The IPCC, its special report on 1.5°C and CO_2 capture and storage

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Key messages from the IPCC Special Report on 1.5°C

Already 1°C of global warming

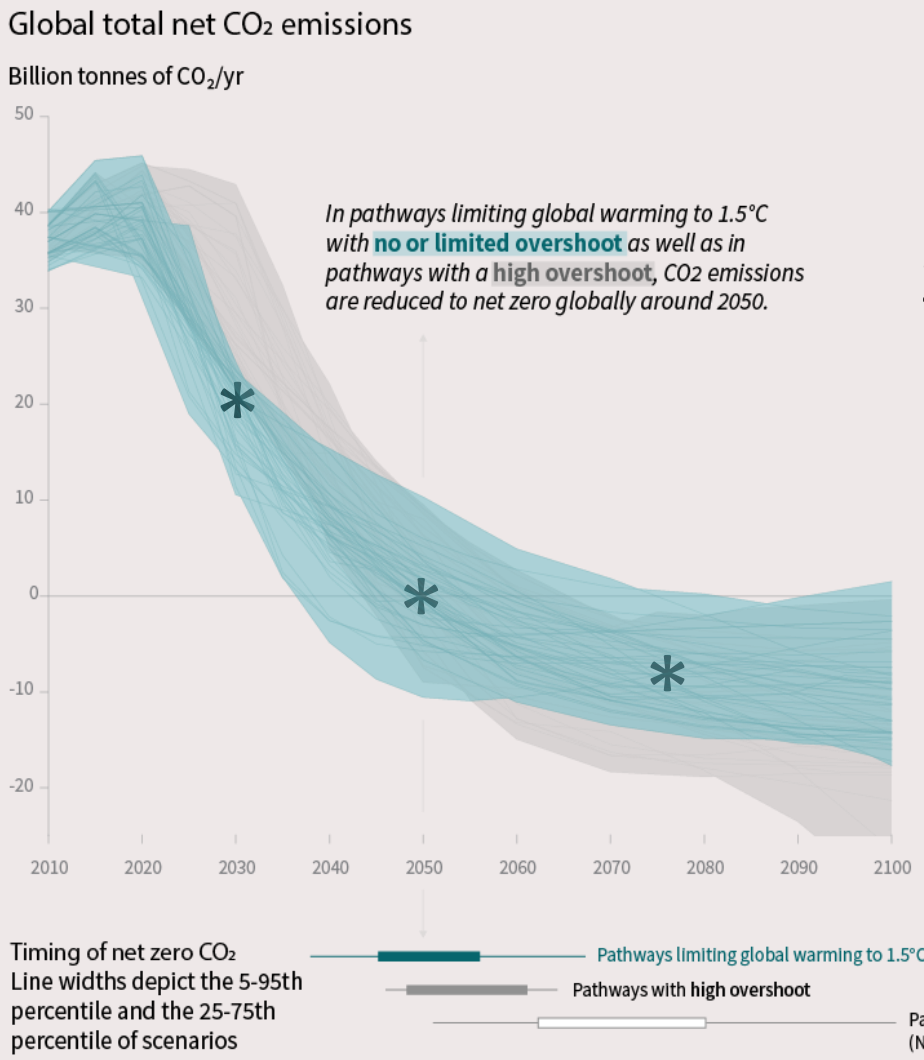
At current rate, would reach 1.5°C between 2030 and 2052

Clear benefits to limiting warming to 1.5°C

We can still limit warming to 1.5°C but this requires unprecedented changes

Waiting for NDCs means missing 1.5°C

Limiting warming to 1.5°C would go hand in hand with achieving other societal goals



Halving CO_2 in 2030

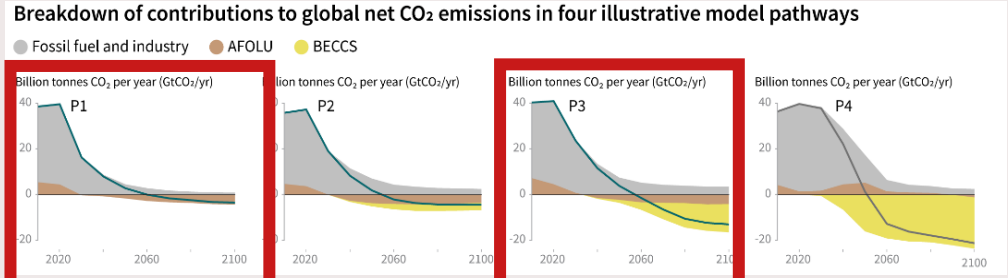
Net zero CO_2 in 2050

Carbon dioxide removal

ipcc
INTERGOVERNMENTAL PANEL ON climate change

TU/e

CCS in 1.5C-pathways: reducing emissions and removing CO_2

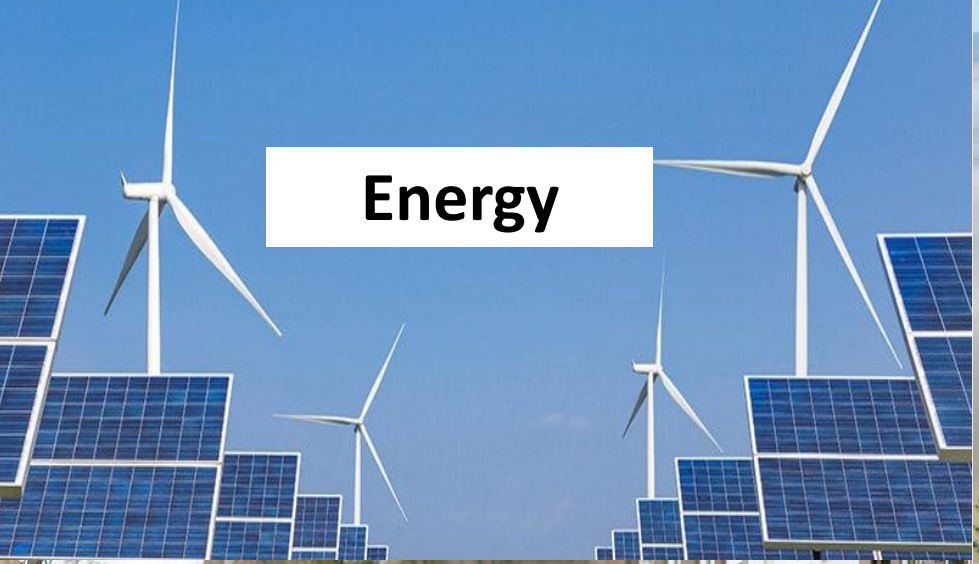


	P1	P2	P3	P4	
	Lower energy demand Downsized energy system	Sustainable development Limited acceptability BECCS	Follows historical patterns Cleaner production	Resource and energy intensive lifestyles	
Global indicators	P1	P2	P3	P4	**Interquartile range**
Pathway classification	No or low overshoot	No or low overshoot	No or low overshoot	High overshoot	No or low overshoot
Cumulative CCS until 2100 ($GtCO_2$)	0	348	687	1218	(550, 1017)
↳ of which BECCS ($GtCO_2$)	0	151	414	1191	(364, 662)

Modelled pathway without CCS: possible with immediate, strong action

CCS has two roles:

- Reduce CO_2 emissions from fossil fuelled operations
- Remove CO_2 from atmosphere: combined with atmospheric removal, through biomass or CO_2

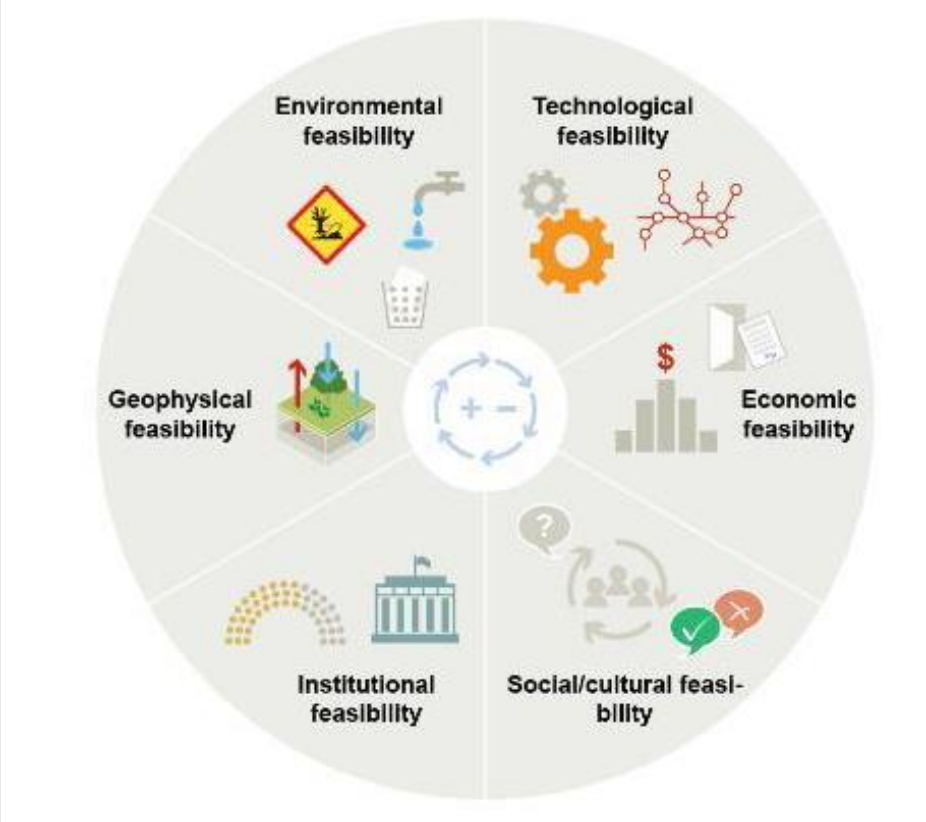

Energy


Land & ecosystems


Urban &
Infrastructure


Industry

Feasibility of options in system transitions



Feasibility of CCS-related options

Mitigation Option	Evidence	Agreement	Ec	Tec	Inst	Soc	Env	Geo	Context
Solar PV	Robust	High							Cost-effectiveness affected by solar irradiation and incentive regime. Also enhanced by legal framework for independent power producers, which affects uptake
Power sector carbon dioxide capture and storage	Robust	High							Varies with local CO_2 storage capacity, presence of legal framework, level of development and quality of public engagement
Industrial carbon dioxide capture, utilization and storage	Robust	High							High concentration of CO_2 in exhaust gas improve economic and technical feasibility of CCUS in industry. CO_2 storage or reuse possibilities
Bioenergy and carbon dioxide capture and storage	Robust	Medium							Depends on biomass availability, CO_2 storage capacity, legal framework, economic status and social acceptance
Direct air carbon dioxide capture and storage	Medium	Medium							Depends on CO_2-free energy, CO_2 storage capacity, legal framework, economic status and social acceptance

Enabling conditions for systems transitions – and CCS