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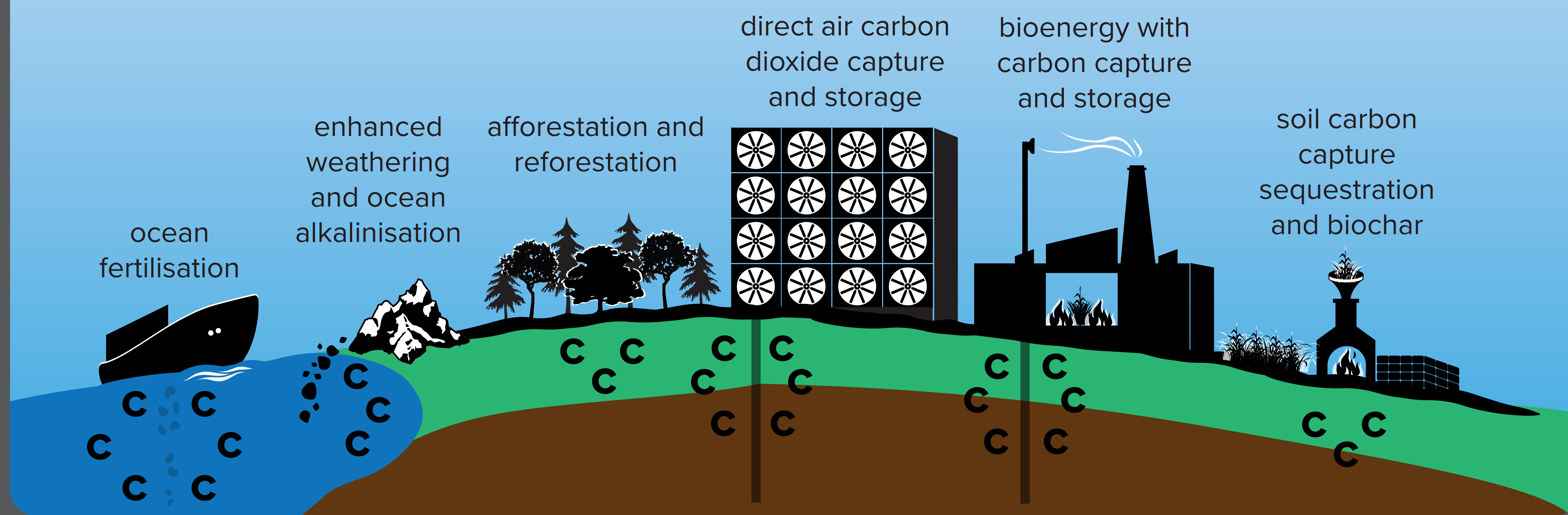
Are we ready for large-scale Carbon Dioxide Removal?

Addressing knowledge and research gaps around CDR

According to the IPCC, all pathways keeping global warming under 1.5C project **the need for both Emissions Reductions AND Carbon Dioxide Removal (CDR).**

There are various approaches to CDR that might be possible to scale-up, but they vary widely in terms of maturity, potentials, costs, risks, co-benefits and trade-offs.

The IPCC also says that all pathways keeping global average temperature rise below 1.5°C with limited or no overshoot indicate the need for CDR to remove and store up to **1,000 billion tonnes of CO₂ from the atmosphere over the 21st Century.**



Governance is needed to encourage co-benefits and reduce trade-offs with the Sustainable Development Goals

Click on the links for selected views on benefits and trade-offs

 Afforestation and forest ecosystem restoration Read a blog on safeguarding biodiversity	 Bio-energy with carbon capture and storage Read a blog on policy challenges of land-based CDR	 Direct air capture and storage Watch a video on the need for sustainable CDR	 Enhancing soil carbon content Read a blog on food security and climate action	 Enhanced weathering and ocean alkalinity Watch a video on governing CDR in the oceans	 Ocean fertilisation Watch a video on governing CDR in the oceans

What governance gaps and challenges exist for Carbon Dioxide Removal at scale?

 Rapid pace of CDR scale-up required to limit warming to 1.5°C	 Responsibility and ethics of implementation	 Incentives for CDR deployment	 Access to information needed to monitor progress	 Safeguards for sustainable development
 Challenges for measuring, reporting and verifying CO₂ removals	 Issues of storage: permanence, leakage and saturation	 Planning for and monitoring the biophysical effects of deployment	 Liability and redress	 Public awareness

Key actors need to be involved to address knowledge and governance gaps.

 Governments at all levels	 Intergovernmental Organisations	 Researchers	 Financial Institutions
<ul style="list-style-type: none"> How can governments use research to address these gaps? How can national-level research feed into international governance discussions? 	<ul style="list-style-type: none"> Should IGOs help governments fund, share and use research to address these gaps? What roles might IGOs play in codesigning and coproducing research on CDR challenges? 	<ul style="list-style-type: none"> What studies need to be undertaken to fill these gaps? Does the research community have the capacity to respond to CDR research challenges? 	<ul style="list-style-type: none"> How can funders co-ordinate to maximize impacts? What research, innovation and capacity building needs to be funded to address these gaps?
 Civil Society	 Knowledge Brokers and Intermediaries	 Private Sector	
<ul style="list-style-type: none"> What opportunities might there be for civil society to help shape CDR governance? What roles might civil society play in promoting inclusivity, transparency and accountability? 	<ul style="list-style-type: none"> What knowledge currently exists and how can this be shared? How can the global community ensure inclusive exchange among parties? 	<ul style="list-style-type: none"> How can the private sector help fund, share and use research to address gaps? What responsibilities, if any, does the private sector have to both fund, but also undertake CDR research? 	