

A debate on the issues

Introduction

This activity is based on a debate between Myles Allen (climate change physicist) and Bjorn Lomborg (author of 'The Skeptical Environmentalist'). The debate took place in 2008 at a Swiss Climate Forum.

An important feature of the debate is the emphasis on economic issues. Bjorn Lomborg does not deny that human activity is causing climate change. He does, however, argue, on economic grounds, that the approaches to mitigating climate change that are the basis of the Kyoto protocol, and subsequent agreements, are deeply flawed.

The activity

This activity is based on a 30 minutes video shown in stages. After each stage students are asked to summarise and analyse the arguments.

Click on the link from this page to start the video:
<http://www.climateprediction.net/node/154>

Before starting this activity students need to be aware of the matters raised in the presentation: 'Political responses to climate change'.

A First show Bjorn Lomborg's opening statement (ends when the red figures of the timer have fallen to 27.08).

B Next show the response from Myles Allen. His slides have a lot of data and so it will help to pause the presentation from time to time to give students time to follow the argument. (end when the red figures of the timer have fallen to 18.10)

C Thirdly show the next section of the film in which first Bjorn Lomborg responds and then Myles Allen answers his points (ends when the red figures of the timer have fallen to 12.00).

The argument continues and raises new and interesting points such as the issue of fairness, but this is probably enough unless your students want to see and hear more.

In addition to the questions on the student sheets, you might encourage your class to discuss the quality of arguments put forward by the two protagonists. Which of the two is more convincing and why?

How Science Works

Gf To make an informed decision about the management of a given risk, we need to take account both of the probability of the event occurring, and the seriousness of the consequences if it did. This is particularly difficult in the case of events of very low probability, but with very serious consequences if they occur.

Hb Decision makers aim to make evidence based decisions, taking into account factors that include: technical feasibility, benefits expected, economic cost, risks to human health and wellbeing, risks to the environment. Cost-benefit analysis is the process of estimating the size of the costs and the value of the benefits as a way of determining the best policy option. A cost-benefit analysis should consider which individuals or groups receive the benefits, and which suffer (or pay) the costs.

He In practice much of the evidence available to decision makers is often uncertain. It is not possible to make accurate predictions about the future. The system may be too complex; some issues may not yet be well understood.

Hf Decision makers are influenced by the mass media, by special interest groups and by public opinion as well as by expert evidence. Decisions about science and technology may be influenced by decision makers' prior beliefs or vested interests, which can affect their interpretation and evaluation of the evidence.

Answers to the questions

- 1 What does Bjorn Lomborg think is the cause of global warming?
He agrees that global warming is real. It is man-made.
- 2 He claims that the case being made to support cutting emissions of greenhouse gases is exaggerated and one sided. What examples does he use to support his argument?
*Heat waves – people will die; but fewer cold waves – and as a result many more lives will be saved. (Note supported with peer reviewed data.)
Malaria – weakly correlated with temperature but strongly correlated with wealth; Kyoto saves 1400 deaths for \$380 billion. Tackling malaria could save 36 000 deaths for \$3 billion.
Polar bears – implementing Kyoto might save 1 polar bear a year but we shoot 300-500 bears a year.*
- 3 Why does a one sided presentation of the argument lead to bad policy making?
It leads to choosing expensive courses of action when much cheaper ways of tackling the problem are available – for example by cooling cities by making surfaces more reflective. Cutting carbon emissions will not have anything like the same effect.
- 4 What does Bjorn Lomborg think we should be doing to combat global warming?
Invest in non-carbon emitting technologies. It would be cheaper and more effective.
- 5 How does he think that money saved by not cutting carbon emissions in line with Kyoto should be spent?
Better things to fix: clean drinking water, sanitation, better healthcare and education all for \$75 billion per year rather than £180 billion per year on Kyoto type solutions.
- 6 What is the point that Myles Allen is making when talking about a 'global warming unit' and the extent to which we have and will use the 10 GWU that existed at the start of the industrial revolution?
His argument is that Bjorn Lomborg's argument only stands up if without making restrictions on CO₂ emissions or interfering in the market, we can leave 7 out of 10 GWU in the ground. This is because burning each GWU of fossil fuel raises the Earth's temperature by a degree and global warming is only bearable if total warming is restricted to about 2 degrees.
- 7 Why does Myles Allen think it incredible that we should leave so much fossil fuel in the ground?
Fossil fuels are a very compact form of energy and they are incredibly valuable. We get huge benefits from using fossil fuels – we are not going to leave all that fossil fuel in the ground. So we have to learn to use fossil fuels safely if we are to meet our energy needs.
- 8 How does Myles Allen counter the argument that it would be better to spend money on solving the malaria problem rather than on cutting carbon emissions.
He refers to the money spent on nuclear safety. He says that it is like arguing that nuclear safety saves lives at a very high cost, so instead of doing that we should spend the money on irrigation for agriculture or solving the problem of malaria. This happened in effect in the old Soviet Union and the consequences were Chernobyl.
- 9 What is it about Bjorn Lomborg's economic estimates that does not make sense to Myles Allen?
Simply not plausible that burning 5 GWU and raising global temperatures by another 5 degrees for a couple of centuries will only cost an average of \$35 per person per year. Stern estimated \$1000 per person per year.

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- 10 How does he account for the low values of the costs in Bjorn Lomborg's argument?
Three points: costs are balanced by benefits even though the two do not affect the same people; the costs of impacts in 2100 are very heavily discounted and so priced at a very low value compared to current costs; uncertainty is ignored in the argument (a recent calculation of the social cost of carbon by an economist comes up with a figure close to that of the Stern review).
- 11 So why is it, as Myles Allen says, that it all depends on whether we care what happens in 2100?
In the short term global warming might be bearable and managed as suggested by Bjorn Lomborg, but his approach fails to avoid dangerous and sustained climate change from 2100.
- 12 What is missing from Myles Allen's presentation?
He does not set out clearly what should be done, though he does imply, in his last slide that the way ahead is to spend 10-20% of the value of fossil fuels in solving the problem.
- 13 Bjorn Lomborg points out the failure to cut emissions despite Kyoto and other agreements. What is his solution to the problem?
Make low-carbon technologies available that are so cheap and effective that they will be adopted – including in countries such as India and China.
- 14 Myles Allen takes the opportunity to say what his solution would be. What is it?
To engage with the highly profitable fossil fuel industries, to get them to accept that dumping the waste products of burning fuels is not acceptable and to invest 10 – 20% of the value of fossil fuels in making carbon safe at the point when they are burnt.
- 15 What do both arguments have in common?
They both rely on investing in new technologies.

August 2009



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Introduction

Bjorn Lomborg is author of 'The Skeptical Environmentalist' published in English in 2001. He has no training in climatology, meteorology, or the physical sciences, but is trained in the use of mathematics and statistics in the social sciences. He campaigns for an unconventional position on climate change

Myles Allen is a climate change physicist. He is head of the Climate Dynamics group in the Atmospheric, Oceanic and Planetary Physics Department at the University of Oxford. He is the lead investigator for the *climateprediction.net* project and was the main person responsible for setting up the project.

These two were asked to debate to start discussion at the Swiss Climate Forum in 2008.

The activity

A Start by watching the opening statement by Bjorn Lomborg.

Questions

- 1 What does Bjorn Lomborg think is the cause of global warming?
- 2 He claims that the case being made to support cutting emissions of greenhouse gases is exaggerated and one sided. What examples does he use to support his argument?
- 3 Why does a one sided presentation of the argument lead to bad policy making?
- 4 What does Bjorn Lomborg think we should be doing to combat global warming?
- 5 How does he think that money saved by not cutting carbon emissions in line with Kyoto should be spent?

Before watching the next section of the film, discuss how you would respond to Bjorn Lomborg as a climate change scientists wanting to show that he is wrong.

B Now watch the response from Myles Allen.

Questions

- 6 What is the point that Myles Allen is making when talking about a 'global warming unit' and the extent to which we have and will use the 10 GWU that existed at the start of the industrial revolution?
- 7 Why does Myles Allen think it incredible that we should leave so much fossil fuel in the ground?
8. How does Myles Allen counter the argument that it would be better to spend money on solving the malaria problem rather than on cutting carbon emissions?
- 9 What is it about Bjorn Lomborg's economic estimates that does not make sense to Myles Allen?

- 10 How does he account for the low values of the costs in Bjorn Lomborg's argument?
- 11 So why is it, as Myles Allen says, that it all depends on whether we care what happens in 2100?
- 12 What is missing from Myles Allen's presentation?

Before watching the next section of the film, discuss the relative merits of the two arguments. Who do you think has won the argument so far?

Questions

- 13 Bjorn Lomborg points out the failure to cut emissions despite Kyoto and other agreements. What is his solution to the problem?
- 14 Myles Allen takes the opportunity to say what his solution would be. What is it?
- 15 What do both arguments have in common?