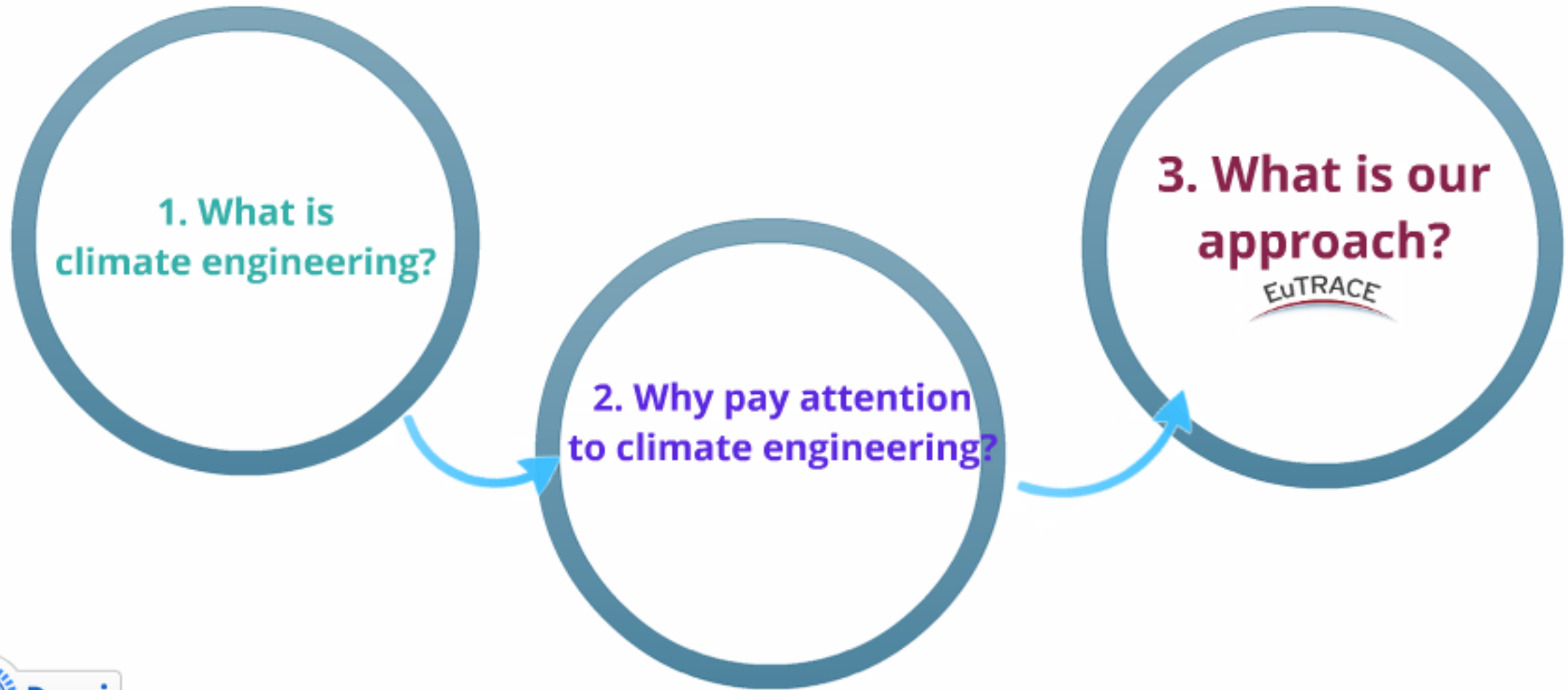




**European Trans-disciplinary Assessment  
of **Climate Engineering****

# Outline of our presentation



# 1. What is climate engineering?



A **proposed response** to climate change...

- Group of ideas 
- Large-scale interventions 
- Deliberately alter the climate system
  - Alleviate the impacts of climate change



# Responses to climate change

## Mitigation

Reduction of greenhouse gas emissions and enhancement of sinks

## Adaptation

Measures to reduce vulnerability of natural and human systems against climate change effects

## Climate engineering...?

A proposed response to climate change

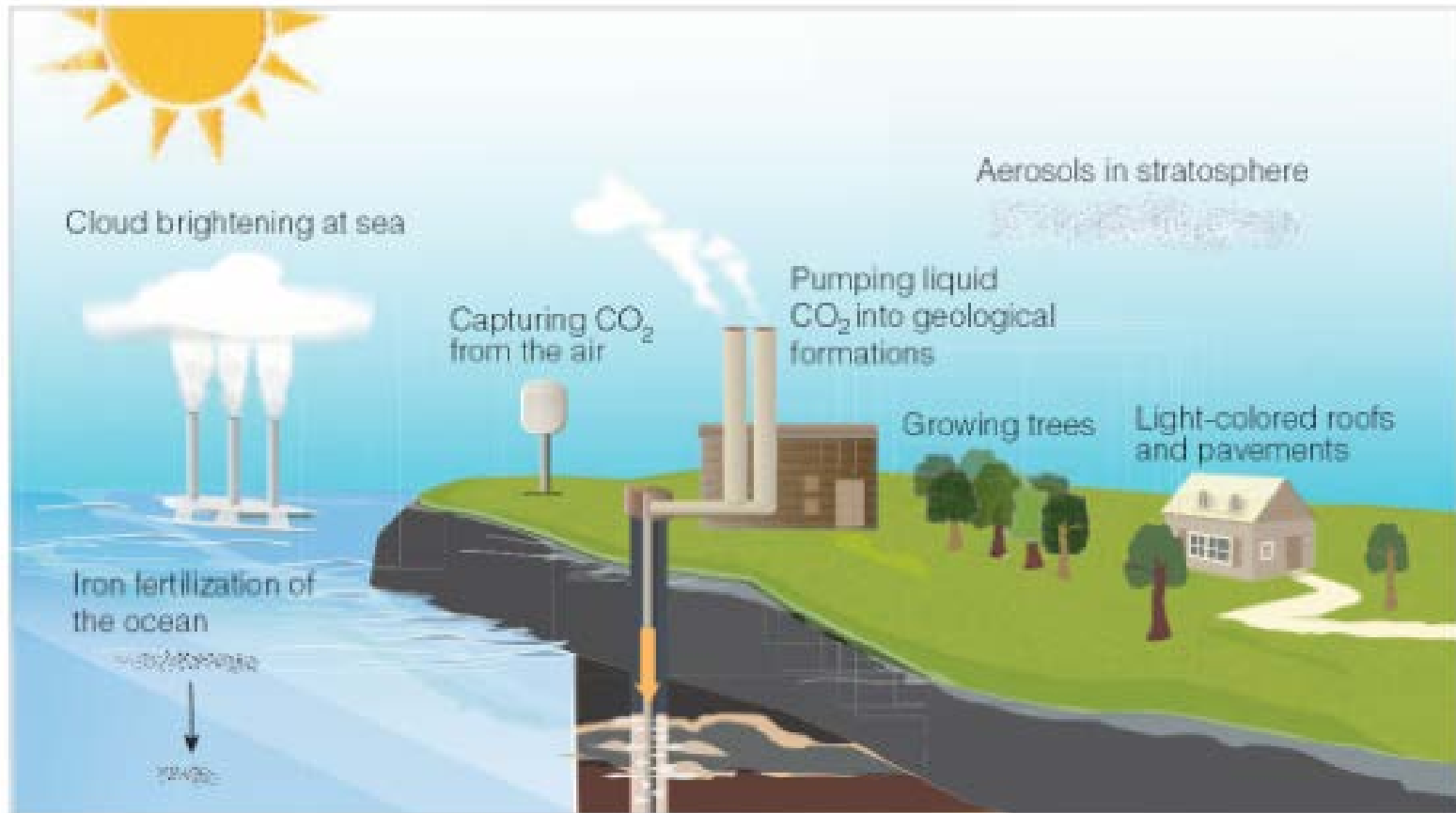
What is climate engineering?

Why pay attention to climate engineering?

What is the EuTRACE approach?

# What is climate engineering?

Ideas to intervene in the climate system to alleviate the effects of climate change include...



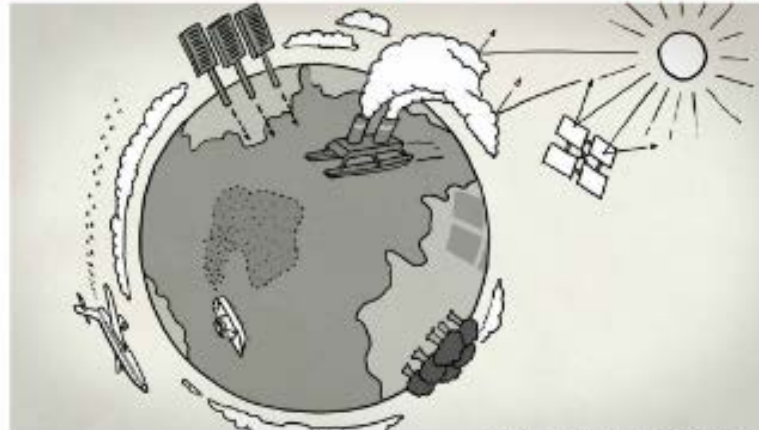
Source: U.S. Government Accountability Office (GAO) 2011; Climate Engineering: Technical Status, Future Directions, and Potential Responses.

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# Types of climate engineering techniques



Source: Climate Media Factory (CMF)

## --> Carbon Dioxide Removal techniques

Some ideas aim to remove greenhouse gases from the atmosphere, thus addressing the root cause of climate change.

## --> Solar Radiation Management techniques

Other ideas aim to alleviate the effects of climate change by reflecting some of the sun's light back to space.

What is climate engineering?

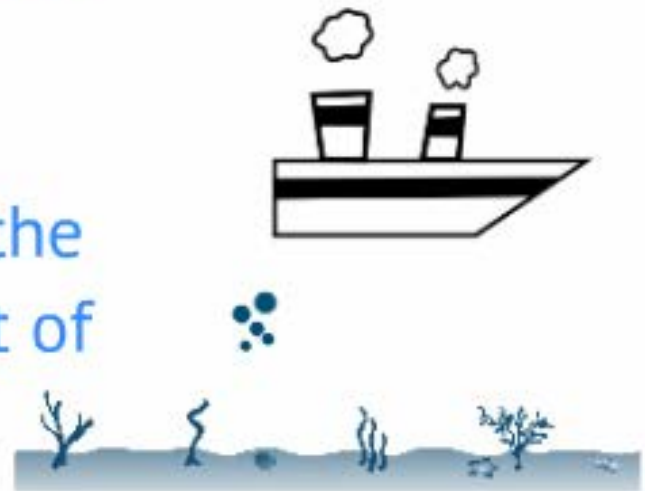
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# Carbon dioxide removal

One specific example of CDR ideas

Fertilising the ocean with micronutrients such as iron has the potential to increase the amount of carbon uptake in the ocean.



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# Solar radiation management

One specific example of SRM ideas

Mimicking the effects of volcanic eruptions by injecting sulphate aerosols into the lower stratosphere to reflect back sunlight.



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## 2. Why pay attention to climate engineering?

- Difficulties of reducing global GHG emissions have led to serious discussion of CE
- Viability, reliability, safety and public acceptability are **unknown**
- Controversial topic with many **uncertainties** and **potential negative impacts**

## Democratic use of science

- Who controls the climate and who will have a say?
- Possibility of unilateral implementation (a country, or even an individual private actor)

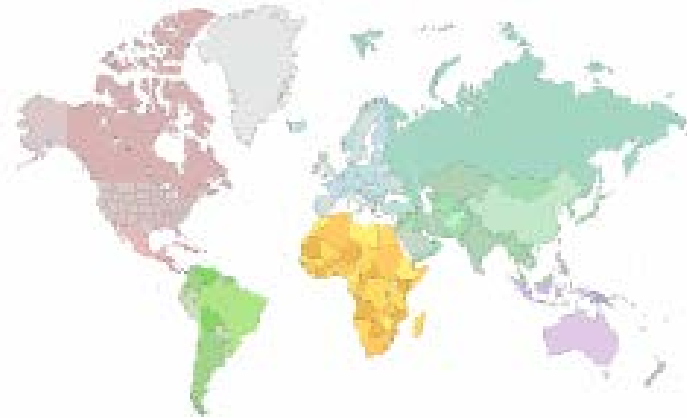


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# Scale and distribution of impacts



- Large scale interventions can have regional or global effects
- Potential impact on global commons
- Possibly unequal distribution of positive and negative effects

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# Reversibility

- Unintended consequences on the environment are unknown and could be greater than anticipated
- Once deployment of some of the methods takes place (e.g. sulphate aerosols or ocean fertilisation) there may be a **time lag after abandonment for the effects to cease**

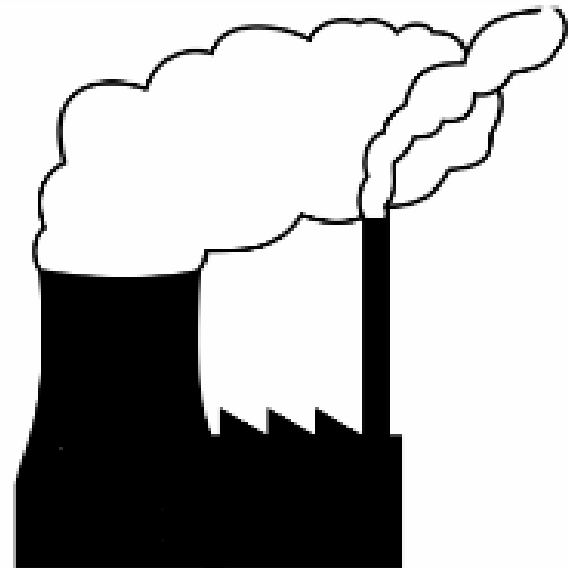
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## Moral hazard

- The idea that research on CE methods could create a false sense of security
- Thus making the reduction of emissions seem less urgent and derailing global efforts to reduce them.



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### 3. What is our approach

- European
- Trans-disciplinary
- Assessment of climate engineering

**EuTRACE**



## Who are we?

- Team of 14 research partners from 5 European countries
  - Natural sciences
  - Social sciences
  - Humanities
  - Governance
- Project Advisory Board with key stakeholders
- Large network of experts in aspects of CE



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## What are we doing?

- **dialogue** with public, policy-makers to share information about CE and to understand concerns
- develop a next-generation **assessment** of the potentials, uncertainties, risks and implications of CE
- outline **options and pathways** for the EU and its partners in for addressing the challenges of CE
- identify the most important **gaps in our current understanding** of CE



What is climate engineering?




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## How are we doing it?

- **Public engagement** involving multiple actors for an active dialogue
- Online videos and social media for **increased interaction**
- Website with latest events in the CE research community 
- An **interactive argument map** for understanding and structuring the complex discussion around CE 
- A **final assessment report** Executive Summary and Policy Recommendations in **22 European languages**. 
- EuTRACE journal with essays reflecting the state of the art on CE

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find us at <http://www.eutrace.org/>



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