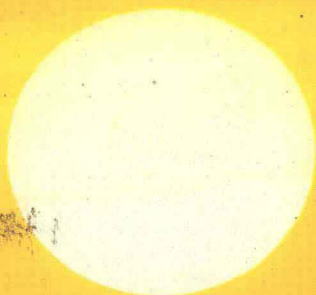




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GLOBAL WARMING

THE **GREENPEACE** REPORT



EDITED BY JEREMY LEGGETT

Global Warming

THE **GREENPEACE** REPORT

Edited by Jeremy Leggett

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In the order the papers appear:

Dr Stephen H. Schneider, a leading climatologist and environmental-policy analyst, is head of the Interdisciplinary Climate Systems at the US National Center for Atmospheric Research. He is editor of the interdisciplinary journal *Climate Change*, author of a popular best-seller, *Global Warming*, which received the American Meteorological Society's Louis Battan Award, and has contributed to over 150 scientific publications on climate theory, modelling, model validation, and the implications of climate-change.

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Dr George M Woodwell is President and Director of the Woods Hole Research Center in Massachusetts. He has studied the biotic interactions associated with global warming for many years, and has published more than 300 papers on ecology. He has held appointments on the faculty of the university of Maine and at Yale University. He was for fourteen years a staff member at the Brookhaven National Laboratory, and for ten years was with the Marine Biological Laboratory in Woods Hole. He was President of the Ecological Society of America from 1977 to 1978, is a Fellow of the American Academy of Arts and Sciences, and a member of the National Academy of Sciences.

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Dr Amory Lovins is Director of Research at Rocky Mountain Institute, a public charity which fosters resource efficiency and whose research is used by more than 160 energy utilities and related organizations in thirty countries. Dr Lovins has published a dozen books and hundreds of papers on energy issues. A former Oxford don, he has held various academic chairs, served on the US Department of Energy's senior advisory board, holds five honorary doctorates, and has been the recipient of the Onassis Prize and the 'Alternative Nobel Prize'.

Carlo LaPorta, President of Analysis, Review and Critique Division of R&C Enterprises in Washington, DC, is a consultant to industry and government on renewable-energy policy and market development. His past posts include European Affairs Analyst at the Library of Congress, Director of Research at the Solar Energy Industries Association, and Director of Programs at the Renewable Energy Institute. He holds a Master's degree in international relations from the Johns Hopkins University School of Advanced International Studies.

Michael Walsh managed significant US Government programmes in motor-vehicle pollution. He headed the Environment Protection Agency's programme at the time when the most stringent auto-emissions standards in the world were introduced. Since leaving the EPA he has been a technical consultant to organizations which include the Senate Committee on Environment and Public Works, the Office of Technology Assessment, the United Nations, the World Bank, the OECD, and numerous governments in both developed and developing countries.

Dr Bill Keepin, an energy and environment consultant living in Berkeley, California, has held research positions at the International Institute for Applied Systems Analysis, Princeton University, the Beijer Institute of the Royal Swedish Academy of Sciences, and Rocky Mountain Institute. Dr Keepin has lectured and published widely, testified on energy issues, and advised senior management of major oil companies.

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Dr Anne Ehrlich is Senior Research Associate in biology and Associate Director of the Center for Conservation Biology at Stanford University, USA. Her numerous publications cover population biology and a range of related policy issues. She has served as a consultant to the White House Council on Environmental Quality's 'Global 2000' Report, published in 1980. In 1988 she was elected an Honorary Fellow of the California Academy of Sciences, and in 1989 was selected for the UNEP Global 500 Roll of Honour.

Dr Kilaparti Ramakrishna obtained his Ph.D. in International Environmental Law from Jawaharlal Nehru University, New Delhi, and was Assistant Professor at the Indian Academy of International Law and Diplomacy prior to attending Harvard Law School in 1985 as a Fulbright Visiting Scholar. An Indian national, he has focused his research on global warming and climatic-change issues from the perspective of developing countries for the last two years at the Woods Hole Research Center, USA, where he is Senior Associate for International Environmental Law.

Dr Susan George, an American who lives in France, is a Fellow and Associate Director of the Transnational Institute (Amsterdam) whose brief is 'to address the fundamental disparities between the rich and poor peoples and nations of the world, investigate their causes and develop alternatives for their remedy'. She was educated at Smith College, the Sorbonne, and the École des Hautes Études en Sciences Sociales in Paris. Her books are *How the Other Half Dies: the Real Reasons for World Hunger*, *Feeding the Few: Corporate Control of Food*, 'Les Stratèges de la Faim' (doctoral dissertation), *Food for Beginners*, *A Fate Worse than Debt*, and *Ill Fares the Land*. She is a member of the International Board of Greenpeace.

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Introduction

“...the United Nations Intergovernmental Panel on Climate Change – its scientists excepted – has failed in its responsibilities in what has been the most important international consultation process in history. The policy-makers have consistently refused to listen to the dire and virtually unanimous warnings from the world’s climate scientists: they continue to recommend the distribution of a few bandages in the face of an effective plague warning... This is what makes the *Greenpeace Report* so important ... it says what the IPCC should have said about how we must respond to the greenhouse threat...”

Global climate change has emerged as a major scientific and political issue within a few short years. Politicians the world over are shuffling for position in the wake of opinion polls showing steady escalation of public concern. Scientific journals are crammed with comment and analysis. Forty-nine Nobel-prizewinning scientists have appealed to President Bush to curb greenhouse-gas emissions, professing that ‘global warming has emerged as the most serious environmental threat of the 21st century ... only by taking action now can we insure that future generations will not be put at risk’.¹ Even nuclear-weapons laboratories host conferences on the greenhouse effect these days.²

The message is clear: humankind is heading for deep trouble unless we drastically cut our emissions of greenhouse gases into the atmosphere. In May 1990 the world's climate scientists formalized the message – clear as it already was from the pages of the science journals – in a report for the Intergovernmental Panel on Climate Change (IPCC), a body set up in 1988 by the UN General Assembly to advise world leaders on the seriousness of global climate change. 'We are certain', said the 300-plus scientists from more than twenty countries, that 'emissions resulting from human activities are substantially increasing the atmospheric concentrations of the greenhouse gases ... These increases will enhance the greenhouse effect, resulting on average in an additional warming of the Earth's surface.' The scientists went on to make the prediction, based on their computer simulations of climate, that if greenhouse-gas emissions continue at their present rates the world average temperature will rise by a full degree Celsius (nearly 2° Fahrenheit) or thereabouts within just thirty years. A full degree may not sound like much, but it is a global average, and the record of past climate shows that global average temperatures have never risen so fast before. Within less than half a century – if we carry on with 'business as usual' – we will be experiencing average temperatures never before felt while humans have walked on the planet.³

Furthermore, the IPCC scientists say that their assessment is likely to be an underestimate: the uncertainties involved in predicting climate change are legion, but the aspects of the climate system omitted from the computerized climate-simulations on which their predictions are based are such that the warming is most likely to be amplified by natural processes.⁴ One of several ways this is likely to happen is as a result of warming oceans being unable to take as much carbon dioxide out of the atmosphere as they do at present. Carbon dioxide, which comes largely from the burning of coal, oil, and gas, is the main greenhouse gas. The other principal greenhouse gases are chlorofluorocarbons (CFCs), methane, and nitrous oxide.

In a world rapidly becoming inured to sweeping change on the political stage, we have witnessed the emergence of an environmental threat which cuts to the heart of how humans choose to operate society – a problem which is truly global in both consequence and cause. Greenhouse gases are produced in their current superabundance as a result of the ways we humans produce and use energy, by

the use of certain industrial chemicals (CFCs and related gases), and by intensive agriculture and tropical deforestation. In a world in which the greenhouse effect is allowed to continue its buildup, we would all – at some stage – be losers, and we would all – to varying degrees – be responsible.

No quantum leap in scientific understanding explains this situation. What we have been caught unawares by – scientists, industrialists, farmers, policy-makers, environmentalists, and ordinary people alike – is quite possibly a coincidence. The 1980s saw the emergence of computer models which, in all the world's climate-modelling centres, began predicting unprecedented global warming in the decades to come. They also saw the five hottest years in recorded history. Media-worthy manifestations of the warm '80s – droughts, floods, freak storms – whether themselves the product of greenhouse warming or of natural climatic fluctuations – conspired to fix the public spotlight on global warming.⁵

The issue came into focus in 1988. An international conference hosted by the Canadian government in Toronto produced a consensus statement which spoke of effects 'second only to global nuclear war' if humankind did not mobilize effectively and cut greenhouse-gas emissions appreciably.⁶ The concern of the United Nations was awakened. Thus was the Intergovernmental Panel on Climate Change born.

Most governments have delayed their policy decisions until the IPCC reports in August 1990 – many in undisguised trepidation. The implications of concerted action to cut global emissions of greenhouse gases are not for the politically faint-of-heart. Simple ameliorating measures such as investment in renewable forms of energy-production, and wholesale energy efficiency, are perceived by five-year-cycle politicians and the industrial interests which lobby them so effectively as being too far outside the present frame of reference to be workable. And this is not to mention any attempt at a rethink of the economics which each year requires tens of billions of dollars to be transferred from the developing countries to the industrialized countries – positive transfers from South to North due to debt service alone having been in excess of \$300 billion since 1982 – or any committed effort to cut weapons-spending by more than a few token per cent. Already, environmentalists talk of the NIMTOO syndrome: Not In My Term Of Office.

Yet the first whiffs of panic are in the air. The Dutch deputy prime minister, for example, told the president of Brazil in 1989 that if deforestation in the Amazon was continued to its completion, emitting as it does such vast quantities of carbon dioxide, Holland would cease to exist as a country, flooded by rising seas as global temperatures rose.⁷

Also taken by surprise, the relevant vested interests have now begun inevitable spoiling tactics. The world spends up to a trillion dollars a year on its coal, oil, and gas,⁸ and a further trillion dollars on its weapons.⁹ The multinational infrastructure spawned by these juggernauts over the years cannot look with relish on a world in which fossil-fuel burning must be cut to the bone, and concepts of national security trampolined from the military to the environmental.

'Crisis? What crisis?' Readers of an editorial in the *Wall Street Journal* on 6 February 1990 could be forgiven this age-old response. They read of the grave dangers of 'scientific faddism' and the unreliability of the 'global warming models of various agency bureaucrats'. The editorial was a response to environmentalists' criticism of a speech President Bush had given to the third plenary of the IPCC in Washington a few days before. In it, Bush had spelt out that 'we all recognise that the atmosphere is changing in unexpected and unprecedented ways', and 'we know the future of the Earth must not be compromised'. Fine sentiments, but – to the exasperation of many present – the president made no specific commitments to buy insurance against such eventualities. 'The politics and opinion', the president informed us, 'have outpaced the science.' Sitting in the audience, I struggled to assimilate this Orwellian reversal of what I see each week in the scientific journals. The *Wall Street Journal's* editorial writer spoke for corporate America a few days later: 'We hope the President hangs tough on this one.'¹⁰

The first serious political heat from global warming began to be felt during April of 1990. An attempt by the Bush Administration to recruit other governments to its 'business-as-usual' approach to the greenhouse effect collapsed in Washington, because most European countries – excepting the UK – want action to abate it. At a White House-hosted seminar on global warming, the West German environment minister, Mr Töpfer, caused a stir by announcing that he would be suggesting to the German government that Germany's emissions of carbon dioxide should be cut by at least 25 per cent – unilaterally – by

the year 2005. Holland was among those who accused the Bush administration of an unseemly attempt to delay an effective international policy response to the greenhouse effect in order to protect US industry. A group of twelve European governments want international negotiations for an agreement to protect global climate – a Climate Convention – to begin even ahead of the World Climate Conference in October 1990.

The IPCC climate scientists are only one of three working-groups in the IPCC process. Their conclusions will be combined with those of two others: one studying the impacts of climate change (Working Group 2: Potential Impacts), and the other the policy responses (Working Group 3: Response Strategies). It is the integrated results of the three working-groups, combined as an overall IPCC Report, which are due to be released in August 1990. By June, it was already clear that the dire warnings the scientists issued when their report was completed in May had been ignored by the policy-makers of the third IPCC working-group. Their report did not even refer to ‘global warming’ – merely to ‘potential climate change’.¹¹ This despite the scientists’ agreement that they are ‘certain’ of global warming unless significant efforts are made to cut greenhouse-gas emissions.

The Response Strategies Working Group did not even come down on the side of a freeze in greenhouse-gas emissions, much less the deep cuts the scientists clearly indicate will be necessary if any attempt is to be made to slow or arrest the greenhouse effect. The IPCC scientists calculate ‘with confidence’ that, to stabilize the carbon dioxide composition of the atmosphere at its present level, cuts in global emissions of that particular greenhouse gas would need to exceed 60 per cent. They are not alone in such calculations. Similar conclusions have been drawn by the US Environmental Protection Agency, in a report long stalled in the Washington bureaucracy,¹² and in a recent study Greenpeace commissioned from a leading climate scientist at the University of East Anglia’s Climate Research Unit,¹³ summarized in Chapter 4 of this book.

The atmosphere already contains 25 per cent more carbon dioxide than it has done for at least 160,000 years. And the gas is building up steadily at 0.5 per cent per year.¹⁴ In view of this, many experts advocate cuts in global carbon dioxide emissions of 20 per cent in the next decade. Even this, however, would only be a start if the goal is to stabilize the greenhouse-gas content of the atmosphere. If that is not

the goal, then the clear implication of the IPCC scientists' report is that the corollary of a decision to continue with business-as-usual – or anything approaching it – is a willingness to mortgage tomorrow's environmental security in the interests of today's corporate profit, and a reluctance to take on the challenge of change.

The stakes are high with global warming, as even President Bush has noted. In his February address to the IPCC, speaking of the need not to jeopardize the future of the planet, he observed: 'We bear a sacred trust in our tenancy here – and a covenant with those most precious to us: our children and theirs.' Mrs Thatcher has spoken, in similar vein, of 'the prospect of irretrievable damage to the atmosphere, to the oceans and to the Earth itself'.¹⁵ Now that the world's climate scientists have taken away any possible excuse for further procrastination, it is only a matter of time before the full extent to which Bush and Thatcher have compromised themselves becomes clear. While ostensibly waiting for the opinion of the IPCC, their interim policy-making hardly engenders confidence that they are taking the greenhouse threat seriously. In the US, for example, the Department of Energy projects a 22-per-cent increase in carbon dioxide emissions by 2010, and President Bush opposed a provision in the Clean Air Act that would require car manufacturers to increase vehicle efficiency to 40 miles per gallon as a means of cutting carbon dioxide emissions from oil. In the UK, among many such examples, the Department of Transport is planning for an 80–140-per-cent increase in the number of cars on the roads, and the Department of Energy has been busy inflating its energy projections to minimize the impact of any decision to cut emissions.¹⁶

Meanwhile, concern grows apace among the public. In the UK, an opinion poll showed that almost everyone has now heard of the greenhouse effect, 76 per cent are worried by it (28 per cent 'very worried'), and almost 80 per cent think the government is doing too little about it (41 per cent 'far too little').¹⁷ In the USA, 60 per cent of the public believe that global warming is a worrying issue, and 72 per cent want the US government to take the lead in acting on it.¹⁸ All this was before the publication of the IPCC scientists' report. Those commentators who have predicted that the greenhouse effect will be the policy issue of the 1990s are so far very much on course.

A host of expert studies, summarized in several chapters of the *Greenpeace Report*, have shown that carbon dioxide emissions can

be cut substantially over the next decade, and at negative cost. Given the right legislative framework, it is generally far cheaper to save energy than to find extra capacity for generating it. And with prices-per-kilowatt-hour plummeting for a number of renewable means of energy production, there are now many means of generating new future-energy requirements in greenhouse-friendly ways which do not involve the burning of fossil fuels. But all this requires a collective willingness to countenance change, and the right approach to state intervention and investments. The UK government leads the cast of those impaled on its own prejudices. Research and development expenditure for energy efficiency in 1989–90 was just £8.9 million (\$15.5 million), for all renewables just £18 million (\$31.4 million). The government regularly spends these kinds of sums on its own advertising. Elsewhere the picture is the same. In the USA, funding for energy efficiency and renewables has been cut hugely in the 1980s. In the European Community, research-and-development budgets for nuclear are still much higher than for renewables and energy efficiency combined.

Global Warming: the Greenpeace Report was born of our certainty in Greenpeace that the scientists in IPCC would fairly reflect the unprecedented scientific consensus which exists in the world today, and our equal certainty that most governments would choose to ignore them insofar as they possibly could. Thus it is that the United Nations Intergovernmental Panel on Climate Change – its scientists excepted – has failed in its responsibilities in what has been the most important international consultation process in history. The policy-makers have consistently refused to listen to the dire and virtually unanimous warnings of the climate scientists: they continue to recommend the distribution of a few bandages in the face of an effective plague warning.

Yet policy responses by governments are due to be formulated based on the IPCC report, and a common approach to negotiations on a Climate Convention are due to be decided in ministerial negotiations at the World Climate Conference at the end of October, also based on what the IPCC report says. If the IPCC scientists' Working Group is to be believed – and who else do we have to go to for an opinion on the future greenhouse threat than the world's most eminent climate scientists? – a viable future for humankind could be at stake, to say nothing of the ecological traumas which unmitigated global