
Experiment
Earth?
Public Dialogue on Geoengineering

Hello and welcome

Today's big question:

Geoengineering: Does it have a part to play in tackling climate change?

Risks and benefits of:

- **Investing in research into geoengineering**
- **Deploying geoengineering**

Thinking about:

- **Your own views**
- **Others in society (grandchildren, people outside UK)**
- **Plants and animals**
- **The environment overall**

What are we talking about today?

Geoengineering – countering or reversing climate change

Two different types:

1. Ways of taking CO_2 out of the atmosphere once it's there

2. Trying to stop the planet heating up so quickly, by stopping some of the sun's energy hitting us.

What's the problem?

Greenhouse gases warm us up

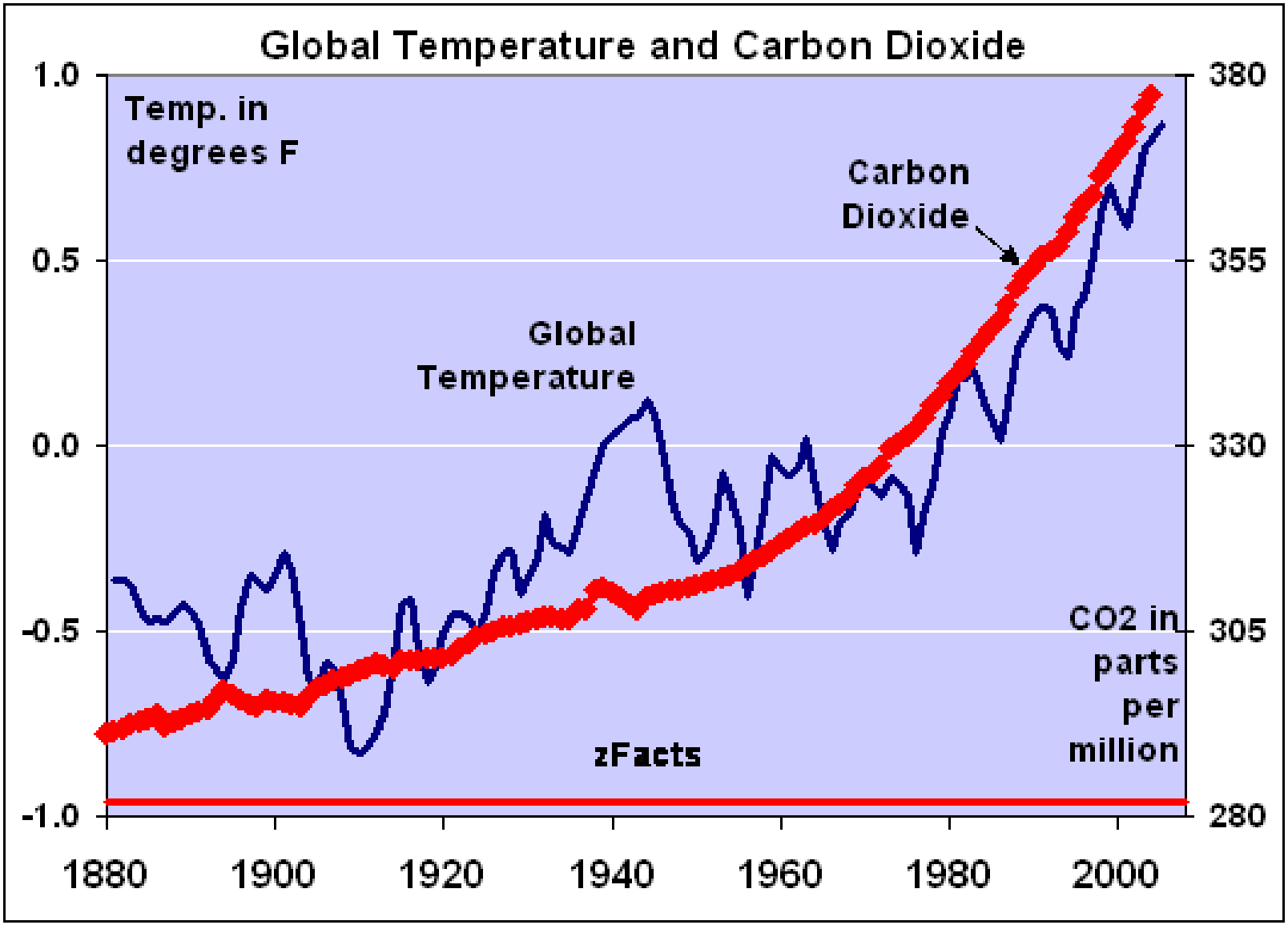
Greenhouse gases such as Carbon dioxide in the Earth's atmosphere absorb heat leaving the Earth's surface.

We need Carbon dioxide…

It occurs naturally in the atmosphere and without it, plants couldn't grow and the Earth would be too cold to live on - without CO_2, we wouldn't be here.

But what if we have too much?

CO_2 causes changes in climate



Source: zfacts.com

Scientists are 90% sure this is due to human activity

A future with too much CO_2...

A future with too much CO_2...

Probably other unexpected effects too

How serious is it?

Scientists are doing research to find out how critical the climate change situation is.

What will the impacts on us be?

How far along the road are we?

What will be the impacts on natural systems?

What is the potential for sudden and/or irreversible change?

?

?

?

?

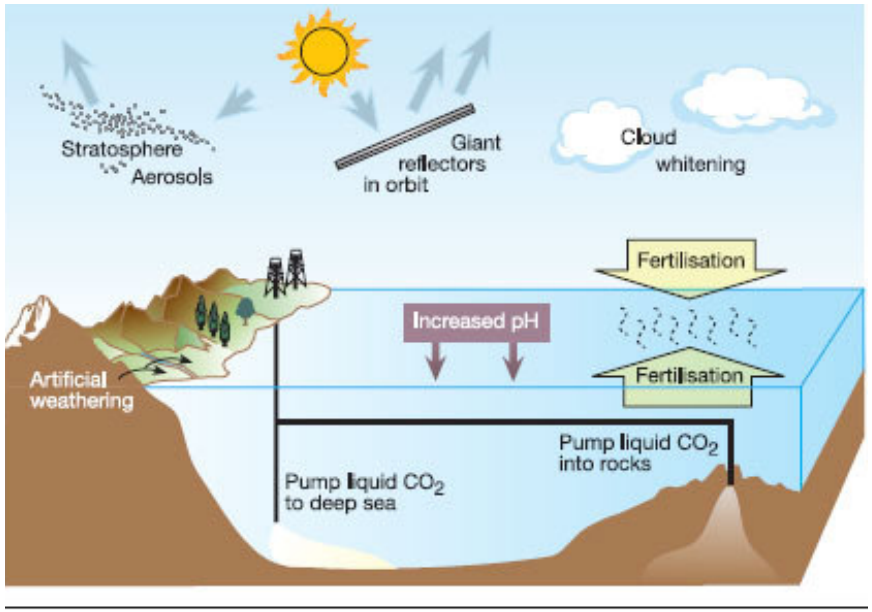
?

But most scientists think that we should try and keep temperatures to a maximum of 2ºC above preindustrial …to avoid some of the biggest changes


Experiment
Earth?
Public Dialogue on Geoengineering

So what can we do?

At the moment, 3 approaches



Geoengineering – countering or reversing climate change

Mitigation: reducing emissions

International agreements

National

Low carbon energy generation – wind, tidal, solar

Emission trading schemes

Taxing carbon and fossil fuels

Waste minimization/landfill regulations

Energy standards for appliances, housing and transport

Carbon Capture and Storage

Individual

Flying and driving less – insulating our homes – turning off appliances- using energy saving light bulbs and appliances – buying local

Reducing emissions is a challenge

It's the preferred option

But we will need to cut back a lot

Is it fair on poorer / more rural nations?

Is it fair on developing economies?

Could make a real difference to our way of life in the UK

Why not just adapt to change?

There is a limit to our ability to adapt

UK and other highly industrialised countries contribute most to emissions, and are best able to adapt.

Poor, less educated, or more isolated communities could find it harder

And adaptation could involve 20-30% of species on Earth going extinct

Alongside these options we have…

Geoengineering – countering or reversing climate change

Two different types:

1. Ways of taking CO_2 out of the atmosphere once it's there

2. Trying to stop the planet heating up so quickly, by stopping some of the sun's energy hitting us.

Why we are here today

NERC is considering how to approach research on geoengineering, and want to understand your viewpoints.

Questions NERC are considering include whether to invest in geoengineering research, and if so…

- Which areas to prioritise?
- On what timescale?
- What factors should we take into account?

NERC is working with the Royal Society, EPSRC and Sciencewise-ERC to carry out this project.

NATURAL ENVIRONMENT RESEARCH COUNCIL

Living With Environmental Change

sciencewise EXPERT RESOURCE CENTRE

How your views make a difference

Your views will:

- help NERC to consider the ethical, moral and societal implications of geoengineering research funding
- inform NERC priorities for 2010-2011, as well as NERC's strategy, which is currently being reviewed

The results will be available to other organisations with an interest in geoengineering. Government departments and agencies are involved in the process - some are also on the Steering Group.

This morning's task

Thinking about two sorts of geoengineering

Ways of taking carbon out of the atmosphere

“Carbon Dioxide Removal” (CDR)

Removes **carbon dioxide** from the atmosphere to address the cause of climate change.

Takes a long time to have a noticeable effect

Helps protect marine life. CO_2 dissolves in the surface waters of the sea, making them more acidic and harmful to sea life and coral reefs – removing CO_2 from the atmosphere reduces acidification

Stopping some of the sun’s energy hitting us

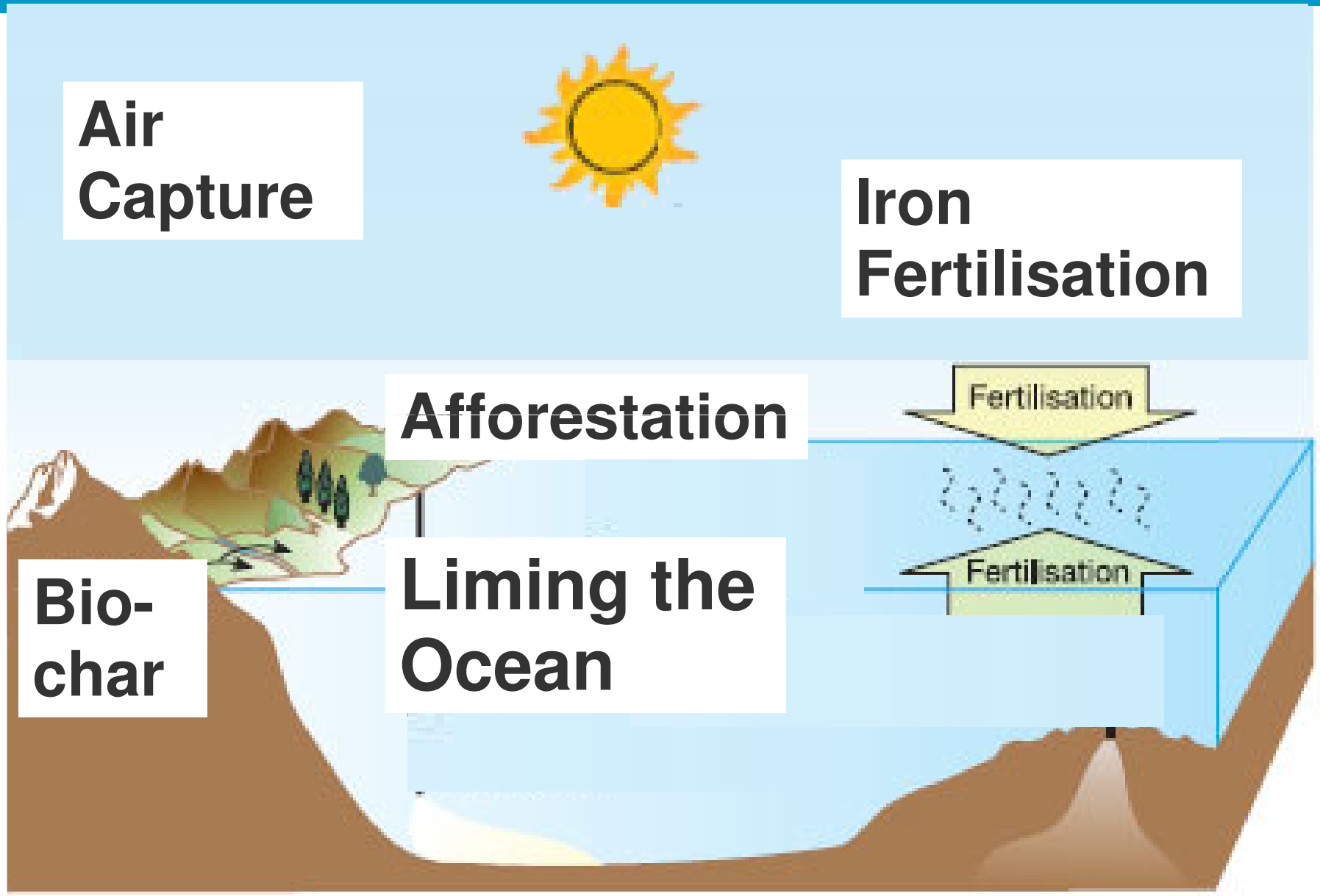
“Solar Radiation Management” (SRM)

Offsets the effects of increasing greenhouse gas concentrations by causing the Earth to absorb less solar radiation.

Can reduce temperatures relatively quickly

Prevents the Earth warming up, however will not help protect ocean life – as CO_2 is still present at high levels in the atmosphere

Carbon Dioxide Removal



Solar Radiation Management