3 Questions: David MacKay on renewable energy

April 5 2010, by David L. Chandler

Graphic courtesy David MacKay

David MacKay (pronounced mac-EYE), a professor of physics at the University of Cambridge, UK, was recently appointed to a three-year term as chief scientific advisor to the UK's Department of Energy and Climate Change. In an April 1 talk at MIT, he described what specifically would be required to shift the world's energy use entirely to non-carbon emitting sources.

Q. How much of an effect do you expect the so-called "Climate-Gate" episode to have on public attitudes to climate change, and do you think this will have any long-term repercussions?

A. It clearly had some impact, and my feeling is that it doesn't deserve to have had impact. I think the impression that the public has gained of what happened is entirely based on mudslinging and invention. People allege that there was deliberate manipulation of data, and I'm not aware of any evidence that that's so. In fact, a recent House of Commons committee has just found that although they're not completely happy with everything, but they say the reputations of the scientists involved is intact. So I guess what's needed for the long term is a clear retelling and proper exposition of the science so that the conclusions of the public will be more robust in the future.

Q. What do you think the prospects are for reaching any significant international agreement on greenhouse emissions, in the post-Copenhagen world, and do you see the Copenhagen process as having made such agreements more likely?

A. I think there was some progress made at Copenhagen. I think it was the first time an international agreement mentioned aiming at a target of 2 degrees warming or less. Also there was a move toward really substantial international transfers of money. So I don't think Copenhagen was all bad news. I can't predict the future, and I don't know what's going to happen. I'm still an optimist. I feel that there is an international consensus that there is a problem and something needs to be done. The difficulty is the notion of equity, of fairness, of what should different countries do. And it's human nature to try to get away with doing as little as possible, so that's what makes it difficult. But the good news is that there's a general agreement that international action is what's needed.

Q. What do you see as the most under-appreciated potential technology or policy that could help the world avoid catastrophic climate change?

A. Well, the one that I'm obsessing about at the moment is seasonal heat storage. In Britain, our demand for energy peaks during the coldest

weeks in winter, and it can be twice as big as our energy consumption at other times of the year. In parts of America, demand peaks in the summer, during the hottest periods. So if we could develop low-cost technologies for moving heat in time, from the winter to the summer and vice versa, I could see that making quite a difference to the scale of new energy sources that may be needed in the future.

My impression is the Dutch are currently the leaders in the creative deployment of heat storage methods. They store heat underneath roads in the summer and then pump it out again in the winter. And in my talk I mentioned a community in Canada called Drake's Landing, where they have a community heat storage which collects heat from solar hot water panels, and stores it in a huge hole in the ground, and then they can pump it back out in winter, and it provides heat for quite a few dwellings.

Provided by Massachusetts Institute of Technology