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PRIME MINISTER

10 January 1989

CLIMATIC CHANGE

The Cabinet Office paper is commendably thorough and informative, particularly in view of the speed with which it has been compiled. The proposed seminar, with independent professional participation, sounds good provided that its purpose is clearly understood to be informative only and not to reach policy conclusions.

DO WE HAVE AN ENVIRONMENTAL POLICY?

Environmental policy, in its broadest sense, has already been defined, particularly in your Royal Society Speech and that of the Party Conference. I would summarise our broad policy as follows:

1. The regular monitoring and control of pollutant activity with immediate effects. Examples include sulphurous emmissions from coal and chemical plants leading to acid rain, water from effluents which may pose immediate dangers to life, and clean air regulations which protect the atmosphere from particle contamination leading to smog. HMG's record in combating these short-term forms of pollution is as good as any and better than most.

2. Continuous monitoring of long-term threats to life, especially where the atmospheric chemistry is subtle and only recently becoming understood. The CFC influence on upper atmosphere ozone depletion is a good example. Most extant life forms, in particular human life, appear to have developed under a long-term ultra violet shield. If that shield goes we shall

have to live under permanent protection from sunlight which would be terrible.

The present work on ozone depletion is based on the scientific principle of finding out what is happening and taking early action as soon as some pattern in evident. The Montreal agreement on CFC reduction is acknowledged to be a step in the right direction, but with far further to go because the phenomenom is both cumulative and irreversible. The March conference is an HMG initiative which has wide support.

The long-term health effects of radioactivity once fell into this category of major, potentially irreversible, harm which we may be storing up for ourselves as a species. Although detailed work on carcinogenic mechanisms has far to go, the guidelines on safety may have already become excessive.

WHY THE GREENHOUSE EFFECT IS DIFFERENT

Long-term climatic change, which an enhanced greenhouse effect may cause, does not directly threaten life in the short term. No-one is suggesting that the Maldives or Holland is suddenly going to become inundated because everyone burns too much fossil fuel in 1989! The threat is rather to global organisation and economic activity.

Experts generally agree that human activity will lead to some long-term global heating but are divided on its consequence. There seems to be nothing significant that any individual country, other than America or Russia, can do within its own borders. It is the old logical conondrum called 'the prisoner's dilemma' where it is clearly in the interests of all to do something (escape) but against the interests of anyone to lead (because he will get shot). I therefore caution against attempting to reach firm policy

conclusions on climatic change in a hurry. This is a field where opinions outweigh both study and ideas. The issue has also been hijacked by the politically unscrupulous.

There is no argument for inaction. Until we have thought out alternative mechanisms to combustion for energy generation, and major advances in the efficiency with which raw energy is harnessed, CO_2 discharge will continue. Indeed it will increase rapidly from developing countries where current energy consumption per capita is only a twentieth of the United States. As India, China, South America, and hopefully black Africa evolve into economically viable societies there are going to be colossal increases in CO_2 discharge. See article in Annex A.

Action of various kinds may be effectively taken within the developed world for the other greenhouse gases. However, the most important, CO_2 emission , does not yet have a solution. World levies on fossil fuel consumption, unless totally financed by the developed countries, will be unenforceable. LDCs will always find a way round because the alternative is more starvation. Politically delayed growth is only acceptable morally or practically in an advanced society with plenty of economic cushioning to absorb the impact.

WHAT WE NEED TO DO NOW

There are three key areas needing more work before Government will be in a position to advance a robust, detailed policy on climatic change:

1. Data collection and computer modelling both of atmospheric behaviour and the geographic consequence of global warming must proceed apace. The uncertainties in the figures presented are too great

and can be narrowed through continued work. As this happens , the divergence of expert views on the consequences of sea level rises will narrow so that world leaders will better identify and agree upon the dangers.

2. In parallel with the above, urgent diplomatic thinking must go into resolving the logical issue - how can all countries be persuaded to do something which it is in no individual country's interest to pioneer! There are several ideas which the paper does not mention. Examples include:

2.1 Making the granting of Foreign Office aid dependent upon energy conservation policies in the LDCs.

2.2 A system of economic offsets, whereby the LDCs would be allowed more CO_2 per capita while the developed countries learned to live with less.

2.3 Mechanisms involving third world debt retirement, such as James Goldsmith has advocated for protecting rain forests.

3. Further research on energy production itself including enhanced efficiency and electricity storage. The revolution which an effective fuel cell technology would bring to transport is obvious. It is absurd that, in the age of space travel and microchips, we still generate electricity by using turbines to move wires in a magnetic field!

Alternative energy research, including efficiency enhancement would be a worthy contender for Government funding - not because some economist thought fossil fuels would become expensive, but because they may

threaten the stability of the planet! Annex B summarises the Rocky Mountain Institute's recent findings on the importance of improved energy efficiency, which is identified as the single most important ingredient towards solving the greenhouse problem.

CONCLUSION AND RECOMMENDATIONS

1. Hold the seminar in April or May, which would distance it from the March ozone conference. Both Ministers and independent experts should be involved.

2. Emphasise that the purpose of the seminar is to inform and exchange views. It is not to reach precipitate and detailed policy decisions. Proposals for White Papers and 'glossy policy documents' should cease until we know what we are talking about. The 'Action for Cities' document addressed a clearly defined problem about which the necessary information was to hand.

3. Encourage the Government funding of research which goes to the heart of the CO_2 issue, namely alternative electricity generation and storage.

4. Fund data collection and computer models which will narrow the uncertainty margin of present projections on sea level. IBM have given an excellent lead in this - you have already seen Corbally Stourton's letter which is at Annex C.

5. Recognise that ultimately the problem may not be catastrophic - at the moment we do not have the evidence to say whether it will. What we must do is to find out fast.

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6. In parallel with the above, examine political and diplomatic mechanisms for corralling global activity so that the dilemma of who goes first is addressed.

7. Not only scientists should lead the seminar although it is important to hear their views, particularly when there is divergence. It is equally important to hear people like Crispin Tickell who combines a passionate long-term interest in climate with diplomatic and political exposure. Perhaps he could take a lead on climatic issues for HMG after he leaves New York?

GEORGE GUISE

ANNEX A

INSTITUTE OF BRITISH GEOGRAPHERS AT COVENTRY

Treaty on greenhouse effect unlikely

By Pearce Wright
Science Editor

A leading British researcher in environmental sciences gave a pessimistic forecast yesterday of attempts to reduce the "greenhouse effect" through international agreement by limiting the discharge of carbon dioxide from the burning of fossil fuels.

Dr Martin Parry, of Birmingham University, told the annual meeting of the Institute of British Geographers in Coventry that the "interventionist" approach being used to avoid the destruction of the Earth's protective ozone layer, would not work for the greenhouse effect.

Ozone destruction is being caused by the discharge of CFCs (chlorofluorocarbons), the man-made chemicals produced by a handful of large firms for use in aerosols, refrigerators and foam plastics.

He said the Montreal Protocol, an agreement which came into force on January 1 to run down production of CFCs by 50 per cent by 1999, was possible because market mechanisms provided an incentive for industry to develop "ozone friendly" alternatives.

The issue of carbon dioxide gas, discharged from a variety of sources in every country, was a different matter.

The United Nations environmental programme, which arranged the negotiations for the CFC treaty, is aiming for a "greenhouse gas protocol" by 1995 but Dr Parry said the latest calculations showed that the amount of carbon dioxide in the atmosphere would double by about the year 2050, with an average rise in the global surface temperature of between 1.5 and 4.5 degrees centigrade.

The threat of climatic change would seem ideal for international intervention because the effects were so long term and carried serious consequences for people, plants and animals not yet in existence.

However, the issue was surrounded by contentious matters, such as disputes over the underlying science of the greenhouse effect and predictions of the scale of its impact on the climate, which made agreements unlikely.

He said there would be a strong temptation to cheat for social and economic reasons if attempts were made to introduce limits.

The problem was linked to existing disparities across the world, with, for example, the United States already discharging 20 times more carbon dioxide per head of population than India, and much more than China, yet the need for more energy production, with implications for the greenhouse effect, were felt more strongly in countries such as India and China.

to direct attention to the most cost-effective and rapid responses to what is becoming an increasingly urgent global environmental threat.

By definition, increased energy efficiency involves a reduction (or even halt) in the growth of energy demand. On the other hand, a nuclear strategy is a supply-side approach that is, in principle, independent of energy demand. Thus our analysis utilizes several different energy scenarios, as follows. After summarizing the arguments for a nuclear strategy in Section 2, we begin our analysis in Section 3 by examining two scenarios -- high and medium energy growth -- in which large scale global investments are made in nuclear power. This is followed in Section 4 by a review of historical experience with nuclear power, focusing in particular on developing countries. Then in Section 5 we examine low energy growth scenarios, in which increased energy efficiency is an integral part, and compare these with nuclear abatement strategies. Finally, in Section 6, nuclear and efficiency investments are compared directly to determine their relative cost-effectiveness for abating CO_2 emissions.

Our findings are as follows. *First, even a massive worldwide nuclear power program sustained over a period of several decades could not "solve" the greenhouse problem. Even if it could, the Third World cannot support a major expansion of nuclear power on the scale that would be required in an attempted nuclear solution to greenhouse warming. Second, the key to ameliorating future climatic warming caused by the combustion of fossil fuels is to improve the efficiency of energy usage.* Indeed, the greatest determinant of future CO_2 emissions is the degree of future improvement in energy efficiency. Even a sixfold expansion of nuclear power -- suggested by advocates as a response to greenhouse warming -- would have little impact on the greenhouse problem, unless that problem has already been largely solved by efficiency in the first place. In the U.S., *improving electrical efficiency is nearly seven times more cost-effective than nuclear power for abating carbon dioxide emissions.*

The conclusion of this study is that improved energy efficiency is a relatively effective and inexpensive response to the greenhouse warming problem, whereas nuclear power is the opposite: relatively ineffective and expensive. Following the conclusions are two Appendices that provide details of calculations and analyses in the text.

2. Arguments for a Nuclear Response to Greenhouse Warming

Nuclear power has long been viewed as a possible solution to the global greenhouse problem. As public awareness of the threat of climatic warming grew during the 1960s and 1970s, nuclear energy was frequently cited as an attractive alternative to fossil fuels.[13] In recent years, nuclear advocates have pointed to the growing urgency of environmental problems associated with fossil fuels as a major reason for revitalizing nuclear power.[14]

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[13] See, for example, A.M. Weinberg, "Nuclear Energy at the Turning Point," IAEA CN-36/593, 1977, and the discussion in Chapter Six of Keeny, S.M. et al., Nuclear Power: Issues and Choices, Ballinger, 1977.

[14] See, for example, A.M. Weinberg, "A Nuclear Power Advocate Reflects on Chernobyl," Bulletin of the Atomic Scientists 43(1):58 (Aug./Sept. 1986), or quotation from H. Blix in Nucleonics Week, 16 Oct. 1986, p. 13. See also testimony from Edward M. Davis and W. Howard Arnold to Joint Hearing on Technologies for Remediating Global Warming, U.S. House of Representatives, 29 June 1988. See also R. Wilson, "Nuclear Power and Energy Policy," Nuclear News, May 1988.