



This is the print version of the [Skeptical Science](http://sks.to/toohard) article '[It's too hard](http://sks.to/toohard)', which can be found at <http://sks.to/toohard>.

Can we fix global warming?

What The Science Says:

Scientific studies have determined that current technology is sufficient to reduce greenhouse gas emissions enough to avoid dangerous climate change.

Climate Myth: It's too hard

"The fact is that there is no one in the world who can explain how we could cut our emissions by four fifths without shutting down virtually all our existing economy. What carries this even further into the higher realms of lunacy is that such a Quixotic gesture would do nothing to halt the world's fast-rising CO2 emissions, already up 40 per cent since 1990. There is no way for us to prevent the world's CO2 emissions from doubling by 2100" ([Christopher Booker](#))

In order to [avoid dangerous global warming](#), we need to reduce global greenhouse gas (GHG) emissions by about 50% by the year 2050. Skeptics often make the argument that we simply don't have the technology necessary to reduce emissions this much, this quickly.

[Pacala and Socolow \(2004\)](#) investigated this claim by examining the various technologies available to reduce GHG emissions. Every technology they examined "has passed beyond the laboratory bench and demonstration project; many are already implemented somewhere at full industrial scale." The study used the concept of a "stabilization wedge", in which "a wedge represents an activity that reduces emissions to the atmosphere by a certain amount. The study identifies 15 current options which could be scaled up to produce at least one wedge:

1. **Improved fuel economy**
2. **Reduced reliance on cars**
3. **More efficient buildings**
4. **Improved power plant efficiency**
5. **Substituting natural gas for coal**
6. **Storage of carbon captured in power plants**
7. **Storage of carbon captured in hydrogen plants**
8. **Storage of carbon captured in synthetic fuels plants**
9. **Nuclear power**
10. **Wind power**
11. **Solar photovoltaic power**
12. **Renewable hydrogen**
13. **Biofuels**
14. **Forest management**

15. **Agricultural soils management**

This is not an exhaustive list, and there are other possible wedges, such as other renewable energy technologies they did not consider. The study notes that "Every one of these options is already implemented at an industrial scale and could be scaled up further over 50 years to provide at least one wedge." Implementing somewhere between 7 and 14 wedges would be necessary to avoid dangerous climate change.

The bottom line is that while achieving the necessary GHG emissions reductions and stabilization wedges will be difficult, it is possible. And there are many solutions and combinations of wedges to choose from.



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Skeptical Science explains the science of global warming and examines climate misinformation through the lens of peer-reviewed research. The website won the Australian Museum 2011 Eureka Prize for the Advancement of Climate Change Knowledge. Members of the Skeptical Science team have authored peer-reviewed papers, a [college textbook on climate change](#) and the book [Climate Change Denial: Heads in the Sand](#). Skeptical Science content has been used in university courses, textbooks, government reports on climate change, television documentaries and numerous books.



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