

*Why is it important to talk about governance of
emerging climate-altering approaches*

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C2G Webinar Series 2020

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INTERGOVERNMENTAL PANEL ON climate change



Some background for the presentation

- All findings presented in this introduction are from the assessed literature by the Intergovernmental Panel on Climate Change (IPCC) in the following reports:
 - the Special Report on Global Warming of 1.5°C (2018)
 - <https://www.ipcc.ch/sr15/>
- Additional scientific findings will be made available in the ***Sixth Assessment Report*** of the IPCC (AR6) (2021/2022)

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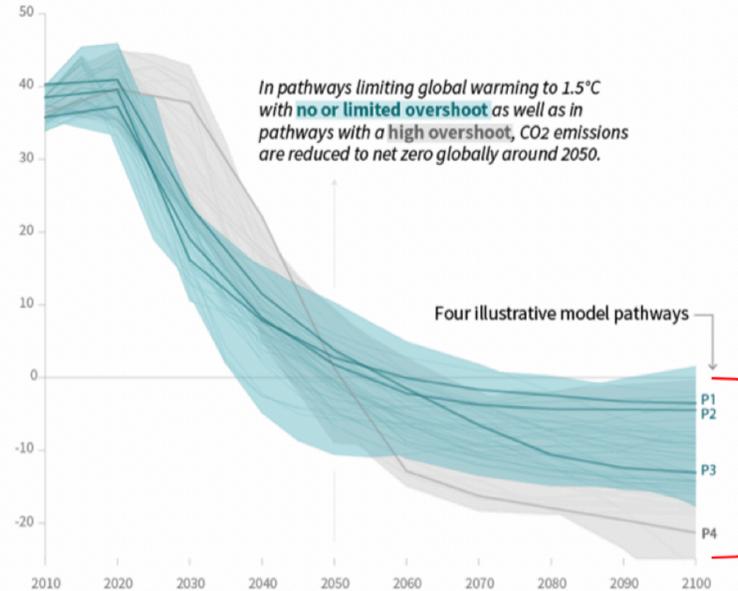
Special Report on 1.5°C

- Focus on **impacts** of global warming at this level, above pre-industrial levels and **related global greenhouse gas emissions pathways**
- **Emission pathways:**
 - modelled trajectories of global anthropogenic emissions over the 21st century
 - assumptions about economic growth, technology development and lifestyles
- **Different pathways assessed:**
 - **No overshoot:** pathways limiting global warming to below 1.5°C
 - **Limited overshoot:** pathways limiting global warming to below 1.6°C and returning to 1.5°C by 2100
 - **Higher overshoot:** pathways exceeding 1.6°C but still returning to 1.5°C by 2100

Global emissions pathway characteristics

Global total net CO₂ emissions

Billion tonnes of CO₂/yr



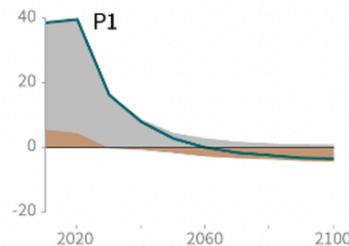
CO₂ emissions are reduced to **net zero** globally around 2050

- carbon dioxide removal (CDR) techniques may be required to offset **residual CO₂ emissions**

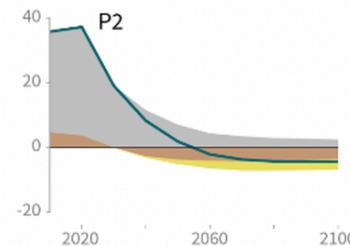
For overshoot pathways

- CDR will be required to achieve net **negative emissions** to return global warming to 1.5°C

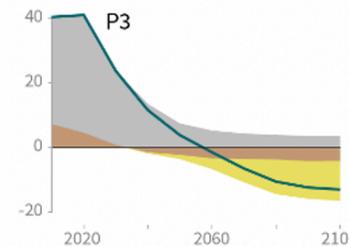
Billion tonnes CO₂ per year (GtCO₂/yr)



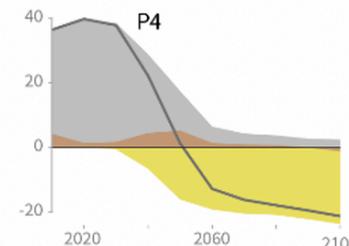
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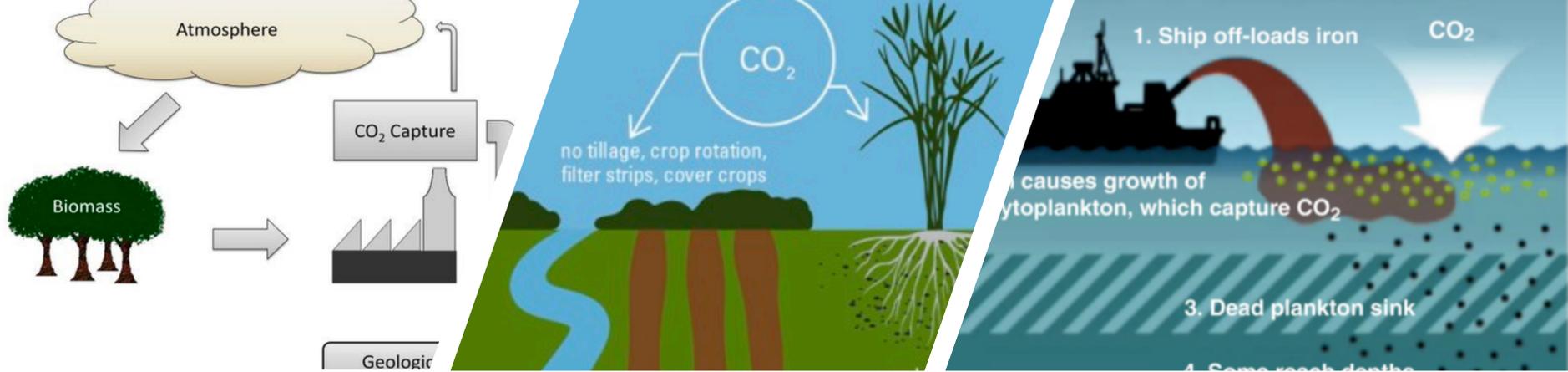


Billion tonnes CO₂ per year (GtCO₂/yr)



- Fossil fuel and industry
- AFOLU
- BECCS

AFOLU = Agriculture, Forestry and Other Land Use
BECCS = Bioenergy with Carbon Dioxide Capture and Storage



What types of CDR have been assessed?

Bioenergy with Carbon Dioxide Capture and Storage

Afforestation/Reforestation

Soil Carbon Sequestration and Biochar

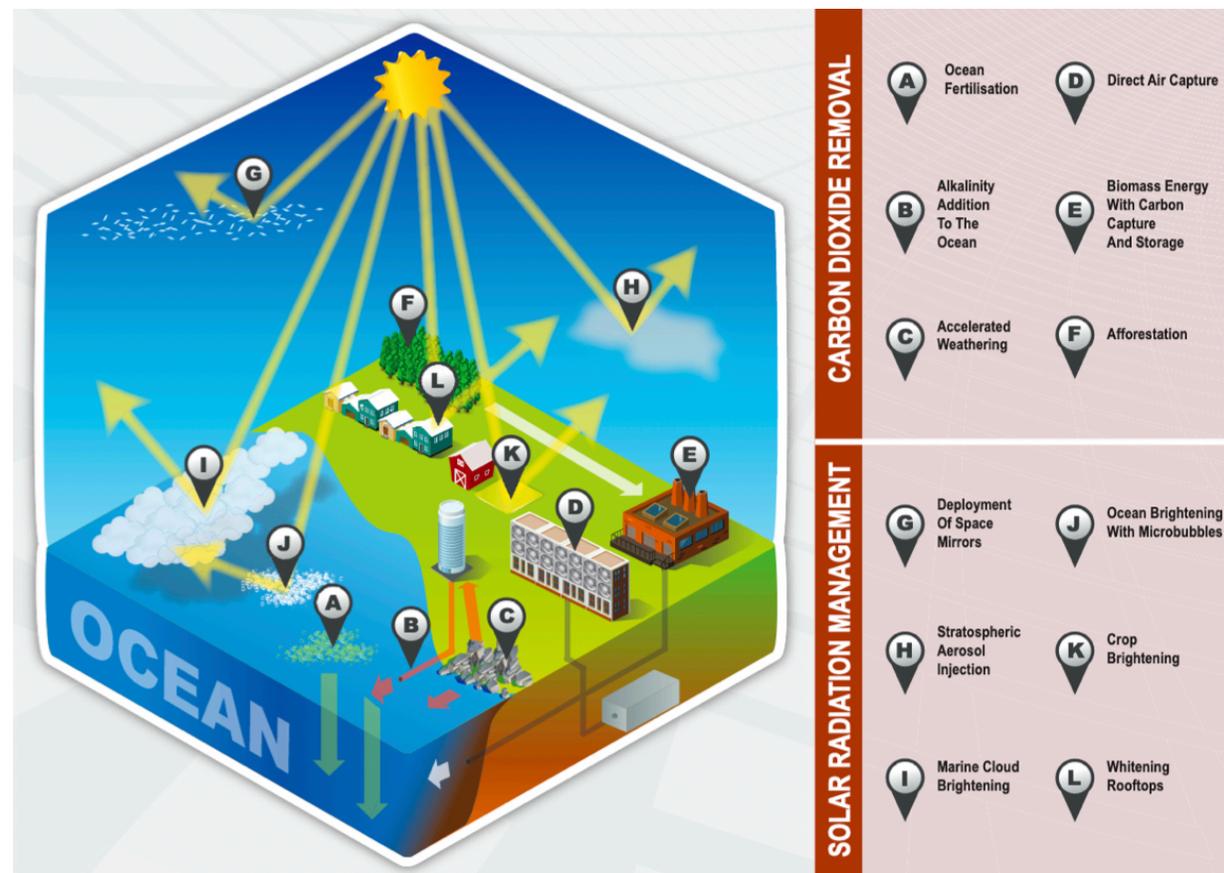
Enhanced Weathering and Ocean Alkalinization

Direct Air Carbon Dioxide Capture and Storage

Ocean Fertilization



Overview of some proposed CDR and Solar Radiation Modification methods



Source: IPCC Fifth Assessment Report, Working Group I, page 632

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Solar Radiation Modification - SRM

- Not included in any of the available assessed pathways
- Some SRM measures may be theoretically effective in reducing an overshoot, but...
 - face large uncertainties
 - knowledge gaps
 - substantial risks
 - institutional and social constraints related to governance, ethics, and impacts on sustainable development

What is governance?

- Governance: a comprehensive and inclusive concept of the full range of means for deciding, managing, implementing and monitoring policies and measures. Whereas government is defined strictly in terms of the nation-state, the more inclusive concept of governance recognizes the contributions of various levels of government (global, international, regional, sub-national and local) and the contributing roles of the private sector, of nongovernmental actors, and of civil society to addressing the many types of issues facing the global community.
- **Definition in the Glossary** in the IPCC Special Report on Global Warming of 1.5°C
 - https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_AnnexI_Glossary.pdf

Why is governance necessary?

- Some examples of why governance is important:
 - to limit potential negative impacts of some large-scale CDR and SRM
 - to ensure permanence of carbon removal in terrestrial, geological and ocean reservoirs
 - to enable sustainable land management to conserve and protect land carbon stocks
 - to accelerate the necessary system's transitions, behavior change, innovation and technology deployment
 - to avoid potential risks of unilateral actions that could have negative effects across borders
 - to promote greater engagement of a diversity of actors that can participate in the selection, evaluation, implementation and monitoring of policy instruments for adaptation and mitigation of climate change

Pictures searched in Google for Slide 5

From top left to right, bottom left to right

- 1 – BBC News, UN dilemma over 'Cinderella' technology, Matt McGrath
- 2 – Afforestation/Reforestation – worldlandtrust.org
- 3 – Soil Carbon Sequestration and Biochar: Iowa State University, Bioeconomy Institute
- 4 – Enhanced Weathering and Ocean Alkalinization
 - Bach et al., CO₂ removal with enhanced weathering and ocean alkalinity enhancement: potential risks and co-benefits for marine pelagic ecosystems
- 5 – Direct air carbon dioxide capture and storage - Carbon Engineering Ltd.
- 6 – Ocean fertilization – Geoengineering: a tool to use after a stain has set – Part 2

References:

- **SLIDE 4: pages 13 and 14** in the Summary for Policymakers in the IPCC Special Report on Global Warming of 1.5°C (2018).
 - https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf
- **SLIDE 5, in chapter 4, section 4.3.7, pages 342-347** in the IPCC Special Report on Global Warming of 1.5°C.
 - https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_Chapter4_Low_Res.pdf
- **SLIDE 6, in chapter 7, pages 632-633** in the Contribution of WG I to the Fifth Assessment Report of the IPCC, 2013
 - https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter07_FINAL-1.pdf
- **SLIDE 7, in chapter 7, pages 627-631; 633-635** in the Contribution of WG I to the Fifth Assessment Report of the IPCC, 2013
 - https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter07_FINAL-1.pdf
- **Slide 8, Glossary** in IPCC Special Report on Global Warming of 1.5°C
 - https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_AnnexI_Glossary.pdf