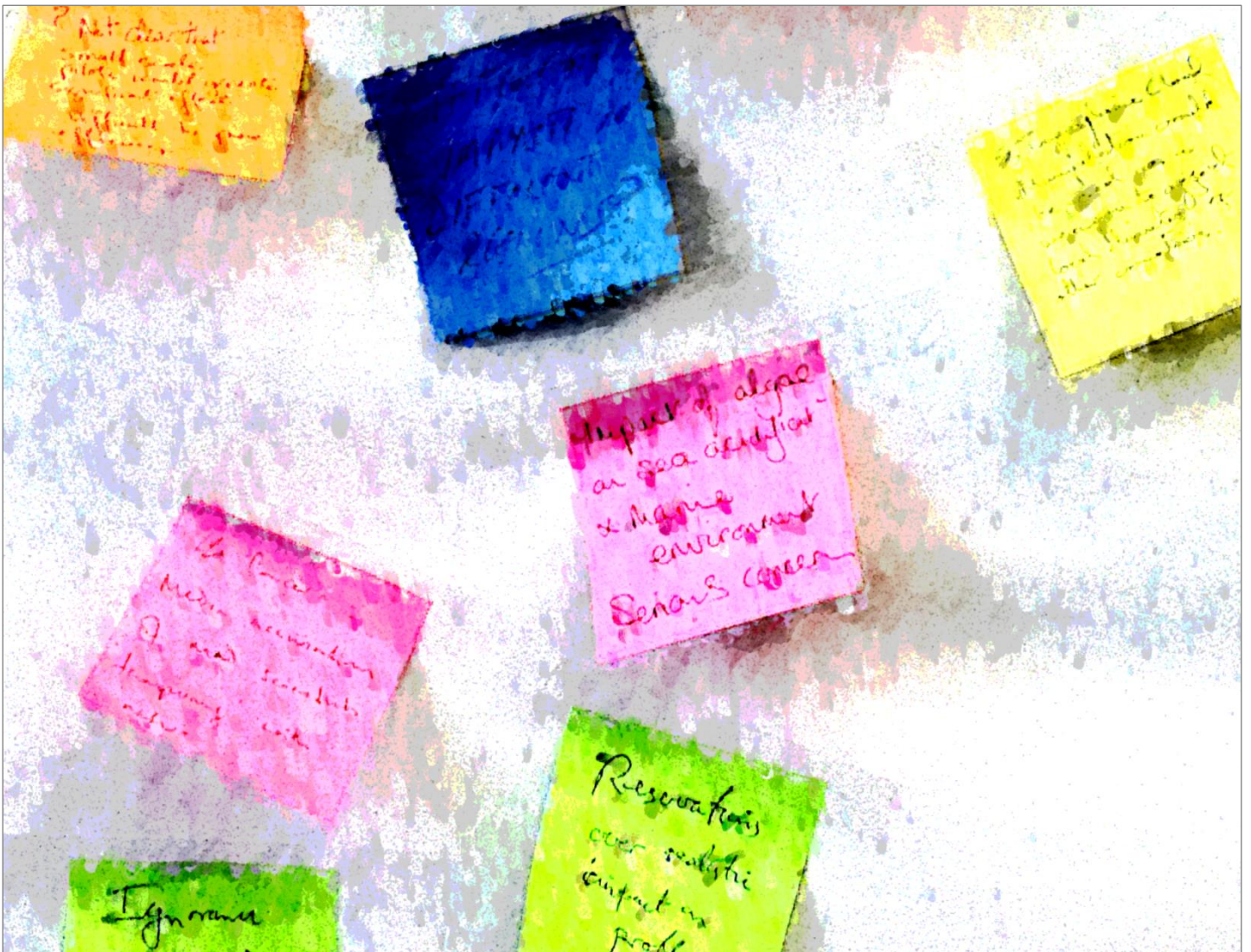


# Views about geoengineering

## Key findings from public discussion groups



The **Integrated Assessment of Geoengineering Proposals (IAGP)** is a four year research project bringing together a broad range of expertise, from climate modelling to philosophy and engineering to public perceptions to conduct an objective, policy-relevant assessment of geoengineering proposals.

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**This short paper is designed to explain the key findings from a series of public discussion groups that were held in early 2012, on the idea of using ‘geoengineering’ as a possible response to climate change.**

## **Climate change**

When we burn coal, oil and gas (known as ‘fossil fuels’) certain gases are released, including carbon dioxide. Levels of carbon dioxide in the atmosphere have increased a great deal since the industrial revolution, when we started to burn fossil fuels on a large scale. Carbon dioxide traps heat, so as the amount of it in our atmosphere increases, more of the sun’s heat is ‘trapped’ rather than being emitted back out into space. Average global temperatures on Earth have increased over the past 150 years, and this has caused polar ice to melt and increased some types of extreme weather. If it continues to get warmer, much more serious impacts can be expected, including major problems with food production, increased flooding from rising sea levels, and prolonged droughts in some areas.

## **How can society respond?**

There are several ways that society can respond. The first is by reducing the amount of carbon dioxide that goes into the atmosphere in the first place. This is called ‘mitigation’, and could involve producing energy from ‘renewable’ sources such as wind or solar power, or using less energy in our homes. However, despite a lot of effort, levels of carbon dioxide in the atmosphere have continued to rise. The second is known as ‘adaptation’, which refers to the idea that we could ‘adapt’ the way we live to accommodate the effects of climate change. This might mean building flood defences, or growing different types of crops that can withstand more heat. But there are likely to be serious limits to how much we can adapt, and it will become harder the more the climate changes. A new approach, that has not been tested and is likely to carry serious risks and side-effects, is called ‘geoengineering’.

## **What is ‘geoengineering’?**

Geoengineering is the term used to describe a whole range of ideas for technologies that could one day be used to try and ‘control’ the Earth’s climate. This could happen either by ‘capturing’ carbon dioxide from the atmosphere and burying it underground or under the ocean, or by reflecting a small amount of sunlight back out into space. The first type – carbon removal technologies – would reduce the amount of carbon dioxide in the atmosphere, in turn reducing the temperature. The second type – solar reflection technologies – would only affect the temperature, not the levels of carbon dioxide in the atmosphere.

Interest in geoengineering is growing because the window of opportunity for trying to prevent the most dangerous effects of climate change is beginning to close. Although many geoengineering technologies may never see the light of day, some are starting to be taken seriously by scientists and politicians.

## **Public discussion groups**

The IAGP project held a series of four discussion groups in early 2012, in Cardiff, Norwich, Birmingham and Glasgow. 11 people took part in each group, which lasted for a whole day. The discussion groups started by exploring people’s views about climate change, then possible responses to climate change including ‘mitigation’, ‘adaptation’ and geoengineering. The afternoon session focused solely on geoengineering. As well as a few different examples of ideas for geoengineering technologies, lots of discussion focused on the potential moral questions that geoengineering raised.

## **The IAGP project (Integrated Assessment of Geoengineering Proposals)**



## Key findings from the public discussion groups

Hardly anyone in the discussion groups thought geoengineering was a full solution to climate change, and few thought it should be prioritised over policies to reduce the amount of carbon we release into the atmosphere in the first place. Some people were very concerned about climate change, and wanted to see a strong societal response from the start. Other people were not as concerned about climate change when they first started the group discussion, but by the time they'd spent the day talking about geoengineering were a lot more worried. No-one saw the benefit of geoengineering without mitigation, if they supported it at all. People also saw a clear difference between carrying out research and actually running trials of geoengineering technologies. People wanted research to be safe, to be done transparently so that people were accountable for what they did, and to be cautious.

*“ I mean, its opened my eyes to how serious... I knew it was serious but the fact that we've gone into this where we're looking at reflecting sunlight and you're thinking 'well, it's a bit closer than I thought really' ”*

*“ There's only any point in doing that if you're trying to cut down at the same time ”*

*“ I'm a bit wary of it, but definitely not 'no thanks' ”*

*“ You can't just do a trial. Well, you can do a very small trial but you can't do a trial like you can say with medicines where you get a group of people and do a trial like that. Its such an immense topic. I mean it frightens me a bit, yeah it does. ”*

The IAGP project is a collaboration between six UK universities, and the aim of IAGP has been to improve our understanding of geoengineering by studying it from a range of different perspectives. For example, some members of the IAGP team have produced computer models that try to predict the effects (and side-effects) of geoengineering. Other IAGP researchers have spoken to policy-makers and representatives of environmental campaign groups who have a particular interest in the subject (called 'stakeholder' engagement). And we have asked members of the public for their views on these controversial new technologies.

People had quite different ways of thinking about geoengineering. Some people saw it as a stopgap, others as a sticking plaster, others as a last chance. No-one really thought it was the best option.

*“ It will give us a bit of time until we do perfect a renewable source of energy, and we do have things under control, that maybe this would be a stopgap ”*

*“ I think using these is just like putting a Band Aid on the problem...we need to tackle the problem here and deal with it and stop doing what we're doing. I think this is just going to give people a false sense of security ”*

*“ If we can't do it the natural way, we must reach for geoengineering... we have to create something to rescue us actually, to rescue the whole planet ”*

One of the strongest themes and questions to emerge from the public discussion groups was whether geoengineering involved 'messing with nature' and whether this was a bad thing. People had very different views on this – some thought that trying to control the climate would unleash a monster that we couldn't control, others thought that we mess with nature when it suits us, so why use that as an objection now?

*“ It's a bit like Frankenstein's monster, if you could control climates to that extent they'd be saying 'Right I'm going on my holidays to the Bahamas, I never want it to rain there' ”*

*“ It's going to affect Mother Nature, and we've been doing that for the past 20/30 years and its when it suits us, and when we accept it, then its OK ”*

People also raised a lot of questions about the 'politics' of geoengineering. How would these technologies be managed and governed? Would there be the potential for 'eurovision politics'? How would conflict be avoided? There was also concern about the possibility of people pushing their own interests, whether this was scientists and their pet ideas, or perhaps commercial influences on the development of the technologies.

*“ Every one of these ideas will have one man behind it who that has been their life's work and they will, to the hilt, tell you that it's the best thing since sliced bread ”*



## How did these findings fit with the rest of the IAGP project?

- The findings from the public discussion groups played an important role in guiding the work that other IAGP project partners completed.
- For example, some of the final outputs of the project will be research papers which use computer models to explore the ways in which geoengineering might disrupt natural systems such as the Monsoon rains. These will be able to partially answer the question of how much geoengineering will ‘mess with nature’.

## What are the recommendations from IAGP: what happens next?

As the IAGP project reaches its conclusion, we recommend a series of ‘next steps’ for public engagement:

- Public perspectives should continue to play a central role in the debate about geoengineering.
- When decisions are taken about whether to invest money in researching geoengineering technologies, it is important to bear in mind that there is a strong preference for **mitigation** policies among the public, and that geoengineering approaches are seen by most as a ‘sticking plaster’ rather than a full solution.
- It is important to find out members of the public in developing countries think too, so that their voices are also represented.

## Further information

The IAGP project has been carried out at the seven project partner institutions of: University of Leeds, Cardiff University, Lancaster University, University of Bristol, University of East Anglia, University of Oxford and the Met Office. The IAGP project has received funding from the Engineering and Physical Sciences Research Council (EPSRC) and the Natural Environmental Research Council (NERC) and support from Living With Environmental Change (LWEC).

**Further resources can be found at our website:**

[www.iagp.ac.uk](http://www.iagp.ac.uk)

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