Climate Change:

Prognosis And Courses Of Action

Phil England

As the USA launches an illegal invasion and occupation of the country with the world's second largest proven oil reserves, it's as good a time as any to step back and look at the state of the bigger environmental picture. Fifteen years after NASSA's Dr James Hansen first warned a congressional panel that the world was warming are we any closer to addressing the problem of climate change? Where is unchecked warming leading us? Have we, as a global community, achieved a commitment to action that is sufficient to avoid global catastrophe? If not, what can we do about it?

The science

Since the facts about climate change are often shrouded in fog to the extent that many people are in doubt as to whether or not global warming is benign, first: what is the state of the science?

The world's leading authority on the science of climate change is the UN's Intergovernmental Panel on Climate Change, established in 1988 by the World Meteorological Organization and the UN Environment Programme. The IPCC brings together over 2,000 of the world's leading climate scientists and its Assessment Reports represent summaries of the latest scientific consensus.

Its Third Assessment Report published in 2001 is a document to give pause. The 0.6C increase in global mean temperature over the 20th century, it says, is likely to have been the largest increase of any century during the past 1,000 years and has already produced observable, dramatic changes including widespread retreat of mountain glaciers, a decline in Arctic sea ice thickness of about 40% during late summer to early autumn, a 10% loss of snow and ice cover, warming oceans, sea level rises of between 0.1 & 0.2 metres, more frequent and intense warm El Nino episodes and changes in patterns of rainfall, cloud cover and temperature.[1]

News of observable impacts on the natural world—such as "thawing of permafrost, later freezing and earlier break-up of ice on rivers and lakes, lengthening of mid to high-latitude growing seasons, poleward and altitudinal shifts of plant and animal ranges, declines of some plant and animal populations, and earlier flowering of trees, emergence of insects, and egg-laying in birds"—has become part of the background noise of our society. Yet, out of everyday sight, some natural systems that are particularly vulnerable to climate change may be undergoing significant and irreversible damage including "coral reefs and atolls, boreal and tropical forests, polar and alpine ecosystems, prairie wetlands, and remnant native grasslands."

But climate change also has wide ranging impacts on the human systems of "water resources; agriculture (especially food security) and forestry; coastal zones and marine systems (fisheries); human settlements, energy and industry; insurance and other financial services; and human health."[2]

The UK government has funded its own assessments of how climate change will impact over the coming decades. The temperature over central England has risen—beyond the global average—over the course of last century by 1ºC and the mean temperature is expected to rise by a further 2 to 3.5ºC by the 2080s depending on the emissions scenario. Winters will continue to become wetter and intense rainfall events will continue to increase in frequency. High temperature extremes will become more common and low temperature extremes rarer. Sea-level rises and extremes of sea level will occur more frequently. And whilst the thermal growing season will increase, the summer soil moisture will decrease.[3]

But while we are relatively well placed to adapt to these changes, it is the world's poorly resourced majority that will suffer most. The IPCC notes the low adaptive capacities of the poor and their high vulnerability. It details the expected changes for each region—an increase in droughts and floods in Africa, for instance—along with the degree of confidence with which they can be predicted. It is in the developing world that loss of life will be greatest and the impacts of climate change will serve to "increase the disparity in well-being between developed countries and developing countries."

In 2001 a Red Cross report noted that natural disasters had doubled between 1995 and 2000. Eighty-eight percent of those affected and two thirds of those killed during the 1990s lived in the least developed countries. The report warned that "Recurrent disasters, from floods in Asia to drought in the Horn of Africa, to windstorms in Latin America, are sweeping away development gains and calling into question the possibility of recovery." Aid agencies capacity to adequately respond will soon be exhausted.[4]

But we can expect worse to come since the IPCC predicts that without additional measures to combat climate change the global average surface temperature will rise a further 1.4 to 5.8ºC depending upon the development scenario used. Such a projected rate of warming, they warn, "is much larger than the observed changes during the 20th century and is very likely to be without precedent during the last 10,000 years."

The professional deniers

"There is no debate among any statured scientists of what is happening. The only debate is the rate at which it is happening."

James McCarthy, Chair of the Advisory Committee on the Environment of the International Committee of Scientific Unions[5]

Faced with action to curb emissions the fossil fuel industry has conducted a war on reality in order to preserve their trillion dollar business. By doing so they have put the very future of the planet in the balance.

A handful of sceptics have been promoted by the carbon industries to try and present the climate science as uncertain and flawed. They have peddled scientifically spurious arguments and have often put forward economic objections to change. Ross Gelbspan of the *Boston Globe* has shown that the principal US sceptics such as Fred Singer, Patrick Michaels, Robert Balling and Richard Lindzen have been bank rolled by fossil fuel interests.[6] But these scientists and their arguments are not taken seriously by the climate scientists that lead the field.

One of the tactics of the sceptics was to play up the uncertainties in IPCC reports. Scientists are by nature cautious in their assessments and areas of uncertainty that were expressed in the earliest IPCC reports have been replaced, as the science has improved, with more firmly expressed statements. But as Ross Gelbspan noted: "Uncertainty cuts both ways [...] Our scientific knowledge, in other words, may even be lagging behind nature. The momentum of globally disrupting climate change may be further advanced than earth science, with its areas of uncertainty, is currently able to prove." This was the case with the ozone hole. When atmospheric measurements of ozone were finally made, the results were much worse than anything the modelling had predicted.[7]

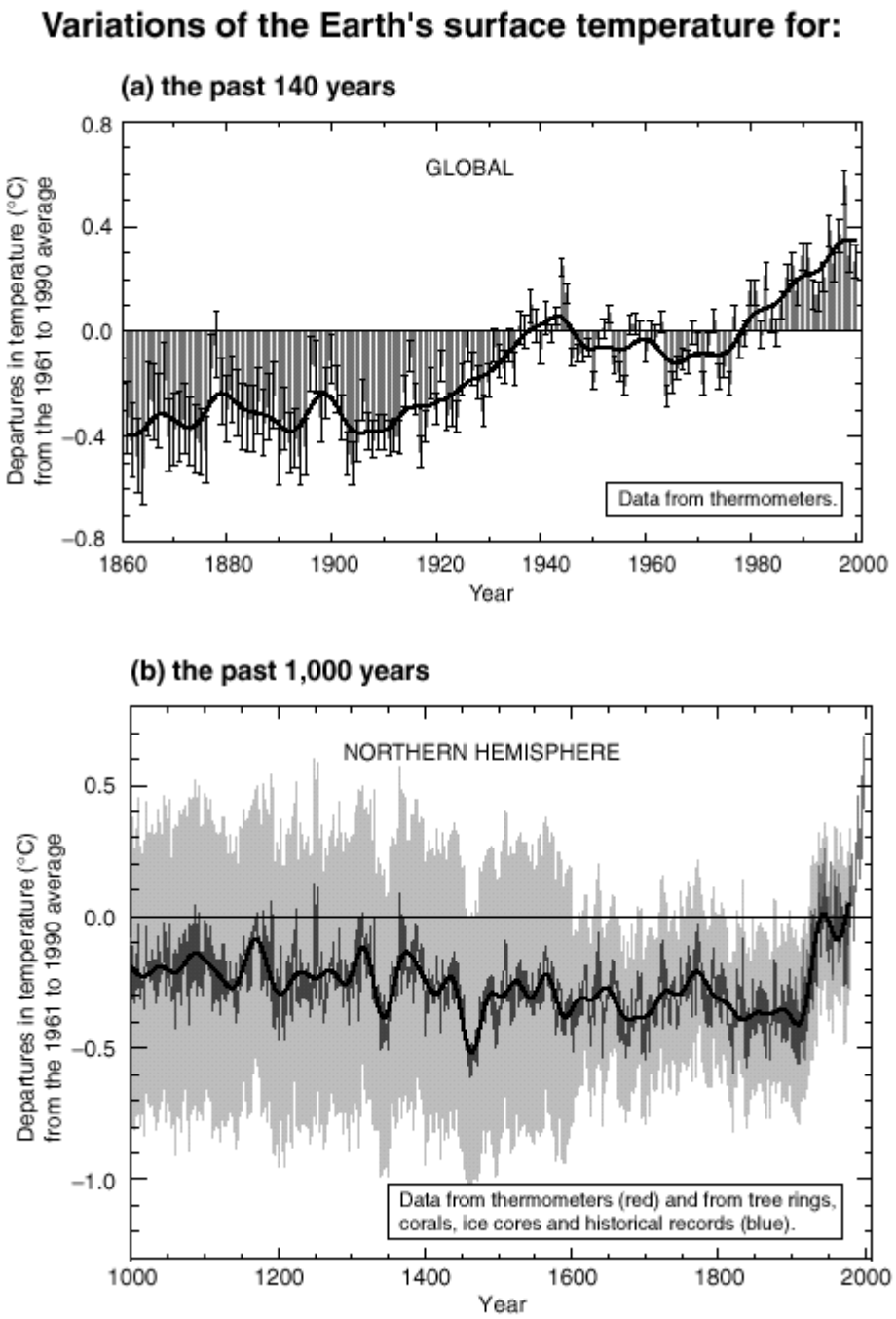
International action

So what action has been taken at an international level and is it enough? The warning signal of IPCC's first report in 1990 was enough to spur the international community into action. The United Nations Framework Convention on Climate Change (UNFCCC) was signed at the Rio Earth Summit in 1992 and came into force in March 1994. It established the objective of stabilising atmospheric greenhouse gas concentrations at levels that would avoid "dangerous anthropogenic [i.e. human] interference with global climate." Significantly, it recognised that scientific uncertainty must not be used to avoid precautionary action and that industrial nations—with the greatest historical contribution to climate change—should take the lead in addressing the problem.[8]

In 1995 however, the signatories to the UNFCCC concluded its commitments were inadequate and launched talks on a legally binding protocol. The 1997 Kyoto Protocol commits industrialised countries to an overall reduction in emissions of 5.2% below 1990 levels by 2010. The US committed itself to a 7% cut and the EU 8%. On announcing the agreement, the Chair of the negotiating session, Raul Estrada claimed that "the overall target of 5.2% is 30% below business as usual [...] This we can celebrate."[9]

However, Kyoto's target of an overall 5.2% reduction was much less than the 15% originally argued for by the European Union or the 20% that the Alliance of Small Island States wanted to see. The withdrawal of the US—representing 36.1% of industrialised countries' greenhouse gas emissions in 1990—from the treaty in 2001 means that the overall figure of 5.2% reduction is no longer relevant. Furthermore the inclusion of 'flexibility mechanisms'[10] (successfully pushed for by the US with Japan, Australia and Canada), weaken the potential for reductions still further, since they effectively provide get-out clauses for any country who fails to meet their targets. In effect the Protocol now allows for an increase on 1990 levels which perhaps even go beyond business-as-usual projections.[11]

Illustrations by: Paul Bommer



After the US pulled out of Kyoto in March 2001, 178 nations finalised many of the protocol's key rules in Bonn in July 2001. Many compromises were made to keep countries on board. Canada and Japan who formerly sided with the US's negotiating position have now ratified the Protocol, though Australia—another key US ally—has not. As soon as Russia has ratified the Protocol—which it has stated its intention to do—it will become law.[12]

In terms of emissions reductions, eleven years of international negotiations have achieved disappointingly little. Whilst acknowledging that the current agreement is "totally inadequate", NGOs such as the World Wildlife Fund and Greenpeace argue that it nevertheless provides "a sound legal architecture" upon which to build future reductions.[13]

UK Government

On the face of it the UK government has a relatively good record regards climate change. It accepts the science; has a programme of action to deal with it; lobbied along with the EU at climate negotiations for strict targets; by setting itself a voluntary target of 20% it has gone further than its original Kyoto commitment of 12% reduction in greenhouse gas emissions from the 1990 level by 2010; it now has a white paper on Energy which proposes a reduction of 60% of CO2 emissions by 2050.

Dig a little deeper however and it emerges that the bulk of the UK's CO2 emission reductions to date have been as a result of an economically driven switch in emphasis away from coal towards gas in electricity generating stations. The government's existing programme of measures designed to deliver its emissions reductions[14] has been criticised for being inadequate. A report by the government's Sustainable Development Commission reached the conclusion that although the UK's Kyoto target would be met, "without further measures, the UK will fall well short of the Government's goal of reducing carbon dioxide emissions by 20% of 1990 levels by 2010."[15] Published earlier this year The White Paper[16] contains many encouraging signs taking on many of the recommendations made by the Royal Commission on Environmental Pollution (RCEP) in its report 'Energy: The Changing Climate'.[17] According to the SDC it "goes a long way to filling the gaps identified in the Sustainable Development Commission's recent audit of the existing Climate Change Programme."[18] Its main guiding consideration is that: "Significant damaging climate change is an environmental limit that should not be breached. We need to keep the UK on a path to 60% cuts in carbon dioxide emissions by 2050." It also recognises that: "If we do not begin now, more dramatic, disruptive and expensive change will be needed later." On the international level it declares: "A concerted international effort is needed. We will continue to work with other countries to establish a consensus around the need for change and for firm commitments to this ambition [...] We want the world's developed economies to cut emissions of greenhouse gases by 60% by around 2050."

Highlighting the importance of energy efficiency and renewable energy, nuclear power was put on hold as an option. The government has already announced (January 2000) an aim that renewable sources of energy will supply 10% of UK electricity by 2010 and now aims to double that by 2020.

Interest groups are still picking over the White Paper and their responses to it. Friends of the Earth's cautiously optimistic response is characteristic: "For the first time it seems that climate change has been placed at the heart of energy policy and this has to be congratulated. We are however concerned that the government has got a long way to go to deliver the policies and measures that will ensure the vision outlined in the White Paper is met."[19]

The White Paper includes a promise of an extra £60M for the development of renewable energy supplies in addition to the £38M extra announced in the 2002 spending review. Much greater amounts are needed to kick start the renewable industry in the way the government suggests. (Compare this amount for example to the chancellor's £3B reserves to pay for the war on Iraq and its £7B bail out of nuclear energy[20]).

The Science and Technology Select Committee issued a scathing condemnation of the White Paper as "a document full of sentiments with few practical policy proposals that give us any confidence that its targets (and aspirations) can be met." It argues for a massive increase in investment in renewable energy technologies funded by a Carbon and Renewable Energy Tax (Science & Technology Select Committee, Fourth Report "Towards a Non-Carbon Economy: Research, Development and Demonstration", 3/4/3.

Most worrying from the UK's point of view is that any gains in CO2 savings at home have been far outstripped by emissions it has helped create abroad. Since Labour came to power the Export Credit Guarantee Department has put $1B into financing eleven coal-fired stations in the developing world. BBC2's Newsnight programme calculated that for every tonne of C02 emissions the government had saved at home, three tonnes had been produced abroad.[21]

The Problem with the US

The funding and promotion of sceptics in the US has been but one prong of a campaign fought by the fossil fuel industry to confuse the public, play up the economic implications of the Kyoto protocol, make it politically unacceptable to introduce a carbon tax or cuts in emissions and ultimately impede and disrupt the international negotiations.

ExxonMobil and others have pumped millions of dollars into think tanks and lobby groups (including the Global Climate Coalition, George C Marshall Institute, American Petroleum Institute and Competitive Enterprise Institute) and conducted high profile media campaigns and direct lobbying to massage the public, legislative and business communities in the US.[22]

And the campaign has seen some considerable successes. In 1995 Republican congress member Robert Walker successfully argued for cuts in funding of climate change science programmes (although these were subsequently partly reinstated)[23]; and in 1997 Congress passed a key resolution recommending that the US not sign an international climate agreement unless it included new commitments for developing countries.[24] The fossil fuel lobby's persistent work inside the international negotiations to bring about the weak agreement that we are left with today has been well documented.[25]

Today, the fossil fuel industry no longer needs a lobby—it effectively became the government when Bush appointed a cabinet with a majority of its members having ties to oil and gas corporations. Since Bush came to power his administration has pulled out of Kyoto (March 2001), unveiled an alternative to Kyoto consisting entirely of voluntary measures by business (February 2002), launched an energy strategy that promotes a massive increase in fossil fuels (May 2001)[26] effected the removal of Dr Robert Watson from the chair of the IPCC (April 2002), dismissed a report written by its own Environmental Protection Agency confirming the science of climate change (June 2002), snubbed the Johannesburg Earth Summit by sending Colin Powell instead of George Bush (September 2002) and now launched a war for oil in Iraq in the face of overwhelming international opposition and against international law (March 2003).[27]

With just 4% of the world's population using a quarter of the world's energy, the US remains the largest stumbling block to effective action to counter climate change. But perhaps the tide is turning. In January 2000 at the World Economic Forum, a vote amongst hundreds of chief executives put climate change as the number one issue of concern to business in the future and some predict that international diplomatic pressure and increasing domestic pressure may yet force the US to re-engage with the Kyoto process.

The ultimate gamble

The impacts of climate change are already catastrophic: extreme weather events are commonplace and will continue to increase. The most worrying characteristic of the climate system is the danger posed by 'feedbacks'. Once set in motion these have the effect of accelerating the rate of warming. Although each of the IPCC's assessments have contained warnings about such feedbacks The Ecologist's science editor, Peter Bunyard, believes that the IPCC has underestimated the role of these processes by leaving them out of its modelling. New climate modelling by Peter Cox at the Meteorological Office's Hadley Centre suggests that if no further action is taken to curb greenhouse gas emissions then within the next fifty years we will reach a threshold beyond which climate will start accelerating irreversibly and out of control.[28] This threshold occurs when the Amazon rainforests start to turn from a 'sink' (buffering the effects of climate change by absorbing excess atmospheric CO2) to a 'source' (releasing CO2 back into the atmosphere through an increase in forest fires).

In Cox's modelling this occurs when levels of CO2 concentrations in the atmosphere reach 550ppmv and according to the RCEP this level

should be considered an unbreachable upper limit. The world is not currently on track to stay within this threshold. In order to be so, cuts of 60% in industrialised countries' CO2 emissions from 1990 levels by 2050 would be needed.[29] To achieve this will require radical changes. Both the UK government and the EU are saying that they want to adopt these targets and promote them at an international level. How they will achieve this and secure the participation of the US and limit the weakening role of flexible mechanisms remains to be seen.

Up until now, action at intergovernmental level has been characterised by an attitude of 'How little can we get away with?' But increasingly there is a realisation that the economic imperative alone requires a fast pace of change. We now know that the longer we wait the more painful, difficult, drastic and financially costly the changes will be.

Ways forward

The gravity of the climate situation means that we can't just wait around to see whether or not governments and big business get their act together (though we need to put pressure on them to ensure they do). We need to start now to take action at every level we can. Beyond the obvious things like registering for electricity from renewable sources (all it takes is a phone call and it can be cheaper)[30], considering modes of transport and fuels[31], cutting down on international flights, ensuring our homes are properly insulated, using energy saving light bulbs, etc. we should be raising awareness and encouraging action with friends and relations and at the workplace.

There is also good potential for getting local government to take action. Five hundred local governments representing 8% of global emissions have signed up to a programme of voluntary action to address their emissions. The Cities for Climate Protection campaign requires participants to monitor and reduce their emissions with many adopting a target of an 8% reduction in greenhouse gas emissions by 2005 or 2010.[32] The Local Agenda 21 Initiative provides an interface with your council through which they can be encouraged to sign up to the CCP plan.[33] Alternatively, you may have a local Friends of the Earth group who are active and could be effective in this way.

In London, Ken Livingstone has issued a bold 'Draft Energy Strategy' which lays out a broad programme of action and shows many of the ways in which local councils can play a major role in encouraging the use of energy efficiency, renewable energy and combined heat and power plants through the planning system.[34]

A key lever of change in today's society is the economic one. *The Ecologist* has suggested raising awareness amongst fund managers of the risk to investments from climate change and encouraging disinvestment in fossil fuels.[35] Such action was the source of the success of the campaign to stop the Illisu Dam and the organisers of the offensive have written a report which shares their experiences.[36] Individual shareholders of oil companies and campaigns are an important pressure point and campaigns against new oil developments such as the Baku-Ceyhan pipeline[37] should be supported. Development banks and export credit agencies need to be pressurised to stop funding the development of fossil fuel electricity plants and start funding renewable ones.[38] *The Ecologist* discusses the option of bringing crippling legal actions against fossil fuel companies for their knowing role in causing the impacts of climate change, similar to the recent successful actions against the tobacco industry.

There are limitless things that can be done. 'Stormy Weather—101 Solutions to Global Climate Change' by Guy Dauncey and Patrick Mazza[39] makes constructive suggestions for action at every level from the individual to the intergovernmental, and the UK Rising Tide group brainstormed fifty ideas for direct action.[40] The battle for the Earth's climate is the single most important issue facing the world today and one way or another we need to make sure that it is not one that is lost.

Notes

1. Third Assessment Report, Climate Change 2001: The Scientific Report, Summary for Policymakers, (IPCC, 2001), www.ipcc.ch/pub/reports.htm
2. Third Assessment Report: Climate Change 2001: Impacts, Adaptation and Vulnerability, Summary for Policymakers (IPCC, 2001), www.ipcc.ch/pub/reports.htm
3. Hulme, M., Turnpenny, J., Jenkins, G., (2002), Climate Change Scenarios for the United Kingdom: The UKCIP02 Briefing Report. Tyndall Centre for Climate Change Research, UK—see www.ukcip.org.uk for this report as well as regional and sectoral studies.
4. Disasters will outstrip aid efforts as world heats up, by Peter Capella, The Guardian, 29/06/02.
5. The Heat is On, Ross Gelbspan, p.22 (Perseus Books, 1998)
6. These scientists received funding from Western Fuels, German Coal Mining Association, Edison Electric Institute, Cyprus Minerals, British Coal Corporation, Kuwait Foundation for the Advancement of Science, Kuwait Institute for Scientific Research, Reverend Moon, Exxon, Shell, ARCO, Unocal and Sun Oil (Gelbspan, pp. 41-56). The American Petroleum Institute's 1998 strategy document included the grooming and promotion of five new sceptics. See Exxon's Weapons of Mass Deception—The Assessment of Greenpeace International, www.greenpeace.org.uk/MultimediaFiles/Live/FullReport/5292.pdf
7. Gelbspan, p.31-2.
8. http://unfccc.int/resource/docs/convkp/conveng.pdf
9. The Carbon War, Jeremy Leggett, p. 321, (Penguin, 2000)
10. In depth discussion of the flexibility mechanisms can be found in Democracy or Cabocracy, Corner House Briefing No. 24, www.thecornerhouse.org.uk/briefing/24carboc.html; and The Sky is Not the Limit: The Emerging Market in Greenhouse Gases, by Carbon Trade Watch, (The Transnational Institute, Amsterdam, January 2003, www.tni.org/reports/ctw/sky.pdf)
11. See 'Extended Quantitative Analysis of the COP-6 President's text', by Malte Menishausen and Bill Hare, Greenpeace International, June 2001 and "Evaluating the Bonn Agreement and some key issues", The National Institute of Public Health and the Environment (RIVM) p.22. The Netherlands 2001)
12. http://unfccc.int/resource/kpstats.pdf, www.panda.org/goforkyoto/ratification_updates.rtf
13. The Ecologist Report, November 2001, pp. 21-22, www.theecologist.org
14. www.defra.gov.uk/environment/climate-change/02.htm
15. UK Climate Change Programme—a policy audit (Sustainable Development Commission, 12/2/03); & Policy audit of UK Climate Change Policies and Programmes (Edinburgh Centre for Carbon Management, 12/2/03.
16. Energy White Paper, Our energy future—creating a low carbon economy, Department of Trade & Industry, February 2002, www.dti.gov.uk/energy/whitepaper
17. Energy: The Changing Climate (Royal Commission on Environmental Pollution, 2000)
18. Sustainable Development Commission, Press Notice: 24 February 2003, Sustainable energy future beckons, http://www.sd-commission.gov.uk/events/news/pressrel/030224c.htm
19. Bryony Worthington, Campaigner, Climate and Transport, Friends of the Earth
20. Liabilities—Labour's Hidden Subsidies To Nuclear Power, Friends of the Earth Press Briefing, January 2003, www.foe.co.uk/resource/briefings/liabilities_nuclear_power.pdf
21. BBC2 Newsnight, report by Susan Watts, July 2002; Exporting Pollution—Double Standards in UK Energy Exports, Greenpeace UK, July 2002, www.greenpeace.org.uk/MultimediaFiles/Live/FullReport/5034.pdf
22. Exxon's Weapons of Mass Deception—The Assessment of Greenpeace International, www.greenpeace.org.uk/MultimediaFiles/Live/FullReport/5292.pdf
23. Gelbspan, p. 76
24. Between them, the two sponsors of Senate Resolution 98 —Senators Hagle and Byrd—have received hundreds of thousands of dollars from the oil and gas industry. The vote on the resolution was preceded by intensive lobbying by Mobil, Exxon and their various front groups. See Exxon's Weapons of Mass Deception.
25. Legget; Exxon's Weapons of Mass Deception; and Gelbspan, Chapter 5
26. The Tiger in the Tanks—ExxonMobil, oil dependency and war in Iraq (Greenpeace UK, Feb 2003)
27. Carve up of oil riches begins by Peter Beaumont & Faisal Islam, The Observer, 3/11/02; The Tiger in the Tanks—ExxonMobil, oil dependency and the war on Iraq greenpeace.org.uk/MultimediaFiles/Live/FullReport/5543.pdf; When will we buy oil in euros? by Faisal Islam, The Observer, 23/2/3
28. The Truth About Climate Change by Peter Bunyard in The Ecologist Report, November 2001, pp. 7-11; see also Equinox: The Day the Oceans Boiled, Channel 4 TV, 17/6/01
29. RCEP report, p.4
30. Friends of the Earth have made a comparison of renewable electricity suppliers at www.foe.co.uk/campaigns/climate/press_for_change/choose_green_energy/index.html; see www.powershift.org.uk for information about clean fuel vehicles
31. Biofuels offer amazing potential see Fill 'er up Boyo by Jim White, *The Guardian* 20/1/3 and www.northwales.org.uk/bio-power/links.htm
32. www.iclei.org/co2/index.htm
33. Most local councils operate some form of Agenda 21 group since central government asked them to. The current health and effectiveness of the group is likely to vary widely. Contact your local council for details or see www.london21.org/directory.asp for a list of LA21 groups in London and elsewhere
34. Green light to clean power—The Mayor's Draft Energy Strategy, January 2003
35. Fast-forward: new ideas to accelerate change by Simon Rellatack in Ecologist Report, November 2001
36. Campaigners' Guide to Financial Markets: Effective Lobbying of Companies and Financial Institutions by Nicholas Hildyard and Mark Mansley, (Cornerhouse, January 2002), www.thecornerhouse.org.uk
37. www.bakuceyhan.org.uk
38. www.foei.org, www.bankwatch.org and www.eca-watch.org/index1.html all have campaigns
39. New Society Publishers, 2001
40. www.risingtide.org.uk