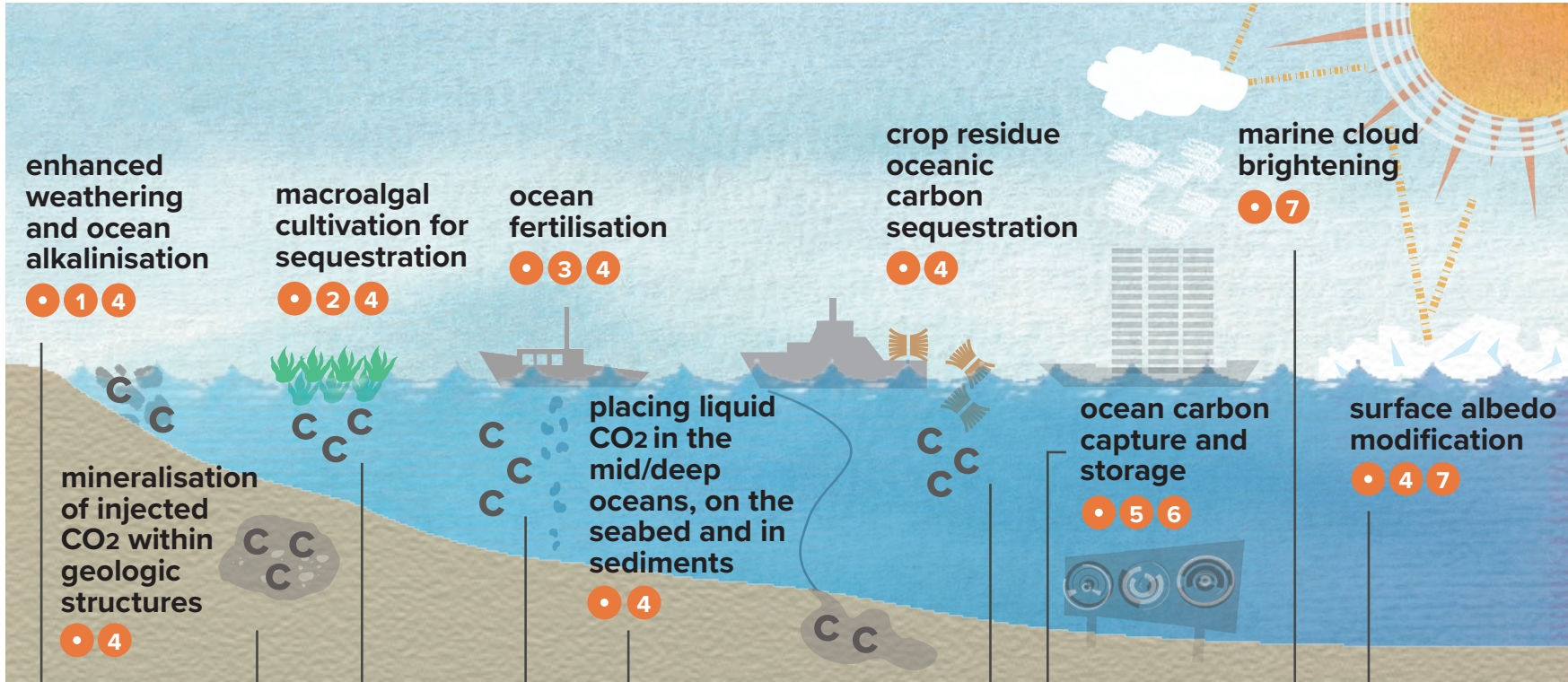


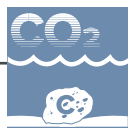
# Governing Emerging Marine Climate Techniques



Adding alkalinity to increase CO<sub>2</sub> uptake, and reduce acidification



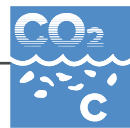
Large-scale farming of macroalgae in near and/or offshore waters, to capture carbon through photosynthesis



Injecting CO<sub>2</sub> into appropriate host rocks beneath the seabed to react with the minerals there to form stable minerals/rock



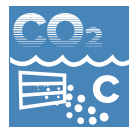
Injecting liquid CO<sub>2</sub> at depth, placing it on the seabed, or sequestering it in sediments



Introducing nutrients (e.g., iron, nitrogen, phosphorus) to surface waters to promote CO<sub>2</sub> uptake through photosynthesis



Storing carbon by dumping crop residue and other organic material in the deep ocean



Removing dissolved inorganic carbon from the water to be taken to long term storage sites



Seeding and whitening clouds above ocean surfaces, most likely using sea salt spray, to reflect solar radiation back into space.



Making surfaces brighter to reflect solar radiation. Potential techniques include reflective floating silica spheres; micro bubbles; reflective foam; creating Arctic sea ice; and creating bright calcifying phytoplankton blooms.

## Common Governance Challenges include:

- Responsibility for implementation, financing and compensation
- Public interests including concern and informed consent
- Commercialisation and patenting issues
- Monitoring and addressing climate impacts
- Aligning governance frameworks
- Impact on Sustainable Development Goals

## Specific Governance Challenges include:

- 1 Material production is likely to have a very large carbon/energy footprint
- 2 Effects on coastal communities and fisheries
- 3 Global constraints to phosphorus supply
- 4 Uncertainty about environmental impacts
- 5 Scaling up from laboratory to oceans
- 6 Resolving sequestration of captured carbon
- 7 Regional variation in impacts

**C2G**

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