

# The power of energy

This morning's papers report that yesterday's anti-war march in London was the biggest protest in British history. Many cannot help but think that the American resolve to wage war in Iraq arises from its own profligate use of oil. With but 5% of the world's population, the USA currently consumes 25% of all oil produced. Last year a US energy review predicted that, by 2020, imports would account for two-thirds of American oil consumption. Is this what motivates such risk-taking with international institutions such as the EU, NATO and the UN? Is this why Iraq looms larger than, say, Israel or global inequalities, as a problem for American foreign policy?

My newspaper today also leaks information about the content of the UK Government's forthcoming White Paper on energy policy. Despite urgings from The Royal Society and other prestigious organizations representing scientists, apparently the Government proposes not to build a new generation of nuclear power stations. Last year's financial collapse of British Energy, combined with a continuing threat of terrorist attack on a UK power station, seems to have convinced the Government that investment in improving energy efficiency is a better option.

Certainly this special issue of *Physics Education*, with energy as its theme, could not have been timed better. Art Hobson argues (page 109) that industrialized democracies will not survive unless citizens become scientifically literate. Does he exaggerate? Energy policies are likely to lie at the heart of 21st century debates about the environment, particularly global climate change and resource extraction.

During the last century, large-scale changes to the environment became noticeable within a single human life-



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time, powered by the energy industries and heavy machinery. On present trends, humans might overtake Nature herself in shaping the Earth, for human activity now ranks second only to water in the mass of crust material it moves.

We must reduce carbon dioxide emissions. Road transport is especially dependent on oil. As most people make personal choices, their perception of risks and potential benefits is only in small part affected by scientific understanding. Energy questions are not just technical: they have profound economic and political dimensions that cannot be detached.

Teachers of physics, at every educational level, have a pivotal role to play in developing public understanding. The challenges this poses are severe. Not only do we need to explore new ways of engaging with people's lives, to motivate the learning of difficult concepts related to energy production and consumption. We also need a clear grasp of common misconceptions and ways around them. Thought-provoking articles in this issue consider transportation, the greenhouse effect, generating electricity from both fission and fusion—and suggest some ways forward.

The world out there will not go away. As I write I cannot shake off today's pressing questions. By the time this issue of *Physics Education* is in print, will a war with Iraq have been launched? Will the UK Government still be supporting the White House? Can humanity change course in time? The stakes are high. Physics education is obliged to help prepare *all* students, including tomorrow's engineers and scientists, to build a better future. Energy is, and will for some time remain, centre stage.

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