

## *Engineering our climate*

### **Teachers' notes**

#### **Lesson2: Is there a future in geo-engineering?**

Where does this lesson fit? The focus of the lesson is a debate about geo-engineering and understanding why there is conflict between the scientific and moral viewpoints. To be fully involved in this discussion, students should have some prior knowledge of geo-engineering techniques and existing approaches to climate change at a range of scales including reducing emissions and the Kyoto protocol.

This lesson should be introduced as a conference and students will be national delegates. The classroom should be set up in an appropriate format, perhaps with the teacher as the Chair. Tables could be labelled with country names to give a sense of formality to the task. Students could be asked to do some prior reading from articles on [21<sup>st</sup> Century Challenges: 'In the news' page](#)

### **Starter**

Split students into small groups to represent countries. There are six country profile sheets but it is not necessary to use all of them. You should select one from a developed country, one from a newly industrialising country and one from a developing country. The idea is that students approach the debate from countries at different levels of development.

It is worth defining geo-engineering as a term to ensure understanding although students should have some prior knowledge. Geo-engineering is used to describe modification of the Earth's systems to meet human demands. It is most commonly linked to methods of manipulating the Earth's climate to counteract the effects of global warming from greenhouse gas emissions.

### **Main activity**

Set up questions for debate. Use the task sheet to structure group discussions. The video clip demonstrates the idea that geo-engineering is both a scientific and moral issue. Students should use this and the views sheet to inform their responses to questions.

While students are preparing their responses the teacher should discuss ideas with groups and pose challenging questions such as: How would you finance any geo-engineering plans? Why haven't you succeeded in reducing emissions? Are your approaches sustainable? What about contributing to environmental catastrophe? Wouldn't the money be better spent on... healthcare, education, infrastructure? Do you have any responsibility to other nations?

## Plenary

As students present responses to four questions posed, the other delegates should respond with questions.

A group discussion should decide whether there can be any agreement on the future of geo-engineering. You could give students options such as: commit to geo-engineering as a viable option, more research is needed but not prepared to financially commit, more research is needed and will commit financially for next 5 years, abandon the discussion and concentrate on reducing emissions.

Students should understand that it is difficult to come to an agreement as individuals but also internationally. Link this to Kyoto protocol and other solutions. Students could use geo-engineering as an example of a potential solution and as an example of difficulty in finding solutions. This can be linked to exam question responses.