

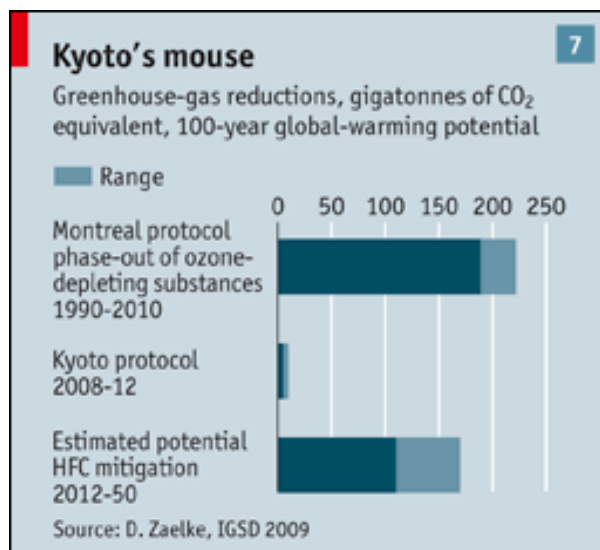
A special report on climate change and the carbon economy

Unpacking the problem

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The attractions of a piecemeal approach to global warming



ONLY half of man-made global warming comes from CO₂. The rest comes from a variety of sources, including hydrofluorocarbons (HFCs), black carbon (soot), methane and nitrogen compounds. Packing them all up together gives the Kyoto protocol an elegant framework which in theory should solve the problem with a single set of numbers—the national caps that are designed to cut the whole range of greenhouse gases.

Critics point out that the Kyoto protocol has achieved a great deal less than the Montreal protocol, which was designed to prevent the use of ozone-depleting CFCs. Montreal,

implemented in 1987, was originally expected to cut half of its gases in 12 years. In the event it got rid of all of them in ten years. It has had a huge global-warming side-benefit. CFCs are greenhouse, as well as ozone-depleting, gases. According to a study in 2007, the Montreal protocol prevented the emission of 189 billion tonnes of CO₂ equivalent. Kyoto has abated around 10 billion tonnes.

Montreal worked better than Kyoto largely because the problem was a manageable size and the gases similar in nature and origin. Some people therefore argue that the greenhouse-gas problem should be unpacked and dealt with under different agreements.

Methane and nitrous oxides produced by agriculture account for about 10% of man-made warming. Most of that comes from the guts of cattle and sheep. That could be cut through breeding programmes and less gassy diets.

Black carbon is a particular problem in the Arctic and the Himalayan glaciers; it melts snow and ice and thus increases the tendency to absorb heat from the sun. It contributes somewhere between an eighth and a quarter of global warming. Unlike CO₂, which stays in the atmosphere for centuries, it disappears within weeks. Cutting emissions would therefore make an instant difference.

Black carbon is produced by diesel engines and primitive stoves burning wood and cow dung. Mechanisms appropriate for dealing with large-scale emissions from power plants and factories will have little impact on peasants' cooking techniques. Providing villagers with cheap, cleaner stoves would be more effective.

HFCs—industrial gases with 1,440 times the global-warming potential of carbon dioxide—are another candidate. Like CFCs, they are produced by a smallish number of industrial processes, and cutting emissions of them is cheap and easy. America, Mexico, Canada and a bunch of other countries have indicated that they support the idea of dealing with HFCs under the Montreal protocol.

Those in favour of a more holistic approach argue that disaggregating greenhouse gases could undermine the effort to solve the problem as a whole. But better to get some significant cuts made than none.

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