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GLOBAL WARMING: THE GREAT EQUALISER?¹

Abstract

This article examines the claim that global warming may significantly affect power relationships between North and South. It accepts that such a claim cannot be inferred from the outcome of the recent negotiations which produced a convention on climate change at the UN Conference on Environment and Development signed in Rio in June 1992. However, it argues that since some developing countries at least are projected to account for a significant and increasing proportion of greenhouse gas emissions in the future, this gives them potential leverage, which could be used in future negotiations. The article outlines this argument and objections to it, concluding that while it is by no means clear that developing countries can exercise such leverage effectively, such a potential does exist.

1. Introduction.

The central aim of this study is to explore the extent to which traditional concepts about where power lies in North-South political and economic relations are altered by global warming. Such a possibility has often been suggested but rarely explored. The central reason why such a change might operate is that in relation to global warming, the ecological interdependence between North and South is extreme and could affect power relationships between the North and the South. It has to be assessed whether this outweighs the South's previous weaknesses or not.

The value in investigating this issue is that if the South has gained substantial bargaining power, it may be able to affect the outcomes of international negotiations on global warming to a far greater extent than it has previously. Consequently the South may be able to secure much greater economic and technological transfers from the North, because it may become in the North's interest to accept the necessity of these transfers. The likelihood of supranational institutions being created is also probably enhanced, as previous negotiations, such as those proposed within the New International Economic Order (NIEO) or for the UN Conference on the Law of the Sea (UNCLOS), show that most developing countries have shown a preference for this to achieve their development ends, to prevent domination by Western economies, and to maximise their leverage over the North².

It should be emphasised that the contents of the convention on global warming recently signed at the UN Conference on Environment and Development do not lead us to believe that such a possibility is evident. However, if such a change in underlying power relationships exists, it is not likely to become apparent quickly. Thus this article treats the Convention as merely an early part of the negotiating process rather than

an outcome in itself, and the argument is that any changes in power relationships can only be expected to be realised in the longer-term. The focus is therefore on the potential underlying the situations of each group of countries.

Global warming first became a serious political issue during the Summer of 1988. In June of that year, a Conference held in Toronto, entitled 'The Changing Atmosphere: Implications for Global Security', established that a scientific consensus had emerged expressing the belief that a significant global warming due to human activities was highly likely. This coincided with widespread crop failure in the US, freak climatic conditions elsewhere in the world, and the realisation that most of the hottest years ever recorded were in the 1980s. A huge undertaking to try to understand the problem more fully began in 1989, under the auspices of the newly formed Intergovernmental Panel on Climate Change (IPCC). This involved the majority of the world's prominent climatologists, who tried to establish the full extent of the problem, as well as other analysts who worked to develop strategies to adapt and respond to global warming.

By the Summer of 1990, the IPCC's three working groups had submitted their First Reports, and their consensus was that a global warming of 1° Centigrade by 2025 would result if current trends in emissions continued³. Impacts would probably include a sea-level rise of about 6cm per decade, inundating small island states and low lying countries such as Kiribati, Bangladesh and Egypt, large migration of plant species, including many agricultural crops, and greatly changed weather patterns which might further disrupt food production.

This holds many interesting implications for North-South relations because the main sources of greenhouse gases (GHGs), especially the most important one, Carbon dioxide (CO₂), come from industrial activity, and the consequent concentration of the emissions in industrialised countries, combined with the inference that significant reduction in emissions of CO₂ are required, has potentially strong implications for the future of developing countries.

2. The weakness of the South

The weakness of most Third World countries within the world economy is widely documented and accepted. It is most commonly explained either through the concept of dependency or, from another school of thought, in terms of extreme asymmetries of interdependence. What North-South transfers there are can often be explained away as export subsidy, and the fact that very few industrialised countries live up to their UN commitment of 0.7% of GNP in aid, shows how little their dependence on the South is.

North-South transfers⁴ are, however, largely legitimated on the grounds of some sort of moral obligation of the rich to help the poor. This has also been the dominant view in relation to responses to global warming. For example, Greenpeace in their evidence to the UK House of Commons Energy Committee stated that 'Equity dictates that "Polluters should Pay" and the UK and other industrial countries, as large polluters, should bear the greater burden of reductions in greenhouse gas releases'. Consequently, as 'developing countries are those least able to bear the costs of

damage and loss incurred by the greenhouse effect', 'The UK should assist these countries in adaptation'⁵. The then UK Prime Minister Margaret Thatcher used a similar argument in her speech to the UN General Assembly on November 8 1989, saying 'Every country has to contribute and industrialised countries must contribute more to help those who are not'⁶. Most of the international conferences from the Toronto Conference onwards, have also emphasised this perspective, where the situation of developing countries has been mentioned⁷.

The context in which North-South transfers have been mentioned, recognised by all as essential to any sustainable solution, is one of the moral responsibilities of the North, based on its being the source of the vast proportion of GHG emissions to date, thereby causing flooding, drought, sea-level rise etc., in many developing countries. It has been suggested that 'Such arguments could well be used as a lever by LDCs to obtain increased aid ...'⁸. However, historical experience does not augur well if we rely on ethical exhortations on most countries in the North.

3. Global warming, interdependence, and power

What is being suggested here is that global warming changes the situation radically so that the motivation for North-South transfers is no longer moral, or 'humanitarian', but the self-interest of the North. Global warming exists in a context of extreme, and global, ecological interdependence. This ecological interdependence, because of the origins of GHG emissions, heightens North-South political and economic interdependence. The causes of global warming implicate policies and economic processes concerning energy, transport, industry, technology transfer, forestry, agriculture and many others, and therefore affect a vast area of economic activities which in turn affect North-South relations because North/South abilities to adjust differ so widely.

Many of the concepts in the interdependence literature could be useful in relation to global warming, so a brief review might be in order. Interdependence is generally defined either as simply 'mutual dependence'⁹ or as 'the extent to which events occurring in any given part or within any given component unit of a world system affect (either physically or perceptually) events taking place in each of the other parts or component units of the system'¹⁰. Asymmetries of interdependence, i.e. where one actor is less dependent than another within a particular relationship, is where power comes into these relationships, with power accruing to the less dependent actor.

Keohane & Nye make a distinction in their framework between sensitivity and vulnerability interdependence which may prove useful to us. 'Sensitivity means liability to costly effects imposed from outside before policies are altered to try to change the situation. Vulnerability can be defined as an actor's liability to suffer costs imposed by external events even after policies have been altered'¹¹.

Many developing countries are evidently more vulnerable to the direct effect of global warming, i.e., sea-level rise, agricultural migration etc., than are countries in the North, which have more resources to adapt. However, if we were to try and argue that developing countries (or some at least) had gained power from global warming,

the reverse would have to be the case; the South would have to be less vulnerable than the North. The reasons for believing this could be the case are in the sources of future emissions. The international negotiations in the Intergovernmental Committee for a Framework Convention on Climate Change which produced the Convention signed at UNCED focused on reductions of emissions (although no such reductions were in the end agreed), and in this, arguably the South is less vulnerable. The North is vulnerable in the sense that even if it imposes policy changes to reduce its own emissions, it is still dependent on, and vulnerable to, developing countries' emissions increases. Developing countries, while they are themselves vulnerable to these increases, are arguably no more vulnerable to these than to the costs of not industrialising. The asymmetry in this might therefore give the balance of power to at least some countries in the South.

A simplified version of the argument would run as follows: emissions of GHGs in any country affect all other countries (i.e. complete global ecological interdependence). Since emissions originate largely in industrial activity, power lies with those who control that activity (and therefore those emissions), and particularly those who control future emissions. These people can hold the rest of the world to ransom if they so wish. As the bulk of CO₂ emissions in the future are predicted to come from developing countries as they experience industrial 'take-off' (assuming they all do this), global warming gives them greatly increased leverage over industrialised countries. Put simply (and leaving aside for the moment the complication of how this interacts with other aspects of North-South relations), developing countries can blackmail industrialised countries into vastly increasing economic and technological transfers from North to South, with the alternative being to base their industrialisation on fossil fuels, or to have no industrialisation in the South, an option which developing countries have already been clear in rejecting.

The new situation can be seen by considering two statistics. Firstly, 'Per capita emissions in developing countries are currently very low, but the share of total emissions contributed by the developing countries is expected to increase significantly in the future and becomes more than 50% by 2025 in the scenarios analyzed'. Secondly, 'if developing countries do not adopt stabilizing policies, then the equilibrium warming commitment (i.e. how much warming is likely to be caused) in 2050 could increase by about 40% compared to scenarios in which there is global cooperation'¹². In other words, the key to stabilising global warming depends on future developing countries' policies in vital areas such as energy, forestry and transport, while it is industrialised countries who have the resources to facilitate these policy changes. It is therefore in industrialised countries' self-interest to provide these resources. Again, a collective action problem remains here in relation to some industrialised countries trying to free-ride on the transfers of the others. Experience is also ambiguous here, as although in general the tendency to free ride has been strong, in the most recent negotiations, for the Montreal Protocol update in 1990, all the major industrialised states provided money for the transfers¹³.

The Economist has published one of the few articles where this line of reasoning has been suggested. 'In theory, the anxiety of rich countries to stop damage to the environment puts a powerful weapon in the hands of the poor', it has written¹⁴. One might reject this theory, as the Economist itself did, by saying that developing

countries will be hit first and hardest by global warming, for example Bangladesh and Egypt by rising sea-levels. However, given the level of poverty, environmental degradation, etc., already present in many developing countries anyway, it is doubtful whether this consideration will hold sway, especially as many of these countries do not have the resources to finance or organise non-fossil fuel based economic development themselves. As the IPCC Special Committee on the Participation of Developing Countries has put it.

"While the global environment has assumed today greater significance for the industrialized countries, the priority for the alleviation of poverty continues to be the overriding concern of the developing countries; they rather conserve their financial and technical resources for tackling their immediate economic problems than make investments to avert a global problem which may manifest itself after two generations."¹⁵

4. Objections and responses

Several objections to this line of argument exist. One would focus on the traditional weaknesses of developing countries through dependency. These analyses would insist on locating any argument in the dynamic of the capitalist world-economy. Thus it might be argued that the processes of uneven development and the core-periphery relations of control would enable the North to effectively channel the South's development away from fossil fuels but still keep it in some sort of subordinate position in relation to the North. However this might well be a limitation of the world systems/dependency perspectives, that they leave little room for consideration of factors (such as global warming) outside the internal process of the world economy. Constraints imposed on economic activity by ecosystems are more easily explained through the interdependence literature, partly since these often explicitly refer to ecological problems and those of managing the commons¹⁶. The key limitations of world-systems arguments in this context is their focus largely on the internal features of the world economy which, while evidently useful in many circumstances, fail to explain power which may derive from manipulation of non-economic (e. g. ecological) relationships between different parts of the world system. However, there is an assumption here that developing countries will be able to translate this potential into real gains, an assumption which rests on their realisation of the existence of this power potential, and their ability to manipulate it in the negotiation process.

A stronger objection would focus on the need to disaggregate developing countries. Ramakrishna¹⁷ has identified four separate groups, whose responses have differed in various ways. The first is the Newly Industrialised Countries (NICs) of East and South East Asia, whose rapid economic growth and relatively diversified economic base will influence their role in CO₂ negotiations. The second category is the least developed countries, whose weakness and dependency is the most extreme, and who are least likely to influence negotiations except in so far as they can appeal to ethical principles to alleviate the most harmful impacts of global warming. The third is the low-lying countries who will be particularly badly hit by sea level rise. The last category is the developing countries who are essential to any climate agreement

simply by virtue of their size; China currently emits 11.8% of global fossil CO₂, and India 3.8%¹⁸. Other countries in this category might include Brazil, Mexico, and Indonesia. In relation to the general argument advanced here, it is clear that only some groups will gain power; the large countries and the NICs are the most likely contenders. Developing countries' abilities to influence negotiations as a whole will depend partly also on their ability to act collectively, the experience of which is at best ambiguous, both in general and in relation to the INC process. It will also depend on the related ability of the North to engage in 'divide and rule' strategies, isolating key countries by buying them off.

A third objection would focus on the failure of previous arguments for a Northern self-interest in significant transfers to the South because of North-South interdependence. This position was adopted by Northern liberal advocates of the NIEO, as well as most clearly in the Brandt Report¹⁹. The experience of the 1980s seems to have shown this to have been an inaccurate assessment; were it otherwise, arguably many more Northern countries would have lived up to their UN aid commitments, as noted earlier. However, this does not mean that analogous conditions to those outlined in the Brandt Report might not be produced by global warming, as has been argued here is the case.

The last objection might be that even if this is the case, North-South transfers might not be the answer, at least not quantitatively²⁰. Many developments in the 1980s have highlighted the importance of the quality of aid. Subsequently what is needed in the South is more autonomous development of 'appropriate technologies', and this would take place apart from the North-South negotiations on global warming. However, so far, the emphasis within many developing countries has been on the level of transfers, and if this remains their perception of what they need, and subsequently what they demand in negotiations, then this is what matters most to the present argument.

Thus it remains possible that global warming may be the 'great equaliser'. In the words of one team of researchers:

"One important insight driven home by the greenhouse effect is that gross international inequity and ecological maintenance are fundamentally incompatible. In fact the global environmental crisis and the warming threat could bring about a realignment that goes far beyond the control of greenhouse gases in the narrow sense ... historically, industrialized countries have for the most part allied themselves with Third World elites at the expense of basic-needs oriented development. In view of the global environmental consequences, these alliances have now become anachronistic. Solutions to the global warming problem and related environmental threats will necessitate satisfying basic needs everywhere."²¹

5. The problem of perception

The problem of perception is crucial to the argument here. If policymakers in the North fail to recognise the necessity of transfers in response to global warming, then developing countries are unlikely to be able to translate this potential into control over outcomes. However, this change in North-South relationships may be gradually being recognised. Some political studies on global warming (including the one quoted

above) have argued this. For example, 'the developing countries, in this instance, have a degree of power — the power to threaten the mutual damage arising from uncontrolled emissions. It is a very negative form of power ... But it is real, for it seems likely that most developed countries stand to lose from climatic change'²². Or, more strongly; 'Biospheric solidarity may yet be forced on the governments of the North; like it or not, they may finally have to recognize that debt relief and real contributions to sustainable development in the South are vital to their own survival'²³.

To a lesser extent, some intergovernmental statements seem to support this view. For example, the declaration of a major international conference in the Netherlands, held in November 1989 stated that 'Solving the External Debt problem of developing countries, and establishing fair economic and commercial relationships between industrialized and developing countries would assist developing countries in creating appropriate conditions to protect the environment'²⁴. An early IPCC document stated that 'it is imperative that the developing as well as developed countries participate effectively in any decisions regarding response strategies. Otherwise the commitment needed, to ensure that agreed strategies are pursued, may not be universal'²⁵. The veiled threat here is not hard to spot. The Second World Climate Conference Declaration is less strongly worded but recognises the need for major transfers²⁶. Much revolves here, as in other statements, around the usage and interpretation of the word 'must', i.e. whether this refers to complying with the principle of equity, or of necessity.

Once this situation is recognised, however, the prospects for real transfer of resources to the South improve considerably. As Norman Myers has noted:

"By helping key Third World countries with their environmental needs, the United States (and other industrialised countries) is helping itself. This hard-nosed approach, posited on a rationale of What's in it for the United States? is likely to prove more productive in policy terms than an appeal to 'environmental conscience' or some similarly vague motivation."²⁷

This may result not only in a further 'greening' of the World Bank and regional Development Banks as the industrialised countries which control them recognise the need to incorporate environmental standards into both lending and aid programmes, but also in a vast increase in the resources made available to those programmes.

Third World countries have, through the Group of 77, the Non-Aligned Movement, and in the NIEO, always insisted on linking environmental and development issues, and that their 'willingness to address the problems of special interest to the North will be conditioned by the commitment of the North to assist them in achieving their development objectives'²⁸. When the self-interest of the North in resolving the problem becomes so self-evident, as in the case of global warming, the issue of equity in world politics changes from being an egalitarian moral claim, into an inherent part of the solution. The unprecedented level of developing country involvement in the global warming negotiations compared to previous international environmental negotiations can in part be explained by the statements made by some industrialised countries and international conferences recognising the need for larger transfers. 'It is the renewed interest and determination to assist the Third World in their economic development that is responsible for the wave of support from the developing countries'²⁹.

The question of where power lies, of whether global warming gives net power (i.e. outweighing developing countries economic weakness and dependency) to the

South depends on the crucial question of the volume of transfers to the South which is necessary. Early studies suggested these could be of the order of US\$ 100 bn annually³⁰. The following indicators are illustrative. For example, 'the World Bank lends approximately \$ 4 billion for power generation projects in the Third World' each year³¹. Given that this amount of investment represents only a small fraction of the power generation involved in running an industrial economy, it is possible to begin to visualise the amounts involved. Alternatively, if we consider the previous figure, that scenarios predict developing countries' contribution to global warming to rise to 50% of the total by 2025, then assuming other countries emission levels were stabilised at present levels, the extra emissions from developing countries would be equal to 60% of current total world emissions³². Given that current estimations are that total CO₂ emissions would need to come down by over 60% in order to stabilise concentrations at current levels³³, this also gives an indication of the extent of the transfers involved.

6. A possible lesson from the Montreal Protocol

Obviously, if this power is real, then it has not worked through the international negotiating process yet. Another distinction made by Keohane & Nye might however be useful here; that between 'the initial power resources that give an actor a potential ability' and 'the actor's actual influence over patterns of outcomes'³⁴. Therefore 'asymmetrical interdependence cannot itself explain bargaining outcomes, even in traditional relations among states ... We must also look at the 'translation' in the bargaining process'³⁵. It might be possible within this analytical framework to argue that developing countries, or some of them, have gained power in international negotiations through some of the implications of global warming without reference to outcomes obtained as yet. Obviously the negotiations are currently at a very early stage. The text in the Convention on financial resources and technology transfer contains a compromise wordings between alternatives originally proposed by industrialised and developing countries respectively. One could argue either way whether the North had been able to resist Southern demands or whether the South had managed to gain significant concessions from the North³⁶. However, a more fruitful debate here is about whether they have gained power as potential, with its translation in the bargaining process to be observed over the next few years (or decades).

If an analogy with the ozone depletion diplomacy is possible (and some would say it is not), then we could possibly argue that developing countries power as potential might become translated in to power as control over outcomes. Their main similarity is that they are the only two genuinely global environmental issues³⁷, i.e., they are the only two which require all countries to participate. A similar case to the one here could be made that with chlorofluorocarbons (CFCs), even if industrialised countries cut their emissions back drastically, developing countries, in particular India, China and Brazil, would easily have made up for the shortfall in emissions as they developed and thereby scuppered any efforts by the North.

Some developing countries thereby gained power in the ozone depletion negotiations through this asymmetry. Arguably, this power as potential turned into control

over outcomes in the period between early 1989, when it was recognised that CFCs effectively needed eliminating, and the First Review of the Montreal Protocol in London in June 1990. At the beginning of that period, China and India both stated that they would be willing to sign only 'if a fund were set up by industrialized countries to support research and development of alternative materials, and if the outcome were transferred to developing countries free of charge'³⁸. While at the meetings during 1989 (the London 'Saving the Ozone Layer' Conference in March and the Helsinki 1st Meeting of the Parties to the Montreal Protocol in May), countries such as the UK stated categorical opposition to the establishment of a climate fund, only one year later, in June 1990, this position had significantly changed to one of acceptance of a fund, with the UK also contributing £9 million to this fund³⁹. Even the US, the most vehement opponent of transfers, was forced to accept the need for them in order to secure these countries' accession. Arguably this was a response to the adamantness of the Chinese and Indian governments in particular in their refusal to sign without a fund, and the necessity of gaining their accession to the Protocol. At present, Brazil and China have acceded to the Protocol, and that of India is anticipated..

The questions of sensitivity and vulnerability come up again here. While everyone is vulnerable to the impacts of unrestricted ozone depletion, were no controls on CFCs and related gases enacted, countries in the South had more of a trade-off between that and their traditional development concerns to make⁴⁰. Their vulnerability dependence within the world economy anyway meant that they would not necessarily have been economically worse off from ozone depletion than from the costs of not using CFC technologies (or their substitutes, which only the North could give them access to). In contrast, the North is simply vulnerable to the impacts of ozone depletion and has no such trade-off to make. However, the 'translation' in the bargaining process is likely to be much more complex for global warming than for ozone depletion, because of the vastly increased complexity of the issues involved.

7. Conclusions

I have argued, although this is difficult to demonstrate, that Third World countries have gained a substantial amount of potential power over industrialised countries, as they are likely to be the source of most future GHG emissions. Subsequently, the reasons for North-South transfers become self-preservatory due to the extreme ecological interdependence inherent in global warming, rather than moral reasons. Third World participation is essential to the success of any international agreement concerning GHG emissions. A climate fund of some sort is therefore likely to be necessary mainly because, as the Montreal Protocol has shown, many developing countries will probably not participate without such a fund.

Several factors remain about which there is still much uncertainty. It is arguable that they are not possible to demonstrate conclusively. Firstly, there is the scale of the transfers involved, and subsequently how much power they gain relative to industrialised countries. Secondly, and related to this is the obvious fact that developing countries are by no means as homogeneous a bloc as this paper has to an extent portrayed them; an examination of the implications of their diversity may modify these

conclusions (although I do not believe they would completely change them). Also, it needs to be established how available fossil fuels are to various groups of developing countries, since this affects their ability to 'blackmail' the industrialised countries. The final factor is the scale of the alternative; that is, the implications of leaving global warming far less under control than if rigorous international enforcement were accepted. Many judgements remain here about which the state of research is still undeveloped, and are therefore very difficult to be precise about, such as the extent to which nation-states will take unilateral action, and the extent to which this action will achieve sufficient reductions in GHG emissions to stabilise global climate.

It has been suggested that 'In regard to global equity designs, questions arise as to whether the industrialized world can ever be persuaded that its interests lie in making what appear to be significant concessions to assist the Third World in achieving its development objectives'⁴¹. I am suggesting that in relation to global warming, if the industrialised world is not persuaded of this, then it is possibly taking a risk of titanic proportions, by provoking conflict with the South which could result in global warming becoming uncontrolled.

NOTES

- ¹ This article was originally presented as a paper to the workshop on 'Recent Developments in North-South relations', at the European Consortium for Political Research Joint Sessions, at Essex University, 22 — 28 March 1991. I am grateful to those present for their comments, as well as to Dr Hugh Ward.
- ² Obviously the terms 'South', 'North', and 'developing countries' are oversimplistic as explanatory concepts. It will be the case that some countries within the 'South' will gain power in negotiations. However, until I have fully explored which these will be, in later research, I propose to stick to this usage for the moment.
- ³ IPCC, *Scientific Assessment of Climate Change*, Policymakers' Summary of the Report of Working Group I to the Intergovernmental Panel on Climate Change, WMO/UNEP, 1990.
- ⁴ This term is being used to include aid, technology transfer, all the way through to debt relief, restructuring of trade regimes and the wider demands of the NIEO.
- ⁵ Sixth Report of the House of Commons Energy Committee (Session 1988 — 89), *Energy Policy Implications of the Greenhouse Effect*, HMSO, London, 1989, Memorandum 9 by Greenpeace, paragraph 2.
- ⁶ Guardian Thursday 9 November 1989. For other examples of this view, see William A. Nitze, *The Greenhouse Effect: Formulating a Convention*, Royal Institute of International Affairs, London, 1990, p. 14; Edward B. Barbier, *Economics, Natural Resource Scarcity and Development: Conventional and Alternative Views*, Earthscan, London, 1989, p. 151.
- ⁷ What is quite interesting is that the Statement of the first major conference to occur in a developing country, the International Conference on 'Global Warming and Climate Change: Perspectives from developing countries', held in New Delhi, India, 21 — 23 February 1989, did not mention North-South transfers at all.
- ⁸ D. Everest, *The Greenhouse Effect: Issues for Policymakers*, Royal Institute of International Affairs/Policy Studies Institute, London, 1988, p. 5.
- ⁹ Robert Keohane & Joseph S. Nye, *Power and Interdependence*, Little, Brown & Company, 1977, p. 8.
- ¹⁰ Oran R. Young, 'Interdependencies in World Politics', *International Journal*, vol. 24 (1969), pp. 726 — 50.

- ¹¹ Keohane & Nye, *op. cit.*, p. 13.
- ¹² D. Lashof & D. Tirpak, *Policy Options for Stabilizing global climate*, United States EPA, Washington, 1989, pp. 87 — 8. The IPCC Working Group III Report gives similar estimates, with developing countries CO₂ emissions moving from 26% of the world total in 1985, to 44% in 2025, in their reference scenarios. IPCC, *Formulation of Response Strategies*, WMO/UNEP, Geneva, June 1990.
- ¹³ *New Scientist*, 7 July 1990, p. 21.
- ¹⁴ *Economist* September 2 1989, *Environment Survey* p. 25.
- ¹⁵ *Policymakers Summary of the IPCC Special Committee on the Participation of Developing Countries*, WMO/UNEP, Geneva, August 1990.
- ¹⁶ For example, Keohane & Nye, *op. cit.*; Oran R. Young, *International Cooperation: Building Regimes for Natural Resources and the Environment*, Cornell University Press, Ithaca NY, 1989.
- ¹⁷ Kilaparti Ramakrishna, 'Third World Countries in the Policy Response to Global Climate Change', in Jeremy Leggett (ed.) *Global Warming: The Greenpeace Report*, Oxford University Press, Oxford, 1990. For other studies which categorise developing countries in this respect, see Nitze, *op. cit.*; Matthew Paterson and Michael Grubb, 'The international politics of climate change', *International Affairs*, Vol. 68, No. 2, April 1992, pp. 293 — 310.
- ¹⁸ Michael Grubb, *Energy Policies and the Greenhouse Effect: Volume One*, Dartmouth, Aldershot, 1990, p. 48.
- ¹⁹ *North-South: A Programme for Survival*, the Report of the Independent Commission on International Development Issues under the Chairmanship of Willy Brandt, Pan Books, London, 1980.
- ²⁰ See Patrick McCully, 'The Case Against Climate Aid', *The Ecologist*, Vol. 21, No. 6, November/December 1991, pp. 244 — 252.
- ²¹ Florentin Krause, Wilfrid Bach & Jon Koomey, *Energy Policy in the Greenhouse: Volume One*, International Project for Sustainable Energy Paths, El Cerrito CA, 1989, p. 1.5 — 1.
- ²² M. J. Grubb, *The Greenhouse Effect: Negotiating Targets*, Royal Institute for International Affairs, 1989, p. 25.
- ²³ Susan George, 'Managing the Global House: Redefining Economics in a Greenhouse World', in Leggett, *op. cit.* See also Oran Young, 'Global Environmental Change and International Governance', *Millennium*, Vol. 19, No. 3, Winter 1990, pp. 337 — 346; Paterson & Grubb, *op. cit.*; Andrew Hurrell and Benedict Kingsbury, *The International Politics of the Environment*, forthcoming 1992. In general, where this suggestion has been mentioned, writers have been sceptical of its potential.
- ²⁴ 'Declaration of the Ministerial Conference on Atmospheric Pollution and Climate Change', Noordwijk, Netherlands, November 1989, paragraph 6.
- ²⁵ Report of the Second Session of the WMO/UNEP Intergovernmental Panel on Climate Change (IPCC), Nairobi 28 — 30 June 1989, Annex III (Continued) p. 2.
- ²⁶ Ministerial Declaration of the Second World Climate Conference, 7 November 1990, Geneva, p. 2.
- ²⁷ N. Myers, 'Environment and Security', *Foreign Policy* Spring 1989, p. 25.
- ²⁸ K. Dahlberg et al., *Environment and the Global Arena*, Duke University Press, Durham NC, 1985, p. 135.
- ²⁹ Ramakrishna, *op. cit.*
- ³⁰ L. R. Brown et al., *State of the World*, Norton, New York, 1988.
- ³¹ Jill Jaeger et al., *The full range of responses to anticipated climate change*, UNEP/Beijing Institute, Stockholm, 1989, p. 115.
- ³² I calculate this on the basis that current emissions from developing countries are 20% of the total. The 2025 LDC emissions would be equal to current non-LDC emissions (i.e. 50% of the 2025 total), which is 80% of current emissions, so emissions will rise by 60%.

³³ Scientific Assessment of Climate Change, op. cit.

³⁴ Keohane & Nye, op. cit., p. 11, my emphasis.

³⁵ Ibid., p. 18.

³⁶ See Intergovernmental Negotiating Committee for a Framework Convention on Climate Change, Draft Convention on Climate Change, New York, 5 May 1992, UN Document A/AC.237/CRP.1/Rev.1, Article 4.2.3.

³⁷ Peter M. Haas, 'Obtaining International Environmental Protection through Epistemic Consensus', *Millenium*, Vol. 19, No. 3, 1990.

³⁸ *Nature*, March 9 1989, p. 101.

³⁹ *New Scientist*, 7 July 1990, p. 21.

⁴⁰ A complication here is that while the impacts of ozone depletion are asymmetric, with those nearer the poles (i.e. mostly the industrialised countries) being subject to the seasonal Arctic and Antarctic holes, the impacts of global warming are, if anything, likely to be asymmetric the other way, as developing countries are more dependent on agriculture and therefore more vulnerable to climatic changes.

⁴¹ Dahlberg, op. cit., p. 139.

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