

The governance of large-scale carbon dioxide removal

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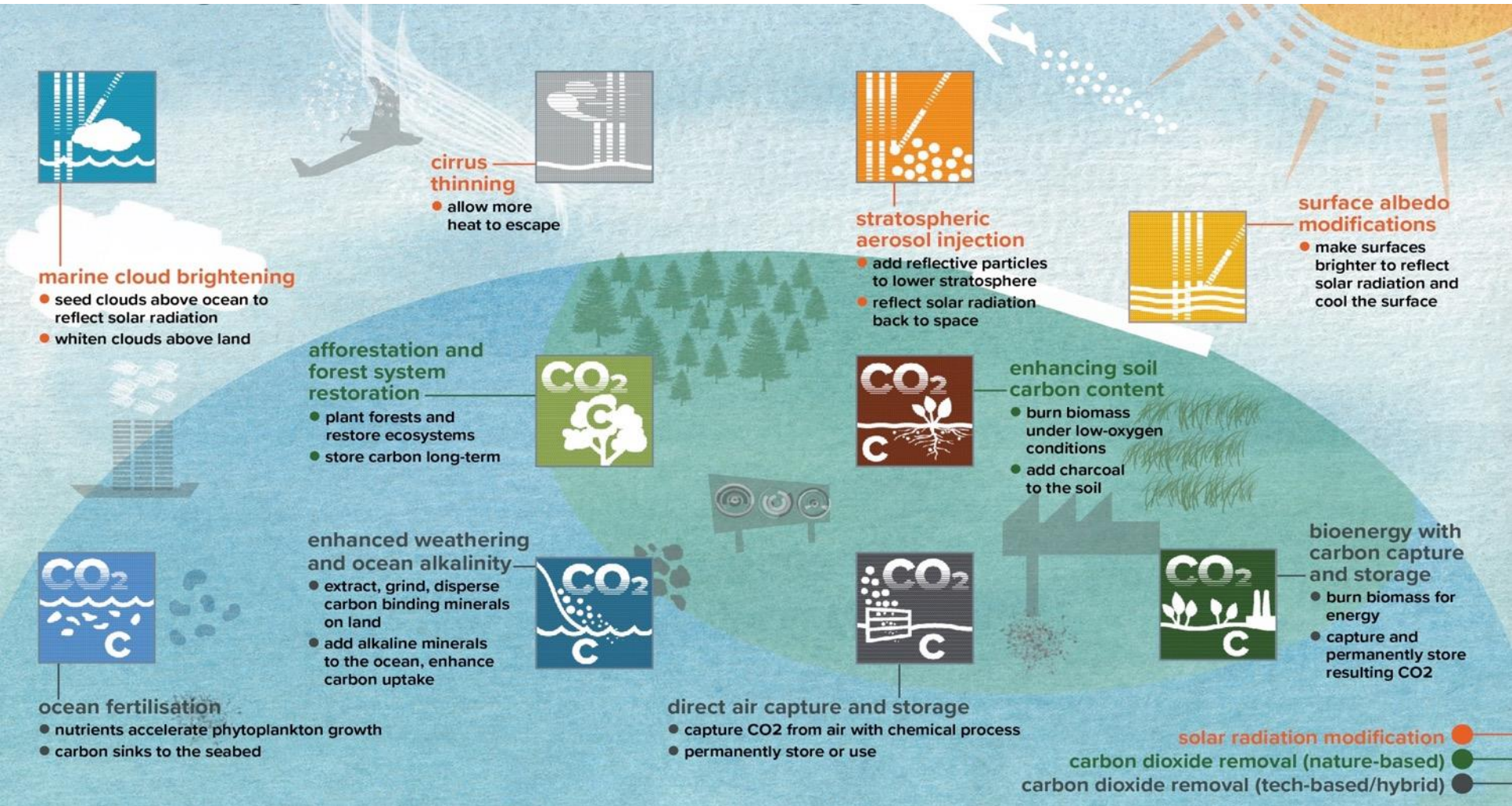
C2G - who are we?

- **About:** small global/virtual team, philanthropy funded, timelimit
- **Mission:** governance for climate altering technologies (CDR/SRM)
- **Strategy:** enable the international community to consider conclusions of science (e.g., IPCC) on CDR/SRM at key intergovernmental and civil society processes
- **Approach:** impartial, catalytic and inclusive
- **Timeline:** 2017 – 2022/23

The challenge...

- **IPCC SR15:** All <1.5C pathways require large-scale CDR
- **Emissions of countries:** UNEP emissions gap is large and growing
- **Lack of leadership:** leaders are not talking about the challenge
- **UNSG Summit:**
 - 77 countries net zero by 2050
 - Implications on CDR (NBS etc)

What are climate altering technologies?



Governing large-scale CDR: are we ready?

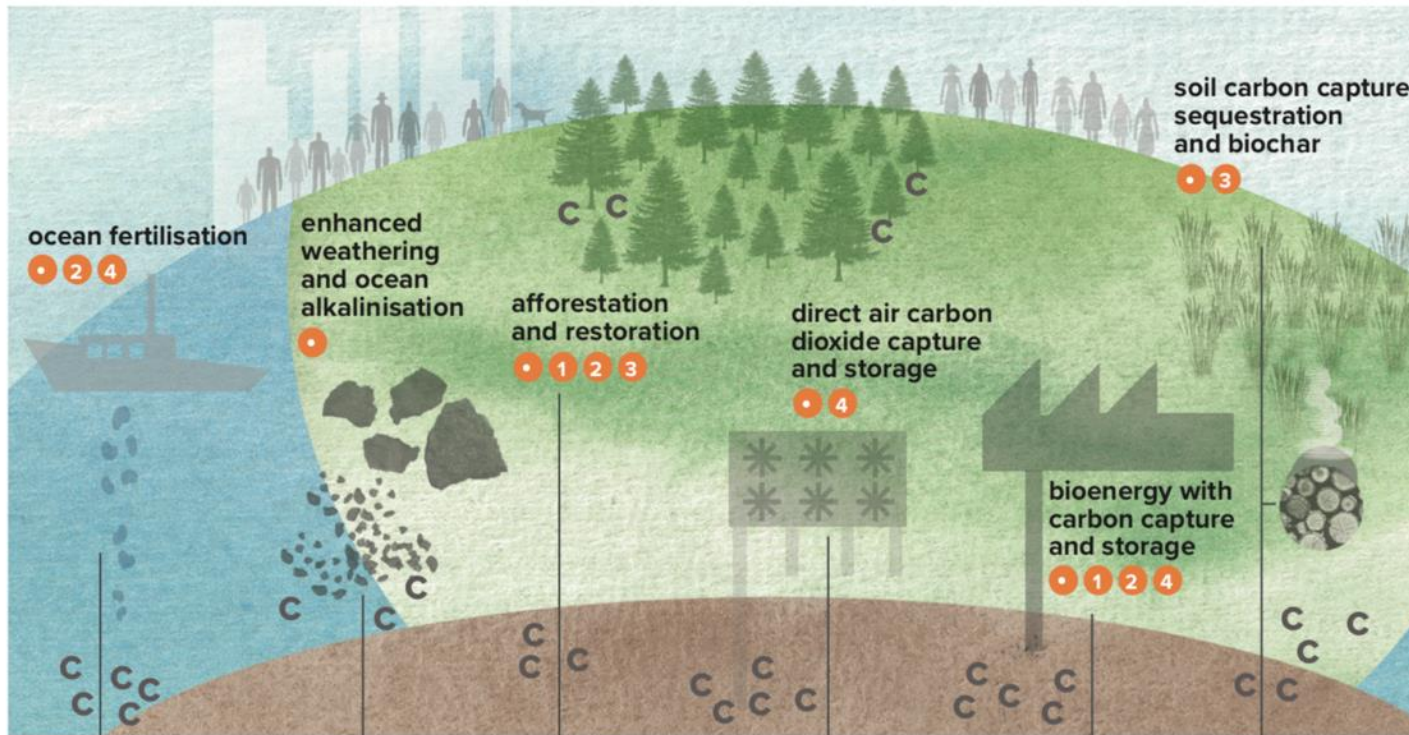
- Commissioned Climate Analytics to produce paper to start discussion on three key issues:
 - How much CDR is needed to avoid or limit any overshoot of the 1.5C?
 - Are governance mechanisms in place that can begin to address CDR at the necessary scale?
 - What governance gaps remain?
- Published December 2018



Governing large-scale CDR: are we ready?

- Key questions:
 - Are we prepared for implementation of large-scale CDR?
 - Can the challenges, risks and trade-offs be managed?
 - What governance is needed for upscaling of CDR?
 - Are current governance provisions enough?

Governing large-scale CDR: are we ready?



Shared Governance Challenges include:

- 1 Measurement and reporting;
- 2 Speed/scale issues;
- 3 Potential public concerns, including transparency of information, accountability, involvement in decisions;
- 4 Liability and compensation.

Specific Governance Challenges include:

- 1 Managing the competition for land use and related impacts on the SDGs at domestic and transboundary levels;
- 2 Managing risks and potential implications for biodiversity;
- 3 Addressing permanence of CO₂ isolated from atmosphere;
- 4 High costs — land use, capital, deployment, energy — mean policy signals, e.g., price on carbon or other regulation, are needed.



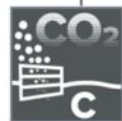
Fertilising ocean ecosystems to accelerate phytoplankton growth, which partly sinks to transport carbon from atmosphere to seabed



Enhancing natural weathering of rocks by extracting, grinding, and dispersing carbon-binding minerals on land, or adding alkaline minerals to the ocean to increase carbon uptake



Planting forests and restoring ecosystems, for long-term carbon storage in above- and below-ground biomass



Using chemical process to capture CO₂ directly from ambient air; using or permanently storing the CO₂



Burning biomass for energy generation; capturing and permanently storing the resulting CO₂



Burning biomass under low-oxygen conditions, yielding charcoal "biochar" to add to soil and enhance soil carbon levels

Save

Ten governance challenges for the implementation of large-scale CDR

1. Rapid pace of CDR scale-up required to limit warming $<1.5^{\circ}\text{C}$
2. Responsibility and ethics of implementation
3. Incentives for CDR deployment
4. Access to information needed to monitor progress
5. Safeguards for sustainable development
6. Challenges for measuring, reporting and verifying CDR
7. Issues of storage: permanence, leakage and saturation
8. Planning for and monitoring the effects of deployment
9. Liability and redress
10. Public awareness

Governance gaps and challenges: **Priorities**

1. Narrow the mitigation gap to reduce reliance on CDR options
2. Improve inventory data and information management systems
3. Put in place robust accounting rules
4. Incentivise research, investment and implementation
5. Engage research community to scope options and incentives
6. Improve public awareness of options, risks and trade-offs
7. Improve international collaboration and cooperation

Governance gaps and challenges: Roles

1. Narrow the mitigation gap to reduce reliance on CDR options
 - UN Secretary General, UNFCCC Executive Secretary, Parties
2. Improve inventory data and information management systems
 - IPCC, IGOs, NGOs, CSOs,
3. Put in place robust accounting rules
 - Paris Agreement Work Programme, UNFCCC Executive Secretary
4. Create incentives for research, investment and implementation
 - Research community, Parties

Governance gaps and challenges: Roles

5. Engage research community to scope options and incentives
 - Research community, IEA, IRENA, IIASA
6. Improve public awareness of options, risks and trade-offs
 - IGOs, NGOs, CSOs,
7. Improve international collaboration and cooperation
 - Paris Agreement Work Programme, ICAO and IMO, IPCC, Climate Action Tracker, UNEP

Conclusions

- CDR presents the global community with a dilemma
- The next decade is critical
- More work needed to develop CDR approaches that maximize synergies and minimize trade-offs with SDGs
- Many gaps exist in the governance systems that are needed to manage CDR at scale

Arigatōgozaimashita - Thank you!

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