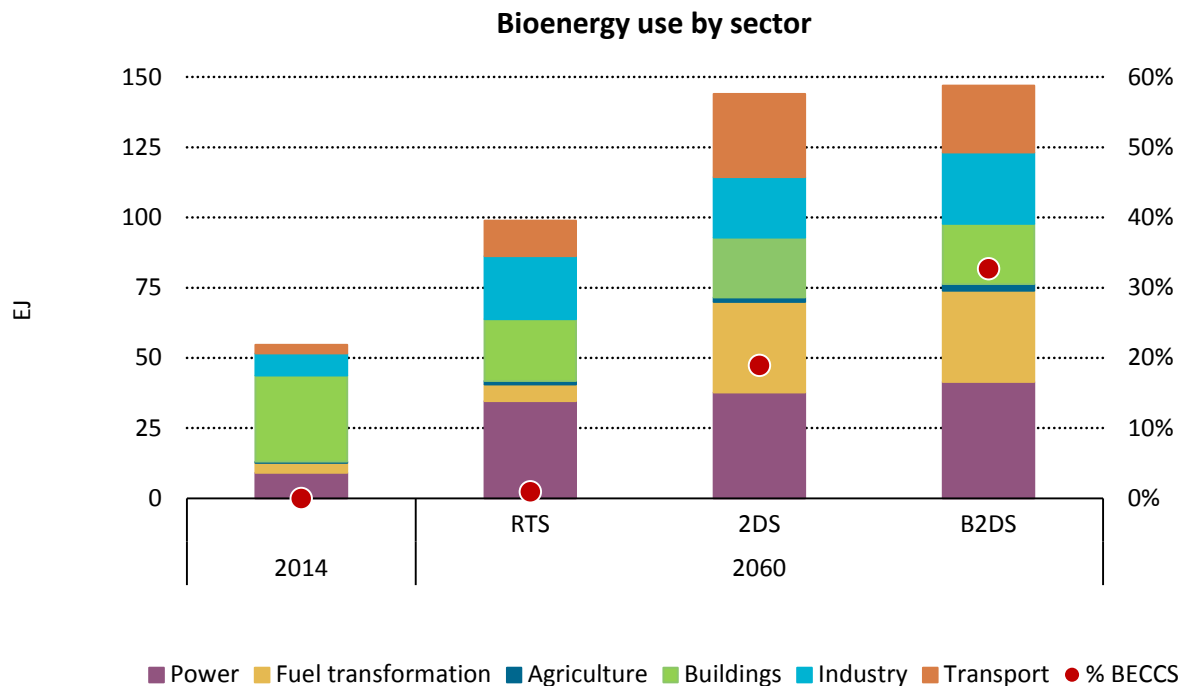


**Pushing energy technology to achieve carbon neutrality by 2060 could meet the mid-point of the range of ambitions expressed in Paris**



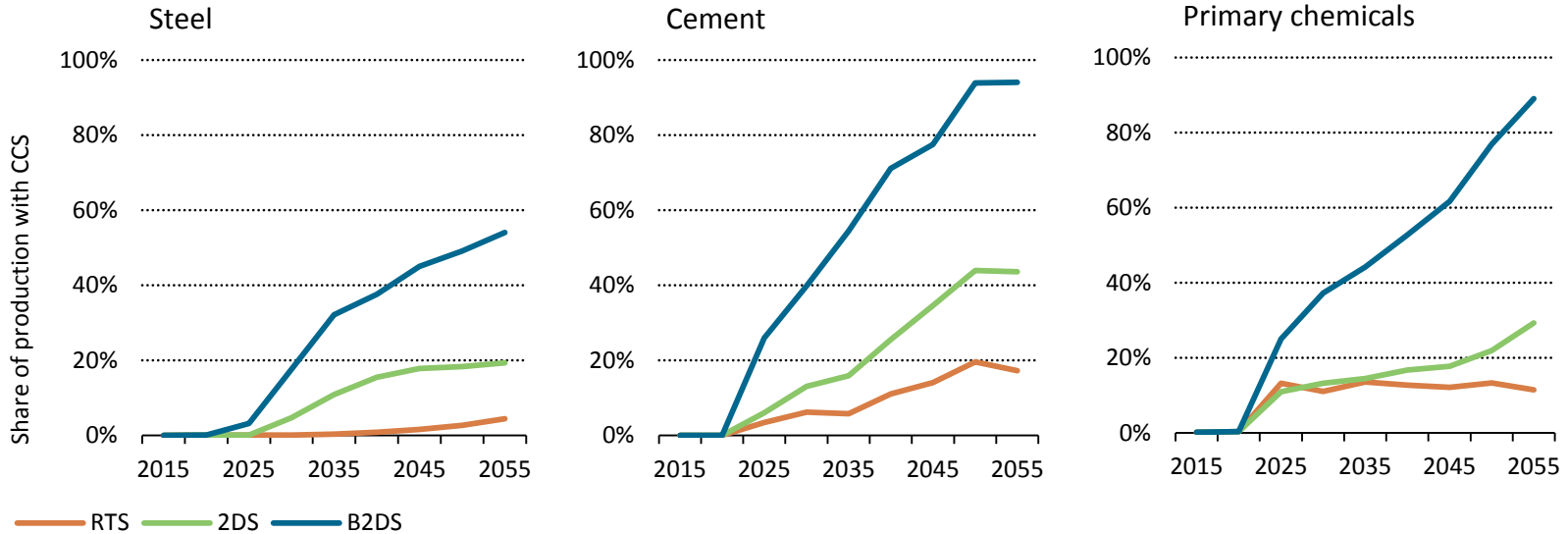
**6 Gt CO<sub>2</sub> is roughly equivalent to total oil and gas production today**

# Negative emissions compensate for other sectors/end uses



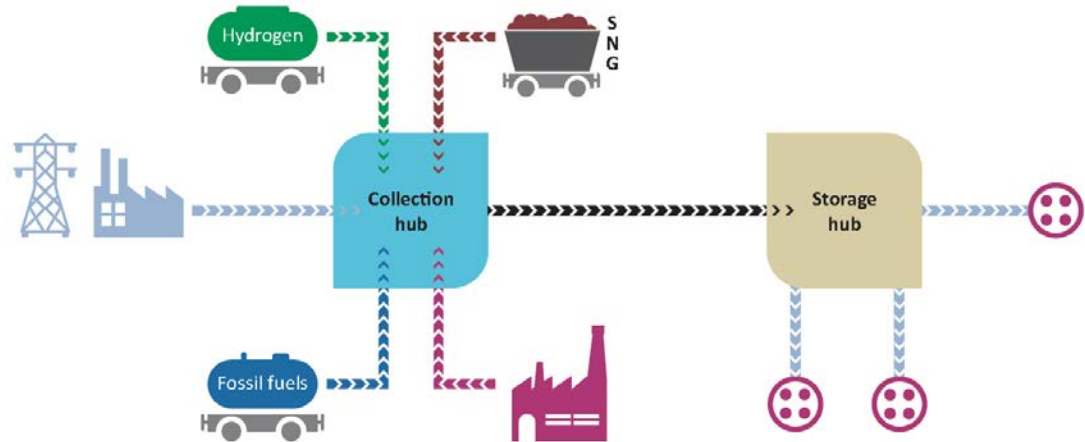
**Around 145 EJ of sustainable bioenergy is available by 2060 in all decarbonisation scenarios, but in the B2DS a lot more is coupled with CCS**

# CCS is needed in industry – share of production with CCS

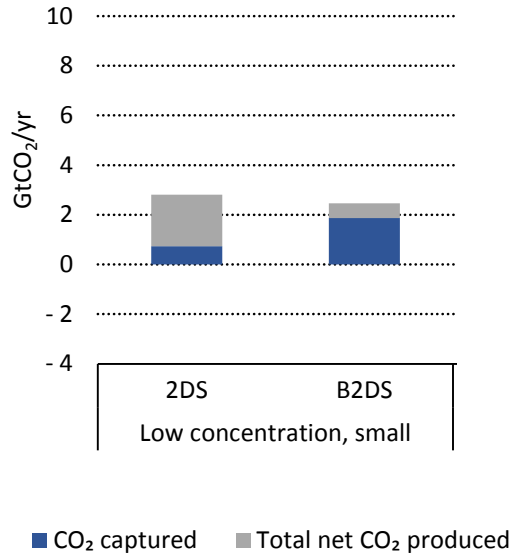


**The further we reduce emissions, the more we need CCS in the production chain – likely to be geographically spread**

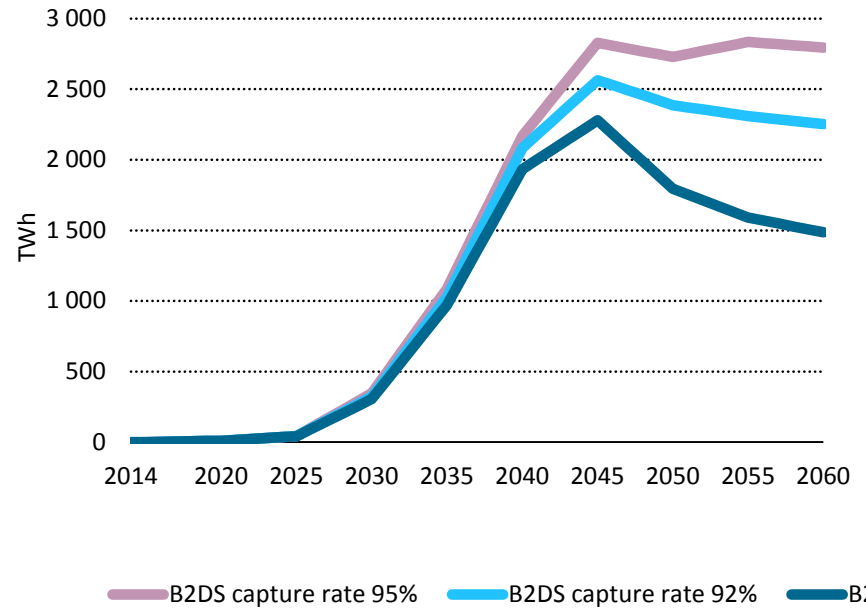
- **CO2 transport and storage are critical infrastructure in a low carbon economy**
- **Separating transport and storage from capture**
- **Critical role for public leadership in the development of CO2 pipelines and storage resources**



.....on capture from smaller, dilute sources...



.....and on higher rates of capture





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# How do we get there?

CCS investment and commercialisation

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7 November 2017



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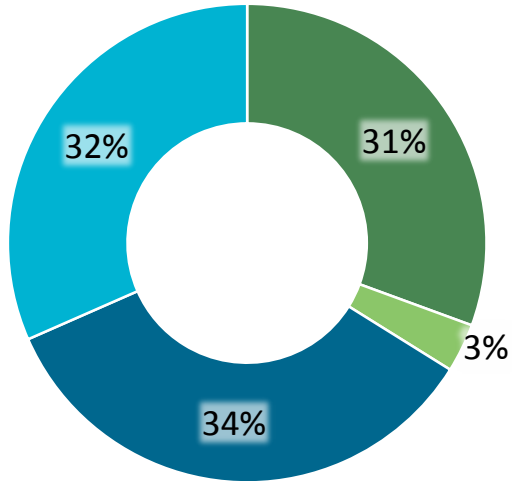
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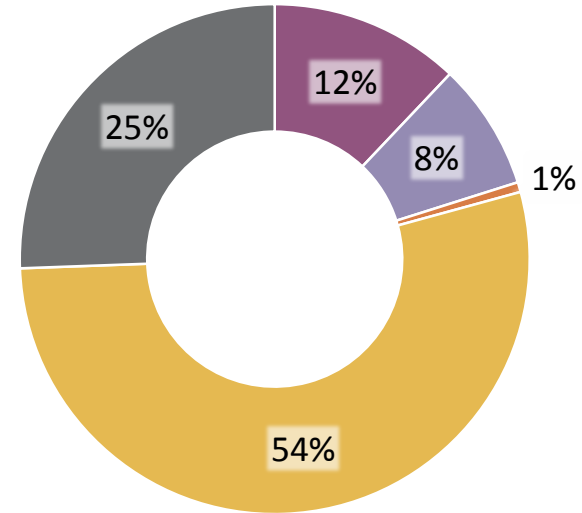
# There has been investment in CCS

Investment by source of capital



- Public grant
- Debt - off balance sheet
- Equity in SPV/JV

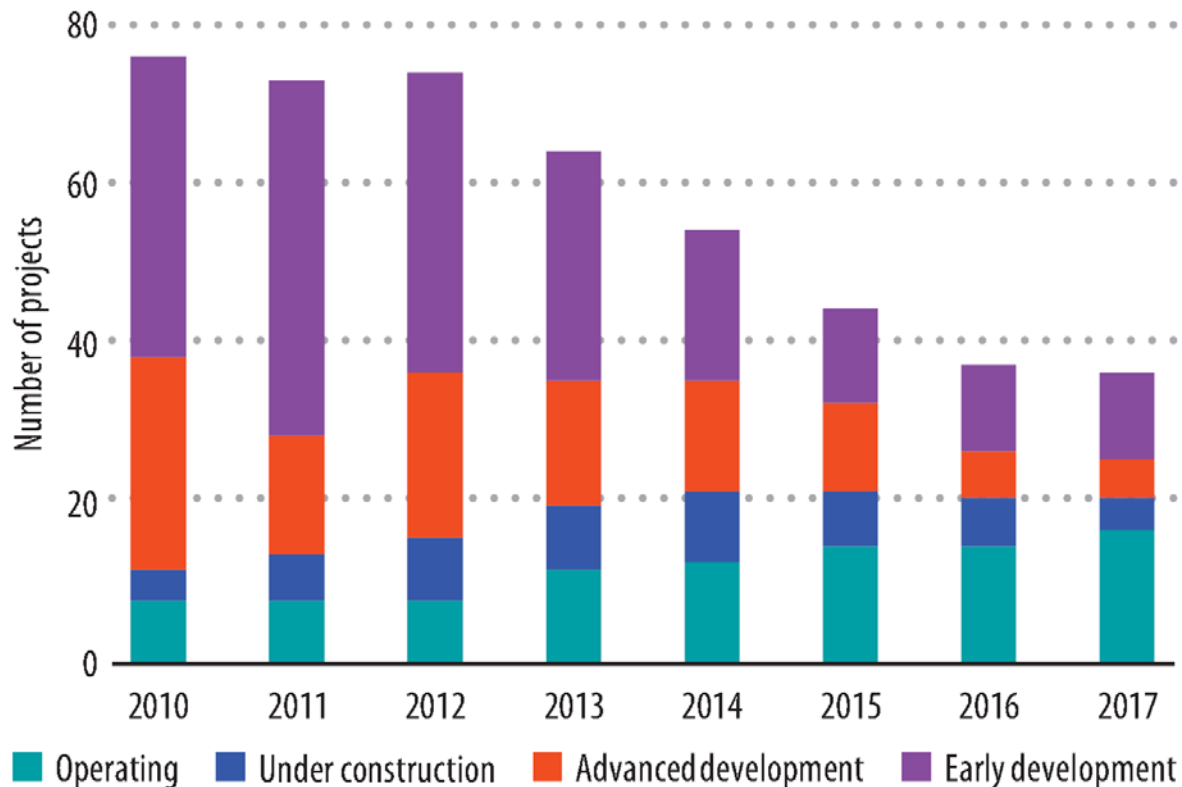
Revenue source



- Regulated electricity sales
- Industrial products sales
- Tax credits
- Oil and gas sales

**Government interventions have leveraged corporate investment – future scale of CCS will need debt financing**

# But we need more investment



- Total large-scale projects halved from 77 to 37
- FEWER projects in development than construction and operation
- Only **one final investment decision** since 2014 (Yanchang Petroleum in PRC)

Source: GCCSI *Global Status of CCS*



- 1) **Harvest low-hanging fruit** to build CCS deployment and experience from the ground up.
- 2) **Tailor policies** to shepherd CCS through the early deployment phase and to address unique integration challenges for these facilities.
- 3) **Target multiple pathways to reduce costs** from technology innovation to progressive financial mechanisms.
- 4) **Build CO<sub>2</sub> networks** to better support transport and storage options.
- 5) **Strengthen partnerships** and cooperation between industry and government.