PM/89/016

PRIME MINISTER

Global Climate

/ 1. I attach a paper on International Handling of Climate Change in the Medium Term for our meeting on 19 April. It has been prepared by my officials in collaboration with the ODA, Forestry Commission and Treasury.

2. I am copying this minute, with the paper, to Nigel Lawson, Nicholas Ridley, David Young, Kenneth Baker, Paul Channon, John MacGregor, Cecil Parkinson, Chris Patten and Sir Robin Butler.

(GEOFFREY HOWE)

Foreign and Commonwealth Office
14 April 1989

FCO CONTRIBUTION:

INTERNATIONAL HANDLING OF CLIMATE CHANGE IN THE MEDIUM TERM

1. At her meeting on 12 January to discuss global climate change, the Prime Minister invited the Foreign Secretary to commission a paper on the international handling of this problem in the medium term, covering:

a. the implications of the development plans of countries like China and India;

b. the options for arresting and if possible reversing the trend to deforestation globally;

c. the possible link with the problem of third world debt;

d. whether there was a case for a new United Kingdom initiative on the global climate, perhaps related to the need for reafforestation, and if so what the timing should be.

2. A contribution on (a) is attached, at Annex A. It is clear that India and China will make a major and increasing contribution to greenhouse gases in the medium term. The problem of greenhouse gas cannot therefore be solved by actions within the developed countries alone. The pattern of development in the industrialising countries of the Third World needs to be so designed that it avoids the mistakes which have been made in the past by the developed world. But the priorities of Third World countries in allocating their scarce development resources will almost certainly not coincide with those now perceived by the developed world as crucial for the planet as a whole. So there will be a need for sustained action at the multilateral level to get agreement on objectives and priorities. That effort will almost certainly need to be reinforced by the provision of resources on an adequate scale to developing nations. The potential implications for the size, shape and geographical distribution of aid programmes are considerable

at a time when donor countries and institutions will already have onerous commitments to the important priorities of poverty reduction and the fostering of sound economic policies (both of which are components of any strategy of environmental care). The FCO will prepare a paper, designed for the UK Delegation to the Montreal Protocol Review meeting in Helsinki from 2-5 May, on assisting the developing countries over substances that deplete the ozone layer, which will be an important step towards dealing with this particular problem.

3. The UK domestic and ODA forestry initiatives are described in an ODA/Forestry Commission paper at Annex B. Current plans have been drawn up within the constraints of current policies and priorities for the UK Aid Programme. They are arguably no more than a token contribution to the issues which need to be addressed. Other OECD nations may well consider that a much greater effort is needed and may well be ready not only to commit more resources to the task but also to press the UK to share substantially in that process. The UK stands fourteenth out of eighteen in the OECD league table of donors (which is based on official development assistance as a percentage of GNP, not by any means a perfect yardstick but the one deemed by the international community to measure burden-sharing). Moreover it is clear that action on forestry alone, important as it is, will not make an adequate impact on global warming without parallel action on energy efficiency, population and poverty reduction. It is also clear that the countries of crucial importance in the forestry context are not necessarily those to which we have hitherto been willing and able to give priority in our Aid Programme. We will need to consider whether the ODA's current forestry initiative is of a scale sufficient to give us international credibility as a leading advocate of positive action in these areas of fundamental importance for the global environment (see paragraph 24 of Annex B).

4. On (c): a separate paper by the Treasury and FCO Economic Advisers deals with the role of debt management (Annex C). This does not suggest there is the basis for a new British initiative.

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5. There is however scope for further British initiatives in the field of international institutions. There is already a good deal happening in this area, in addition to the Helsinki Review meeting mentioned above:-

- The Inter-governmental Panel on Climate Change which is due to report in the spring of 1990.

- The World Climate Conference (autumn 1990) which will consider the IGPCC report.

- The 1992 Conference on the Environment. This is as yet unfocussed but it is principally envisaged as a follow-up to the Brundtland Report.

6. The United Nations Environment Programme is endeavouring to co-ordinate these activities; but it is not a strong organisation. Meanwhile, 24 countries meeting in The Hague on 10/11 March at the initiative of the French Prime Minister issued a Declaration calling for a new institutional authority either by creating a new body or by strengthening existing institutions. This will be pursued at a meeting of officials in Paris on 9-10 May.

7. Against this background, there are strong arguments for Britain to take the initiative in two areas:

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(a) A campaign for the strengthening of existing UN environmental institutions.

We have clearly indicated our opposition to a completely new body as called for in The Hague Declaration. But it is already clear that UNEP needs considerable strengthening if it is to play a central role in dealing with the environmental issues currently under discussion, particularly those listed above. The Prime Minister's speech at the end of the recent London Conference on the Ozone Layer referred to the need to strengthen existing international organisations, as did Mrs Chalker in her speech to the Lord Mayor's Easter Banquet on 5 April.

We are currently studying, with the DOE, what specific proposals we might make, first in discussion with Dr Tolba, the Executive Director of UNEP, at the Governing Council meeting in Nairobi starting on 14 May. Apart from being increasingly clearly necessary, such an initiative might also be the best way of absorbing or re-channelling the Rocard initiative. In her speech Mrs Chalker referred to some of the possibilities, which range from increasing UNEP's resources to a change in its status. If broad agreement can be reached with Dr Tolba on the right approach, we would then need to attract as much support as possible from other countries. These might include the Russians (who were not invited to The Hague and have recently been floating a number of suggestions for dealing with environmental issues in the UN); and the reluctant attendees at The Hague (Canada, Japan, Australia and New Zealand). We could then spell out our ideas in a further speech say in early June.

(b) A campaign for an international Convention on Climate Change.

This idea is already in the air: it has been encouraged by the Canadians (who want to go as far as an International Law of the Atmosphere) and has for example been referred to both by the German Environment Minister at the London Conference and

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by Mrs Chalker on 5 April. It would, theoretically and logically, be best to await the Report of the Inter-governmental Panel on Climate Change in 1990, but it is unlikely that the Canadians and others will do so: there will be pressure at the UN General Assembly and that pressure might take forms difficult for us to accept - for example calls for specific targets for the reduction of greenhouse gases.

For us to espouse the idea publicly and in a high profile way would not only gain us credit both domestically and internationally: it would greatly increase the chances of guiding the initiative in directions which would suit us (and many other industrialised countries) best - in other words by pressing for a simple umbrella or framework Convention (rather than an all-embracing one) which would be easier and quicker to negotiate and agree, and reserve action on different gases and substances which contribute to climate change and global warming to separate protocols. These would lay down international standards and targets for action. These could be either national, regional or global. The protocols would be negotiated subsequently and separately according to the state of scientific knowledge and the emergence of international consensus. The precedent of the Vienna Convention on the Ozone Layer and the Montreal Protocol on CFCs is probably the most advantageous and attractive to the UK.

Such an approach would limit initial undertakings to principles and would not oblige us to take decisions, in the context of proposing and negotiating an umbrella Convention, on what we could accept or offer e.g. on carbon dioxide emissions. But we shall in any event be required to consider at some stage ideas such as the promotion of energy efficiency e.g. by formulating targets of CO2 emissions relating to GNP, the fixing for each country of a proportion of energy which would depend on fossil fuels, assistance to developing countries to reduce emissions, and fiscal measures. Our

/approach

approach would increase the chances of these proposals being considered in the context of individual protocols but avoid delaying the Convention itself unduly.

We are urgently considering what the outline of such a Convention might be, prior to an informal discussion with the Canadians to see how far the attraction of a major political push from the UK might make them willing to consider our approach rather than the wider ideas they currently seem to espouse. We could then consider, possibly in the same timescale as a speech on strengthening UNEP, a clear public call for a Convention. Such timing would enable us to move before the impact and interest already aroused is lost, and before other countries (eg the French) have crystallised their own ideas.

China and India

1. At the moment statistics do not allow of certainty in estimating emissions of greenhouse gases for India and China. The uncertainty is heightened because there are sources of emission in these countries, not common in the developed world, where little research has been done. The main global warmers are carbon dioxide, methane, nitrous oxide, CFCs and ozone. Other gases can contribute through chemical reactions in the atmosphere which increase concentrations of greenhouse gases but it is very difficult to quantify their effect.

2. Because of its smaller GNP and population, India is a significantly smaller global warmer than China (e.g. in terms of CO_2 of the order of one-third the impact) but both are already substantial contributors to net increases in CO_2 emissions, responsible for substantial proportions of methane and NOx emissions, and potentially major causes of future CFC emissions. In the future India and China's growth plans will have major implications for global warming, increasingly so if the current improvement in their long term rates of economic growth is maintained or enhanced. But India's impact will only be one-third to one-quarter that of China.

Carbon Dioxide

3. Table I shows fossil fuel consumption in coal equivalent terms for 1986. India and China together account for over 10% of consumption (and CO_2 emissions) from fossil fuel consumption. India is clearly a much less serious contributor than China. The developed countries (including the Eastern Bloc) account for about 80% of fossil fuel consumption. These figures do not include an important source of CO_2 emissions in developing countries which is fuel wood. It is estimated that fuel wood burning in India is equivalent to the burning of a further 90 million tons of coal per annum (in terms of CO_2 emissions) which would raise India's CO_2 emissions to about the level prevailing in the UK. Similarly China's emissions are probably increased by about 65 million tons of coal equivalent from fuel wood, raising its proportionate

contribution to about 9% of world emissions. Probably the most fruitful way of tackling this problem is to assist both China and India to improve their energy efficiency. Experience throughout the developing world shows that power generation and transmission systems are run much less efficiently than in the industrialised world.

4. Against this has to be set the very substantial efforts that are now being made to increase forested area in both India and China which has the effect of fixing carbon. Better data are needed to estimate the extent to which new tree planting is offsetting the effects of fuel burning, with respect to net emissions of CO2.

Methane

5. Methane emissions arise from a number of sources: Paddy cultivation and natural emissions from wetlands are a major source but there are no reliable data. India and China accounted for about 28% and about 23% respectively of total world paddy area in about 1986: this suggests that the total emissions in India and China from this source are 25-115 million tons per annum.

6. It is difficult to estimate the effect of other sources of methane emission (e.g. biomass burning, domestic animals, coal mining), but, in total, India and China may account for 35-42% of world methane emissions, but not rising at a rapid rate.

/Nitrous Oxide

Nitrous Oxide

7. Making assumptions about likely emissions, it is estimated that India and China may contribute about one quarter of world nitrous oxide emissions, principally from natural soils, fertilisers, biomass burning and fossil fuel combustion, but the rate of growth is, again, probably low.

CFCs

8. It is unlikely that either of the two countries is currently a significant contributor to CFC emissions world-wide, but their potential for expansion is enormous, and if they do not adhere to the Montreal Protocol will be the major cause of future CFC emissions.

Ozone

9. Ozone concentrations are increased through the release of volatile organic species and nitrogen oxides into the atmosphere promoted by sunlight. Although India and China may account for only a small proportion of total emissions based on their relatively low shares in fossil fuel consumption, the climate may significantly enhance the ozone-creating impact along with the fact that vehicle exhaust emissions are likely to be more noxious than in the developed world.

10. Carbon dioxide is thought to be the main global warmer by a long way, followed by CFCs, methane, nitrous oxide and ozone. If the percentages in preceding paragraphs are weighted by global warming and effect then India and China's overall contribution to global warming is likely to be less than 15% largely because it is assumed that their contribution to CFC emissions are very small and the gases where their relative contribution is quite large account for perhaps only one-fifth of the global warming effect (and less than CFCs).

11. On that basis, and assuming India and China sign up for the CFC Protocol, carbon dioxide emissions from fossil and other fuels,

methane and nitrous oxide will be the main sources of increases in greenhouse gases. In respect of methane, it seems unlikely that the major sources (rice/wetlands, biomass burning, and animals) will increase at a substantial rate in the future because future increases in rice output will come from yield increases rather than area expansion, biomass burning is likely to be increasing at about the same rate as population growth, and animal numbers are also increasing relatively slowly. The only substantial increases are likely to come from the expansion of coal mining, but since this appears to contribute only 4-10% of total methane emissions from India and China, even a fast rate of growth will not have a substantial effect.

12. Again, only two nitrous oxide sources are likely to increase at a rate faster than population, that is fertilisers and fossil fuel consumption, accounting for 16-25% of India and China's emissions of N^2O. Ozone concentrations can be assumed to rise in line with fossil fuel consumption.

13. India's Eighth Plan (to run from 1990) is not yet in existence but it is understood to be based on a growth rate of GNP of 6% pa (as compared to 5% in the Seventh Plan). Given possible shortfalls in performance, it would be reasonable to assume growth rates of consumption of relevant commodities as in the Seventh Plan targets as follows:

Coal	9% pa
Crude Oil	7% pa
Natural Gas	15% pa
Nitrogenous Fertilisers	11% pa

Based on current consumption patterns, this suggests a growth in Indian CO_2 emissions from all fossil fuel burning of about 9% per annum. This needs to be compared with the projected UK central scenario of increases of just over 2% per annum from 1990-95. In respect of methane, the expansion of coal mining at about the rate of consumption, will have a small effect on India's total methane emissions most of which are from relatively static sources. Overall, India's methane emissions might be expected to grow at 2%

pa. There are no comparable world projections. In respect of nitrous oxide, India's growth rates in fossil fuel consumption and fertilisers might serve to contribute to net increases in emissions of about 2% pa also.

China

14. In the medium term a reasonable forecast for China in real growth of about 7.5% pa. It is likely that fossil fuel consumption will grow at a somewhat slower rate. Chinese use of energy is very inefficient and in the past supply constraints have significantly hindered industrial output. Thus growth must be based on increasing the efficiency as well as the total quantity of energy consumption. This is the explicit policy of the Chinese Government. The plan has been for oil and natural gas to assume greater importance. This may be optimistic however. Thus a 5% pa growth for all fossil fuel consumption, and hence for fossil fuel CO_2 emissions, might be appropriate. Regarding methane and nitrous oxides similar estimates to India apply.

15. The above evidence suggest that both India and China will contribute increasingly to global warming in the future largely because their rates of growth of GNP and associated use of fossil fuels will exceed world averages. In the case of India, a 9% growth rate of CO_2 emissions would mean that it would contribute 10% of the world's annual increase of 2% pa (if it is 2%). (In the case of China a 9% increase would correspondingly contribute 37% of an average 2% increase worldwide.) Thus it is not inconceivable that India and China together might account for nearly 50% of increases in CO_2 emissions from fossil fuels. This conclusion, however, is very much dependent on the overall rate of growth of CO_2 emissions. In 1983/86 world consumption of energy in coal equivalents rose at over 2.5% pa and India's contribution to this increase was 5% and China's 20%.

UK FORESTRY INITIATIVE

SUMMARY

1. Trees are the most effective terrestrial means of locking up carbon. UK domestic forest policy serves to provide a net gain in carbon through replanting as well as afforestation. Though these actions, combined with industrial utilisation practices, support the aim of stimulating international action to mitigate carbon dioxide additions to the atmosphere and are significant, they are small in relation to the world CO2 problem. Deforestation in tropical countries releases about 2 GT of carbon a year compared with 5 GT from fossil fuels. Current initiatives supported by the UK, bilaterally and in association with FAO, World Bank, development banks and NGOs, will help to mitigate the CO2 problem. Reinforcement of home and overseas aid policies towards forestry is desirable in order to stimulate further international action. This paper considers how.

BACKGROUND

2. Tree growth and timber production are by far the most effective terrestrial biological mechanisms for absorbing carbon dioxide and locking it up for very long periods of time. Sustained forest management ensures the continuous storage of carbon. This function is enhanced by the conversion of harvested material into relatively long lived products such as chipboard and building timber. Such uses can lock carbon up for several hundred years beyond the time when the wood was cut, though in other uses, such as wood pulped for newsprint, carbon may be stored only an extra year from the date of harvesting. By contrast, in unmanaged natural forests which are in a state of equilibrium in which old trees die and decay, the fixation

/of CO2

of CO2 is offset by the release of carbon through the process of decay. However exploitation of natural forests for timber can result in a partial fixation of CO2 through conversion of the wood to long lived uses. Destruction of natural or plantation forests can result in a rapid release of CO2 which can only be offset in the longer term if the forest is regenerated and protected.

3. For purposes of fixing CO2, the most efficient system in the short term is the form of forest which produces the greatest mass of dry matter per unit area. However it is desirable that the CO2 thus fixed should be retained in the crop for as long a time as possible. Growth rates and final felling ages vary considerably with latitude. The relevance of age is that the growing stock and hence mass of carbon steadily increases through the years. Typical rotations of plantation grown conifers are about 40-70 years in temperate latitudes compared with 10-30 years in the tropics, while broadleaves vary from 60-100 years in plantations in the temperate zone to 10-50 years in the tropics; however natural tree life-spans in both conifers and broadleaves are correspondingly much longer.

THE UK FORESTRY SITUATION

4. The table below uses the rates of dry matter production achieved in Britain by typical upland and lowland species to calculate the average rates of carbon fixation (column 3) on typical rotation lengths. For each combination of species, growth rate and rotation, the average amount of carbon stored over all years of the crop and its successors is calculated by assuming typical timber products each with a specific life and expressing these as an addition to the average mass of carbon stored in the living trees (col 4).

RATES AND PERIODS OF CARBON FIXATION
BY BRITISH TRESS AND UTILISATION PRACTICES

Site type	Tree species	Mean annual rate of carbon fixation, tonnes per hectare (rotation in years)	Average amount of carbon stored, incl. allowance for wood utilisation, expressed in tonnes per hectare over all years of crop's life
(1)	(2)	(3)	(4)
Upland	Sitka spruce	2.3 (55)	77
	Scots pine	1.7 (70)	63
	birch	1.2 (50)	61
Lowland	Scots pine	2.2 (65)	89
	Corsican pine	3.3 (50)	133
	oak	1.8 (199)	107

5. From this table it is clear that trees grown on lowland sites are more efficient at absorbing and storing carbon than those grown in the uplands. Secondly conifers are more efficient than traditional broadleaved species such as oak. These generalisatio are useful in assessing the likely contribution which different forestry policies may make towards reducing the greenhouse effect. The recent emphasis on afforestation of better land in the lowlands to act as an alternative to surplus agricultural production is obviously helpful in this respect.

CURRENT DOMESTIC FORESTRY POLICY

6. Current policies encourage the active management of all woods for timber production purposes. There is no great conflict between this policy and other policies which exploit the multipurpose role of woodlands such as landscape amenity, recreation and nature conservation. Extreme conservation policies such as the retention of woodlands beyond the natural life cycle of the component trees can however result in a net release of CO2. The country's current stock of 2.3 million hectares of woodland contains 65 million tonnes and fixes annually some 2.9 million tonnes of carbon net per year at present, which is small though not negligible in relation to the 170 million tonnes of carbon from fossil fuel burn in Britain.

7. Replanting of felled areas to restore a tree crop is normal practice in Forestry Commission and grant-aided private woodlands. Replacement after cutting of other woodland is covered by felling licensing arrangements. Thus in Britain loss of woodland area is limited to the small land take of housing, industry and roads. Current policy is to achieve a total area of new planting, outside the new Farm Woodland Scheme and on land set aside from cereal growing, of 33,000 hectares per year. The Farm Woodland Scheme envisages the planting of a further 12,000 ha per annum over the three years 1988/91, which brings the total planting target up to 45,000 ha per year.

8. The additional contribution which these proposed rates of new planting makes to the amount of carbon fixed annually is small but increases annually so that by the year 2005 the total stock of woodlands will be fixing 4.0 MT annually compared with 2.9 MT if there were no new planting.

DOMESTIC POLICY INITIATIVES

9. On general grounds as well as that deriving from concern over global climatic change, the current trough in new planting in Britain makes it very desirable to revive confidence. Encouragement of investors in planting at the present time may be usefully deployed as a signal to the rest of the world in favour of increased afforestation and reforestation. Possible initiatives include:-

a. restatement by forestry Ministers of the government's policy of support for continued planting by private investors,

b. reinforcement by agriculture Departments of policy favouring forestry as an alternative to agricultural land use in light of current CAP developments.

GLOBAL FORESTRY SITUATION

10. In the EC there is no common forest policy and it is not the UK's intention to support any comprehensive policy in this

area. Some Community support is currently provided for the protection of forests, provision of access and afforestation of land relinquished by agriculture. A new Forestry Action Programme is currently under discussion. This would provide additional support to investment rising to a Community contribution of some £160m per annum by 1993. To the extent that this is agreed and countries introduce or extend arrangements such as the UK's Woodland Grant Scheme and Farm Woodland Scheme, the resulting management and afforestation would add to the net storage of carbon currently occurring in Europe.

11. The value of restocking after cutting and of afforesting non-forest land in order to offset additions of CO2 to the atmosphere applies to forests throughout the world. One important factor in the world context which is not a problem in Britain is the relative effectiveness of restocking measures after forests have been felled or burnt. This factor is especially important in less developed countries but is also far from being a negligible concern in some major forest countries such as Canada where the intervention of the Federal Government has been necessary in order to help reduce the large area of unstocked land resulting from past decades' exploitation.

12. The most relevant measure for assessing the forestry changes in carbon balance is the total volume of trees standing, or growing stock. This may be maintained or increased, even under exploitation, simply by reducing losses from insects, fire and wasteful logging practices. A useful measure of the success of policy aimed at enhancing growing stock or controlling its depletion is that of net change in forest area. The table below summarises the world situation in terms of areas of existing forest and estimated rates of change.

FOREST AREAS (c.1980)

	Area (closed forest and other woodland) million hectares	Annual rate of change in area, per cent
World	4321	-0.3
All developed countries	1964	Negl.
of which:		
UK	2.3	+1.1
EC	57	+0.1
Nordics	60	+0.1
US	298	-0.03
Canada	436	-0.06
USSR	930	-0.2
All developing countries	2356	-0.6

13. In the world as a whole, closed forest occupies 2900 million hectares split equally between developed and less developed countries. Of the 1400 Mha of other woodland (savanna, etc), two-thirds occurs in developing countries. Among developed countries, in which the growing stock of wood is currently increasing at ½% per year, the general picture is that the more densely populated countries show an increase in area, while the less densely populated such as the USA and Canada show a small decline. Despite the fact that the volume of growing stock even in these countries is broadly constant, a failure to reforest provides the wrong signal to developing countries. More careful planning of exploitation to ensure regeneration, as well as firmer control of logging practice and subsequent tending, could provide support for actions aimed at reducing uncaring and wasteful deforestation in developing countries.

Developing Countries

14. In developing countries the picture overall is of a decline in area, although the rates of change vary markedly. It has to be remembered however that many advanced countries have prospered as a result of their transformation of forests and forest land to other uses: substantial incentives will be required to persuade governments and people not to follow the historic example of developed countries.

15. Since large scale clearance for agriculture began around 8000 BC the cumulative effect of deforestation has been to reduce forest cover from one half to one third of the world's land area. While the process had gone on over millenia, forest loss in tropical regions has become much more significant in the recent past. Tropical forest accounts for about half the remaining forest area and is potentially much more biologically productive than temperate forest. However, while the area of temperate forest has increased slightly over the last two decades, deforestation in tropical regions has exceeded reforestation 10-20 times. It is estimated that 25-40 per cent of the original area of tropical forests had been lost by 1980 when the overall loss rate was 0.6% per year. These figures are now eight years out of date. In some areas, the rate of tropical moist forest destruction has accelerated greatly. While the global focus has been on rates of deforestation there are areas where reafforestation is significant. In Kenya, for example the Green Movement and Women's Groups have been instrumental in reafforestation. The dynamics of this and the possibility of replication elsewhere need to be more clearly understood and applied.

Causes of Deforestation

16. During the 1970s the deforestation of tropical woodlands was blamed on unsustainable demand for fuelwood which is being cut faster than trees can grow in 63 countries. Half the world's people depend on fuelwood to

meet their daily energy needs for cooking and heating. Recently researchers have suggested that while fuelwood demand may be a major cause in specific areas, in most cases woodland is cleared of trees in order to grow crops. In some countries the forests are seen as a resource to be commercially exploited to finance rapid economic growth. This has led to rapid deforestation in virtually all cases without the hoped for economic development.

17. Commercial logging contributes to deforestation in two ways. It provides a financial incentive to open up the forests for tree felling and access roads which encourage the invasion of forest land by landless shifting cultivators, a combination which is often devasting. The international tropical hardwoods trade however is a relatively small component of tropical commercial logging. Worldwide, less than 10 per cent of the timber extracted from tropical closed forests and woodlands is put on the international market, but the proportions vary widely between countries. In turn, hardwoods are a relatively small component of international timber trade, and international trade in tropical hardwoods is expected to decline sharply in the next century as deforestation and domestic use reduce the supply of timber for export.

Requirements for Countering Deforestation

18. Since land clearance for agriculture is a major cause of deforestation (probably accounting for 70% of permanent forest destruction in Africa from 1950-1983) tackling the problem requires an integrated approach based on land use studies of the productive potential of particular areas. Agricultural research and development are needed to increase yields on existing land thereby reducing pressures for further clearance. Work is also required on agroforestry to develop viable systems which retain tree cover while allowing the land to be used simultaneously for agriculture or livestock. The potential agriculture returns from agroforestry are significant. Shelter belts of trees to protect crops from soil erosion can increase crop yields by 15-20% while an adequate cover of savannah woodland can increase grain and protein production by 30 to 60% in arid rangelands.

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19. Within the forestry sector experience suggests that an appropriate policy and institutional framework is required if reafforestation is to be successful. First governments must attach priority to tackling deforestation. Secondly a permanent forest estate must be selected in a way that respects political realities. The selection of the estate must be based on adequate information about the environment and its ecological potential. Once selected the estate's managers must be guaranteed long-term security for their forests and a market for sustainably harvested timber and products. The managers also require information and planning models on which to base sustainable management regimes. Finally resources and controls must be available to ensure that the revenues from the estate are distributed between those involved (government, loggers, local communities etc) in a way that ensures their continued co-operation.

The ODA Forestry Initiative

20. The ODA is undertaking a forestry initiative to implement the Prime Minister's pledge to "direct more of our aid to encourage the wise and sustainable use of forest resources." (Hansard 24 October 1988 Vol. 139 column 4). Mr Patten's latest progress report is attached.

21. So far this initiative has particularly involved taking steps to increase bilateral aid commitments. ODA's bilateral actions are part of the Tropical Forestry Action Plan (TFAP) which is the acknowledged and agreed mechanism for chanelling forestry aid The Plan provides a framework for coordinated action by bringing all interested donors together to review the forestry sector in individual recipient countries and draw up a national plan of action to be financed with the help of those donors. The TFAP is serviced by a small secretariat in the Food and Agriculture Organisation and after 4 years is active in more than 60 countries . ODA is supporting action in 20 of them at a current cost of about $10 million. The TFAP calls for expenditure of some $1 billion per year by all donors at 1985 prices. This represents a doubling of the overall level of donor support.

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22. We are encouraging other bilateral and multilateral agencies to put more effort into and impetus behind both the TFAP and the International Tropical Timber Organisation (ITTO). ITTO was established under an agreement between tropical timber producers and consumers in 1983 and has 41 members representing 90% of current trade. ITTO's objectives are to promote trade expansion and diversification and encourage an ecologically sustainable approach to forest management.

23. If the forestry initiative is to be fully effective there is a need to reinforce the political will within appropriate fora. At the political level, we need to ensure that the issues figure, inter alia, in:

i. Intergovernmental Panel on Climate Change (IPCC);

ii. UNEP Governing Council May 1989;

iii. Paris Economic Summit;

iv. UNGA and FAO

v. IBRD 1989 Autumn meeting;

vi. CHOGM;

vii. 1990 Bergen Conference (European regional follow up to Brundtland);

viii. 1992 "Stockholm Anniversary" Conference

Papers prepared for the Economic Summit by the FRG (who claim to finance 15% of forestry assistance) show they share our view and stress the role of the TFAP and ITTO.

24. At present commitments to forestry projects currently underway total approximately £80 million of which about £30 million relates to plantation projects financed by the Commonwealth Development Corporation.

Commitments are drawn down over several years; much of this money has already been spent. From the existing commitments of £50 million ODA's own expenditure was an estimated £7 million in 1988/89 (expenditure varies considerably from year to year but the trend has been upward). Expenditure has been constrained by budgetary considerations, and does not reflect the UKs undoubted technical capability nor our leading advisory role in the TFAP process and in ITTO Council meetings. If as a result of bilateral discussions and international political initiatives focussing on the existing TFAP and ITTO mechanisms, developing countries can be persuaded to share our emphasis on forestry, ODA could usefully spend in the order of £70 million a year in bilateral aid by the end of 5 year from a much higher level of commitments. This figure takes account of the absorptive capacity of the countries identified in Mr Patten's report. It would represent some 10% of the global donor requirement identified in the TFAP. Increasing expenditure to this level would have implications for ODA's running costs and level of in-house forestry expertise.

25. It is impossible to quantify the impact of enhanced and effective action by the UK and other donors on total forest area nor to predict the implications for climate change. If deforestation can be slowed in Amazonia, West Africa and South East Asia there should be a positive impact on carbon dioxide levels. However progress has to be country specific and the benefits are likely to be hard won and gradual. This means that while the forestry initiative should be pursued vigorously other avenues for helping developing countries, for example encouraging energy efficiency, population policies and appropriate agricultural and industrial development need to be taken forward simultaneously.

Conditionality

26. Success in increasing bilateral commitments is crucially dependent on the priority given to forestry by recipient countries. There is an argument that the need for reforestation is so urgent that we should use all available measures to change developing countries' priorities, and that the provision of aid should be made conditional on countries' environmental policies and that we should cut off all aid to countries

which cut down their forests. Such an approach smacks of sanctions and would run counter to agreed policy as stated in the Prime Minister's letter of 7 March 1989 to Allan Roberts MP which rejected blanket conditionality while fully endorsing the need for appropriate environmental conditions in specific projects. Experience suggests that aid is only efficiently and cost effectively used when it meets needs that are seen as priorities by the recipient governments. Getting other countries to share the importance we attach to forestry will almost certainly mean that developed countries will have either to shoulder much of the burden themselves or shoulder some of the burden of other aspects of development to which third world countries attach higher priority in the light of their local circumstances. In any case threatening to cut off aid assumes that countries have the basic data, monitoring capacity and resources to know what is happening to their forests and to affect the outcome. In fact external support for projects and institutional strengthening may be crucial to a country's ability to act. Britain's internationally acknowledged expertise in tropical forestry means we are well placed to help with training and institution strengthening, and both are expected to be an integral part of several of the country proposals in the forestry initiative.

FROM: CHRIS PATTEN

DATE: 3 APRIL 1989

cc PS/Lord Glenarthur
Mr Caines
Mr Ainscow
Mr Bennett
Mr Manning
Mr Hudson
Mr Buist
Mr Ireton
Mr Turner
Mr Beetham, MAED/FCO
Mr Machin

Secretary of State

This is a further report on our commitment to direct more of our aid to encourage the wise and sustainable use of forest resources.

Bilateral country programmes

2. We have identified the following countries where we aim to seek new forestry commitments over the next 2-3 years:-

Africa	Cameroon
	Ghana
	Kenya
	Lesotho
	Malawi

/Nigeria

	Nigeria
	Somalia
	Sudan
	Tanzania
	Zimbabwe
Asia	Burma
	China
	India
	Indonesia
	Nepal
	Sri Lanka
Elsewhere	Belize
	Brazil
	Fiji
	Honduras
	Jamaica
	Solomon Islands
	Vanuatu

An outline of the proposed action for each country is appended. Actual commitments will be subject to the agreement of the country concerned, taking account of the priorities they themselves set for the forestry sector for the aid funds available from Britain and of the activities of other donors in this sector. For certain countries, eg. Burma, progress will to a greater or lesser extent depend on the political and/or security situation. For some others, such as Sudan and Somalia, our willingness to take on new commitments in the near term will depend on wider aid policy considerations determining the stance we take on the future of the development aid programme. The list of countries is not exclusive but to be effective we will need to focus our own bilateral efforts. If opportunities arise elsewhere which seem to offer the scope for particularly effective help, and if country resources permit, we will pursue them. But the list represents

/our current

our current assessment of where the prospects are in principle most favourable. It is expected that an integral part of several of these country activities will be additional training and institution strengthening.

Research

3. Commitments to centrally-funded, strategic forestry research in 1989 already exceed £1 million compared to £840,000 in 1988. Our increased support for international forestry research (an additional £0.5 million a year from 1 April) has permitted the initiation of a project at the World Conservation Monitoring Centre, Cambridge, to provide data on the existence, distribution and status of protected areas of tropical forests and woodlands in close association with the FAO Tropical Forest Resources Assessment Project (1990). We are reviewing the possibilities for additional support to research in association with FAO and the International Council for Research into Agro Forestry (ICRAF) and through our central involvement in planning the future programme of the International Tropical Timber Organisation (ITTO) and the Tropical Forestry Action Plan (TFAP). We are participating in the Consultative Group on International Agricultural Research discussions on how to take forward last December's Wilton Park conference on strengthening developing country national research capacity.

Commonwealth Development Corporation

4. CDC is already a significant investor in the forestry sector in Swaziland and Jamaica and is paying increased attention to expanding its forestry portfolio. In 1988 it launched a further venture alongside the Government in the Solomon Islands and has a number of investments in other countries under active consideration.

/British Charities

British Charities

5. We are encouraging British charities to put forward more forestry projects under the Joint Funding Scheme. I recently announced a block grant to the World Wide Fund for Nature of £1 million in 1989/90. We have agreed with WWF that more than 70% of this grant will go on forestry conservation.

Multilateral Aid and other Bilateral Donors

6. We are pressing for the main multilateral agencies to adopt appropriate policies and provide funding for forestry (for instance, the Inter American Development Bank). We are encouraging FAO to give further support to the TFAP. We are paying for a forestry adviser to work in the EC Commission. We also aim to ensure in the programming of Lome IV that proper weight is given to tropical forestry. We intend to encourage other bilateral donors to devote more resources to forestry and we shall consider the scope for collaboration with other donors.

Access to expertise

7. In order to ensure we have the expertise to deliver the initiative, we have taken steps to increase our Corps of Specialists in forestry from 4 to 10 posts and to create an additional forestry post in the Overseas Development Natural Resources Institute (ODNRI). We plan to appoint a TCO Regional Forester later this year to assist our SE Asia Development Division (SEADD). We already have strong links, including a Manpower Centre Scheme, with the Oxford Forestry Institute but we have advised them to widen their access to expertise to help meet the expanding programme.

International Political Agenda

8. In order to take forward international action on reversing deforestation and encouraging afforestation, we need to encourage further support for the Tropical Forestry Action Plan and the International Tropical

/Timber Organisation

Timber Organisation and to convince developing countries to place higher priority on forestry. We should do so by seeing that the issues figure inter alia at:-

(i) Paris Economic Summit;
(ii) UNGA and FAO
(iii) IBRD 1989 Autumn meetings
(iv) CHOGM;
(v) Intergovernmental Panel on Climate Change IPCC;
(vi) UNEP Governing Council May 1989;
(vii) 1990 Bergen Conference (European regional follow up to Brundtland)
(viii) 1992 "Stockholm Anniversary" Conference

9. You may wish to advise the Prime Minister of progress.

Myles A. Wickstead

C P
(Approved by Mr Patten
and signed in his absence)

Overseas Development Administration
3 April 1989

TARGET COUNTRIES FOR ADDITIONAL BILATERAL FORESTRY COMMITMENTS

AFRICA

Cameroon: Tropical moist forest regeneration and management project under consideration based on R & D work undertaken at Mbalmayo.

Ghana: New forest management and inventory project, part of a major World Bank project, to start once Ghanaians raise royalty rates on timber trees

Kenya: Project in preparation to manage and conserve the natural forest inside forest reserves and identify areas outside reserves for conservation of genetic resources or for protection of catchment.

Lesotho: Further support to existing project to strengthen newly formed forestry division under consideration.

Malawi: Support for the Forest Research Institute of Malawi has been offered, working closely with the World Bank wood energy project. Support for construction of women's dormitory at Malawi College of Forestry so that women can be trained particularly for extension forestry, is under consideration.

Nigeria: Continuing support for conservation and management of the Oban Hills forest reserve in association with WWF.

Somalia: New project involving local people in conservation and management of natural woodland in the Bay Region under preparation.

Sudan: Plans to fund a link between Khartoum and Edinburgh Forestry Departments well advanced. Strenthening forest research at the Forest Research Centre Soba under consideration. A forestry component will be part of a new phase of the Northern Region Irrigation Rehabilitation Project.

Tanzania: Depending on identifying a suitable NGO as implementing agency, support for social and community forestry in one region, possibly Tabora.

Zimbabwe: ODA Forestry Adviser plans an early visit to examine the scope for involvement in the forestry sector

ASIA

Burma: Action frozen due to political and security situation but potential assistance with forest conservation and management in medium term.

China: Potential link in medium term between Oxford Forestry Institution (OFI) and suitable Chinese institution eg. on tree breeding/genetics.

India: Further phase of Karnataka Social Forestry Project under consideration; possible major project in Western Ghats; research on fast growing species.

Indonesia: Exploratory mission planned for May 1989. A proposal (ATP) for assistance with radio communications to assure forest protection is under consideration.

Nepal: Continuation and strengthening of current programme of research and community forestry/agroforestry (Kosi Hills) in context of 25-year Master Plan for Forestry Sector.

Sri Lanka: Mission to finalise proposals for a substantial ODA forestry programme planned for April/May.

ELSEWHERE

Belize: Continuation of assistance in forest management and research plus consideration of proposals under TFAP review led by ODA.

Brazil: Consideration of new TC projects related to the Amazonian forests.

Fiji: Continuation of existing expertise and CDC involvement;

Honduras: New TC project for wood use centre in preparation;

Jamaica: Continuation of current assistance in forestry and potential for supporting CDC activity under consideration

Solomon Islands: Increased TC and CDC involvement under consideration.

Vanuatu: Increased TC support, ie. Director of Forestry, envisaged.

THE ENVIRONMENT, FORESTRY AND DEBT

1. This note considers the possible role of debt management in promoting our environmental objectives internationally. It considers linkages between debt policies and the environment, how they might be exploited to promote environmental objectives, and discusses a particular proposal (by Sir J Goldsmith) of this type, to arrest deforestation.

2. Many of the problem debtor countries of Africa and Latin America are also those from which the international community seek more resposible environmental policies - sometimes in conflict with the debtor's short term economic interests. This has led to suggestions that one way of providing incentives for improved environmental policies in these countries might be to include some environmental linkage in the design of measures to alleviate their debt difficulties.

3. Within the current debt strategy the scope for this is limited. Generally speaking, the middle-income debtors owe most of their debt to commercial banks. We have argued strongly that governments should not intervene in arrangements made between debtors and their commercial bank creditors. Debt reduction negotiated voluntarily between debtors and banks is however welcome. This has generally taken one of two forms:

a) debt/equity swaps, in which hard currency debt is exchanged for domestic currency - in effect at an advantageous exchange rate - which can be used for new investment in the debtor country;

b) debt buy-backs, whereby debts are <u>either</u> paid off immediately in cash, at a fraction of their face value; <u>or</u> exchanged for new debt which offers greater certainty of ultimate repayment (eg by guarantee or securitisation) again at a discount.

In some instances, conservation organisations have been able to purchase debt at a discount and arrange for the debtor to buy it back with local currency to be directed to environmental projects. But such transactions have been few and relatively small, and funds for this sort of scheme are necessarily limited. It might be possible for governments to do more to encourage potential investors to undertake debt/equity swaps specifically for environmentally related investments. But governments in fact have little leverage to persuade commercial banks to take the losses which are involved in such debt reduction schemes.

4. The part played by governments under the current debt strategy is rescheduling of debts owed to them in the Paris Club, and provision of new finance through the IMF, World Bank, multilateral development banks or bilateral aid and export credits. Such assistance is conditional on debtors pursuing approved programmes of economic reform. Additional finance provided by the World Bank and bilateral donors is usually subject to careful environmental assessment. It might be possible to make more use of loans specifically directed to economically beneficial improvements in environmental policy as part of the range of sectoral adjustment loans used by the World Bank in financing packaging for debtors. Environmental views are beginning to permeate the Bank's thinking in structural and sectoral adjustments, and their capacity for environmental assessment has increased substantially in recent years.

5. Most other suggested linkages between debt policy and the environment would arguably erode important principles of the debt strategy - such as that creditor governments should not take over the risks incurred by banks, that governments should avoid encouraging debtors to believe relief will be available to bail them out of avoidable economic difficulties, and that debt owed to official creditors should not be reduced. It may be that a convincing quid pro quo, for example relating to forest preservation, would allow creditor governments to move some way beyond the current debt strategy without setting undesirable wider precedents. Two possibilities are discussed below - although governments would need to consider very carefully whether the

environmental benefits outweighed the disadvantages in terms of the debt strategy:

i) creditor governments could themselves write down the debt owed to them; enable it to be bought back at a discount; or provide money (bilaterally or through an IFI) for buying back discounted commercial debts in return for environmental action. But (as in the case of voluntary debt-for-nature swaps), the debtor faces immediate costs (both the opportunity cost to the potential beneficiaries of deforestation and the local currency cost to the government in financing protection measures) in return for reduction of debt obligations payable in the future. This may prove an obstacle to exploiting a debt-conservation link on any significant scale. (The easiest way to make a small contribution, and one that avoids governments directly purchasing debt, would be to offer cofinancing to NGOs who plan such swaps.) In any case, it really amounts to the provision of additional aid, and needs to be considered against alternative uses for aid resources - such as direct support for environmental projects;

ii) governments could extend the economic conditionality applied to IFI resources and Paris Club reschedulings to include specific environmental conditions. There may be scope at the margin to take a longer term view of the role of the environment in economic recovery - particularly in the negotiation of medium term IMF programmes (ESAF and EFF) and in World Bank structural and sectoral adjustment loans. Some Woeld Bank sectoral loans already include environmental conditionality. But to extend conditionality beyond policies directly related to economic recovery or the immediate purposes of the loans in question would not be within the Articles of the IMF or World Bank, and might increase worries over national sovereignty. In any case, many debtor countries lack the institutional capacity to ensure compliance with environmental conditions, and policing would be very costly.

It would be easier to justify exploring these routes if the environmental policies involved could be shown to assist with

debtors' economic recovery and put them in a better position to overcome their debt difficulties. But in practice there is likely to be a conflict between the two objectives, at least in the short-term.

Deforestation

6. Arresting deforestation has been suggested as one of the more promising applications of a debt/environment linkage. Deforestation can bring benefits to the country concerned both through sales of timber and because it provides additional agricultural land and fuel. But there are longer term costs, both locally and globally. The former include soil erosion and depletion of resources, while the latter causes a reduction in carbon fixation by the forests (releasing CO_2 into the atmosphere) and in genetic diversity (notably in Brazil, Madagascar and Central America). There may also be other, as yet unresearched, climatic effects. Some 46% of the world's tropical forests are in Latin America, almost all countries with commercial bank debt problems. Another 37% are in Africa, where debt problems are even more acute, but largely owed to government creditors.

The Goldsmith Proposal

7. Sir J Goldsmith has proposed a scheme which attempts to use the approach discussed above to persuade countries with tropical rain forests at risk to manage them in a sustainable manner, consistent with broader international interests. Essentially, he proposes that such "host governments" should annually be forgiven the interest on some or all of their outstanding debt in exchange for undertaking to protect their forests for the good of all. This would be achieved by an international agency ("Forestco") entering into a contract with the host government to pay annual rent in the form of retirement of the host nation's international debt at face value. Using aid resources in the hands of existing international organisations, Forestco would acquire such debt through the market (where it typically stands at a discount on face value) or by bilateral transactions with banks and creditors. To reduce costs and to maximise the immediate impact on host nations' cash flow,

payments might be confined to forgiveness of the stream of interest due, with Forestco selling on rights to capital repayments in a market to be created. To avoid escalation of the price of the debt purchased in the market, Forestco would buy forward (for payment on delivery) or buy future call options on the debt - again in markets not at present existing, but which might be created.

8. The main attractions in adopting this approach towards securing improved environmental performance by host nations would be that it could be presented as a commercial transaction devoid of the overtones of exploitation associated with proposals to transfer ownership; that it recognises that the developed world may have a stronger interest in such policies than the host nation; that, moreover, it uses politically neutral markets to achieve this; and that the inclusion of debt relief to which host nations attach high priority provides a strong incentive for them to cooperate.

9. Several major problems would, though, have to be overcome to make such a scheme viable:

a) the aid resources required would be very substantial; the Latin American debtors alone are due to make interest payments of $40bn this year, while the total international flow of aid (multilateral and bilateral), net of interest and repayments, was only $42bn in 1987. Moreover, the aid provided would be a grant, not a loan generating interest;

b) whilst the concept of a rent for good international environmental behaviour might be intellectually appealing, it comes close to accepting the premises underlying the New International Economic Order (NIEO) which we spent such effort refuting during the 1970s. It would be necessary to present such a scheme as part of a cooperative international effort to help host nations to undertake environmental policies consistent both with their own long term interests and with their international obligations. Too obvious a flavour of quid pro quo could undermine this;

c) there would inevitably be doubts about the ability of host nations to deliver their side of the bargain. Doubtless as strong an incentive as debt forgiveness would be a powerful reason for host governments to try. But the domestic, political and economic forces ranged against them, not to mention managerial inadequacies, are formidable obstacles;

d) the proposed solution to the problem of driving up the value of discounted debt to be acquired by Forestco seems inadequate. Forward and futures markets in discounted bank debt do not at present exist; indeed, the underlying markets are thin and, in the main, limited to transactions among banks; if it was known that Forestco had a continuing requirement to buy host country debt, the price would be considerably enhanced, with the benefit going to the bank concerned; the only way to avoid this would be a "dawn raid" in which all of Forestco's future requirements were negotiated (if not paid for) at once; even if Forestco declined to buy at prices above those available before the process started, this might simply have the effect of putting a floor to the market in which Forestco might be unable to satisfy its own requirements;

e) non-debtor problem governments would be excluded from such a system of environmental incentives, as would most low income countries, whose debts are owed primarily to official creditors. Morevoer, the benefits of debt relief would not go to non-afforested debt problem countries;

f) on a less fundamental point, the likely price in the market of the capital component of discounted bank debt would be only a very small proportion of the component interest.

10. More generally, this scheme goes far beyond anything which has hitherto been contemplated in the context of the Brady Plan or even of the Chancellor's African debt initiative. In these cases, the main benefit sought as a quid pro quo for debt relief has been better economic adjustment policies which would have the effect of improving the performance of the creditworthiness of the country concerned. Whilst environmental objectives are not inherently

inconsistent with these obejctives, there would be a severe danger of failing to hit either target if these two objectives were juxtaposed. If aid resources were available on the scale required to support the scheme, they could almost certainly be effectively targetted - either at environmental or economic objectives.

11. Thus the Goldsmith scheme could have attractions in dramatising the importance of the objective and, perhaps, in drawing forth the additional aid resources which might not otherwise have been provided. But there would, at best, be very high costs for somewhat uncertain benefits. Nevertheless, it may have to be recognised that persuading host countries to adopt satisfactory environmental policies will be expensive, even if alternative routes are few.

File Global Climate Summit [Sir C Tickell's background MP].

RESPONSES WITHIN THE INTERNATIONAL FRAMEWORK

1. **The Role of Governments and Public Opinion**

A symbiotic relationship.

2. **Establishing a Basis for International Action**

First a brief look at what has already been done:

- The World Meteorological Organization (WMO)

Coordinates worldwide monitoring of the weather, climate, ozone, greenhouse gases and the study of these key elements.

- United Nations Environment Programme (UNEP)

After the 1972 Stockholm Conference, the General Assembly established new institutions for the environment within the structure of the United Nations. These new institutional arrangements were superimposed upon a situation where organizations such as FAO, UNESCO, WHO, WMO and others were already involved in activities with a strong environmental dimension. The resulting new institutions were the Governing Council, a legislative body composed of representatives of 58

governments; the Environment Fund, a source of finance to be made up of voluntary contributions and used to support the costs of environmental initiatives within the United Nations system (it is used today for financing such programmes as regional and global environment monitoring; data collection systems and research); and an Environment Secretariat as a focal point for environmental action and coordination within the United Nations system. The environment secretariat, although only one element of the United Nations Environment Programme, itself soon came to be known as UNEP.

- The World Climate Programme (WCP)

Established in 1979 by the eighth World Meteorological Congress. Since then the World Climate Programme had provided the international means for the collection of climate data and its applications, the study of climate impact, and climate research. The WMO is responsible for overall coordination of the World Climate Programme and for the Data and Applications components. UNEP has the responsibility for Impact Studies. Research is being coordinated by ICSU and WMO. Other international organizations involved are UNESCO, FAO, the World Energy Council, the International Atomic Agency and a consultative group on international agricultural research.

- The Intergovernmental Panel on Climate Change (IPCC)

The formation in 1988 of the Intergovernmental Panel gave a major new dimension to the World Climate Programme. The intergovernmental panel, established by the Secretary-General of WMO and the Executive Director of UNEP, has moved the assessment of the scientific understanding of climate change to an intergovernmental level. The panel, which is open-ended, has established three working groups to summarize and assess a) the scientific aspects of climate change (British chaired), b) their socio-economic and eco-system impacts (Russian chaired), and c) the national and international response (American chaired). WMO and UNEP are jointly providing the Secretariat (based at WMO Headquarters in Geneva) and financial support. At its first session (November 1988, Geneva) and the first meeting of its bureau (February 1989), the Panel agreed on August 1990 for the completion ofits assessment of the climate change issue.

- International debate

Recognition that there are environmental trends that threaten to alter the planet, and the lives of many species upon it, including our own, led to the establishment in 1983 of the Brundtland Commission on Environment and Development by the UN General Assembly. The 1987 report of the Commission was of value both for setting out the issues in a coherent form

and for its relative impartiality in doing so. At the 1987 General Assembly no-one contested the need for more respect for the environment, but the welcome was often qualified. For example the Prime Minister of Zimbabwe argued that "the current inequitable international economic system is the major cause of environmental degradation in the developing world" and that "to ask us to plan for our survival tomorrow when our survival today is in doubt is to demand too much of us". These arguments were echoed by the Indian Prime Minister and many others.

At the 1988 General Assembly there was a shift of emphasis in the focus of the economic debates. The problems of external indebtedness still took up much time. But the most productive debates were those dealing with climate change and other environmental questions. There was growing recognition that action on debt lay elsewhere but that responsibility for ensuring a coordinated response by the UN system on environmental questions had now become one of the Assembly's most important tasks. Climate change is prominently on the next General Assembly's agenda.

Between now and 1992 climate change will be an important issue at the following meetings: a high level political conference on climate change in the Netherlands in November 1989 (Dutch national initiative, planned before Hague

Conference, about 60 countries to be invited; UNEP/WMO involved); the World Energy Conference in Canada in September 1989 (not a UN conference but attended by energy producers and governments) and the World Climate Conference in Geneva in June 1990 (the first, organized in 1979 by WMO and other international agencies provided a comprehensive review of climate effects on human activities). The Russians have proposed meetings on the health of the earth at expert level in 1989 and a summit of 15-20 Heads of State in 1990. The 1992 UN Environmental Conference will have climate change as one of its major themes.

3. The Politics of International Action

There is now little we can do, nationally or internationally, to prevent global warming. We can only hope to mitigate the effects and adapt ourselves to them. At one end of the spectrum are the main industrial countries. They are unwittingly responsible for most of what has happened both from their past and present contribution to the greenhouse gas increase, and from their creation of the kind of society which the rest of the world now wishes to copy.

At the other end of the spectrum are the poor non-industrial countries which have so far contributed little to atmospheric pollution. In between is a range of countries, conspicuously India,

China and Brazil, which may have contributed little in the past but are likely to make a steeply rising contribution in the future. In all cases but in varying measure, emission of greenhouse gases comes from 3 main sources.

- Change of Land Use

  Land use has meant forest clearance for agriculture, and the burning of trees, believed to account for putting around 1 billion tons of carbon a year into the atmosphere (or 13% of the forcing mechanism in greenhouse gases). It has also produced methane from cleared land, paddy fields, and ruminants, and some nitrous oxide from increasing use of fertilizers.

- Energy Policy

  Although consumption of fossil fuels is the main factor in increasing atmospheric C02, a prime energy source for countries at the poorer end of the spectrum has been fuel wood and biomass burning. This has of course contributed to forest clearance, caused soil erosion, and aggravated the difficulties of land management.

- Industrial Policy

  The contribution of industrial effluents, in particular chlorofluorocarbons, to global warming is at present very

small in poor countries, but would increase sharply if industrialization proceeded as now planned in such countries as India, China, Brazil and the Soviet Union.

A prime factor driving change of land use, energy policy and to some extent industrial policy in all but established industrial countries is the pressure of rising human population with corresponding increase in selected domestic plants and animals. While countries in temperate areas have achieved a broad balance between population and resources, those in other parts of the world, in particular China and India, are facing a crisis of Malthusian proportions. In poor countries the prospects for sustained economic growth are bleak.

This complicates the task of concerting international action. In the middle and at the poorer end of the spectrum, governments often lack the means to carry policies through and restrain their own people, for example from forest clearance. Many have not yet understood - or do not want to understand - the nature of the problem. In this respect the Brundtland Commission Report was of great help. The key elements in our approach to them should be to emphasize:

- the likely consequences of global warming.
- the national interest of each country in mitigation and adaptation.

- acceptance in general terms of the principle that the polluter pays.
- practical measures of help.

On each of these points

- Our models may not be adequate, and the consequences still uncertain. The report of the Intergovernmental Panel could help. Thereafter we must do all we can to bring home the likely consequences of global warming.

- Those for each specific country and region will be different. The more we can relate them to national circumstances, the better the response will be. The points that usually make most impact are likely changes in rainfall patterns and sea level rises. The fate of Bangladesh, the Netherlands, and coastal areas worldwide was strongly emphasized in the General Assembly debate on the Brundtland Commission Report. The likelihood of large numbers of environmental refugees with nowhere to go, of conflict within and between countries over water and productive land, and of the evolution of new pathogens and diseases is a chilling problem for the future.

- Acceptance in general terms of the polluter pays principle is critical to securing worldwide cooperation in dealing with the problem. We have already recognized the need for equity in dealing with chlorofluorocarbons and tightening up the Montreal Protocol.

For non-industrial countries it seems unfair that the established industrial countries should have drawn the short term benefits of pollution without paying the long term price, and should now be asking the rest of the world to abstain from taking the benefits. How the principle of equity could be applied is highly complex. But a beginning would be to give an example. If the industrial countries were to restrict their consumption of fossil fuels, undertake reafforestration, and adopt means to discourage production of greenhouse gases, the rest of the world would be more inclined to follow. The non-industrial countries might welcome ideas which have recently been floated for an international environment fund, perhaps as a special facility of the World Bank. At present they would probably reject a worldwide carbon tax to be paid into such a fund, but they would be impressed if the industrial countries took national measures to tax gas emissions according to their greenhouse effect, or try to ensure that the current prices broadly reflect the future costs of coping with it.

- They would welcome of help from the industrial countries. They might well try to bargain measures of restraint against measures of aid. Such help could cover the three main sources of greenhouse gas production.

- Change of Land Use

  The focus here could be on helping recipients use already productive land rather than seeking to bring marginal land under cultivation; treating forests as a resource, and harvesting them on a longer time scale; combining extension of forest cover with small scale agriculture; and helping to reduce wilderness and desert through selection and development of plants and trees for use in arid and semi-arid conditions. Help may also be necessary in developing agricultural plans and techniques for new environmental circumstances (for example changing use of C3 and C4 plants). The same would go for shifting of animals and plants, in particular trees, to enable them to survive rapid climatic change.

  Debt-for-nature swaps need further consideration. There are variants that get round the problem of sovereignty.

- Energy Policy

Conservation should be a priority where there is energy to conserve. Whatever measures to limit consumption of fossil fuels in industrial countries are applicable elsewhere. The poorer countries have particular interest in small scale energy generating systems, in particular solar energy and small hydro-electric plants, and they would of course wish to profit from the results of research into alternative energies in the industrial world. The prospect of cold nuclear fusion is particularly interesting for them. They have a specific problem over fuel wood. Much can be done to improve efficiency in its use. But this problem should be linked with reafforestation, the planting of fast growing forest species, and their harvesting over a sustainable period. The price of energy is critical. For such countries as China and India the temptation to use coal will be irresistible until costs of energy from other sources can be brought down.

- Industrial Policy

We can help in limiting industrial emissions with greenhouse effects. In many cases, for example over chlorofluorocarbons, this would mean leap-frogging

over technologies now in use in industrial countries. Transfer of technology is easier said than done, but manufacture of new plant for export from industrial countries, and local manufacture elsewhere, should conform with tighter environmental guidelines.

4. International Agreements, Conventions or Protocols and what might go into them

It will clearly be necessary to have some international framework within which to manage the consequences of climatic change. Negotiations on a far reaching and legally binding convention would risk repeating the fate of the Law of the Sea. For that reason it would be wise to avoid current proposals for a Law of the Atmosphere. Any attempt to dragoon governments into agreeing commitments for which they were not ready or might later ignore would be futile.

A better approach would be first to establish a code of good climatic behaviour without specific legal force, and to complement it with agreements on specific topics as in the Montreal Protocol governing chlorofluorocarbons. Such an approach would have the benefit of flexibility and provide the means to make early progress. As

knowledge and needs arise, items in the code could be translated into more binding commitments.

The code could cover the following points:

a. guidelines for environmentally sound energy policies. The aim would be to stabilize atmospheric carbon dioxide concentrations. This part of the code could cover conservation, energy efficiency, supply and pricing. It might also cover research and cooperation on renewable sources of energy.

b. guidelines on major experiments by governments intended to test the behaviour of the climate or which might inadvertently do so. Examples are experiments in rainmaking and control of hail storms over a defined are; attempts to disperse hurricanes and typhoons; systematic towing of icebergs away from the polar waters to arid regions, and the placing of certain objects in space; and

c. guidelines on actions by governments which might have a major impact on global, regional or local climates. Examples include the permanent diversion of major rivers; the construction of river dams and irrigation systems likely to affect an area of given size; the diversion of ocean

currents; efforts to melt part of the polar icecaps; oil drilling in areas where major spills would have incalculable and, possibly, irreversible effects; and changes in the character of the earth's surface in an area of given size (as in the current deforestation of Brazil).

The Canadian Government have recently taken the initiative in pressing for a framework convention on the atmosphere (Toronto 1988 and Ottawa February 1989). The Canadians envisage a framework with specific protocols dealing with carbon dioxide, methane, chlorofluorocarbons and halons, stratospheric ozone and forestry. Some of their ideas look over ambitious but the main elements would be to establish:

a. the obligation of states to protect and preserve the atmosphere and to cooperate in doing so

b. agreement to exchange relevant information; promote research; and cooperate in promoting relevant technologies and in giving technical assistance;

c. provision for consultation between states and with the competent international organization, when the activities of a state, advertently or inadvertently, are likely to test or change the global, regional or local climates;

d. provision for coping with emergencies;

e. a disputes mechanism.

These ideas have marked similarities to a mix of guidelines in a code and agreements on specific issues.

5. **Institutional Problem of How to Handle International Action**

- UNEP

  UNEP is a coordinating body. But most attempts to improve coordination within the UN system have failed because of the autonomy of the specialized agencies. UNEP has developed an ambitious plan allocating environmental work. But its success depends on the good will of others. Injection of more funds and staff would not necessarily turn it round.

- UNEP is not highly regarded. Dr Tolba is an effective lobbyist who has built up a constituency amongst African governments and elsewhere. But he has not won the confidence of many in the environmental world. UNEP's problems are increased by its location in Nairobi. But any proposal to bring it to New York would be resisted by the African group, supported by the G77.

- Nevertheless a good deal could be done to strengthen UNEP on the technical side. We need to study the possibilities, and if need be consider revising its mandate and promoting it to the status of a Specialized Agency.

- Intergovernmental Panel

The Intergovernmental Panel has been identified by the General Assembly as the expert body to make recommendations on the policy response to climate change. But the ad hoc nature of the panel and the lack of clarity over its precise legal status (a point of concern to the united States) suggests that it could not easily be transformed into a permanent body with responsibility for managing the atmosphere.

- How to give a major high level impulse

The United Nations system is at present ill-equipped to deal with the multifaceted problems of climate change. Even an upgraded UNEP could not give the necessary leadership. The French initiative which led to The Hague declaration was muddled and misconceived. But steps to strengthen UN environmental activities is needed at the political level. Here are two possibilities:

a. Seize the Security Council of present threats to the environment, and use the Council, as the most effective United Nations body, to give a political lead. Although the Council has so far concerned itself with threats to peace and security arising from armed conflicts, Article 34 of the Charter states that "the Security Council may investigate any dispute or any situation which might lead to international friction or give rise to a dispute, in order to determine whether the continuance of the dispute or situation is likely to endanger the maintenance of international peace and security". The impact of climate change and environmental degradation can be held to fall into this category. The fact that 3 of the 5 Permanent Members account for a substantial proportion of the planet's land mass is an additional argument.

b. But the Security Council cannot give day to day direction. We might therefore consider setting up under the authority of the Security Council and with the endorsement of the General Assembly an Inter-Governmental Commission as a successor to the present Inter-Governmental Pannel on Climate Change. The first task of such a Commission would be to work out a change in UNEP's mandate.

There is a precedent for such a commission. At its first meeting in 1946 the General Assembly on a recommendation from the Soviet Union, the United States and Britain, agreed to set up a Commission (the Baruch Commission) under the Security Council, to make proposals for the control of atomic energy for peaceful purposes only. Due to Soviet obstruction (the Russians walked out in 1952), the Baruch Commission was wound up. But it did useful work and some of its ideas for an international atomic authority were incorporated in the mandate of the current International Atomic Energy Authority. The problems of climate change are of a similar order of magnitude to those posed by the discovery of atomic energy. The Russians, in recognizing this, have recently proposed an Environmental Council. They have also mentioned the precedent of the Baruch Commission. In the longer term such a Commission might become a standing body under the direction of the Security Council.

If these ideas find favour, they might first be initially with the Russians and the Americans (the Secretary-General has already told me he would use the Security Council). We would need to bring in our European partners and the Chinese at an early stage. The ideas

might appeal to the Canadians and the Norwegians (who have recently indicated support for an Environmental Security Council). But some might object to use of the existing Security Council (with the veto rights enjoyed by the Five Permanent Members) and argue for something new. The attitudes of India and Brazil would be important. It is hard to predict the French reaction. If they fail to make progress on The Hague Declaration, they might find these ideas a graceful way out.

6. Conclusion

Four last thoughts:

- science is full of surprises: things do not necessarily happen in gradual or linear fashion: there is an ineradicable element of chaos.

- in the short term global warming would yield no winners: only victims; and the long term is too long to attract most beneficiaries.

- the underlying problem is not change but the speed of change.

- We need to move fast in our thinking on institutions if we are not to be pre-empted.

BACKGROUND NOTES

SCIENTIFIC ASSESSMENT OF CLIMATE CHANGE AND ITS IMPACTS

Greenhouse Effect

-The temperature of the earth's surface depends on a balance between the radiation it receives from the sun and the radiation it emits, mediated by the insulating effect of the atmosphere Solar radiation is concentrated at visible wavelengths, to which the atmosphere is transparent. Most of the radiation emitted by the earth is at infra red wavelengths. This is absorbed by "greenhouse gases", keeping the temperature of the surface and lower atmosphere about 33 degrees C above the level it would otherwise maintain and allowing it to support life.

Greenhouse gases

-Man's activities since industrial revolution have been increasing concentration of greenhouse gases. The main ones are:

-carbon dioxide (CO2) mainly from burning fossil fuels (currently about 80%) and destruction of forests (20%0. Atmospheric concentration approaching 30% above pre-industrial levels.

-chlorofluorocarbons (CFCs). Entirely artificial. Atmospheric concentration rising by about 6% per annum. Molecule for molecule CFCs are upto 10,000 times as effective as CO2 as greenhouse gases.

-methane (CH4) mainly from atmospheric sources (rice paddies, livestock). Atmospheric concentrations rising at 1% per annum. 30 times more effective than CO2 as greenhouse gas.

-nitrous oxide (N20)probably mainly from burning fossil fuels and agriculture. Atmospheric concentrations rising by about 0.25% per annum.

-ozone (O3) in lower atmosphere (not stratospheric ozone). Concentrations appear to have doubled since pre-industrial levels probably from combustion of fossil fuels.

-By 2050, relative contributions to global warming might be CO2 64%, CFCs 13% (assuming current Montreal limits are fully effective), methane 10%, N2O 9%, O3 4%.

Assessment

-No proof yet of climate change resulting from greenhouse effect. But most scientists agree man's activities will lead to global warming. Magnitude of change is uncertain. Prediction of regional changes and effects will require great deal of work. May need to halve current rate of CO2 emissions if we wished to stabilise warming effect of greenhouse gases.

Expected effects

Effective doubling of effective concentration of greenhouse gases compared with pre-industrial levels is possible between 2030-2100. There would be a delay before full climatic effects felt (ie equilibrium temperature reached) because of damping effect of oceans.

-global warming might average 1.5-4.5 degrees C. (Even the bottom end goes beyond historical experience.)

-sea levels might rise by at least 20-140cm. (mainly thermal

expansion of oceans).

-details of regional climate changes cannot be predicted. Much would depend on whether natural, agricultural and social systems could adapt with unprecedented speed.

POINTS FOR DISCUSSION

Much research is being undertaken, nationally and internationally, to understand climate change, and identify possible effects. Is more work needed? To achieve what results? Over what timescale?

Do we have an adequate understanding of the sources and effects of greenhouse gases other than CO2 and CFCs? Ways of reducing emissions of such gases?

What is the likelihood that the recent abnormal weather is the result of the greenhouse effect? (Mild winter in Europe; exceptionally cold winter in Alaska? ?6 warmest years on record in 1980s?) What is role of oceans?

MEASURES TO MITIGATE THE GREENHOUSE EFFECT B

-UK emissions of CO2 are about 3% of world total. (Electricity generation 37%; industrial uses of energy 20%; heating 20%; transport 20%.)

-Action to mitigate the greenhouse effect is likely to increase costs. If not undertaken internationally could affect UK competitiveness. Possible measures (some being developed already) include:

ENERGY

-greater energy efficiency (through pricing, advice, information, R & D, regulation, subsidies).

-use of new technologies for burning coal.

-greater use of nuclear electricity generation.

-greater use of renewables (wind, tidal, geothermal) and changes in fuel use (gas for electricity generation).

TRANSPORT

-improved fuel efficiency (maybe 30% by 2010).

-alternative fuels (gas, non-fossil electricity).

-radical measures to reduce demand.

AGRICULTURE

-increased forestry.

-coastal defences (adaptation rather than mitigation)

WASTE DISPOSAL

-use of methane from landfill sites as alternative energy supply (emissions are estimated at 3m tonnes per annum.)

CFCs

-strengthening and wide ratification of Montreal Protocol.

RESEARCH

-Sensible policies depend on better scientific understanding of climate change.

POINTS FOR DISCUSSION

How could more of the developing world be persuaded not to use CFCs? How acceptable are the substitutes (in terms of greenhouse effect and energy consumption)?

What is the potential of nuclear power in reducing emissions of CO2?

In view of the desirability of increased energy efficiency, what are the most effective methods of achieving it? Over what timescale?

What are the relative merits for CO2 reduction of the new technologies for fossil fuel power generation? And their other environmental effects?

How are developing countries to respond? And how should we help them?

It is difficult to evaluate options without some method of testing their relative costs and benefits. Has sufficient work been done to make this possible? What gaps need to be filled?

RESPONSES IN AN INTERNATIONAL CONTEXT C

Climate change is a global problem and must be handled internationally. Rapid population increase plus economic growth will increase energy demands of non-industrialised world. India and China together currently account for over 10% of CO_2 emissions from fossil fuel consumption (excluding fuel wood). They may also account for 35-42% of world methane emissions.

Much work is currently in hand, principally through UNEP/WMO Intergovernmental Panel on Climate Change (IPCC). Started work in November 1988, setting up sub-groups to assess (a) the scientific information (chairman Dr John Houghton, Director-General of Met Office); (b) environmental and socio-economic impacts (USSR chair); and (c) formulate response strategies (USA chair). IPCC is to report in Autumn 1990.

Other fora include United Nations, UNEP, World Climate Programme (initiated by World Meteorological Organisation and involving several other UN agencies and the International Council of Scientific Unions) and at a non-governmental level, the International Geosphere-Biosphere Programme for which the Royal Society is the focus in the UK.

ODA is increasing forestry aid commitments within the Tropical Forestry Action Plan (current cost $10m. Also supporting International Tropical Timber Organisation. ODA commitments to forestry projects currently underway total #80m.

Although the IPCC is not due to report until the second half of 1990, there is already talk of, and at the UN General Assembly this autumn there will be pressure for, an International Convention on the Atmosphere or Climate Change.

HMG has not yet decided what attitude to adopt: there are arguments for taking the initiative in proposing a simple framework Convention, to which protocols on individual greenhouse gases would be added according to the state of scientific knowledge and the consensus on international action.

The need for closer international monitoring of international obligations also raises the question of the adequacy of existing international institutions. We are committed to their strengthening rather than the establishment of new bodies. The issue is how UN bodies, particularly UNEP, could best be adapted to meet the new challenge.

The responsibilities increasingly being placed on the international community over the environment also raise the question of assistance for developing countries in meeting the obligations e.g. of the Montreal Protocol, and new thinking may be necessary.

POINTS FOR DISCUSSION

Are current institutions able to cope with the challenge of global climate change? If not, what are the weaknesses and how might they be remedied?

Is the abatement of greenhouse gases an issue for an international Convention? If so what are the best ways to structure it?

What special provisions might be needed in an international convention to deal with developing countries? Do the centrally planned economies have special features to be taken into account?

Is there a role for directed foreign aid or "debt swops"?

Are there dangers in too many organisations trying to cover the same ground? Is public awareness being heightened? - or stampeded?