Key CDR approaches and their implications for delivering the SDGs

C2G Webinar: Carbon Dioxide Removal and the Sustainable Development Goals

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perspectives climate research

Content

- How CDR differs from emissions reductions
- Key CDR approaches
- The Sustainable Development Goals
- How CDR might intertwine with pursuit of the SDGs

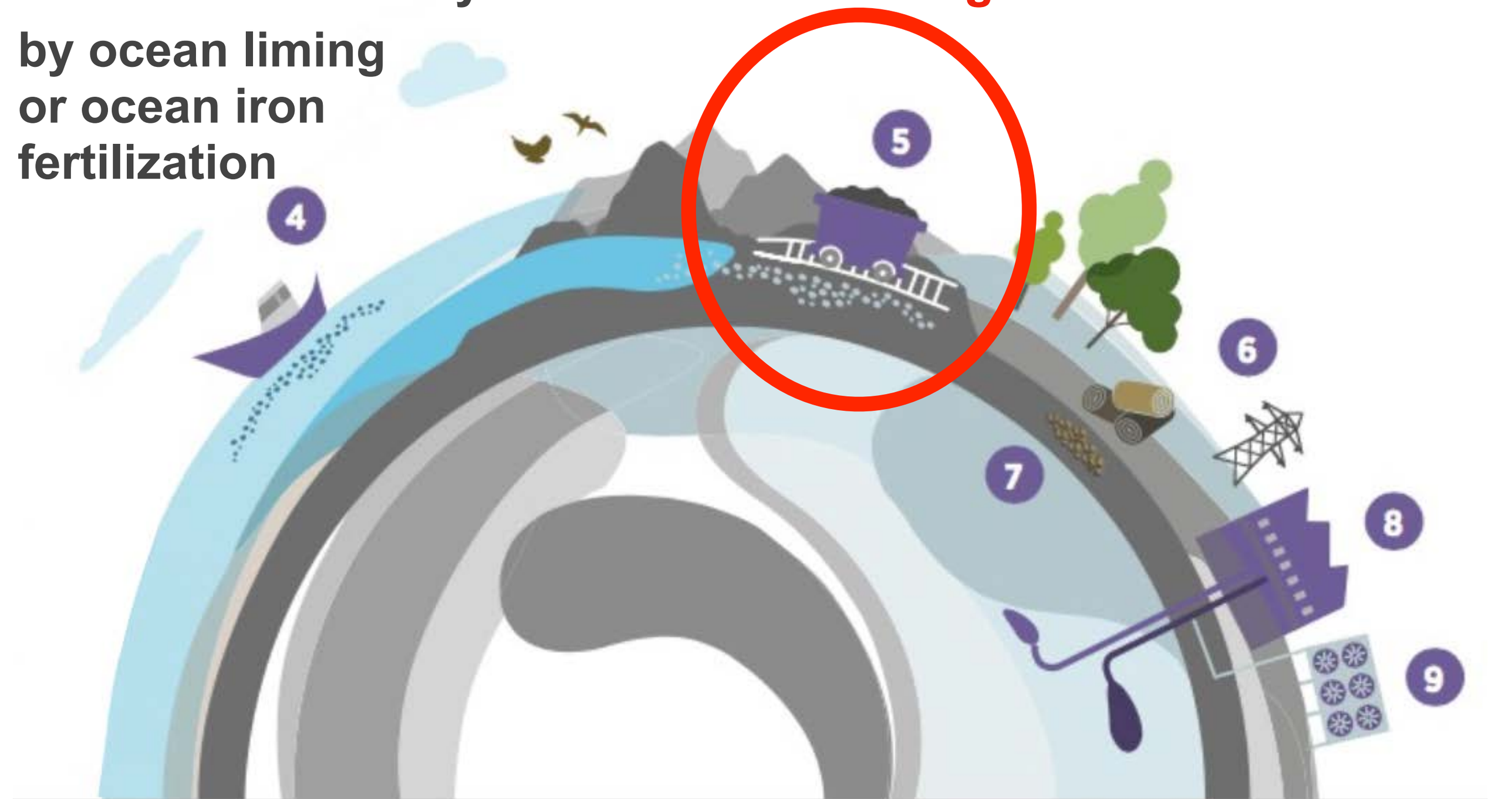
Removing Carbon

by ocean liming or ocean iron fertilization

Removing Carbon

by **enhanced weathering**

by ocean liming or ocean iron fertilization



Removing Carbon

by bioenergy with CCS

by ocean liming
or ocean iron
fertilization

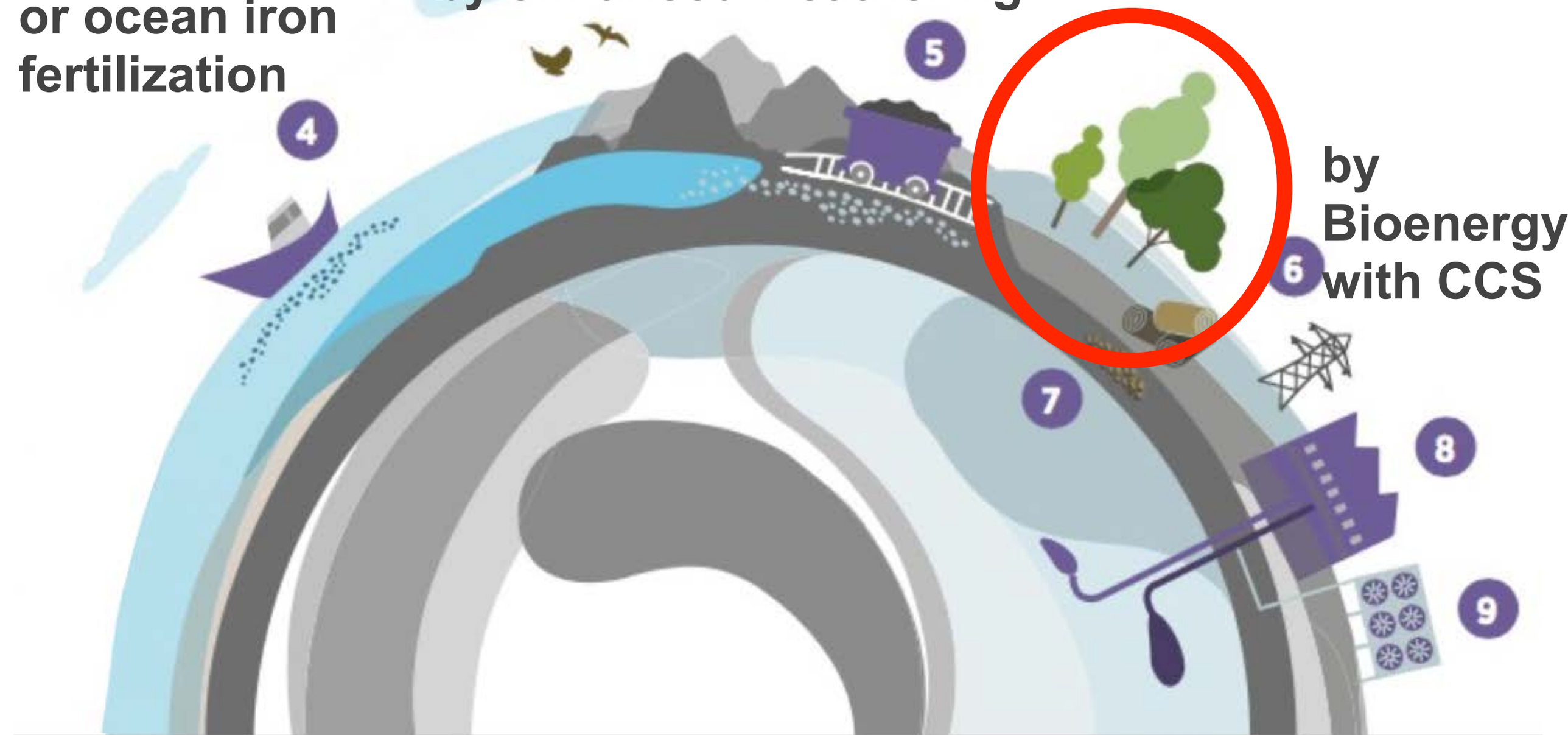
by enhanced weathering

Removing Carbon

by **afforestation**

by ocean liming
or ocean iron
fertilization

by enhanced weathering



by
Bioenergy
with CCS

Removing Carbon

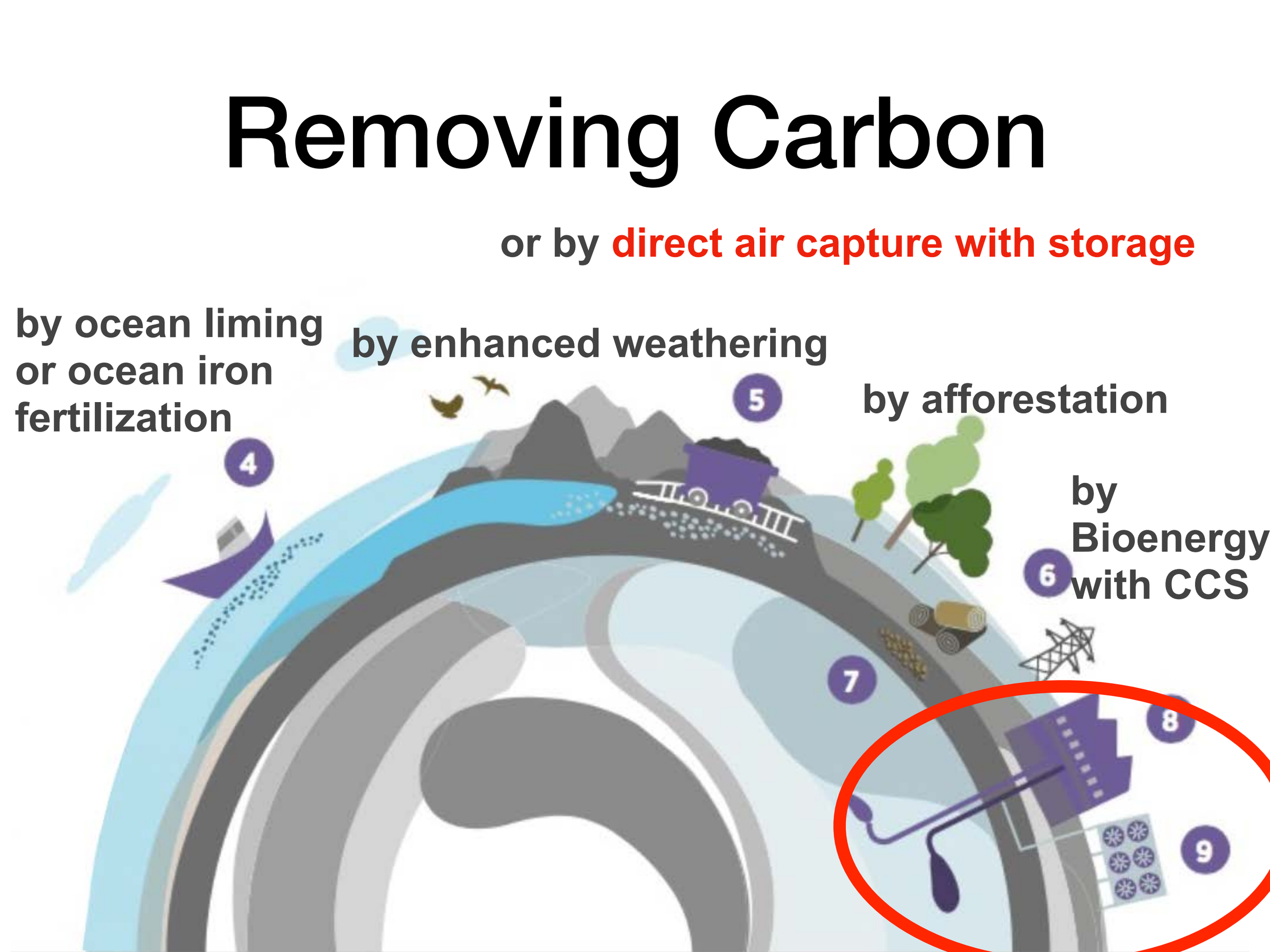
or by direct air capture with storage

by ocean liming or ocean iron fertilization

by enhanced weathering

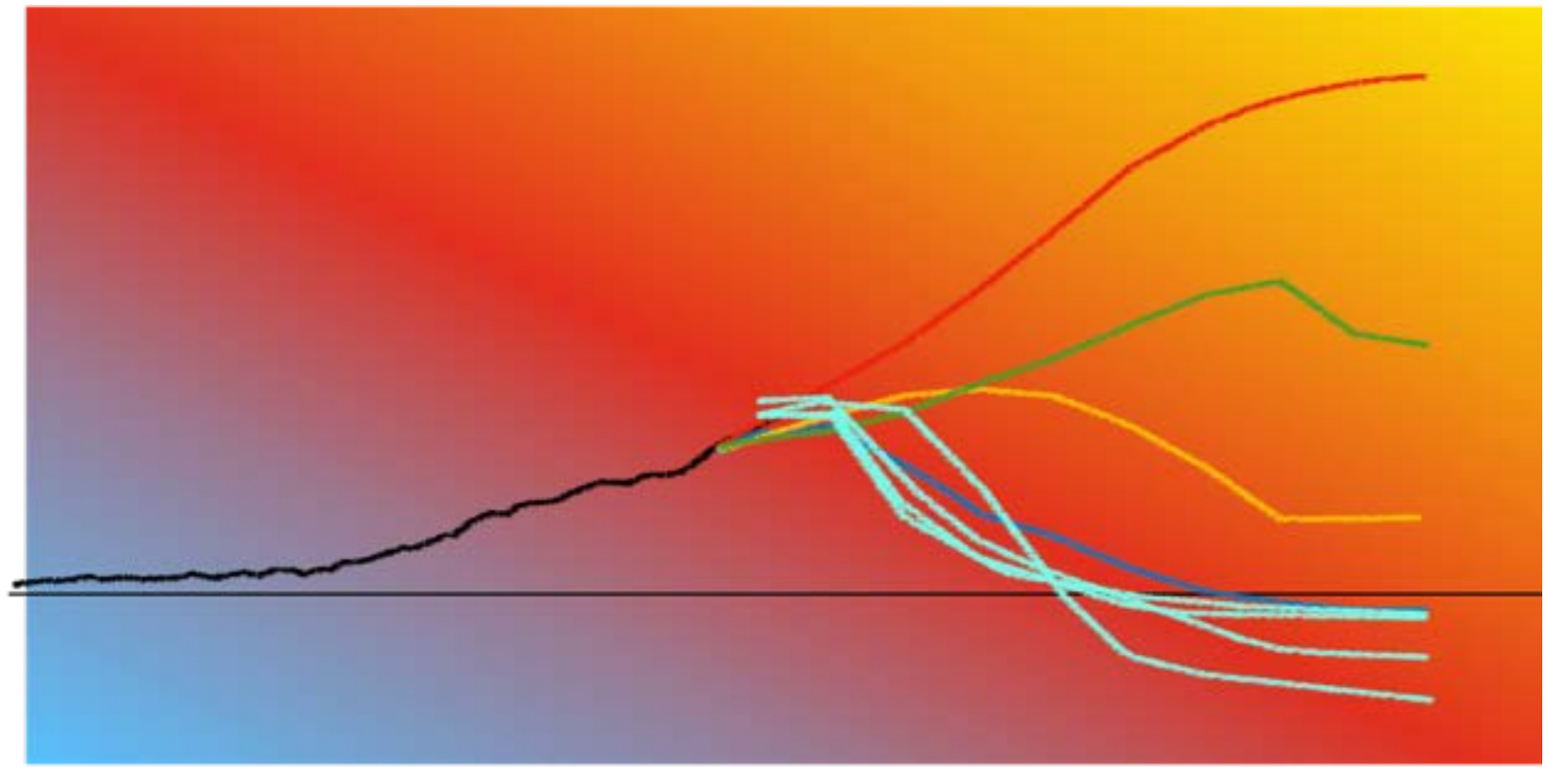
by afforestation

by Bioenergy with CCS



What is CDR to achieve?

- Climate change mitigation:
  - rapid and deep reductions in GHG emissions
  - removal of CO_2 already in the atmosphere



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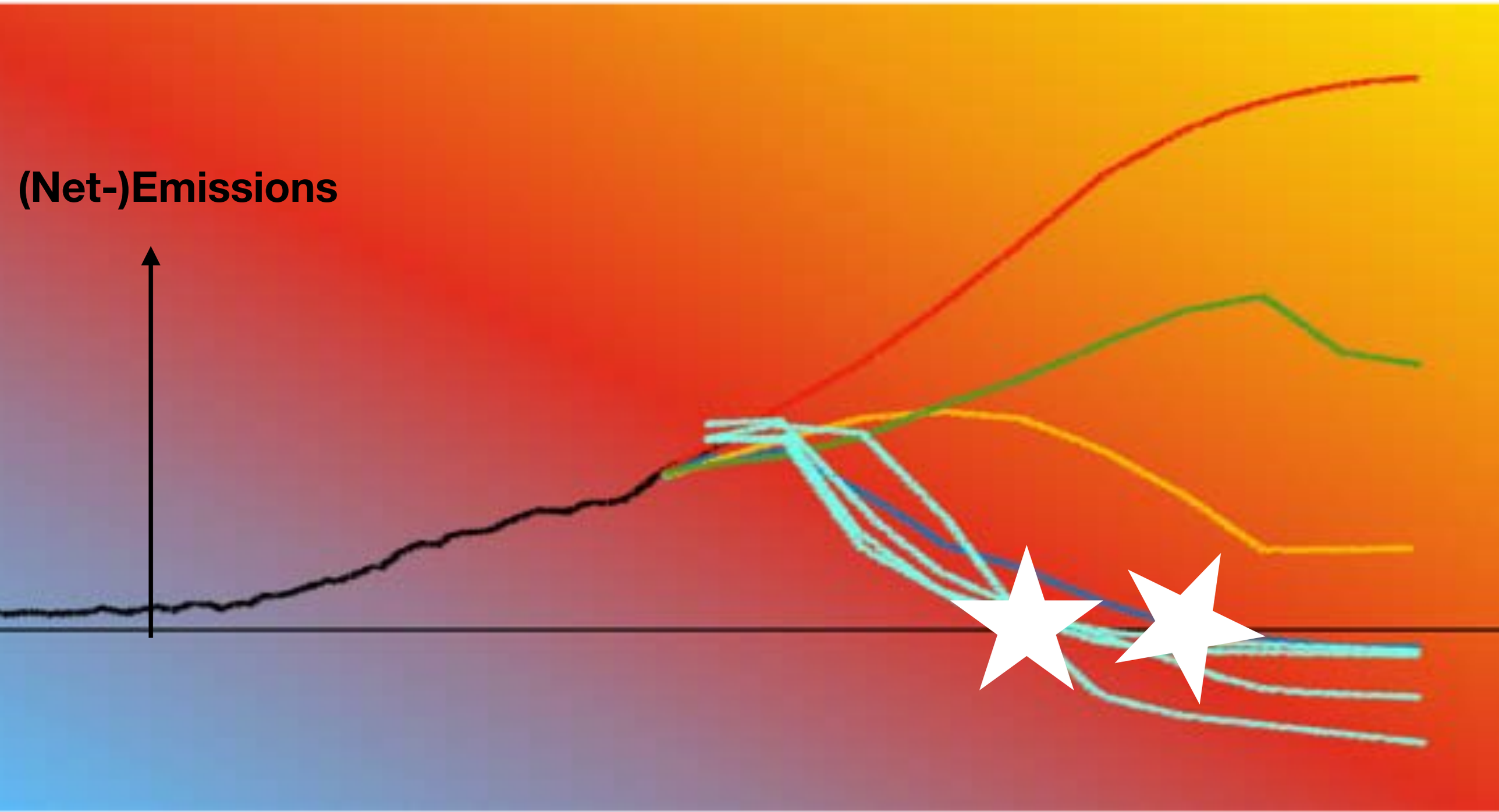
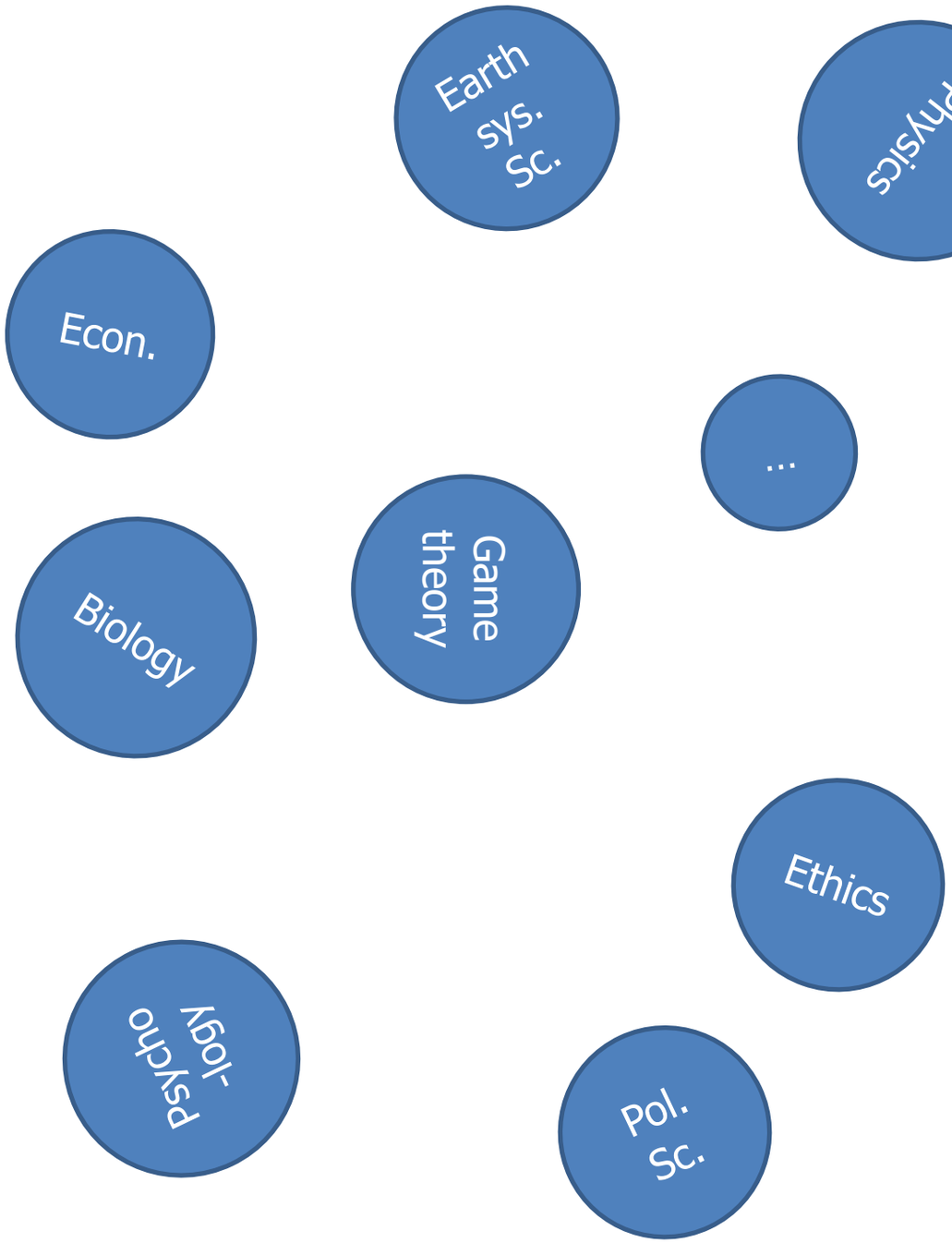


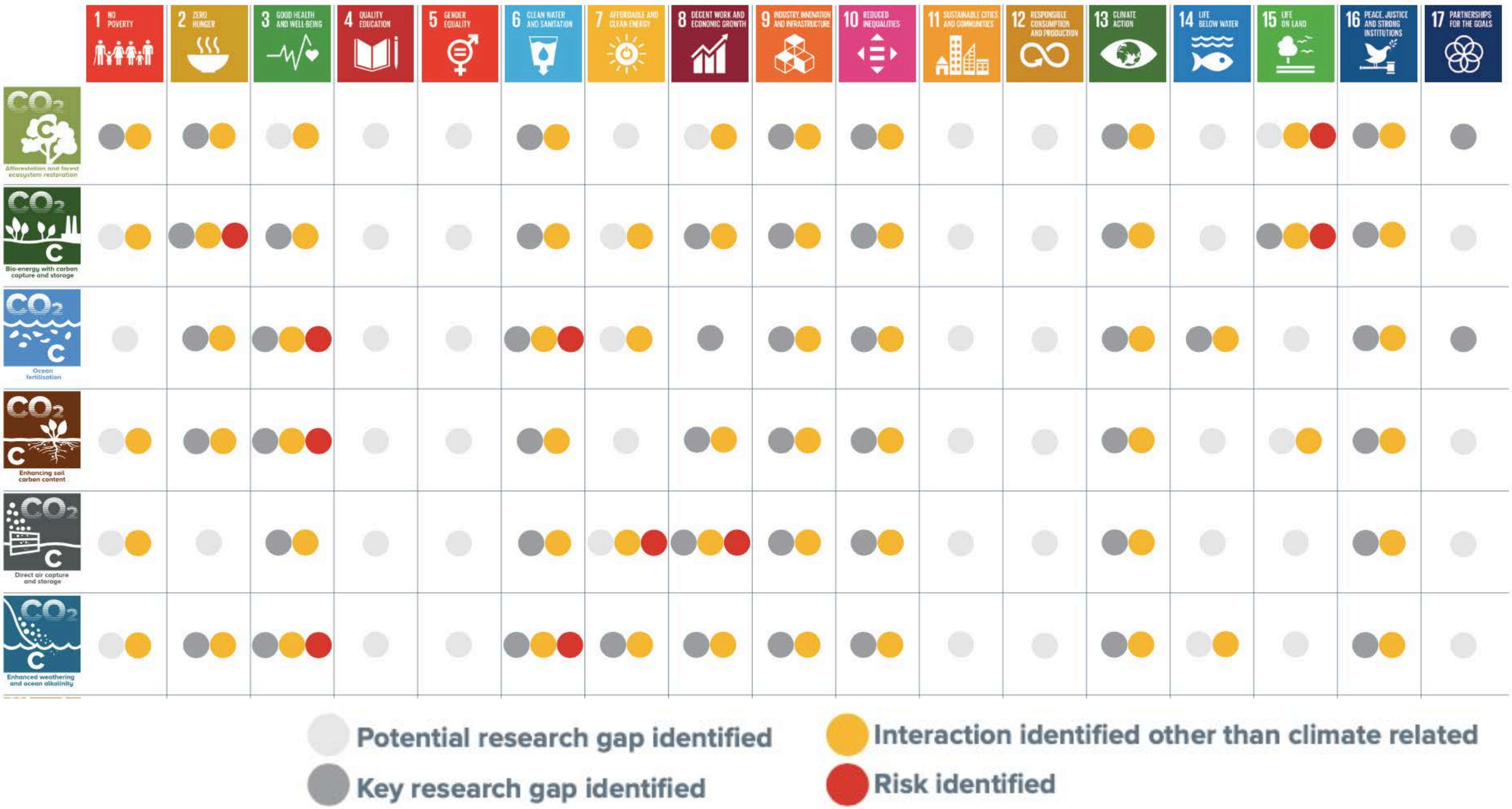
Scattered scientific evidence



Multiple societal objectives

Identifying implications

Knowledge, gaps, risks and +/- interactions



SDG-1: End poverty in all its forms everywhere

- Land-based CDR could lead to conflicting **demands for land and water**, disproportionately affecting poorer communities (esp. those lacking formal ownership titles).
- CDR might enable **smallholder farmers to profit** from enhanced yields as well as potential financial revenues **or put them in unfair competition** with larger corporations depending on policy design.
- Significant public spending required to operate large-scale CDR could displace **funding for poverty-alleviation**; excluding CDR would result in even larger emissions reductions (funding) requirements.

SDG-2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

- Ocean fertilisation could alter **food-chain interactions** and variously affect **fisheries**.
- Resource conflicts could be problematic for **food production** and regional food **prices**; outcomes strongly depend on policy design and access to markets.
- Some CDR practices might increase **agricultural yields**. Limited quantities of BECCS and biochar can be sourced from **waste-biomass** limiting impact on food production.
- Sustainable amounts of different CDR need to be identified via **bottom-up research** taking socio-economic and cultural conditions into account and by exploring locally appropriate policy designs.

SDG-17: Strengthen the means of implementation and revitalize the global partnership for Sustainable Development

- CDRs are included in mitigation models as they **reduce the overall cost of mitigation**, thus freeing up resources for delivery of other SDGs. However, much higher levels of overall mitigation ambition are needed for this effect to become relevant.
- **Integrative policy impact assessments** needed to implement CDR at national levels (in NDCs) might result in renewed **efforts toward international support for mitigation** overall.

Some relevant publications

- Report on the SDG implications of CDR and SRM: https://www.c2g2.net/geoeng-sdgs/

- Forthcoming publication on SDG implications of CDR policies (get in touch with me)

- IASS Fact Sheet on CDR: https://ce-conference.org/system/files/documents/online_iass_factsheet_01_2017_en_171002.pdf

- IRGC Report: International governance issues on climate engineering: https://infoscience.epfl.ch/record/277726/files/IRGC(2020)_International%20governance%20issues%20on%20climate%20engineering%20Information%20for%20policymakers.pdf

- Net-Zero Emissions - the role of Carbon Dioxide Removal in the Paris Agreement: https://www.perspectives.cc/fileadmin/Publications/Situating_NETs_under_the_PA.pdf

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