

**Environmentalists vs Oil Producers:  
Clearing Misunderstandings for Constructive Action**

Léonie J Archer

---

Oxford Institute for Energy Studies

EV18

1995

**Environmentalists vs Oil Producers:  
Clearing Misunderstandings for  
Constructive Action**

*Léonie J Archer*

EV18  
Oxford Institute for Energy Studies  
1995

The contents of this paper  
are the author's sole responsibility.  
They do not necessarily represent the views of  
the Oxford Institute for Energy Studies  
or any of its Members.

**Copyright © 1995**

**Oxford Institute for Energy Studies**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior permission of the Oxford Institute for Energy Studies.

This publication is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, resold, hired out, or otherwise circulated without the publisher's prior consent in any form of binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

**ISBN 0 948061 85 5**

**Dr Léonie Archer** holds a Ph.D. in ancient Near Eastern history from the University of London and is a Member of Wolfson College, Oxford. She has published widely on near eastern antiquity. In 1989 she joined the Oxford Institute for Energy Studies (O.I.E.S.) with the specific brief to examine energy matters related to the environment. Her publications from the Institute include *The Gulf War: Implications for the Environment*, *Exhausting our Options: Fuel Efficient Cars and the Environment* and *Aircraft Emissions and the Environment*. Dr Archer is editor of the O.I.E.S. quarterly journal *Oxford Energy Forum* and author of its feature *Asinus Muses* which comments on topical energy enigmas and puzzles.

## EXECUTIVE SUMMARY

This paper examines the ways in which oil producers and environmentalists interact, their fears and aspirations, the misunderstandings which prevent them from 'hearing' each other's point of view, and the common grounds on which a dialogue leading to constructive action could be achieved.

The material on which the study is based is recent speeches and statements made by environmentalist pressure groups and by high officials from OPEC and other oil-exporting countries.

The message of the environmentalists is that we must act on global warming as if it were a reality until proven wrong. The precautionary principle is advocated because the costs of doing nothing are just too great if global warming is actually happening. They focus on oil, perceived to be particularly problematic, given its almost exclusive use as a fuel by the transport sector which is growing at a fast rate worldwide, and is the cause of many environmental ills.

The oil-producing countries of the third world, particularly those which depend critically on oil revenues for their economic existence, fear the adverse impact on their future economic development of policy measures which may significantly reduce world demand for their oil.

Each side is concerned with two vital objectives: the first with the global environment and the second with the very conditions of their economic life.

The study suggests that the two parties to this debate are not addressing each other. In fact each one of them is addressing a third and most important party: the governments of the industrialized countries. The environmentalists' aim is to persuade these governments to adopt fiscal, regulatory and other measures to curb the use of fuels that produce CO<sub>2</sub>. There is no point asking producers to reduce output in the face of demand. The key is the consumption rather than the supply of hydrocarbons.

The oil producers are not primarily interested in the environmentalists. The latter may influence policy but they do not make it. The governments of OECD countries play the key role. Most of them have displayed a strong propensity to tax heavily petroleum products. Their main objective is to raise large fiscal revenues. Environmentalists are giving politically attractive arguments to justify even heavier taxation, which governments use without necessarily believing in their merits.

Rather surprisingly, this study shows that there are in fact many points of agreement between environmentalists and oil producers. Both sides, for example, recognize the difficulties which environmental policies may cause to the third world countries. Both look to the North for initiatives in environmental matters and for aid and technology transfer to the South.

The way ahead is to start a dialogue on the foundation of the concept of 'sustainable development' which is a shared concern. An OPEC agenda for international negotiations, drawn before the Rio Summit, quoted in full in the study, shows that few, if any, of the items are at odds with environmentalism. And there are other meeting grounds.

That all three sides of this triangle – environmentalists, oil-producing and OECD countries – need to revise their positions and shed some prejudices is not in doubt. This study argues, however, that the removal of misunderstandings is not an insuperable task. More importantly, it shows that a solid base for constructive action by all three parties does exist.

## CONTENTS

<b>1.</b>	<b>Introduction</b>	<b>1</b>
<b>2.</b>	<b>Environmentalists: What are they Saying?</b>	<b>7</b>
<b>3.</b>	<b>Oil Producers: What are they Saying?</b>	<b>15</b>
<b>4.</b>	<b>Points of Agreement</b>	<b>21</b>
<b>5.</b>	<b>To Whom are Environmentalists and Producers Speaking?</b>	<b>25</b>
<b>6.</b>	<b>Are OECD Governments Listening? And to Whom?</b>	<b>27</b>
<b>7.</b>	<b>The Earth Summit</b>	<b>35</b>
<b>8.</b>	<b>The Future</b>	<b>47</b>
<b>9.</b>	<b>Obstacles to Dialogue</b>	<b>51</b>
<b>10.</b>	<b>Conclusion</b>	<b>57</b>

**Tables**

**Bibliography**

## 1 INTRODUCTION

The rise in environmentalism in recent history has been formidable. It is possibly *the* force to be reckoned with in these years leading up to the turn of the century and millenium. It operates on a local, national and, most recently, international level, touching virtually every aspect of modern existence and espousing myriad causes. It has successfully penetrated political agenda and fora, has been responsible for a proliferation of national, regional and global treaties, meetings and groupings (NGOs), and has inspired the biggest international conference ever held (at Rio de Janeiro in 1992). Agenda 21, an intensely negotiated text laying down a systematic cooperative plan of action on transition to sustainable development and the twenty-first century, was signed at Rio by nearly 200 countries, together with treaties on climate change and biodiversity.

Climate change, or global warming, is one of the key issues for environmentalists (especially in the First World), one which brings them into direct confrontation with the energy industry whose emissions, from coal, oil and gas, are thought to contribute directly and significantly to the greenhouse phenomenon. This study examines that confrontation with particular reference to oil and oil-producing countries. It considers only oil for several reasons. First, the world is an oil economy: over one-quarter of the world's countries produce oil and all countries consume it. Secondly, it is a remarkably versatile fuel that has found a niche in virtually every sphere of economic activity, and is dominant in the ever-growing transport sector. Thirdly, petroleum combustion is counted by environmentalists (and scientists) to be the primary overall contributor to global warming and hence a target for environmental activity: percentage share of world CO<sub>2</sub> emissions, the principal greenhouse gas, was estimated in 1988 at just over 40 per cent for oil compared with 36 per cent for coal and 16 per cent for gas (the remainder came from non-commercial fuels). Finally, unlike other fuel sources, oil is represented internationally by organized, articulate, high profile groups, a fact which lends itself both to study and to the opportunity for dialogue.

This study examines the way in which oil producers and environmentalists interact, their fears and aspirations, the misunderstandings and misinformation about each other, and where possible areas of common ground and shared endeavour might exist. It also considers the role and activities of consumer governments, which are central to the debate between environmentalists and producers. Indeed, it is these governments in particular that are being addressed by both groups in their speeches and literature. The paper concentrates on global warming, but recognizes that so-called low-level environmental problems such as urban smog, traffic pollution and so forth are also high on the environmental agenda and of general concern to the public at large. Indeed, these problems – to which oil again is seen as a central contributor – could well be the focus of initial dialogue between environmentalists, producers and OECD governments prior to moving onto the greenhouse issue.

The means chosen by environmentalists to communicate their message include direct action; political lobbying; media exposure and hence access to a wider public; speeches to adherents but also especially to non-member groups (conferences, select committees and so on) as well as published articles; working within the political and electoral system either as a separate 'green' party, as in Western Europe, or by combination with existing parties, as in Eastern Europe; campaigning and fund-raising, as is done by all NGOs, and finally, closely connected with this last forum, through literature, which is also largely a product of the NGOs.

Such literature serves several purposes and is consequently of different types. At the most basic level there are the simple leaflets or handouts which contain little detail and are designed to alert the public to a problem and solicit support. Then there is the literature which is intended for fund-raising, targeted primarily at people known already to espouse the cause. Such literature contains more information, obviously with bias, and is essentially – and effectively – an emotive bludgeon. The third tier of literature from the NGOs comprises detailed reports, surveys and research utilized within political circles and among specialists

in the area (scientists, consultants, analysts). In this study we shall be employing mainly the last category of literature, drawn from two international NGOs operating in the UK: Greenpeace and Friends of the Earth.

Unlike environmentalists who tend to function independently and as individual organizations, communiqués from producers may derive from single governments, from national oil companies, the oil industry in the form of private oil companies, or from alliances of producing countries. We shall be concerned primarily with the latter. There are several such organizations, based either on criteria of regional interests or on the fact of substantial net exports of crude petroleum by members. OPEC belongs to the second category and is perhaps the most famous of the producer organizations. It publishes a regular Bulletin, and reports through formal press releases on the deliberations of its constituted biannual policy-making meetings ('OPEC Conference', plus additional extraordinary meetings as necessary). Additionally there are other financial and committee meetings to determine strategy and price.

OPEC defines itself as

a permanent intergovernmental organisation for the coordination and unification of the petroleum policies of member countries and the determination of the best means for safeguarding their interests, individually and collectively ... securing steady income to the producing countries. (OPEC Statute Article 1, 2A and C).

With very similar communication channels are the regional producer organizations of OAPEC (Organization of Arab Exporting Countries) and APPA (African Petroleum Producers' Association), membership of which is often simultaneous with another.

OECD country producers do not have a producers' alliance as such, but are members of the oil security organization, the IEA (International Energy Agency), which publishes extensive analyses and statistics. Additionally there is IPEC (Independent Petroleum Exporting Countries) which groups the main producing countries outside of OPEC and enters into informal discussion with OPEC.

Communications – through press statements, conference proceedings and speeches, published articles, reports from meetings and so on – are all aimed at a mix of home audiences, consumer governments, other producers, independent analysts and, to a far lesser extent than is the case with environmentalists, at the general public.

In this paper we shall be making use primarily of conference proceedings and speeches from OPEC. This is not to deny the importance or voice of other producers. It is simply the case that material for public dissemination is most conveniently presented, and hence accessible, by this group. It is also the case that the oil producer view presented by OPEC is more stark than that of some other producers. While OPEC views cannot be taken as wholly representative of all producers, they do present a baseline of concern for many countries (for example, Mexico and Venezuela will share many interests), and their very starkness allows that message to be seen most clearly. Moreover, the OPEC view is most commonly, rightly or wrongly, taken by the general public to be *the* view of oil producers. Finally, and most importantly, OPEC has a much larger interest in the future of oil as it produces 37 per cent of the world's oil and holds over three-quarters of proven oil reserves; the current reserves/production ratio is over eighty years. For all these reasons we shall focus on OPEC and OPEC's views of the world and oil future.

For ease of handling the material and discussion, the categories 'environmentalists' and 'oil producers' are treated as units in this study. Of course, as just intimated, they are not units or homogeneous wholes but loose groupings containing and displaying much variety. This fact needs to be borne in mind as we go through the analysis. For environmentalists, causes and hence organizational structures vary according to the local and national circumstances. In Europe, green movements have allied themselves with national and regional electoral processes; in the USA green politics have remained essentially at the local level; in East Europe greens have had a role in pushing for domestic political change; whilst in Asia and

South America environmental groups have been formed and have functioned largely on an *ad hoc* basis in response to a particular threat. Membership of ecology groupings in developing countries tends to embrace primarily poor people, while in developed countries it is almost exclusively a middle-class phenomenon. Transmission of an eco-cause comes from individuals, local groupings and networks, public groundswell movements, NGOs and Intergovernmental Organizations (IGOs), and onto government departments and spokespeople – of all shades of green. Environmentalists range from purists and fundamentalists to hard-nosed and cynical manipulators of the agenda. There are moralists and pragmatists of all possible hues.

The category 'oil producers' includes a wide range of diverse countries. There is great disparity in both their oil and development situations, and in their various states of polity and domestic wellbeing. National oil production ranges from a relative low of 140,000 b/d and 185,000 b/d in Cameroon and Yemen respectively to 8,000,000 b/d and 8,850,000 b/d in Saudi Arabia and the USA. Some countries have a greater domestic consumption call on their oil than others. Some rely almost exclusively on oil for their foreign earnings and economic livelihood; for others it is less important. The states of development vary enormously, with the nations of the Middle East, Africa and Asia contrasting sharply with those of North America and Europe. The emerging states of the former Soviet and Eastern European bloc present another sub-category as do the countries of Central and Southern America. States of polity and civil wellbeing also contrast starkly, with 'oil producers' counting in their number kingdoms and other all-powerful hereditary dynasties such as Saudi Arabia, UAE and Qatar, advanced democracies such as Norway, India and the USA, emerging democracies in Eastern Europe, and single-party systems in Algeria, Libya and Iraq. Levels of civil disquiet and unrest within each political system and state of development also vary enormously.

Evidently, as with the 'environmentalists', variety is the name of the game also with the 'oil producers'. Clearly for both there are conflicting interests and needs which do not lend themselves to the creation of an homogeneous or closely allied whole. Such observations apply as much to OPEC as they do to the other member countries of the 'oil producer' category.

The study commences by looking at what messages the environmental movement(s) and the oil producers (typically OPEC) are giving out regarding global warming and the future of fossil fuels. Areas of shared concern as well as differences are highlighted, and the role of OECD governments in the discourse analysed. The study concludes that, despite seemingly intractable difficulties, ways forward in this emotive area are possible so long as some form of direct dialogue between environmentalists, producers and OECD governments is established.

## 2 ENVIRONMENTALISTS: WHAT ARE THEY SAYING?<sup>1</sup>

There are many environmental concerns ranging from problems of waste disposal to global warming. In this paper we shall concentrate on the latter, due to its prominence on the current environmental agenda and the fact that the chief greenhouse gas derives primarily from fossil fuel combustion.<sup>2</sup> It should not, however, be forgotten that, as noted in the Introduction, concerns over local and regional pollution (often themselves part of the greenhouse problem, for example urban smog and ozone production) could well be the springboard for environmentalist–producer dialogue, leading to discussion of the greenhouse phenomenon.

The message of environmentalists is quite simple: global warming may or may not be happening (the belief is that it is) but the danger is such that until proven wrong we must act as if it were a reality. In other words, a precautionary principle is adopted and advocated. Scientific uncertainties regarding the sources and sinks of greenhouse gases and the timing and impacts of the greenhouse effect are acknowledged, but the weight of evidence is taken as being on the side of warming. The exact magnitude and effect of warming may not be uncoverable by present-day science, but the risk of something catastrophic happening is sufficient to warrant risk avoidance strategies as well as further research.

For simplicity and campaign effectiveness, the message given out is often stated in unconditional terms, as, for example, in a document targeted on specialists, policy-makers and governments: 'Greenpeace believes that global warming is already underway and we can see

---

<sup>1</sup> This section refers primarily to material from Friends of the Earth 1992 and Greenpeace 1993(a) and (b).

<sup>2</sup> According to the IPCC's analysis of the global CO<sub>2</sub> budget for 1980–1989, the average annual flux, measured in gigatons of carbon per year, for the two primary sources of CO<sub>2</sub> is 5.4±0.5 for fossil fuel combustion and 1.6±1.0 for deforestation. Estimates for 1989–1990 were higher: 6.0±0.5 GtC for fossil fuels and 1.6±1.0 for deforestation (IPCC 1992).

the first indicators of an oncoming disaster' (*FFES* 1993b, Foreword) and, far more colourfully in a leaflet aimed at the general public:

'Global warming', the 'greenhouse effect' – these are terms that do not in any way reflect the danger of what we humans are doing to the atmosphere. 'Climate chaos', 'climate apocalypse', and 'the hothouse effect' – these terms would be more appropriate (Greenpeace 1992, p. 3).

In line with various works but especially the scientific evidence of the IPCC, environmentalists – and the government delegates at the Rio deliberations (see Section 6) – consider the sources and sinks of all the greenhouse gases.

The greenhouse gases are CH<sub>4</sub> (methane), N<sub>2</sub>O (nitrous oxide), CFCs and HCFCs (halocarbons), O<sub>3</sub> (ozone) and CO<sub>2</sub> (carbon dioxide). The first, methane, derives mainly from enteric fermentation in cattle and from rice paddies, and to a lesser degree from biomass burning, swamps and tundra. The second comes from fertilizer use and fossil fuel combustion. Ozone derives from reactions between CH<sub>4</sub>, CO, NO<sub>x</sub> and HCs in the presence of sunlight; fossil fuel combustion is the primary source of these gases. The fourth, CFCs, derive from man-made aerosols and are the object of the Montreal Protocol. Finally, carbon dioxide comes from fossil fuel burning and to a lesser extent from deforestation and changing land use.

The ascending order of significance in terms of warming potential given to these gases by the IPCC, Rio and environmentalists is N<sub>2</sub>O with the smallest relative contribution through CFCs, O<sub>3</sub>, CH<sub>4</sub> and, at the top, CO<sub>2</sub>. Carbon dioxide is believed to contribute at least 50 per cent of the greenhouse effect (possibly as much as 60 per cent), and fossil fuel burning is reckoned to contribute between 75 and 80 per cent of the anthropogenic emissions. Fossil fuel combustion also contributes to the formation of other greenhouse pollutants, as already noted.

Consequently, when examining the possibility of global warming, environmentalists tend to

give greater attention to CO<sub>2</sub> and focus on coal, oil and gas usage. Coal is counted as the dirtiest fuel, gas the cleanest, with oil falling in the middle. Oil, however, is perceived to be especially problematic because of its almost exclusive use by transport worldwide. This is a growth sector and one to which many environmental ills are attached – urban smog, noxious fumes, congestion, noise, urban soiling as well as acid rain and global warming. Transport takes the lion's share of oil demand and is responsible for upward of one-fifth of the total anthropogenic CO<sub>2</sub> deriving from fossil fuel combustion and deforestation (see n. 2).

Remedial actions proposed by the lobbyists are several and focus on reducing – and in extreme cases, totally replacing – our dependence on and consumption of fossil fuels.<sup>3</sup> In some countries oil may appear to be a particular target as in addition to transport worries environmentalists ally themselves to their governments' concerns for oil security and respond to the needs of a domestic coal industry. Such is the case in the UK where Friends of the Earth made no response to the recent spate of coal mine closures, a move which they should have welcomed given that coal is the dirtiest of the power generating fuels. Coal is often simply not mentioned and so oil, by default, appears to be the dirty fuel or main culprit. Despite this, though, and in general, gas is promoted in the environmental literature as the interim green, clean and efficient replacement fuel for all other power generating fuels (oil by name, coal by assumption). In Eastern Europe the particularly foul-burning lignite in use is seen as being replaced by cleaner-burning natural gas following a regrettable interim phase of increased reliance on nuclear power. The development and increasing utilization of renewable energy resources are advocated at all times. Wind and tidal power are seen as particularly relevant in the USA and northern coastal Europe, while Third World environmentalists encourage the development of solar energy, especially for local power

---

<sup>3</sup> The extreme view is presented by Greenpeace in its Fossil Free Energy Scenario where it urges that 'the only solution to the problem is to phase out the use of all fossil fuels'. This scenario is what the organization calls an 'existence-proof' and does not purport to be more than a technical and economical feasibility exercise. It is not a vision of the future. In it renewables rise to 40 per cent of world energy supplies by 2030 and oil, coal and gas see marked decline, culminating in their total disappearance by 2100.

generating needs. Nuclear power is not supported, despite being greenhouse friendly, due to the dangers of accident and disposal and decommissioning problems. Friends of the Earth, in line with other western environmental groups, campaigns for more research in the area of renewables, for more government funding for such research, and for tax credits for renewable developers. Renewable energy resources are seen as the eventual substitutes for fossil fuel usage.

Together with fuel substitution, programmes of energy efficiency are promoted, most of which focus on demand side management and end-use. Mandatory efficiency standards and labelling for appliances, buildings, vehicles and so forth are proposed together with programmes of information for the general public. For gas and electric utilities mandatory least-cost and integrated resources planning are advocated, and energy auditing recommended for large companies (see, for example, FoE 1993). Government should promote energy efficiency investments and encourage particularly high CO<sub>2</sub> saving targets for its own departments and regional offices. According to Friends of the Earth 'the government should lead by example by introducing state of the art carbon saving technologies and techniques in the government estate and using them for demonstration' (ibid p. 42).

The transport sector, which is almost entirely oil reliant, is usually treated separately in environmental literature, some of which is dedicated to the subject. The various proposals that are mooted to reduce gasoline consumption (and other environmental hazards of driving) are changes in urban planning and land use, traffic calming techniques and lowered national speed limits, the promotion of public transport and full taxation of company cars, advanced technology and alternative fuels, fuel emission and efficiency standards, and fuel price increases (FoE 1993; Greenpeace 1993, pp. 173–4). Greenpeace also urges the creation of an international organization dedicated to energy efficiency and renewables, a sort of environmental equivalent to bodies such as the IEA, IAEA, and OPEC).

In general, environmentalists want to see fuel prices increase to what they term 'realistic' levels, i.e. reflecting to some degree the environmental costs of the fuel use. Subsidizing non-renewable energy resources in whatever way is anathema, and considerable attention is given to the question of energy and carbon taxes. In the case of Friends of the Earth and the UK, the organization supported the EC's proposed energy-carbon tax of \$3 per barrel, rising to \$10 by the year 2000 (FoE 1993, p. 27). In the case of Greenpeace, transition to what it sees as a possible fossil free energy future is aided by proposed energy-carbon taxes of substantial amount (*FFES* 1993b). Carbon taxes are intended to encourage fuel switching from coal and oil to gas and eventually non-carbon based energy resources. Energy taxes are intended to give the right signals for energy efficiency and investment choices, and money thus raised is seen as possibly dedicated to helping finance schemes such as increased public transport (FoE 1993, p. 44).<sup>4</sup> For western countries, Greenpeace is of the opinion that 'a phased increase of energy costs to a level double the current oil price equivalent, or more, is justified' (*FFES* 1993b, pp. 33, 164–5). Practically speaking, both organizations look to less dramatic increases than this.

All of the above are aimed at reducing CO<sub>2</sub> output. Formal country commitments to reduce CO<sub>2</sub> are encouraged and those governments which have already made a public commitment are exhorted to make their targets more rigorous. So, for example, Friends of the Earth urges the UK to be more ambitious than its current target of stabilization at 1990 levels (FoE 1993, pp. 8, 12, 41).

Inequalities between North and South in terms of present energy use and the financial means to implement energy savings are generally recognized in the environmental literature. Environmentalists from the South see great potential for renewable resource development and

---

<sup>4</sup> See also FoE 1993 p. 27: 'A significant increase in real fuel prices at the pump is required for three reasons: to encourage purchase of fuel efficient vehicles; to discourage unnecessary car use and to raise revenue for investment in public transport'.

energy efficiency, but argue vociferously for the fact that (a) the countries of the North must bear the brunt for CO<sub>2</sub> reduction as historically they are the ones who created the problem, and that (b) to break the cycle of ever greater fossil fuel usage the countries of the South need financial and technological aid from the North. Various ideas for the creation of dedicated funding agencies for and to the South are proposed. Greenpeace suggests funding such an agency from a tax equivalent to \$1 per barrel on all non-renewable energy sources, applied in industrialized countries, which could raise \$50 billion plus annually (FFES 1993b p. 171, citing Goldemberg 1990).

At a deeper level, the pervasive linkages between energy, environment and the development process are recognized in most environmental literature, particularly following the Brundtland Report where the notion of sustainable development was first presented and especially since the Earth Summit at Rio and the production of Agenda 21 (see Section 6). 'Sustainable development' – meaning meeting the needs of the present without compromising the possibilities for the future – has become a key concept in thinking about the future of both First and Third World countries and a central tenet of environmentalism.

On occasion the particular hardships to be faced by oil-producing countries in the event of a fossil fuel phase-out are recognized. So, for example,

At national level, there would be reductions of income for those countries currently exporting coal, oil or gas – and large savings for those countries, mainly in the South, whose economies are skewed by the need to import large quantities of oil or coal. Those fossil fuel producers who pioneer renewable energy systems will be best equipped to protect their incomes (FFCC 1993a p. 22).

Economics in the West are seen as far less problematic should the political will be there to effect change. With energy efficiency as the central plank of environmental campaigns, it is believed that CO<sub>2</sub> reductions can be made cost-effectively, probably with economic benefit. Thus Friends of the Earth claim with regard to the UK that it has identified 'cost-effective

measures which would deliver emissions reductions of 25–30 MtC by the year 2000 – close to three times the cuts the government is currently aiming for' (FoE 1993, p. 40).

All environmental groups and organizations believe that action is needed now. We cannot afford to wait. So Greenpeace writes: 'The critical period for averting climate change is between now and the next forty years. Continuing to take no action on carbon dioxide emissions creates the largest risk of global warming' (FFCC 1993a, p. 28).



### 3. OIL PRODUCERS: WHAT ARE THEY SAYING?<sup>5</sup>

Here we shall concentrate on what OPEC is saying to the world.<sup>6</sup> The central concern for oil producers is security of oil revenue, today and tomorrow. The 1980s saw a dramatic fall in the call on OPEC oil as non-OPEC producers came to the fore. Today the falling trend in OPEC's oil power is perceived as turning. Demand is rising and non-OPEC production is peaking. Although oil's share of the global energy mix is falling, oil demand is steadily increasing and, *ceteris paribus*, some forecasters in OPEC expect a world rise (excluding former CPEs) to 58 mb/d by the year 2000 (1992 prediction) with most growth taking place in developing countries and especially the fast-growing economies of the Asia-Pacific region. The call on OPEC oil will rise from 25 mb/d in 1994 to 32–33 mb/d by the turn of the century.

As well as seeing demand growth coming primarily from the developing countries, OPEC looks to transport as the primary sector of growth of oil use:

Use of gas will surely grow as OECD transmission networks are expanded and as the traditional perception of gas as a premium fuel diminishes. Increasingly methane gas will be utilised in the new and efficient combined cycle plants for the purpose of electricity generation. But in transportation, at least, oil will not give up its crown lightly (Subroto 1992, p. 22).

All of the above is expected to happen in a decade with continuing low oil prices – prices which should encourage demand and make oil more than competitive with coal and gas.

Regarding this possible oil future OPEC has three interlinked fears: (a) capacity constraint due to investment difficulties and market instability, (b) the emergence of more protectionist

---

<sup>5</sup> This section refers primarily to speeches of Subroto, OPEC conference proceedings, and speeches by various individuals published in *MEES*.

<sup>6</sup> See Introduction. The voice of OPEC will come from different sources – the Secretary-General, the Secretariat, Conference participants, individual countries in press releases, and so on. Each carries different weight both in OPEC and in the public arena, but all express a consensus on the main environmental issues.

measures on the basis of security concerns by importing countries, (c) the emergence of environmental measures which would similarly act against oil.

Regarding the first, Subroto has argued the need for consumer country cooperation and assistance. In order to make the necessary investments OPEC has to be assured of what it terms security of demand. However, the organization fears that worries over supply security and fears of dependence on the Middle East and 'Arab oil' will make the West act in a contrary way:

OPEC fears the West may attempt to isolate its economies and adopt protectionist measures – tariffs, quotas etc – so that lower prices in the world market would not be passed through to end-users – hence would offset, in part, the effect of lower prices on the rapid expansion of oil consumption (OPEC 1991b).

For security reasons and revenue raising interests, oil and its products are already targeted by consumers. As Al-Sabban says

Oil has in the past been, and continues to be, a tax target in the industrialised countries. Every time the governments of those countries needed extra financing for the budgets, they levied one tax or another on petroleum products (Al-Sabban 1993, D1).

Concerning Europe Hisham Nazer points out,

In 1991 the revenues of the developing country oil exporters from the export of 11.6 mbd amounted to \$70 billion, while the countries of the European Community collected the same year \$222 billion in taxes on petroleum products from the consumption of the same 11.6 mb/d (Nazer, *MEES*, 15 February, 1993, D3).

OPEC's message to the consuming nations of the world is that 'energy security should not be interpreted as reducing dependence on oil for political or strategic reasons.' It argues that a mutually reinforcing definition of security must form the bedrock of good and mutually beneficial consumer–producer relations:

Energy security lies at the heart of this interdependence. To consumers, security means the availability of supplies at reasonable prices to foster their economic growth and competitiveness. To producers, security means continued access to the markets of oil importing countries, the steady share of

oil in total energy consumption over the longterm, and fair and stable prices that allow for their sustainable development over the lifespan of their resources ... energy security is the mutual concern of producers and consumers (Subroto 1992, p. 92; cf. pp. 95, 130, 138).

OPEC fears, however, that oil demand will be hit both by the growth of environmentalism and, more importantly, by manipulation of the environmental message by governments. In other words, environmental concerns, and lobbying, with respect to global warming may prompt some policy action regarding mandatory efficiency standards, tighter CO<sub>2</sub> reduction targets and the like which would affect fossil fuels including oil; but more seriously, governments may ride on the back of environmental worries and use them to introduce even more tax on an already highly taxed commodity. Security fears and revenue raising desires could hide behind the guise of new energy or carbon taxation regimes which, being introduced onto a non-level playing field, would affect oil the most of the energy resources. Prince Sa'ud al-Faisal points out:

While oil is heavily taxed, coal is still heavily subsidized ... A new and additional tax on oil will not serve any real environmental objective. It will only increase the level of discrimination against oil favouring other more pollutant and hazardous fuels (*MEES*, 15 February, 1993).

The concern of OPEC is clearly seen in the following Communiqué from the Fifth Arab Conference in 1994:

The Conference reviewed with deep concern the proposed taxes on fossil fuels, pointing out that their imposition discriminates against oil and that they would only serve to increase budget revenues in the industrialised countries at the expense of oil producing developing countries. Conference participants expressed concern with respect to the negative impact of these taxes on the world economy in general and on the economies of oil producing and exporting countries in particular, pointing out that they will not achieve the declared objective of limiting CO<sub>2</sub> emissions (*MEES*, 30 May, 1994, D3).<sup>7</sup>

OPEC considers that oil is being scapegoated both by governments and by environmentalists. Both groups, it believes, are manifestly singling out oil as the only culprit in global warming,

---

<sup>7</sup> On this latter point, see further below.

making it the handy scapegoat for their various needs. Not only does OPEC argue against such discrimination, it also actively argues for the environmental worthiness of oil. In a statement that brings together many strands of OPEC thinking on the future of oil, Subroto points to

attempts being made to blame oil for all the world's woes, and the belief that if oil demand can be forced down everybody's environmental problem will be solved. This proposal is totally unrealistic, since it seeks to mask the fact that oil is more environmentally friendly than many other sources of energy. Furthermore it runs completely contrary to the interests of both producers and consumers. For the foreseeable future, the world cannot do without oil (Subroto 1992, p. 71, see pp. 93, 103).

Nazer argues that 'Oil has been taxed far in excess of any contribution it may have in environmental degradation' (*MEES*, 15 February, 1993, D3).

OPEC urges the non-implementation of carbon taxes, the removal of CO<sub>2</sub> as the gas central to the global warming debate (and therefore an end to the CO<sub>2</sub> reduction target setting), the de-emphasizing of energy use in the same debate,<sup>8</sup> and the introduction of a level playing field in the market place.<sup>9</sup> In general the organization argues against the need for any direct action with respect to global warming. It believes the findings of the IPCC contain 'some facts, lots of uncertainty, and just plain lack of knowledge' (OPEC 1991(b), p. 10). The scientific base is too uncertain to justify action.<sup>10</sup> Instead OPEC recommends further research. Its message on the environmental front, at least with regard to global warming, is 'make haste slowly' (Abdulai, OPEC 1992(b), p. 3; Subroto 1992, p. 61) and

---

<sup>8</sup> 'Oil should not be singled out as the only culprit in global warming'; 'We do not feel that CO<sub>2</sub> should be singled out as the only culprit in global warming'; 'Discussion should cover all greenhouse gases, their precursors, sinks, reservoirs and sources, and not be confined to, or lay special emphasis on, CO<sub>2</sub> emissions and energy use only' (Subroto 1992, *passim*).

<sup>9</sup> 'There should be revision or elimination of market instruments, such as taxes and subsidies, which permit unfair discrimination among the various energy sources' (Subroto 1992, p. 109).

<sup>10</sup> 'There is not enough scientific evidence to show a causal relationship between the burning of oil and possible future climate change.' (Omani spokesman, *MEES*, 2 May, 1994, A4).

OPEC would urge that no irrevocable steps be taken that would penalise energy producers before there is incontrovertible or at least substantive evidence to show that they are right and necessary (OPEC 1992, p. 199).<sup>11</sup>

Regarding other environmental concerns it argues – in keeping with its fear of environmental scapegoating – that upstream remedies (for example, less pollutive products, safer transportation) are preferable to downstream ones (demand side management, tariffs, subsidies).

OPEC emphasizes the potential cost, to producers and to other Third World countries, of environmental measures adopted both in the West and in their own countries. Regarding the former, OPEC sees the introduction of tariffs and taxes in the West as entailing a net transfer of funds from developing countries to the industrialized world as higher retail energy costs translate into increased prices of exports (OPEC 1992(b), p. 200). Majid Moneef writes

For the developing countries, the tax [energy-carbon tax] would have adverse effects on their growth potential. In addition to the direct decline in the volume and value of fuel exports of the fuel producing developing countries, there is the problem of the transmission mechanism between the developed and developing countries' economies. The decline in real income of the former group ... is transmitted to the developing countries via a decline in exports and price increases (*MEES*, 18 May, 1992).<sup>12</sup>

OPEC repeats Third World arguments that responsibility for today's environmental predicament lies with the North, and even if developing countries wanted to initiate green programmes they would not have the resources (or make the prioritization) so to do. Third World producers and consumers alike call upon the North for both lead action and for aid. OPEC complains that analyses to date have placed little emphasis on the effect of environmental decisions on the economic development of the Third World in general and

---

<sup>11</sup> 'While the scientific jury is out, there is no need to rush into costly policies' (Hisham Nazer, *MEES*, 15 February, 1993, D2).

<sup>12</sup> See also Mohammad Al-Sabban on 'The impact of environmental measures by industrialised countries on the world economy' in *MEES*, 20 April, 1992, and OPEC 1991(b), p. 28 which claims economies will 'suffer drastically'.

OPEC members and other producers in particular (OPEC 1991(b), p. 1).

OPEC's message, essentially, is one of uncertainty regarding the future and of threatened livelihood.<sup>13</sup> It sees the world as economically dependent on oil, yet threatening to reduce consumption for environmental or security reasons. Uncertainty hangs over the level of future demand and hence the level of capacity expansion. OPEC needs to know and feel secure about consumer countries' policy plans and actions. Speaking on behalf of this organization of producers and developing countries Subroto says:

A large question mark lies against the viability of OPEC's utilising the revenue from its strained resources to carry out expansion. The sheer weight of uncertainty surrounding possible anti-oil environmental measures – this alone causes OPEC to question the wisdom of such a step. Our member countries do not, after all, want to end up sitting on massive excess capacity if the projected level of demand does not materialise.<sup>14</sup>

OPEC's agenda for action in the 'Decade of the Environment' is to involve itself actively in the international debate on the environment and make sure its voice and that of other producers are heard; to foster active consumer–producer cooperation; to revise or eliminate market instruments such as taxes and subsidies which discriminate against oil; and to ensure supply of oil in return for predictable demand and a fair return for producers.

---

<sup>13</sup> Sometimes put in very strong language. M. Al-Sabban sees producer interests being 'sacrificed on an altar constructed by the industrial states' (*MEES*, 26 April, 1993, D1).

<sup>14</sup> Subroto (1992). See *MEES*, 5 March, 1990, D1, where a 'leading Gulf oil man' says 'environmental hysteria can play havoc with oil demand through no fault of oil.'

#### 4. POINTS OF AGREEMENT

It is clear from the foregoing that the hopes for the future of producers and environmentalists are very different. Indeed, they are in many respects directly opposed, particularly with regard to the fundamental of future fossil fuel usage. In other respects, however, there may be some points of contact or shared ambition (albeit on occasion for different reasons). It is worth noting where these lie.

Firstly, it is the case that both groupings are in fact concerned with environmental issues. The difference between them is one of degree. Environmentalists come in all shapes and sizes and environmentalism covers an enormous range of concerns. Every human being is to some extent an environmentalist, even if only at the most localized level of concern for his/her own immediate living space or 'back yard'. Developed and developing producer countries will share many of the problems of developed and developing consumer nations. So the concerns of Norway might be very similar to those of other Scandinavian countries, while the concerns of Algeria might to some extent mirror those of Morocco. Regarding issues specifically to do with oil, we have already noted that producers prefer to endorse greater safety measures in transportation and ever cleaner refinery products.<sup>15</sup> They also endorse the development of technologies to counter pollution, as for example in the various controls now available to curb vehicle tail-pipe emissions. Understandably, however, producers will not support anything that impinges on oil consumption and the environment is only one part of their agenda.<sup>16</sup> For environmentalists (of the type that we mean in this analysis), the planet's welfare, at local and/or at global levels, is the overriding concern.

---

<sup>15</sup> Note that production of cleaner petroleum products requires a larger volume of crude oil inputs per unit of output. See OPEC 1991(b), pp. 19–20, for costs and extra energy needed to produce improved refined products.

<sup>16</sup> 'Oil producers within OPEC are ready to do all in their power to improve the environment, providing it does not mean depriving them of their means of livelihood' (Subroto 1992, p. 145).

Subroto says:

We, in OPEC, are as concerned about environmental issues as anyone else. But naturally, in the case of developing country oil producers, the approach to environmental issues is bound to be different from that of the industrial world. In the first place, pollution is not as acute in most countries of the Third World as it is among the industrialised nations, although it is advancing steadily ... In the second place, developing countries generally, due to their poverty, cannot afford to give the environment priority: their immediate concern is just to make a living. And last but not least, developing country oil producers and exporters are bound to seek to protect those exports, since it is the source of their livelihood (Subroto 1992, p. 170).<sup>17</sup>

With respect to the specifics of the environmental issue we have been looking at – CO<sub>2</sub> increase and global warming – there are also, surprisingly, some shared views. The first is that both groupings are aware of the areas of uncertainty that the scientific community has identified regarding the sources and sinks, timing and impact of the phenomenon. Both groups see the need for and advocate further research. Again in line with the scientific community, both groups also insist that discussion of the subject should cover all greenhouse gases, not just CO<sub>2</sub>.<sup>18</sup> The difference between producers and environmentalists on this matter is once again one of degree: producers, for obvious reasons, would like to de-emphasize CO<sub>2</sub> completely, while environmentalists accept that it is a central player in the greenhouse effect. It is, however, clear in the environmental literature that, despite the emphasis on CO<sub>2</sub>, all gases, sources and sinks are considered, and this is something with which the producers would agree.

---

<sup>17</sup> *MEES*, 30 May, 1994, D3, '[Fifth Arab Energy] Conference participants drew attention to the difference between the environmental problems of the industrial countries which are a direct result of industrial development, and those of the developing countries which, for the most part, are not related to the use of energy but are caused by poverty, underdevelopment and the depletion of natural resources.' Hisham Nazer: 'Abject poverty is indeed the worst environmental pollutant ... It degrades a human being far more inescapably than carbon dioxide. The immediate struggle for basic survival by the poor of this world overwhelms the legitimate concerns of environmental protection' (*MEES*, 15 February, 1993, D2).

<sup>18</sup> OPEC: 'Discussion should cover all greenhouse gases [GHGs], their precursors, sinks, reservoirs and sources, and not be confined to, or lay special emphasis on, CO<sub>2</sub> emissions and energy use only' (Subroto 1992, p. 108). The IPCC discusses all GHGs, their sources and sinks; the deliberations at Rio counted all GHGs not covered by the Montreal Protocol; Greenpeace in its fossil free energy future scenario accounts for all GHGs.

Producers and environmentalists are also in agreement – though perhaps not recognizing that fact themselves – regarding the difficulties facing Third World countries. Both look to the North for initiatives in environmental matters and both look to the North for aid and technology transfer to the South. OPEC on occasion charges environmentalists and analysts with ignoring the Third World and paying too little attention to their development needs and the details of the energy–environment–development dynamic. Such charges, however, probably derive from OPEC's own need to have its member countries' particular development requirements (as producers) recognized, rather than from a general omission of Third World matters by environmentalists. OPEC is right in saying that too little attention is given to producer developing countries.<sup>19</sup>

Staying with the Third World, there is a point of agreement – though again not recognized as such by the parties – regarding traditional fuels. In similar manner to the discussion about greenhouse gases, OPEC is keen to see environmentalists take into consideration emissions from non-commercial fuels like fuel wood and animal excreta. There is also an appeal for the effects of deforestation to be taken on board.<sup>20</sup> In fact environmentalists do regard these as important, to such an extent that historically they have been accused of overstating the case of deforestation. For many analyses in the West, and especially for the extensive environmental networks developing in the Third World, the role of traditional fuels is important and not to be ignored.

---

<sup>19</sup> On occasion the literature does also recognize the producing countries as forming a category of their own. For example, Rio recognizes 'the need to be taken into consideration the situation of countries that are highly dependent on income generated from the production, processing and export ... of fossil fuels' (see Section 6).

<sup>20</sup> A 'leading Gulf oil man', *MEES*, 5 March, 1990, 'environmental pressures are hunting for scapegoats among fossil fuels when they should certainly be planting more trees'; Hisham Nazer, *MEES*, 15 February, 1993, D1, 'Even within the question of climate change and carbon dioxide, the problem of deforestation is being compromised. Attention is being focused more on reducing fossil fuel consumption than on preserving carbon dioxide sinks'. See Al-Sabbanin OPEC 1992(b), p. 44.

Both producers and environmentalists are agreed that there is nowhere a free market in energy. From different perspectives both look to the abolition of subsidies (where they exist) on energy resources – for example, on coal, which to environmentalists is the dirtiest of the fuels and should, all else being equal, be charged accordingly, and which producers consider is placing oil at a competitive disadvantage.

Finally, there is general agreement as to one absolutely central element of environmental decision-making: the need for environmental measures to be economically viable. Environmentalists are at pains to point out the cost-effectiveness if not economic advantages of their proposals. Producers too emphasize that there must be no detrimental impact to the economy. Both are agreed regarding the intimate links between environment, energy and development. So OPEC states, at various junctures, 'environmental decisions should sustain and enhance the world economy rather than weaken it; be economically viable in their own right' (OPEC 1991b); and 'Economic growth is needed to create environmental capacity' (Subroto 1992).

Ruckelhaus, in Helm 1990, considers that 'responsible environmental policy is the only policy that makes sense economically in the long run' (p. 205). And the Brundtland Report clearly declares, 'economic development and environmental protection are complementary rather than opposing goals. Sustainable development is the new model for economic growth.'

## 5. TO WHOM ARE ENVIRONMENTALISTS AND PRODUCERS SPEAKING?

At first it might be thought that, having a shared subject of concern and conflict, environmentalists and producers are in these texts and speeches addressing each other, that they are engaged in a debate with each side presenting its case and then proceeding to discussion. Such might be assumed especially from the OPEC texts which on several occasions explicitly refer to 'the environmentalists' (the environmental texts, with just a couple of exceptions, rarely speak of the oil producers directly). This, however, is not the case. A closer look at the texts in question and in their historic context reveals that there is no direct debate or dialogue. Each group presents its concerns in a fairly rigid and dogmatic way, and the texts show no movement or change from one year to the next. Points of contention are not honed nor are possible meeting grounds generated and discussed. The two groups simply slide past each other and remain in an almost ritualized state of opposition.

Their insularity is perhaps closest seen in the way in which each side's perceptions of the other – formed from a standpoint of defensiveness – inform the reading (or hearing) of each other's texts. That is, each side expects to hear certain things and therefore *does* hear them, regardless of what has actually been said. This of course makes the possibility of actual debate or seeing and establishing possible meeting grounds even more remote. Even when there would seem to be the ideal chance of forum for debate as, for example, in the 1992 OPEC and the Environment conference in Vienna, it does not happen. Proceedings from this conference make it clear that this was an OPEC affair, an opportunity for the organization to repeat its stance with respect to the environment and environmentalists, to their own governments and to the world at large. Environmentalists (with the exception of Rio) have never initiated a meeting with producers.

If the two groups are not talking to each other, who are they talking to? The most important

audience for both groups is OECD governments, for it is they who have the power to effect change.<sup>21</sup> Environmentalists present their case directly and explicitly in their texts, oil producers do so by inference from the subject matter presented (for example, statements about carbon taxes and other 'environmental' phenomena are naturally directed to members of the First World, wealthy, major oil-consuming and environmentally literate OECD). There is therefore a shadow interlocutor, and this explains why there is so little debate or movement in the texts. In seeking to influence OECD governments rather than each other, environmentalists and producers continue to present their respective cases in fairly static form. Nevertheless, there have been no signs to reassure producers that western governments will not ride on the back of environmentalism and engage in an anti-oil, revenue-raising programme; equally, environmentalists have not been reassured that governments are taking seriously the threat of global warming. The question which both groups must ask therefore, is whether the governments are listening at all?

---

<sup>21</sup> FoE 1993, p. 14: 'It is Government which establishes the fiscal, regulatory, institutional and (up to a point) informational context in which individuals decide how to meet their household or company needs for energy services and transportation ... On top of this, since Government is central to the control of planning ... the Government actually plays a significant role in determining the scale of the energy services and transportation needs of an individual household or company. Therefore, not only does the Government shape the market context in which the individual chooses how to meet its energy ... needs, it also shapes the very infrastructure, lifestyle and habits which determine the scale of those needs.'

## 6. ARE OECD GOVERNMENTS LISTENING? AND TO WHOM?

To ask 'Are governments listening?' is like asking 'How long is a piece of string?' There is no easy or definitive answer. Governments respond to many different imperatives and messages, in part, *in toto*, or in combination depending on the situation of national and/or electoral need. Compromise is very often the name of the game. In looking at present-day OECD governments' policies and laws regarding energy and the environment, we shall see that to some extent environmentalists (as a broad cross-grouping) will be satisfied, to a lesser extent oil producers will be satisfied. Neither one's vision of the perfect future is happening, but neither are their worst fears. We shall examine the way in which the groupings have allowed their own dogmas and visions to cloud their understanding of reality, or possible realities. In this section we shall examine what the OECD governments are actually doing.

The first thing to emphasize is that the OECD is not comprised of identical nations. It is not a homogeneous unit or body, but rather an organization of differing and sovereign countries and regions. The concern is not with OECD *qua* an organization but with a group of countries conveniently labelled OECD. Several quite different and even opposing stances will come out in the course of this discussion.

Having said this, however, the national governments of the industrialized countries are all functioning in a setting of increased environmental awareness, with and for an increasingly concerned and articulate electorate. Unlike oil issues (except in times of crisis or disaster) environmental matters enjoy a high profile. It is an age when Britain can launch with fanfares its response to Rio, a four volume work entitled *Sustainable Development: The UK Strategy*, and when the President of the United States can come to office with a publicly declared White House subscription to *State of the World*, a Worldwatch Institute report on progress towards a sustainable society, and with a Vice-President already the acclaimed author

of an ecological study called *Earth in the Balance*. It is an age when international treaties -- bilateral, regional and global -- on various aspects of environmental protection have multiplied and meetings proliferated.<sup>22</sup>

Such facts clearly show that governments have been affected by the environmental movement(s) and are themselves affecting the environmental agenda in turn. The question is to what extent will, and can, they allow their decisions and policy making to be shaped by the environmental clarion. Running beneath and alongside such decisions are all the other issues with which national governments have to contend, not least of which are energy matters and a well-oiled economy. It is a balancing trick between the different constituencies and perceived national needs. Within this context of vociferous, very public demands of the environmental lobbies and the quieter, less public demands of the energy sector, we shall ask the question 'Are OECD governments listening, and if so, to whom and to what degree?'

We shall look at some specific national responses first and then turn to the great congress at Rio in which producers, consumers and environmentalists all met and interacted. We shall start with the now well-known EC (as was) energy-carbon tax which was to be introduced immediately after Rio (1993) with an initial charge of \$3 per barrel rising to \$10 per barrel at the turn of the century. At the time of writing, this tax is not a force to be reckoned with. Its introduction depended on member country views and, significantly, on some similar taxation being introduced in the USA and Japan. This did not happen.

Although never introduced and currently sitting in some dusty back room in Brussels showing

---

<sup>22</sup> So, for example, in 1970 the USA had signed just 14 agreements; in 1990 it had signed 168. Between 1987 and 1992 the following meetings, amongst others, were held: the UN World Commission on Environment and Development (Brundtland Report); Villach-Bellagio workshops on greenhouse gases (Montreal Protocol); First and Second World Congress on Climate and Development; Toronto Conference on the Changing Atmosphere; Global Forum on Environment and Development in Moscow; Tokyo Conference on Global Environment and Human Responses Toward Sustainable Development; etc, culminating in the 'Earth Summit' at Rio de Janeiro (Agenda 21).

little sign of reemerging, the EC (as was) proposal still gets a lot of people hot under the collar. It was welcomed by environmentalists (who did not get their way) and spurned by producers (who did get their way, though not for the reasons they put forward). The latter viewed the proposed tax as primarily a revenue raiser, hiding behind the mantle of environmentalism, discriminating even further against oil, and necessitating a net transfer of funds from the Third World to the First World.<sup>23</sup>

The overall context of the EC tax was stabilization of CO<sub>2</sub> at 1990 levels by the year 2000. According to IEA econometric modelling and other sources, this would not have been possible with the level of tax proposed (*World Energy* 1993; OECD 1991).<sup>24</sup> Indeed these studies establish that an extremely high level of taxation would be needed to achieve 1990 stabilization – which must make one wonder about the validity, or at least effectiveness, of (low) carbon taxes introduced unilaterally elsewhere (see below).

According to OPEC's calculations, if the \$3 rising to \$10 tax was applied to all OECD countries it would involve a 2.9 mb/d drop in OPEC production and a 1.3 per cent drop in OPEC gross revenues in 2005 (OPEC 1991b). Despite the fact that the EC proposal has been shelved and shows no signs of reemerging, OPEC worries persist. This is in part due to a proposal, which failed, in the USA to introduce a Btu tax which like the EC tax would have

---

<sup>23</sup> Communiqué from GCC–EC meeting in Riyadh, 18 May, 1992: 'The GCC side questioned the effectiveness of the proposed tax in controlling emissions and pointed out that oil is already overtaxed in the community. Further taxation would adversely affect the GCC economies and their upstream and downstream expansion programme which might affect mutual EC–GCC trade relations.' Iran claimed the tax would produce violent shocks in the world energy market, and was designed to weaken OPEC (interview in daily newspaper *Abrar*, 17 May, 1992).

<sup>24</sup> Helga Steeg, Head of the IEA, 'Our fundamental conclusion is that carbon taxes alone will not be able to stabilise carbon dioxide emissions.' (Paris press conference, 28 May, 1993); 'Assuming the introduction of a tax in the OECD equal to \$100/ton of carbon (about \$12/B of oil), carbon emissions would be just over 5 per cent less than the reference case scenario by 2000 and almost 9 per cent less by 2010. This would still be some 16.5 per cent higher than 1990 levels.' (IEA *World Energy Outlook* 1993); cf Hisham Nazer: 'We have our doubts about the effectiveness of such taxes in tackling a problem with global dimensions ... taxes rarely give clear market signals to increase efficiency nor to reduce per capita emissions' (GCC–EC meeting, Riyadh, 18 May, 1992). See also Majid Moneef in *MEES*, 18 May, 1992.

discriminated against oil;<sup>25</sup> in part due to the actual implementation of carbon taxes in some European countries (see Tables 1 and 2)<sup>26</sup> and the wave of increases in gasoline taxes; and in part due to producers' own fears which tend to exaggerate the reality. The taxes – which have been introduced in Norway, Sweden, the Netherlands, Denmark and Finland (and planned for Switzerland) – like the EC proposal, are low in terms of achieving their goal of CO<sub>2</sub> reduction or stabilization. The same comments as applied to the EC tax apply to them, with the exception, in one respect, of Sweden which notably has created a level playing field between the fuels before applying its new tax. In the context of these taxes and the failed EC proposal, M. Al-Sabban writes:

producing countries believe that whatever the content of the new taxes, and however little their impact on the growth of world oil demand, they do represent a *new trend* which is *organized* and has all the elements of *continuity*. The fact that some of the proposals are small scale and/or to be phased in over the long term reflects only the need for a preliminary test of how much the economy can bear and how revenue neutrality can be achieved. It therefore seems virtually certain that these proposals will not be the last, but rather the start of a series of additional taxes on oil ... since this new tax trend is organized, collective and to all appearances permanent, it has to be worrying for the oil producing countries. At the very least, it casts a lot of uncertainties on future global demand for oil (*MEES*, 26 April, 1993).

It is therefore not so much the taxes themselves as fears of what they may portend which concerns OPEC.<sup>27</sup> Are there signs that things are going to get worse from the producers' point of view? The state of commitment of OECD countries with respect to tackling global warming in the immediate aftermath of Rio was as laid down in Table 2. Few had, or have,

---

<sup>25</sup> President Clinton's modified Btu Tax, revised April 1993, included a 25.7c/mn Btu tax on energy sources other than oil and a 59.9c/mn Btu tax on oil (the 'Base tax' of 25.7c plus a 'Supplemental Oil Tax' of 34.2c).

<sup>26</sup> NB many countries have stated targets *vis-à-vis* CO<sub>2</sub> control, as shown in the Table, but not implemented carbon tax regimes. Many statements for action are conditional on other countries acting similarly.

<sup>27</sup> See Walid Khadduri on the first European Union–GCC Symposium on Energy this year: '[it] highlighted the deep sense of misgiving on the part of the Gulf participants about the future of oil demand under the oil tax regimes being introduced in Europe. These fears were not allayed, despite the efforts made by European officials and experts to demonstrate that the taxes reflect genuine public concern about environmental issues and not merely fiscal measures designed to remedy public budget deficits' (*MEES*, 2 May, 1994).

any definitive action plans though most have a target of stabilization at 1990 levels.<sup>28</sup> Unlike Rio, most target CO<sub>2</sub> specifically (Rio covered all greenhouse gases; see below). None, with the exceptions noted above, have introduced carbon taxes or mandatory measures that would achieve their goal. The USA is committed to a set of policies, already in situ (the Clean Air Act Amendments, follow-ups to the National Energy Strategy and so on) to reduce all greenhouse gases, and the UK, as well as participating in such European initiatives as the Thermie and SAVE (Specific Action for Vigorous Energy Efficiency) programmes,<sup>29</sup> has published its sustainable development strategy which contains few 'hard' policy recommendations. (Apart from some new energy taxes, including the recently introduced VAT on domestic fuel, which is reckoned to account for 10 million tonnes of carbon, the measures are mainly voluntary and achieved through private enterprise). As is the case with most OECD countries neither one can achieve stabilization with the programmes as presently proposed. The UK strategy in fact has as its target just the cutting of three greenhouse gases (Carbon dioxide, methane, nitrous oxide) by a total of 5 per cent by the year 2000 compared to 1990 levels. Regarding this document, Friends of the Earth has the following to say: 'When you open the covers you find old commitments repackaged and a virtual absence of any meaningful targets and timetables' (*Environment Digest* January 1994). David Pearce, a former environmental adviser to the UK government, says: 'There is little in the policy papers to suggest they know the meaning or implications of sustainable development' (*idem*).

As just noted, the UK seeks to achieve in part its stabilization objective with a newly imposed VAT on domestic fuel. This tax highlights several important points about government

---

<sup>28</sup> Note that the earlier stated target from the 1988 Toronto Conference of reducing global emissions of CO<sub>2</sub> by 20 per cent by 2005 still shows no sign of being adopted by any country, despite stated fears to that effect by OPEC.

<sup>29</sup> The Thermie programme was set up in 1990 to run for four years, to support projects for the application of new energy technologies whose realization is associated with a considerable degree of risk. It looks at rational use of energy in all sectors, and alternative energy resources. The SAVE programme was implemented in 1993 to run for five years, and aims at limiting CO<sub>2</sub> emissions through improving energy efficiency.

behaviour. Taxes may be introduced partly for environmental reasons, but equally they serve as significant revenue raisers. The 8 per cent rising to 17.5 per cent in 1995 VAT is presented as a significant plank in the drive to meet commitments taken at Rio, but it also will raise £950 million for the Treasury in 1994/95, £2.3 billion in 1995/96 and around £3 billion a year thereafter. One must wonder which force was driving the introduction of this energy tax.

Throughout the OECD environmental measures such as improved energy efficiency and increased use of renewables are being introduced, but most are voluntary or incentive driven rather than mandatory as, for example, with the Dutch set of voluntary agreements with industrial sectors to achieve a 20 per cent more efficient energy use by 2000. Such new energy and/or carbon taxes as are introduced come in the main on top of existing taxes in the energy sector and so continue distortions and the relatively heavy levels of taxation already existing on energy production and end-use. Norway is a good example of this (and an interesting one too as it is itself a producer). OPEC's objection to the new taxes could in fact be an objection to the entire tax and revenue raising structure into which they are all too readily absorbed. New energy and carbon taxes might be endorsed for environmental reasons if the rest of the regime were reviewed. Frequently, energy intensive components of the industrial sector are exempt from the new and proposed taxes so as not to affect a country's competitiveness.

The answer to the question 'Are governments listening, and to whom?' is not, therefore, an easy one. Most member countries of the OECD have made climate-related policy commitments (reduction targets) and are presently developing response strategies. Environmentalism is not, however, the sole, or even necessarily the prime, mover behind the initiatives. Various policy goals and considerations such as fiscal revenue needs lie behind any particular initiative and a variety of soft-to-hard approaches are being adopted depending

on a country's priorities and particular interests. Before reviewing in greater depth the answer to the question, we shall turn to the deliberations at Rio which brought together, ostensibly under a completely environmental banner, OECD governments, producers and environmentalists.



## 7. THE EARTH SUMMIT

The UNCED Summit at Rio in 1992 was the culmination of two decades of environmentalism. Five agreements were signed at the Summit: the Rio Declaration; Agenda 21; the Framework Convention on Climate Change; the Convention on Biological Diversity; and Forest Principles. The last two are not our concern here. Subsequent to signing all were endorsed by the United Nations and follow-up procedures were established.<sup>30</sup>

The Rio Declaration consists of twenty-seven statements or principles of environment and development. It is a wide-ranging document and promotes the goal of equitable global partnership through the creation of new levels of cooperation. As the *Earth Summit Bulletin* of 16 June, 1992 reported:

The result of protracted procedural debate and agonizing substantive negotiations, the declaration represents a very delicate balance of principles considered important by both developed and developing countries (quoted in Johnson (1993), p. 117).

It recognizes the particular needs of the Third World, urges appropriate environmental legislation and information dissemination, and promotes the concept (and pragmatics) of sustainable development. Regarding environmental protection, the Rio Declaration – and hence all its signatories – endorses the precautionary principle, stating,

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. (Principle 15)

There was some opposition to various of the Principles by the USA (which objected to the idea of the right to development, the diminution of responsibilities of developing countries, and ownership of natural resources), but eventually, with stated reservations, it signed. All

---

<sup>30</sup> For details of the follow-up procedures, see Grubb et al (1993).

attending countries signed the Declaration.

Agenda 21 is the biggest of the Rio Documents, running to forty chapters, and the most comprehensive. It is an action plan, or reference document, for sustainable development in the twenty-first century and covers a great many different subjects, some in support of the Summit's Conventions.<sup>31</sup> It is not a legally binding treaty but rather a piece of 'soft law', i.e. a document with considerable political authority and influence. Its intention is to provide a blueprint for policy and legislative action, national and international, in the next century.

Like the Rio Declaration, Agenda 21 looks to the establishment of a global partnership and of 'continuous and constructive dialogue' between nations (Chapter 2). It too promotes sustainable development and the linkages between environment and development, and emphasizes the assistance needed from First World countries to the Third World. Chapter 4 focuses on the need to change unsustainable patterns of production and consumption, particularly in developed countries. This includes being more economically efficient and environmentally sound regarding energy use, with the stimulus of prices and market signals to make clear the environmental costs.

Chapter 9 of Agenda 21 is the chapter which primarily concerns us here. It concentrates on Protection of the Atmosphere and covers Energy Development; Efficiency and Consumption; Transportation; Industrial Development; and Terrestrial and Marine Resource Development. The first section, Energy Development, promotes the research and monitoring of atmospheric processes; the need to control energy use and be sustainable in energy use from production to end-use; the increasing need for cost-effective energy efficiency and emissions standards plus utilization of renewable energy resources; and the necessity of education and energy

---

<sup>31</sup> Subjects covered include demographic dynamics, health, human settlements, deforestation, sustainable agriculture, biological diversity, biotechnology, protection of oceans and fresh water resources, toxic chemicals and hazardous wastes, indigenous peoples, women, trade unions and so forth.

labelling processes. Contained in the general objective of the chapter – 'to reduce the adverse effects on the atmosphere from the energy sector' – is a statement regarding producer countries:

This objective should reflect ... the need to take into consideration the situation of countries that are highly dependent on income generated from the production, processing and export ... of fossil fuels. (9.11)

Countries which have serious difficulties in switching to alternative energy resources or which are particularly dependent on income generated from the consumption of fossil fuels are also considered.

The Transport section of the chapter, whose objective is to promote policies or programmes to curb harmful emissions whilst accepting that the sector is both essential and bound to grow, looks to ways of developing less polluting transport systems. It particularly concerns itself with programmes to develop urban transit and least polluting transport modes. Chapter 7 Sections 46–52 also deal with transport and the need to integrate land-use and transportation planning to reduce demand. The section on Industry speaks of reducing emissions by increasing efficiency, improving pollution-abatement technologies, and assessing the potential for renewables' development.

This chapter on Protection of the Atmosphere was one of the most difficult chapters of Agenda 21 to negotiate and agree to. Opposition primarily came from Saudi Arabia, which objected to what it deemed an over-emphasis on energy efficiency and conservation.<sup>32</sup> It also objected to repetition of references to renewable energy sources. In this it was opposed by many Northern countries which fought hard to retain the renewables' references throughout

---

<sup>32</sup> At the Rio deliberations the major oil-producing developing countries formed a distinct and significant group. It was led in the negotiations by Saudi Arabia and Kuwait and included the other Middle Eastern oil producers as well as Algeria, Venezuela and, to an extent, Nigeria. The group opposed suggestions that industrialized countries should set targets to reduce CO<sub>2</sub> emissions and focused on the need for more research and increasing sinks for CO<sub>2</sub>.

the text, arguing that repetition of something as environmentally important as this was totally acceptable. At the end of the day, and after some compromise with respect to wording, the chapter went through to the final Plenary of the Summit. At the signing of Agenda 21, Saudi Arabia formally placed on record its reservations with the Atmosphere chapter.

Closely linked to this, and indeed one of the reasons why Saudi Arabia objected to the chapter (on the grounds that it was merely duplication) is the Framework Convention on Climate Change which provides a legal framework for tackling the problem. The Framework Convention on Climate Change (hence FCCC) makes an opening statement about the enhanced greenhouse effect and human activities. It accepts that the phenomenon exists and that it is a serious problem, albeit with many uncertainties regarding timing, magnitude and regional patterns (Addendum, Annex 1). Article 2 of the FCCC states that

The ultimate objective of this Convention is ... stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

Like the Rio Declaration, the Convention urges that lack of full scientific certainty should not be used as a reason for postponing appropriate measures. It advocates a precautionary approach, with First World countries taking the lead and affirming that they will donate a percentage share of their GNP to developing countries' needs and the full incremental costs of measures taken in those countries. For the First World an objective is to set stabilization of greenhouse gases at 1990 levels (Article 4). To this end, national inventories are to be established and national policies and emission projections are to be submitted in periodic report-backs to the Conference of the Parties. (Third World countries are also obliged, within their differentiated responsibilities, to prepare inventories.) Programmes of reduction of greenhouse gases are to count 'all relevant sources, sinks and reservoirs, and to be within cost-effective parameters'. International programmes of research and data collection are to be established as are national programmes of education, training and public awareness. For the effective implementation of the Convention the role, duties and powers of the Conference of

the Parties and various subsidiary review bodies are laid down. Throughout the document all greenhouse gases outside of the Montreal Protocol are addressed and in the main referred to as such, though on occasion the written formula adopted is 'carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol'.

The principles agreed to in the FCCC are stated at the most generalized level. The national and international programmes for greenhouse gas reduction do not specify target actions of economic sectors, with the exception of one sub-section (Article 4:1c, see below). The commitment on greenhouse gas reduction does not specify a date for stabilization and hence is open-ended. All it commits Parties to is reporting their progress toward stabilization at 1990 levels. This lack of bite or compromise commitment is due primarily to intense disagreement between the EC and the USA – with the latter being unwilling to be bound to specific targets, timetables or methods of reduction. Energy production and use are referred to on only three occasions, once in the opening Annex where signatories agree to the Convention

Recognising that all countries, especially developing countries, need access to resources required to achieve sustainable social and economic development and that, in order for developing countries to progress towards that goal, their energy consumption will need to grow taking into account the possibilities for achieving greater energy efficiency and for controlling greenhouse gas emissions;

secondly in the context of the particular difficulties of producer countries and some other parties:

The Parties shall ... take into consideration in the implementation of the commitments of the Convention the situation of Parties, particularly developing country Parties, with economies that are vulnerable to the adverse effects of the implementation of measures to respond to climate change. This applies notably to Parties with economies that are highly dependent on income generated from the production, processing and export, and/or consumption of fossil fuels and associated energy intensive products and/or the use of fossil fuels for which such Parties have serious difficulties in switching to alternatives. (Article 5 Sect. 10; cf. Annex 1)

and thirdly in the one sub-section that does itemize various economic sectors where the commitment is made to

Promote ... the development, application and diffusion ... of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases ... in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors. (Article 4:1c)

Seven producer countries, all from the developing world and mainly Arab, refused to sign the FCCC (Kuwait, Qatar, UAE, Iran, Iraq, Saudi Arabia, Malaysia). They argued that the Convention placed too much emphasis on CO<sub>2</sub> and on energy, or at least made explicit references to those sources while not specifying others. Apart from these six and some others, 154 countries plus the EC (as was), including producers of the North and the South, America and Asia, signed the Climate Convention at Rio whose commitments count as legally binding obligations.

To what extent are the ambitions of environmentalists and producers satisfied by Rio? Two years before the Summit took place, the Secretary-General of the Conference stated

Achieving a viable balance between environmental and development factors will not always be solely a method of adding measures for environmental protection to development programmes and projects. It will more and more require fundamental changes in the dynamics and content of our economic life and behaviour. The most dramatic example of this is the basic changes that will be needed in current patterns of energy use and transport in order to effect the substantial reductions in fossil fuel use that would be required to reduce risks of climate change. This will require a concerted global effort to improve energy efficiency in all sectors, and a transition to other forms of energy that produce less pollutants, particularly greenhouse gases. For example, there should be greater incentives to and support for research and development on new energy supply and storage options such as electric batteries and hydrogen to power motor vehicles (Preparations for UNCED, August 1990).

His words did not translate into definitive commitments and declarations in the agreements as eventually signed at Rio – a fact that could be viewed very differently by producers and environmentalists.

For environmentalists the absence of clear-cut commitments, detailed agendas, and targets within specified time limits and with some hard cash on the table has been the cause of much disappointment and concern. The phraseology and frameworking of the Rio agreements, even with their follow-up procedures, are just too soft to satisfy. Nevertheless, environmentalists did get international recognition of and majority agreement to certain fundamental principles. These included the notion of sustainable development; recognition of the existence of global warming, of its potentially harmful effects, and of damaging anthropogenic emissions; a repeated endorsement of the precautionary principle and the need for action (when and how not rigorously specified); the need to stabilize (at least) greenhouse gases; and First World responsibility to take the lead in clean-up processes, both in its own backyard and by assistance to Third World countries. Programmes to effect change within the climate change sections of the Rio agreements promote sustainability in energy use from production to end-use; cost-effective energy efficiency; increased utilization of renewables; less polluting transport systems; education; and on-going research and monitoring. In terms of general principles, then, environmentalists can be well pleased. Ranked high on the positive side for them, of course, is the fact that the UNCED meeting took place at all and attracted worldwide attention. The question now is to what extent any of this will translate into reality, and how. As we saw in the last section, consumer countries are only just starting to develop their strategies in respect to their commitment at Rio, and environmentalism is not the only force directing their choices.

What of the producers? Clearly their reaction to Rio is very different to that of the environmentalists. For some producers, notably those from the Arab countries whose national income is almost exclusively derived from oil, Agenda 21 and the Climate Change Convention were too firm and dogmatic in their presentation of a case and placed far too heavy an emphasis upon CO<sub>2</sub> and the role of energy (fossil fuels) in the greenhouse progress. They saw definiteness where environmentalists saw woolliness – despite the fact that the final

agreements were in fact so much more bland and non-energy specific than they might have been, given the Secretary-General's vision of the future quoted above. Concern was such that, as we have seen, some producers declined to sign the agreements. The majority of producers, from the OECD and from developing countries including OPEC members, did sign, however, and by so doing endorsed the concept(s) of sustainable development and the existence of global warming. The fact that, unlike the few Arab countries who refused to sign, these producers are not 100 per cent reliant on oil for their hard currency is significant but not sufficiently significant to negate the importance of their having signed the agreements. Many are, after all, major world oil producers with oil revenue making up a considerable part of national income. Their view of the agreements, as well as their baseline circumstances, must therefore be different to those of Saudi Arabia, Kuwait and those other countries mentioned above who formed the dissenting group.

Not all is negative in the agreements for the producers. In addition to the point already made that the texts could have been much more heavily 'against' oil, there is the fact that several points from their own public agendas, as itemized in Section 2, are to be found clearly in the documents. First, the whole notion of development and particularly sustainable development is not an issue with which producers, especially those from the Third World, would wish to quarrel. All the Rio agreements make clear that development, as far as possible within sustainable bounds, is an inalienable right and a number one priority. Also stated as a matter of principle is the sanctity of each country's sovereignty and the exploitation of a country's natural resources as a sovereign prerogative.

Second, and following on from this, the producer texts that we examined establish the fact that any initiative regarding global warming and financing for action must come from First World countries. This too is emphasized and reiterated in the Rio agreements.

Third, the OPEC material refers repeatedly to the need, or producer desire, for dialogue between producers and consumers. This is something that has been placed on the table for some years now, to little or no constructive end. To some extent this desire is recognized, or at least contained, in the Summit's call for and goal of 'equitable global partnership and constructive dialogue between nations'.

Fourth, the producers' wish for more research on the subject of global warming is mirrored in the agreements' stipulation that there should be increased national and international monitoring, data collection and research.

Fifth, producer concern that all greenhouse gases, sources and sinks be considered in the global warming debate is fully satisfied by the statements and commitments of the Rio agreements.

Sixth, the Rio texts emphasize the need for cost-effective parameters for any measures undertaken. As we saw in Section 3, this is something on which there is producer—environmentalist agreement.

Seventh, the point is made in the OPEC material that much can be done at the production end of things and in refining, yet environmental attention focuses on end-use. The agreements embrace patterns of both production and consumption and call for sustainability in energy from production through to end-use.

Eighth, on the question of demand about which producers are much concerned, the Rio agreements make two important points: (1) in the context of development being a priority and a right, they state that energy consumption (and hence also emissions) are set to increase enormously in Third World countries. The Framework Convention on Climate Change also

calls for special consideration to be given to those countries whose economies are 'highly dependent on income generated from the ... consumption of fossil fuels and/or the use of fossil fuels for which such Parties have serious difficulties switching to alternatives' (Article 5 Sect. 10); (2) the agreements recognize that Transport as a sector, the mainstay of oil consumption, is set to grow hugely. Such anti-pollution measures as are proposed are concerned primarily with changing land-use patterns and public transit schemes rather than alternative technologies and fuels.

Finally there is the repeated statement that with the implementation of any measures to counter global warming, the special needs of the producer countries will have to be considered. How and to what extent are not spelled out, but at least Rio recognizes the appropriateness of special pleading on the part of the producers and the need to give due attention.

On the basis of Rio, the Fifth Arab Energy Conference in May 1994 issued the following declaration:

The Conference expressed the Arab countries' determination to take full advantage of the principles and provisions included in the Rio Conference conventions and agreements which state that the exploitation of a country's natural resources is a sovereign prerogative; that particular consideration be accorded to the circumstances of countries whose economies depend on the production and processing of fossil fuels; that no barriers to world trade be erected on the pretext of environmental protection; and that no measures leading to a slowing of the development process in any country be adopted (*MEES*, 30 May, 1994, D4).

By signing the Rio Declaration, Agenda 21 and the Framework Convention on Climate Change, national governments formally and publicly endorsed the objective of sustainable development, which includes sustainable limits to energy production and use, to dangerous anthropogenic gaseous emissions and economic activity. Global warming is recognized as a phenomenon to contend with. But was the Earth Summit just a mountain of words? Certainly no hard and fast commitments were made, and to be effective detailed and rigorous

Protocols would be needed. What we have seen so far, in OECD countries at least, has been unilateral actions of differing degrees of effectiveness and commitment to environmentalism, despite running under that mantle. No governmental concern for the producers' stance(s) has been evinced.

In general, for environmentalists, the aftermath of Rio has been disappointing. Not only have governments by and large failed to respond in concrete fashion to the imperatives of Rio but the phenomenal momentum of environmentalism that was so striking in the decade up to 1992 has since UNCED slowed quite dramatically. There has been a decline in prominence of both environmentalism and environmentalists in political agendas and platforms. The presence of green party representatives in the political machinery of Western Europe has noticeably diminished. Regarding this Andy Hurrell writes:

the period since UNCED has witnessed the decline in the salience of environmental issues on Northern agendas. The presumption in much of the literature that environmental issues will inevitably grow in importance has not been borne out. Many developed countries have been slow to ratify the framework conventions and even slower in carrying forward the negotiations on the funding commitments made in Rio. In the follow-up negotiations many of the old divisive issues, over institutional arrangements, sovereignty, and above all over funding and technology transfer have reemerged (Oxford Analytica 1994, p, 42).

Regarding environmentalism in developing countries the same author, by way of example, examines Latin America and writes

the post-UNCED period has seen a decline in political environmentalism in Latin America. It has not been alone in this, since there has been both a decline in support for and split among green parties/organisations in many countries of Western Europe ... It was inevitable that the frenetic pace of campaigning prior to UNCED would have been impossible to sustain and the Summit and its aftermath have exposed strains within the environmental movement (i.e. differences between the middle-class European-style environmental groups and those stressing a more 'social environmentalist' agenda). Finally, and most importantly, the environmental movement has, in general, been unable to gain a firm foothold within the mainstream of party politics, at least at the national level (idem p. 43).

Environmentalism and environmental issues have not, of course, gone away, but for many they have been displaced as *the* international issue and have become more of a background hum than a foreground noise. Such a development, while perhaps inevitable, is a cause of disappointment and concern to environmental organizations who had placed much faith in the Rio Summit. The lack of firm commitment and implementation by participating countries, whilst again doubtless inevitable given the many dynamics at play in national and international governmental decision making, could be viewed by producers as counting in their favour – a respite at least, if not more.

Returning to the question 'Are governments listening, and to whom?' we find that the environmental push is still sufficient to affect some political decision making and much political rhetoric, but its effect in terms of concrete resolutions is heavily tempered by other considerations and dynamics. Environmentalists have failed to get the action they sought, and know that they have to continue plugging away to get their message heard and effectively acted upon. Their success in the future will probably be more evolutionary than revolutionary. For producers, matters are not nearly as bleak as much of their literature would have us believe. Western governments may not be responding directly to their message – for example, no carbon taxes and no (effective) discrimination against oil – but the measures that are being taken are so compromised by a plethora of other considerations as to be hardly damaging to oil at all – as yet. The main problem for producers is both the existing tax regime with its ongoing distortions and imbalances and the incremental environmental taxes to be added on top. Our analysis of the Rio agreements also shows that (a) some items on the producers' agenda are being considered, and that (b) the possible future producer predicament has been taken on board with some concern if not concrete solutions. The future when such concern would be appropriate seems, at present, to be some long way ahead.

## 8. THE FUTURE

What does the future hold for environmentalists and producers? Some informed guesses for the medium term (the next ten to fifteen years) may be made on the basis of today's observable trends.

For environmentalists it seems likely that environmental betterment, in First World countries at least, will follow an evolutionary path rather than a revolutionary one. Although the kind of fossil fuel free energy future described by Greenpeace, which shows a reduction in CO<sub>2</sub> already in 2010 through various Demand Side Management (DSM) techniques, technological improvements and renewables introduction, may be theoretically feasible, it is too radical and contrary to current economic pathways to be entertained by governments today. It is not realistic. It is likely that governments will continue to soft-pedal and procrastinate on the type of international agreements that environmentalists would like to see put in place. Much of the pace of the evolutionary process will be dictated by the 'natural' speed of technological development and entry into the market place. With Third World countries set to increase their fossil fuel consumption enormously and transport set to continue expanding worldwide, concerns with respect to global warming will remain high. Although it is not possible to predict what future environmental concerns may be, it is likely that global warming – with its necessary long-term analysis of cause and effect – will remain a rallying cry for environmentalists, and that they will remain a thorn in the side of national governments and international meetings.

For producers, the principal concern is and will be security of demand and oil revenue. From the signs to date it would seem that demand for oil over the next ten to fifteen years and beyond is set to grow, with an ever-increasing percentage of supply coming from Gulf producers. In the absence of any dramatic intervention by First World countries (which seems

unlikely), the 1990 world demand (outside of the former CPEs) of 52 mb/d is projected by OPEC and the IEA to rise to 58 mb/d at least by the year 2000 (non-OPEC supply is expected to decline as of 1995, from 28 mb/d to 26 mb/d in 2000, which means that the call on OPEC oil will rise from the 1990 total of 24 mb/d to 32 mb/d in 2000.

This growth is primarily due to the expected formidable increase in the energy requirements of the Third World (a fact noted repeatedly in the Rio agreements) and, ironically, to some environmental regulations in the North. According to the IEA, consumption in the developing countries will be more than twice its 1990 levels within a decade, meaning that by 2005 developing countries will become responsible for more than half of world oil consumption. By 2010 it is estimated that OECD countries will be consuming up to 20 per cent more oil than current levels. This will occur partly because of the growing requirement to produce ever cleaner petroleum products (for example, reformulated gasoline programmes in the USA).<sup>33</sup> Such products require a larger volume of crude oil inputs per unit of output. Running beneath this global demand increase will be the current of environmentalism and technological development which in all probability will affect producer prospects in the longer term. Also to be considered is the rising importance of natural gas (a resource that some producing countries have in abundance) which is being adopted increasingly as a clean, 'green' and efficient substitute for oil.<sup>34</sup> For the longer-term future of oil, these factors will have to be carefully considered and strategies devised. Oil will remain a substantial part of the energy mix during the evolutionary progress of environmentalism, and indeed could be

---

<sup>33</sup> 'Some of the environmental issues can only be tackled by an increase in energy consumption. This increase is needed to improve fuel quality in reducing sulphur and nitrogen oxides emissions directly or indirectly from coal or oil products. The reduction of gasoline RVP and the need for octanes may also require more energy to fuel the new and more severe catalytic reformers and other processes. The increased need for cracking to improve lighter product yields is another contributing factor' (OPEC in *MEES*, 16 April, 1990, D1).

<sup>34</sup> Many OPEC member countries have significant natural gas reserves. In Iran, Algeria, Qatar and Indonesia the natural gas potential is more significant than oil in the long run. Saudi Arabia, UAE, Libya, Nigeria and Venezuela all carry gas resources. According to Mabro: 'timely and significant investments in gas will be able to compensate for any contractions in the oil market' (OPEC 1992(b), p. 193).

regarded as a viable transitional fuel to a more benign energy future – something that environmentalists may have to accept given the universality and versatility of the fuel and the fact that renewable energy resources cannot realistically be expected to substantially replace fossil fuels within the next twenty or thirty years. Producers for their part proclaim the (relative) environmental merits of oil.<sup>35</sup>

For the much longer term, say in fifty years time, producer countries will be focused not only on environmentalism but also on reserve depletion. By then most of the traditional oil suppliers will have depleted their reserves (not perhaps Saudi Arabia, Iraq, Kuwait and Russia and not Venezuelan tar sands). Were environmental measures already to have bitten hard by then, the life of the oil fields – and hence the income of the producers – would be extended. Such matters for the longer-term future are of course merely open to speculation. For the medium term there is little to worry producers in terms of absolute reduction in demand. Rather, their concerns lie with reduced growth and stagnation, though even these may be unnecessary worries given what we have said about continuing oil demand and its possible interim role of a transitional fuel.

---

<sup>35</sup> 'The fact of the matter is that oil is a cleaner, cheaper and more abundant source of energy and will continue to be the world's incremental source of energy for years to come' (Subroto 1992, p. 107); 'oil can be environmentally-friendly and should not be treated as the 'scapegoat' for global warming ... upstream remedies (i.e. improving quality of energy types to make them less pollutive) [are] preferable to downstream remedies (i.e. trying to influence demand through tariffs, subsidies, fiscal and administrative measures)' (ibid p. 103); 'Why not let Big Oil throw its vast technological and financial resources into research aimed at making oil more amenable to the environment?' (ibid p. 123).



## 9. OBSTACLES TO DIALOGUE

We noted earlier that environmentalists and producers, as groups, are not hearing, or indeed are mishearing, what each other is saying – despite the fact that many areas of (often unconscious) agreement and similarity exist between them. The reasons for this disjunction are numerous, but all derive essentially from three basic facts:

(1) environmentalists are pursuing a cause and producers, feeling threatened, are adopting a defensive stance, (2) environmentalists in pursuing a cause seem often to ignore the economic realities of the developing producer countries, and (3) the issue that both sides are addressing is large and complex and open to many interpretations and courses of action. Many of the points and complaints from both sides could be made directly and more appropriately to government bodies than to the apparent opponent. Thus, for example, the charge by producers that oil is being scapegoated regarding global warming would be better brought to governments of consuming countries which, as we have seen, may well be using environmentalism for their own purposes.

Global warming, its causes and effects and projections for the future, is a vastly complex and unproven issue which lends itself naturally to disagreement and misunderstanding. Environmentalists and producers approach the problem with very different attitudes, and with partial and partisan views of the subject. To facilitate dialogue and action with respect to global warming two things, which dovetail into each other, need to happen: (1) international cooperation, and (2) an holistic understanding and appreciation of the issue by all parties. It is not a question of one side being right or wrong; that would require a conversion. Rather, for dialogue, both sides need to progress in their understanding of the issue and of each other's concerns. Similarly, OECD governments need to be informed.

OPEC often complains, directly or indirectly, that environmentalists commonly ignore the

scientific uncertainties surrounding the greenhouse effect. In fact, the definitive document on global warming prepared by the IPCC upon which the environmentalists' view is now based gives equal discussion space to the uncertainties of the greenhouse effect as it does to the certainties. Environmentalists explicitly acknowledge the need for more research and this is one of the areas of agreement between producers and environmentalists mentioned earlier. The real difference between the two sides is how they react to the uncertainties on global warming: according to environmentalists we know enough for action, while for oil producers we know too little. Both sides need to take a moderate and reasonable view of the state and capabilities of scientific knowledge. The intrinsic inadequacies of climate modelling and long-term forecasting must be recognized and accepted rather than criticized for what they cannot be. As B. Flannery says 'uncertainty in projections arises from the inability to forecast future human activities as well as from incomplete understanding of nature' (in Flannery and Clark 1991, p. 16).<sup>36</sup> The implications of this are clearly put by Cox (in Pachauri 1991(b), p. 669), 'Defining our ignorance does not bring comfort, since the *possibility* of significant climate change must be taken seriously.' Moreover, while research to improve our knowledge must continue, it must not be used as a recipe for inaction.

OPEC frequently claims that CO<sub>2</sub> is being singled out as the only culprit in global warming. Strictly speaking, this is not true; it is rather a case of emphasis as dictated by the available evidence. All greenhouse gases are considered by international summits, campaign literature and the scientific community. In particular, the work of the IPCC gives detailed evidence on all gases, sinks, sources, reservoirs and the like, coupled with detailed background data necessary for appreciating the varying impacts of the gases. The emphasis on CO<sub>2</sub> derives from the fact that it is the principal greenhouse gas, accounting for over half the total increase

---

<sup>36</sup> 'models employ scenarios that attempt to incorporate a range of assumptions about population growth, economic activity and the longterm development of technology, across the entire globe into a distant future that no-one can reliably forecast. Even if the laws of nature were modelled with complete precision, scenarios about future human activities will always be uncertain' (ibid p. 14).

in climate forcing in the 1980s. It is produced in larger part by fossil fuel combustion (75–85 per cent anthropogenic emissions), and majoritively by oil. The emphasis upon CO<sub>2</sub> by environmentalists is, therefore, both understandable and logical.

However, the position of the producers is equally understandable. Not only are there obvious reasons for not wanting CO<sub>2</sub> and oil to be targeted, there is also the question whether it is the most effective and appropriate action to take regarding global warming. According to the IPCC, reductions in the anthropogenic emissions of greenhouse gases needed to stabilize concentrations at current levels are at least 60 per cent for CO<sub>2</sub>, up to 20 per cent for methane, 70–80 per cent for nitrous oxide, and 70–85 per cent for CFCs.<sup>37</sup> Given that each gas has several different sources, a combination approach may well be the better way forward rather than targeting one gas and one source, albeit the largest contributor. It is certainly a matter that should be open to discussion.

Also high on the agenda is the question of international cooperation. As mentioned earlier, while the summit at Rio was a success story in many respects, it also highlighted the shortcomings of the embryonic internationalism. It failed to tackle the problem with concrete resolutions and threw into sharp relief the already deep divide between developed and developing countries. Delegates discussed the issue from their own particular viewpoints and, give or take, stuck to their positions rigidly. So, for example, while environmentalists may include Third World economies on their agendas, they do so frequently with broad brush strokes and insufficient attention to the details of the countries' predicaments. This is especially the case regarding producer countries' economies which are rarely singled out for the special consideration they warrant. Environmentalists, particularly those of the First World, need to give far greater thought to the implications of their policy recommendations. It avails their argument nothing if recommendations regarding future fossil fuel phase-out are

---

<sup>37</sup> IPCC (1990), p. xviii. Water vapour and ozone not counted.

urged with scant regard for the fact that oil is the mainstay of most producer countries' economies. Not only is this to ignore the realities of Third World countries and to pay lip service to the notion of sustainable development, it also causes anger and resentment among producers and makes the possibility of intercommunication even more remote.

Also interfering with the possibility of dialogue is the view that environmentalists are in some way anti-establishment, anti-progress and wanting to return the world to a long-lost rural idyll (see, for example, Capobianco in OPEC 1992). Such a view goes hand in hand with the perception that they want to sweep oil away overnight and replace it and other fossil fuels with benign renewable energy resources. The latter may well be a dream for (some) environmentalists – remembering that 'environmentalists' do not comprise a homogeneous body – but pragmatics dictate that their proposal documents and campaign literature consider only a gradual phase-in of renewables. The type of dramatic substitution perceived by producers as part of the environmental literature belongs to the realm of feasibility studies such as the Greenpeace Fossil Free Energy Scenario discussed in Section 1. Regarding the retrogressive rural idyll and anti-progress notion, it is interesting to note that it is perhaps the environmentalists who have a more dynamic view of the future and its technological/societal potential than OPEC, which leans more towards stasis and business-as-usual.

However, the environmentalists do not help their case by projecting unrealistic figures for future renewables increase or oil decline. (Friends of the Earth's 607 per cent increase in renewables in the UK in eleven years (FoE 1993) may be feasible technically but it is certainly not realistic.) To say that such scenarios are just 'existence proofs' for a possible reality as Greenpeace does of its Fossil Free Energy Scenario (which involves halving current fossil fuel use by 2030) is no help.<sup>38</sup> Producers for their part should learn not to exaggerate

---

<sup>38</sup> FFES 1993b Foreword: 'The FFES study is a beginning, not an end. It is an 'existence proof' that a world with greatly reduced risks from climate change and nuclear power can be a reality. Achieving that reality will take policy changes and leadership at all levels of society, from the personal to the international negotiating

about the medium-term demand for oil: it is not about to be decimated as some texts would have us believe. Honesty and rationality, not polemic, are needed on both 'sides', and each 'side' must work out, and communicate, exactly and realistically what it wants.

In general, environmentalists need to stop preaching; producers need to stop their aggressive defensiveness; and both groupings need to meet to discuss the bedrock of future action: what makes cooperative understanding possible, and what are the feasible courses of action open to the world's nations to tackle effectively global warming. Indeed, as stated in the Introduction, the starting point may well be local and/or regional pollution issues. For this, both groupings will have to face, and publicly acknowledge, some hard facts about their cause or product. For environmentalists that could be their limited analysis of Third World economics; for producers it must be the fact that oil and CO<sub>2</sub> are extremely significant contributors to global warming. To work on such inadequacies and eliminate the various misperceptions (and misallocated charges) that each grouping has about the other, as well as emphasizing the areas of agreement, can only assist a more open and constructive discussion between all parties: producers, environmentalists and governments.



## 10. CONCLUSION

It is not helpful to achieving progress on these complex issues for one side to shout at another or claim to be more pure, when the very concept of 'one side' versus 'another' begins to pale in the face of a global problem requiring global responses (Steeg 1992).

Post-Rio the world is a different place, conceptually if not concretely. Sustainable development has moved to the top of international agenda for action (though with little implementation as yet) regarding both Third and First Worlds, and global warming and the need to reduce greenhouse gas emissions have been recognized. Environmentalism and oil consumption are going to remain key forces or parameters of daily existence.

Environmentalists and producers both want to see an equitable, environmentally benign, economically flourishing world and as key players they need to consider each other's viewpoints, discuss, and approach the problems jointly. How to start the discussion? Firstly, they can look at each other's declared agenda and see where points of commonality lie, where the agendas overlap. This would embrace the several areas itemized in Section 3 as well as the shared foundation of sustainable development. The starting point for dialogue could well be issues and shared concerns of local pollution, about which there is less uncertainty and which could act as a lead-up for the larger debate on global warming.

The following, quoted in full, is an example of an OPEC agenda drawn up prior to the Rio Summit for the international negotiations:

- (1) A realistic and balanced Framework Convention that would leave each country to decide its programme without infringement on national sovereignty;
- (2) addressing all greenhouse gases and their precursors, sinks and reservoirs and all sources rather than placing particular emphasis on CO<sub>2</sub> and the energy sector only;
- (3) striking a balance between economic development, energy resources and the environment;

- (4) eliminating the existing and opposing any new market instruments that allow discrimination between various energy sources such as taxes and subsidies;
- (5) opposing the introduction of trade barriers, restrictions or any conditionalities in the name of protecting the environment;
- (6) protecting the interests and considering specific difficulties of countries whose economies are highly dependent on fossil fuel production and exportation;
- (7) encouraging continuing research to limit the uncertainties surrounding climate change and to avoid costly measures that may not be in the interests of any party;
- (8) supporting the developing countries with financial resources and the transfer of environmentally safe and sound technologies, on preferential basis, to foster efficient economic growth, adequate energy use, and the improvement of the environment and the standard of living;
- (9) reducing deforestation and enhancing existing sinks for greenhouse gases and creating new ones through reforestation;
- (10) remaining united with other developing countries and avoiding any greenhouse gas emission targets for the developing countries in general;
- (11) assessing the socio-economic costs and benefits of response strategies and discouraging the adoption of any measures that may result in the creation of different environmental or socio-economic problems (OPEC 1991b).

It may be seen, in the light of what has been said in previous sections, that few if any of these points are at odds with environmentalism or the agreements that emerged at Rio.

The following is a specific set of policy proposals, again quoted in full, put forward by Friends of the Earth with respect to the UK, which also would provide a meeting ground for discussion with the producers:

- \* Initiating comprehensive structural and regulatory reform, including improving utility regulations, removing tax distortions and setting tighter energy efficiency standards for buildings and appliances;
- \* undertaking extensive education and awareness schemes;
- \* introducing a small carbon tax to provide monies for grants, loans and subsidies;
- \* establishing a National Energy Bank to allocate these monies and broker financing for

- investments in carbon abating technologies;
- \* developing a National Energy Network to provide advice, information and expertise;
  - \* stimulating third party financing and energy management programmes, particularly for small and medium-sized businesses and the public sector;
  - \* encouraging appropriate research, development and demonstration of new carbon-abating technologies and measures;
  - \* introducing state-of-the-art measures in the public sector (FoE 1993).

The fundamental disagreement between environmentalists and producers is harder to rationalize: environmentalists want a phase-out of fossil fuels in favour of renewables and producers want at least to maintain oil consumption levels. Two things can be said about this. First, producers are going to have to recognize, without exaggerated fear, that the force of environmentalism is strong and likely to get stronger in the twenty-first century. There is no point burying one's head in the sand. With environmentalism and improved technological know-how, renewables and alternative energy resources will come increasingly to the fore, replacing fossil fuels at a rate as yet to be determined. Natural gas is already making inroads into former oil (and coal) preserves. In guarding their future, producers need to recognize and accept these trends and make appropriate adjustment. Regarding this latter point, Michael Grubb of the Royal Institute for International Affairs asks,

Would it be prudent for the petroleum industries to reduce their future risks by calling upon governments now to embark on clear, steady and quantified steps to limit future CO<sub>2</sub> emissions? (Grubb 1991).

It is argued that it is much better to have measures phased in with transparency and with time for producers and oil companies to respond than to have measures imposed or adopted in panic reactions by governments to changes in scientific knowledge and/or political climate.<sup>39</sup>

---

<sup>39</sup> NB Moody-Stuart 1994: 'The industry needs to retain the maximum flexibility of action. At the same time ... expectations will continue to increase. Two possibilities face the industry – one leads towards increased regulation, restricted flexibility and reduced efficiency. The other leads towards increased self-regulation and greater efficiency. To be allowed to follow the second route we must demonstrate ... a responsible and constructive attitude to the environment' (p. 1). Or, more starkly, 'The environmental challenge is one that

Secondly, environmentalists will have to take on board what an increase in non-fossil fuel resources will mean for the producer countries. This means working with the producers. It involves developing content to the Rio declaration that special consideration will be given to producers as measures to curb greenhouse gases begin to bite.

Sustainable development is a necessity, and the right balance between energy, environment and economic development requirements needs to be worked out – and continually reassessed. There is a need to mobilize international efforts to help the Third World otherwise, apart from anything else, the anti-global warming efforts of the First World will be negated. Producer countries, many of whom fall into the developing category, could, in union with environmentalists, have a powerful and active role to play in this process. They could be in the vanguard of policy and decision making regarding such complex and emotive issues as population control, deforestation and technology transfer, thereby removing or lessening one obstacle to the negotiation process (the charge that First World countries are being patronizing and neo-colonial in their attitude toward and expectations of Third World countries). Producers for years have been calling for a dialogue with consumers,<sup>40</sup> but the nature and content of that dialogue have never been worked out. Now could be the time to act on this initiative, expand its domain, and put some teeth into Rio's hopes for global partnership. An enormously complex task faces the international community and the last thing that is needed is additional conflict. As Mabro writes in his contribution to the 1992 OPEC seminar on the environment:

There is merit in recognizing the environmental issue as relevant and deserving attention. This whole-hearted recognition bestows on oil-exporting countries

---

big companies must not miss. Our future is at stake' (Cecchetti in Flannery and Clark 1991, p. xv).

<sup>40</sup> This does not just apply to OPEC producers. Subroto states, 'OPEC continues to appeal for a meeting between all major producers and consumers ... Because we do recognise that not all the major producers are within OPEC, Russia, Mexico, India and Brazil would have to be included if we want to talk about a true producer and consumer dialogue' (Subroto 1992 p. 61). Note that the extension beyond OPEC here is only to other Third World producers. See further below for involvement of First World producers in the call for dialogue.

legitimacy and credibility as leading participants in open international debates on environmental issues, policies and in negotiations of agreements (p. 197).

And again:

The oil-exporting countries have more to gain in taking the lead and stealing the initiative on environmental issues than allowing themselves to be cast in the position of passive victims of wicked behaviour or fatalistic phenomena ... A positive and dynamic approach enabling them to take a lead in international cooperation would serve their interests best.<sup>41</sup> (ibid)

Environmentalists for their part need also to expand their horizons. They should consider the producers' needs in concrete terms and cease to regard producers as 'the enemy' or 'the other'. Involvement of the oil industry can act as a necessary pace to the environmentalists' proposed programmes, while the environmentalists can urge the industry to greater endeavour and longer-term sights. As a first task both need to work out how exactly to pursue a constructive global partnership given the disparate nature of both their groupings and the fact that they are national, regional and global players. The logistics will not be simple.

What of OECD governments, the third player in this partnership? They must clarify what message(s) they are picking up upon. They need, if possible, to work in collaboration with environmentalists and producers – who in turn should address themselves directly to the OECD governments – and at the very least avoid introducing measures which claim to be one thing but are in reality another, for example taxes which are petrophobic revenue raisers hiding behind the mantle of environmentalism and/or the tired jargon of oil security. Regarding the latter, western governments need to correct their suspicions of OPEC and 'Arab oil'. And if they are adopting an environmental position, subsidies for the dirty fuel coal will have to go. Equally, proposals such as the EC energy-carbon tax should, if truly intended to

---

<sup>41</sup> John Wood-Collins and Nordine Ait Laoussine write: 'The role of the energy industry should be to enter fully into this important debate, by clearly articulating the costs and benefits of alternative policy options in the context of a globally interdependent economy.' They add, however, a word of caution: 'It is far from clear that the energy industries, at the global level, have today either the institutions or the structures to play this role' (*MEES*, 19 March, 1990, D4).

reduce CO<sub>2</sub> emissions, be a simple carbon tax levied at rates dictated by the relative carbon content of respective fuels. Moreover, if genuine in the stated intent to control carbon emissions, governments will need to do much more than implement new tax systems – they will have to speed up action on initiatives such as the Framework Convention on Climate Change and Agenda 21. Many solutions, i.e. low-risk, low-cost policies, are already available and pending implementation.<sup>42</sup>

Just as producers should be open regarding production and capacity, so should governments be about demand. In order to hear the message of both producers and environmentalists, governments need to break with some of the more irrelevant concerns of the past, overcome a certain inertia and an almost institutionalized political timidity. A union of equal partners must be generated, and in general 'politically feasible ways to increase the incentives for collectively rational behaviour' (Olson 1971) must be found.

The need for an agenda, as well as appropriate institutional frameworks and machinery, is as essential as it is complex. Apart from the many general issues that have been highlighted in the course of this paper, specific areas of possible mutual endeavour and cooperation could be tackled. For example, joint projects could be entered into regarding cleaning up upstream operations and controlling flaring;<sup>43</sup> the idea of carbon-energy taxation upstream rather than at the final consumer end of things could be considered to compensate producers for any loss

---

<sup>42</sup> For example, the OTA concluded that the USA can decrease its emissions of CO<sub>2</sub> to as much as 35 per cent below 1987 levels within the next 25 years, utilizing proposals already in circulation and needing no new major technological breakthrough (Friedman and Bierbaum in Flannery and Clark 1991, p. 92).

<sup>43</sup> Environmental protection at the production end of things is rarely considered by environmentalists and there is considerable potential for the abatement of greenhouse gases from the production of fossil fuels. In 1990 the volume of gas flared in OPEC member countries was nearly 14 per cent of gross natural gas production, which equalled 55 per cent of world flared gas. Transportation infrastructures and reinjection facilities are needed to combat the problem.

of growth and simultaneously slow consumption as the environmentalists want.<sup>44</sup>

On the question of institutional frameworking and machinery for international dialogue much thought will have to be given. One of the objections tabled by the USA to the Producer–Consumer meeting in Paris in 1991 was that dialogue between so many countries (25) would be pointless as the process would be too unwieldy to yield solid results.<sup>45</sup> While the USA's point is moot and clearly deserving of careful attention, it should not preclude attempts at further meetings. Apart from anything else, since the Paris talks took place, the Earth Summit at Rio has occurred which, as we have seen, had concrete results and the participation of nearly 200 countries. Alternately, it could be considered appropriate to start at the micro level and have smaller group meetings on issues of local environmental concern – for example urban smog – which require attention in their own right but are also a part of the larger problem of fossil fuel combustion and global warming.

The call to dialogue has come not only from OPEC producers (e.g. Venezuela at the Paris talks) but also non-OPEC producers, prominent among whom is Norway which in 1989 proposed such a meeting in the World Commission on Environment and Development. IEA countries, individually and collectively, have made similar proposals (see *MEES*, 8 July, 1991). At the close of the Paris meeting, participants (except the USA) called for further discussions and saw dialogue as a 'continuing process which can take many forms' (*MEES*, 8 July, 1991, A7). As the OECD stated in 1992: 'The solution to the problem will require a degree of international cooperation not yet witnessed in the energy or environment arena' (OECD 1992, p.15).

---

<sup>44</sup> NB the proposal of Saudi Arabia back in 1976 to the UN General Assembly that a \$0.01 tax per barrel of oil be instored to finance (environmental) projects.

<sup>45</sup> There was also the fact that the USA wanted to establish bilateral rather than multinational relationships and so found the numbers involved untenable.

**TABLE 1: STATUS OF COMMITMENTS OF OECD COUNTRIES ON GLOBAL CHANGE**

Country with Target	Sectors Included	Gases Included	Action	Base Year	Commitment Year	Conditions/Comments
Australia	All	NMP GHGs	Stabilization 20 per cent reduction	1988 1988	2000 2005	Interim planning target; conditional on 'no-regret' policies and similar action by other major GHG producers
Austria	All	CO <sub>2</sub>	20 per cent reduction	1988	2005	Still needs parliamentary approval
Belgium	All	CO <sub>2</sub>	5 per cent reduction	1990	2000	
Canada	All	CO <sub>2</sub> and other NMP GHGs	Stabilization	1990	2000	Target is to stabilize aggregate GWP of the gases included
Denmark	All	CO <sub>2</sub>	20 per cent reduction	1988	2005	Implementation plans adopted; target for the transport sector alone is to stabilize CO <sub>2</sub> emissions by 2005 and to achieve a 25 per cent reduction by 2030
Finland	Energy	CO <sub>2</sub> gross emissions	Stabilization	1990	2000	
France	Energy	CO <sub>2</sub> gross emissions	Stabilization	1990	2000	This is a per capita per year target of less than 2 tonnes of carbon

**TABLE 1 CONTINUED: STATUS OF COMMITMENTS OF OECD COUNTRIES ON GLOBAL CHANGE**

Country with Target	Sectors Included	Gases Included	Action	Base Year	Commitment Year	Conditions/Comments
Germany	Energy	CO <sub>2</sub> gross emissions	2.5–30 per cent reduction	1987	2005	Larger percentage reductions in former East Germany. No official target for other GHGs but government is striving to reduce the overall GWP of total GHG emissions by 50 per cent from 1987 levels by 2005
Greece**			(See end note)			
Iceland	All	All GHG net emissions	Stabilization	1990	2000	
Ireland	All	CO <sub>2</sub> gross emissions	Limitation to 20 per cent growth	1990	2000	Net CO <sub>2</sub> emissions expected to grow by 11 per cent between 1990 and 2000
Italy	All	CO <sub>2</sub> net emissions	Stabilization	1988	2000	Non-binding resolution
Japan	All	CO <sub>2</sub> gross emissions	Stabilization	1990	2000	On per capita basis; implemented if others do likewise. Government has also stated that efforts should be made to stabilize total CO <sub>2</sub> emissions beyond 2000 at about the same level as in 1990

**TABLE 1 CONTINUED: STATUS OF COMMITMENTS OF OECD COUNTRIES ON GLOBAL CHANGE**

Country with Target	Sectors Included	Gases Included	Action	Base Year	Commitment Year	Conditions/Comments
Luxembourg	All	CO <sub>2</sub>	Stabilization 20 per cent reduction	1990 1990	2000 2005	
Netherlands	All	CO <sub>2</sub>  All GHGs gross emissions	Stabilization 3-5 per cent reduction 20-25 per cent reduction	1989/1990 1989/1990 1989/1990	1995 2000 2000	Unilateral action committed; 5 per cent reduction depending on international developments. Unilateral action committed
New Zealand	All	CO <sub>2</sub> net emissions	Stabilization	1990	2000	Primary objective; ultimate objective to reduce CO <sub>2</sub> emissions by 20 per cent from 1990 levels by 2000 conditional on 'no-regret' measures
Norway	All	CO <sub>2</sub> gross emissions	Stabilization	1989	2000	Preliminary target
Portugal**			(See end note)			
Spain	Energy	CO <sub>2</sub>	Limitation to 25 per cent growth	1990	2000	
Sweden	All	CO <sub>2</sub> gross emissions	Stabilization reduction	1990 1990	2000 after 2000	Conditional on like action and only applies to sectors not subject to international competition

**TABLE 1 CONTINUED: STATUS OF COMMITMENTS OF OECD COUNTRIES ON GLOBAL CHANGE**

Country with Target	Sectors Included	Gases Included	Action	Base Year	Commitment Year	Conditions/Comments
Switzerland	Energy	CO <sub>2</sub> gross emissions	At least stabilization	1990	2000	Interim target
UK	All	CO <sub>2</sub> , methane and other major GHGs gross emissions	Stabilization	1990	2000	Conditional on like action; gas-by-gas approach; specific targets are set for different gases
USA	All	All GHG net emissions	Stabilization	1990	2000	Stabilization achieved in part by CFC phase-out; target is to stabilize the aggregate GWP of the gases included

Sources: OPEC 1991(b); Thomas 1992; IEA 1994

\*\* means the country in question falls under the EU-wide target of stabilization of CO<sub>2</sub> gross emissions on base year 1990 by 2000, but has not yet developed its own target.

Targets for the energy sector include emissions from energy use in transport, unless otherwise stated.

NMP = Non-Montreal Protocol (refers to GHGs other than those covered in the 1987 Montreal Protocol and its subsequent amendments i.e. GHGs other than CFCs, HCFCs, halons, carbon tetrachloride and methyl chloroform)

GHGs = greenhouse gases

GWP = global warming potential

TABLE 2: CARBON, CO<sub>2</sub> OR RELATED TAXES IN OECD MEMBER COUNTRIES

Country	Tax in Original Units for Main Products	Tax in \$/TC1	Fuels Covered	Effective Date	Exceptions	Effects on Fuel Prices	Comments
Denmark	<u>Private</u> DKr 242/t coal DKr 0.10/kWh DKr 320/t fuel oil DKr 1.70/t diesel oil	<u>Private</u> 15.8	<u>Private</u> coal oil but not gasoline electricity	<u>Private</u> 15/92	For energy intensive industries, refunds of up to 100 per cent if reasonable conservation projects have been carried through	<u>Private</u> Coal up 5 per cent; electricity up 3 per cent	CO <sub>2</sub> taxes shown are part of an integrated CO <sub>2</sub> and energy tax system
	<u>Industry</u> DKr 121/t coal DKr 0.05/kWh DKr 160/t fuel oil DKr 135/m <sup>3</sup> heating oil DKr 0.85/t diesel oil	<u>Industry</u> 7.9	<u>Industry</u> coal oil but not gasoline electricity	<u>Industry</u> 1/93		<u>Industry</u> coal up 16 per cent; electricity up 12 per cent; fuel oil up 18 per cent	
Finland	Mk 26/TC	6.4	Fossil fuels	1/91	Products used as raw materials in industrial production; fuels in overseas planes and vessels	+1-2 per cent for electricity, fuel oil and natural gas; +5-8 per cent for coal, gasoline and heavy fuel oil +10 per cent for diesel	Tax rate for motor fuels is larger than if it were proportional to carbon content. Carbon tax was first instituted 1/90. In 1991 all fuel taxes increased by 5 per cent except those on motor fuel which increased 20 per cent

TABLE 2 CONTINUED: CARBON, CO<sub>2</sub> OR RELATED TAXES IN OECD MEMBER COUNTRIES

Country	Tax in Original Units for Main Products	Tax in \$/TCI	Fuels Covered	Effective Date	Exceptions	Effects on Fuel Prices	Comments
Netherlands	Gld 5.70/tonne CO <sub>2</sub> Gld 0.44/GJ	12.5 for CO <sub>2</sub> only	Fossil fuels including industrial fuel gas	1992	None except non-energy uses and international sea/air traffic	Modest for transport; otherwise 10-15 per cent increase	Previous general environmental tax restructures to 50 per cent CO <sub>2</sub> and 50 per cent energy-based and raised in 1992
Norway	NKr 0.8/ gasoline NKr 0.3/ diesel and fuel oils NKr 0.8/m <sup>3</sup> natural gas NKr 0.3/ coal	196 (gasoline) 66 (diesel) 196 (natural gas) 47-70 (coal)	Oil products, natural gas and coal	1991 revised 1992 except coal 1992	Fuels in all air and sea transport; coal used as input to industrial processes	+10-14 per cent for gasoline diesel and light fuel oil +15 per cent for heavy fuel oil	Diesel and fuel oil tax not increased in 1992

TABLE 2 CONTINUED: CARBON, CO<sub>2</sub> OR RELATED TAXES IN OECD MEMBER COUNTRIES

Country	Tax in Original Units for Main Products	Tax in \$/TC1	Fuels Covered	Effective Date	Exceptions	Effects on Fuel Prices	Comments
Sweden	SKr 250t CO <sub>2</sub>	166	Fossil fuels	1/1/91	Cap on total energy intensive industrial CO <sub>2</sub> and energy taxes paid; electricity sector; international sea and air traffic biofuels	With accompanying tax changes and simultaneous drop in crude oil prices, gasoline and diesel remained roughly the same	Major tax reform in January 1991. Energy, sulphur and nitrogen taxes are also in effect
	<u>Residential</u> SKr 320t CO <sub>2</sub>	212	Fossil fuels	1/1/93	Same as above plus ethanol	Prices plus taxes could rise 5-13 per cent for residential	
	<u>Industry</u> SKr 80t CO <sub>2</sub>	53	Fossil fuels			Industrial prices plus taxes could drop 25-40 per cent	For 1993, energy tax cancelled for industrial sector and for ethanol

Source: OECD 1992(c)

TC = Tons of Carbon

t = Metric Tonne

## BIBLIOGRAPHY

- Abdulai Y. Seyyid, 'Working together to save our planet' in OPEC 1992(b), pp. 3–8.
- Adelman M.A., 'An investment cycle in world oil prices?' in IAEE (1992), F-1–F-5.
- Agarwal A. and S. Narain, *Global Warming in an Unequal World: A Case of Environmental Colonialism* (1991).
- Alwattari A., 'Oil market prospects in the 1990s' in Pachauri (1991), pp. 340–46.
- Ameen Jr. M.M., R. Rainbow and N.G. Vasquez G., 'Round Table: Issues raised and answers still needed' in Mallakh (1992), pp. 138–41.
- Anderson D., 'Economics of energy and the environment' in Winpenny (1990), pp. 159–82.
- Ayachit N. and L. Lugo, 'Influences of social changes on world energy' in Pachauri (1991b), pp. 487–515.
- Baker A.B., 'Economic analysis of global climate change policies: Some issues to consider' in Flannery and Clarke (1991), pp. 181–98.
- Baudino M., 'The role of natural gas in reducing greenhouse gas emissions: The Italian experience' in Flannery and Clarke (1991), pp. 159–70.
- Beck P.W., 'Prospects and Strategies for Nuclear Power. Global Boon or Dangerous Diversion' (Draft – readers version 1993).
- Beck R.J., 'An energy watcher's view of petroleum and natural gas in the 1990s' in Mallakh (1993), pp. 78–88.
- Bhatia R., 'Wind energy utilisation in India: Analysis of economic and financial aspects', in Pachauri (1991b), pp. 902–13.
- Boussena S., in OPEC (1992).
- Bradke H. and K. Masuhr, 'Chances and limits of solar hydrogen in the Federal Republic of Germany' in IAEE (1992), I-87–I-94.
- Brookes L.G., 'Energy efficiency, economic efficiency and environmental protection: Are these compatible goals?' in IAEE (1992), pp. L-81–L-88.
- Brown G. (ed.), *OPEC and the World Energy Market* (1990).
- Brown L.R. et al, *State of the World 1993: A Worldwatch Institute Report on Progress toward a Sustainable Society* (1993).
- , *State of the World 1991. A Worldwatch Institute Report on Progress towards a*

*Sustainable Society* (1991).

Capobianco G., 'Strategic options for fossil fuel suppliers in the great climate change debate', in OPEC (1992b), pp. 135–46.

Carrié J.L., 'Reflections on the economic feasibility of countermeasures against the greenhouse effect: The case of the European Community' in Mallakh (1993), pp. 53–7.

Carvelaro F., J. Bertholet, J. Chase and P. Taffe, 'Impacts of carbon tax on the emissions of car transport in Switzerland: An engineering-econometric model' in IAEE (1992), I-7–I-14.

Cecchetti G., 'Welcoming address to IPIECA Symposium on global climate change', in Flannery and Clarke (1991), pp. xiii–xvi.

Chalabi F.J., *OPEC at the Crossroads* (1989).

Coburn L.L., 'Alternative transportation fuels: A tax and energy perspective' in IAEE (1989) pp. 134–43.

Conant M.A., 'Middle East stability – A view from the USA' in Tempest (1993), pp. 3–9.

-----, 'Oil versus politics – The options for Iraq' in Tempest (1993), pp. 121–28.

-----, 'The invasion of Kuwait – Consequences of US involvement' in Tempest (1993), pp. 153–60.

-----, "'Desert Storm" – Facing up to the rise of Islamic fundamentalism' in Tempest (1993), pp. 161–6.

-----, 'Changing allegiances in and around the Gulf' in Tempest (1993) pp. 167–70.

Cox L.C., 'Energy policy and global warming: Using the imprecise to deal with the uncertain', in Pachauri (1991b), pp. 661–74.

Curcio E., 'Oil supply prospects in 1990s from non-OPEC producing countries' in IAEE (1989), pp. 101–10.

Davis G.R., 'Energy for planet earth' in *Scientific American* (1991), pp. 1–10.

Drake B.G., 'The effects of rising atmospheric carbon dioxide on the growth of vegetation and accumulation of carbon in terrestrial ecosystems' in OPEC 1992(b), pp. 173–88.

Duxbury G., 'The quest for energy security – and illusion?' in IAEE (1992), F-89–F-100.

Easton J., 'US energy policy: Positioning for the future' in Mallakh (1992), pp. 1–4.

Ebel R.E., 'Soviet oil: Threat or promise?' in Mallakh (1992), pp. 111–18.

European Commission, *The EC Environment Guide* (1994).

FFCC (1993a) see Greenpeace (1993a).

FFES (1993b) see Greenpeace (1993b).

Flannery B.P., 'Climate change: Science and environmental impacts' in Flannery and Clarke (1991), pp. 1–22.

Flannery B.P. and R. Clarke (eds), *Global Climate Change: A Petroleum Industry Perspective* (IPIECA 1991).

Flavin C. and N. Lenssen, 'Designing a sustainable energy system' in Brown et al (1991), pp. 21–38.

French H., *Cleaning the Air: A Global Agenda*, World Watch Paper 94 (January 1990).

Friedman R.M. and R.M. Bierbaum, 'Cutting carbon emissions' in Flannery and Clarke (1991) pp. 91–108.

Friends of the Earth (Simon Roberts), *Energy for a Future: Friends of the Earth's Evidence to the Government's Review of Energy Policy* (1992).

-----, *Climate Change: Our National Programme for CO<sub>2</sub> Emissions* (1993).

Fusero P.C., 'The shifting paradigm on energy and the environment' in Mallakh (1993), pp. 75–7.

Galal E.E., 'Oil producers facing a common challenge' in OPEC (1992b), pp. 35–42.

Garriba S.F., 'Energy outlook: Future greenhouse gas emissions and reduction prospects' in Flannery and Clarke (1991), pp. 23–56.

Gerholm T.R., 'Sustainable scenarios? An assessment of IPCC's CO<sub>2</sub> emission assumptions' in OPEC (1992b), pp. 9–22.

Ghandi M., 'Chief Guest's Address', in Pachauri (1991), pp. 45–9.

Gibbons J.H. and P.D. Blair, 'Energy efficiency: Its potential and limits to the year 2000' in Helm (1990), pp. 35–51.

Goldemberg J., 'Solving the energy problem in developing countries' in IAEE (1989), pp. 1–8.

Greenpeace, *Emerging Impacts of Climate Change. How Lucky do you Feel?* (1992).

-----, *Energy, Research and Development. A Story of Misplaced Priorities* (1992).

-----, *Fossil Fuels in a Changing Climate. How to Protect the World's Climate by ending the Use of Coal, Oil and Gas* (1993a).

-----, *Towards a Fossil Free Energy Future. The Next Energy Transition. A Technical*

- Analysis for Greenpeace*, International Stockholm Environment Institute (1993b).
- Grubb M.J., 'What you don't know can hurt you: Scale and timing of options in responding to climate change' in Flannery and Clarke (1991), pp. 75–90.
- Grubb M.J. et al, *The Earth Summit Agreements: A Guide and Assessment* (1993).
- Haraldsen O.S., 'Environmental challenges and hydrocarbons: Norwegian views' in Mallakh (1993), pp. 42–9.
- Helm J.L. (ed.), *Energy Production, Consumption and Consequences*, National Academy of Engineering (1990).
- Helm J.L. and S.H. Schneider, 'What to do about CO<sub>2</sub>' in Helm (1990), pp. 213–37.
- Holdren J.P., 'Energy in transition' in *Scientific American* (1991), pp. 119–30.
- Homma M., 'Prospects for oil-product trading in the Asia-Pacific region' in Mallakh (1993), pp. 117–33.
- Houghton J.T. (ed.), *Climate Change. The IPCC Scientific Assessment* (1990).
- Hourcade J-C. and A. Shankar, 'From greenhouse to the reshaping of financial structure of technology transfer' in Pacchauri (1991b), pp. 675–96.
- House of Commons, Session 1988–1989, Energy Committee, *Energy Policy Implications of the Greenhouse Effect* Vol. I Report and Proceedings, Vol. II Memoranda of Evidence, Vol. III Minutes of Evidence (1989).
- House of Lords, Session 1988–1989, Select Committee on Science and Technology, *Greenhouse Effect* Vol. II Evidence (1989).
- Hughes W.R., 'Groping toward competition: The US electricity generating industry' in IAEE (1989), pp. 9–18.
- IAC (InterAction Council), *High-Level Meeting on Global Interdependence and National Sovereignty* (1990).
- IAEE (International Association for Energy Economics), *Energy Supply in the 1990s and Beyond. Proceedings of the 11th Annual International Conference* (1989).
- , *Coping with the Energy Future: Markets and Regulations, 15th Annual Energy Conference. Proceedings I* (1992).
- , *Energy Policies of IEA Countries 1992 Review* (1993).
- , *Climate Change Policy Initiatives — 1994 Update, Vol. I OECD Countries* (1994).
- IEA see OECD.

IPCC (Intergovernmental Panel on Climate Change), *Climate Change. The IPCC Scientific Assessment* (1990).

-----, *Climate Change: Science Impacts and Policy. Proceedings of the Second World Climate Conference* (1991).

-----, *Climate Change 1992. The Supplementary Report to the IPCC Scientific Assessment* (1992).

James P., P. Tayler, M. Thompson, 'Plural rationalities', Warwick University Papers in Management No 9 (May 1987).

Johnson, S.P., Introduction and Commentary, *The Earth Summit. The United Nations Conference on Environment and Development* (1993).

Kabelitz K.R., 'Future perspectives of the natural gas industry in Europe' in Mallakh (1993), pp. 9–18.

Karnik J-L., 'Downstream capital requirements in Western Europe' in Mallakh (1992), pp. 82–90.

Khan A.M., Inaugural Address in Pachauri (1991), pp. 38–44.

Khartukov E.M. and Surovtsev D.A., 'The world oil market after the Gulf War – A view from Moscow' in Mallakh (1992), pp. 119–26.

Khwaiter Al- N.O., 'Putting words into action' in Mallakh (1992), pp. 135–7.

Kieschnick W.F. and J.L. Helm, 'Energy planning in a dynamic world: Overview and perspective' in Helm (1990), pp. 1–20.

Koevering T. and N. Sell, *Energy: A Conceptual Approach* (1986).

Kohl W., 'Energy and environmental issues: Options for US policy' in IAEE (1992), B-15–B-22.

Konoplyanik A.A., 'Evolution of energy-economy relationships in the industrially developed countries' in Pachauri (1991b), pp. 530–43.

Lemlin J., 'International and regional processes' in Flannery and Clarke (1991), pp. 65–74.

Lenssen N., 'Providing energy in developing countries' in Brown et al (1993), pp. 101–19.

Leydon K., 'Energy planning long term' in Flannery and Clarke (1991) pp. 135–44.

Lichtblau J.H., 'The air is already cleaner: Progress in meeting clean air goals for oil in the USA' in OPEC (1992b), pp. 147–56.

Lindzen R.S., 'Global warming: The origin and nature of alleged scientific consensus' in

OPEC (1992b), pp. 157–72.

de Lucia R.J., 'Energy, environment and poverty: Perspectives on sustainable development and the need for new thinking and commitments' in Pachauri (1991), pp. 63–93.

Luecke F., 'Transfer of renewable energy technologies – opportunities and limitations from a German point of view' in Pachauri (1991b), pp. 885–94.

Lunde L., *The North/South Dimension in Global Greenhouse Politics: Conflicts, Dilemmas, Solutions*, EED Report No 9 (1990).

Mabro R., 'The consumers' environmental policies and the oil-exporting countries' in OPEC (1992b), pp. 189–98.

Mahdi Al- H.M., 'The impact of oil revenues on the economic performance of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates' in IAEE (1992), pp. L-73–L-80.

Mallakh D. El (ed.), *Energy Watchers I: Shadow OPEC: New Element for Stability? And Reintegrated Oil Industry: Implications for Supply, Marketing, Pricing and Investment* (1990).

----- (ed.), *Energy Watchers III: Regional and Shared-Interest Blocs: How Viable? And the Oil-Gas Industries: Implications of Restructuring* (1992).

----- (ed.), *Energy Watchers IV: Energy, Economics and Environment: Imperatives, Realities and Balances. And Pacific Basin Demand and Downstream Activities; Is Middle East Supply the Answer?* (1993).

McHale T.R., 'A look at OPEC: A producer/exporter shared-interest group in the oil industry' in Mallakh (1992), pp. 12–15.

Malpas R., 'Efficiency, Machiavelli and Buddha' in Helm (1990), pp. 265–78.

-----, 'Epilogue: Moving toward greater energy efficiency' in *Scientific American* (1991), 131–2.

Mathur A., 'Priorities of developing countries on the environment and development' in OPEC (1992b), pp. 103–22.

Mathur S.K., 'Natural gas as an emerging energy source challenging oil' in IAEE (1989), pp. 321–31.

Migdal A.E., 'The growing use of regional trading blocs and free trade agreements as a source of energy policy' in Mallakh (1993), pp. 134–42.

Miller T., W.D. Guthrie, L.L. Bennet, 'Nuclear electricity and carbon dioxide: The Toronto goal' in Pachauri (1991b), pp. 732–46.

Mitchell J.V., 'Preserving oil's competitiveness in the face of environmental regulation' in

OPEC (1992b), pp. 87–102.

Mohnfeld J.H., 'Oil markets in central and eastern Europe: Current situations and outlook' in Mallakh (1992), pp. 91–101.

Moody-Stuart M., *Environmental Action: A Shared Responsibility* (1994).

Morrisette P.M. and A.J. Plantinga, *How the CO<sub>2</sub> Issue is Viewed in Different Countries*, Resources for the Future (1990).

Munroe T. and C. Poncelet, 'The role of utilities in sustainable economic development' in Mallakh (1992), pp. 56–67.

*National Energy Strategy. Powerful Ideas for America* (1991).

OECD, *Responding to Climate Change: Selected Economic Issues* (1991).

OECD/IEA, *Global Energy. The Changing Outlook* (1992).

-----, *Climate Change Policy Initiatives* (1992b).

-----, *World Energy Outlook to the Year 2010* (1993).

Oesterwind D., 'Changing energy management in eastern Europe' in IAEE (1992), pp. 37–44.

Olson M., 'Increasing the incentives for international cooperation', *International Organisation*, Vol 25 (1971), pp. 866–74.

OPEC, *What Priority for the Environment? Dichotomy of Preferences between Rich and Poor Countries*, OPEC Workshop on the Environment (1991a).

-----, *Environmental Issues: The Implications for OPEC*, OPEC Workshop on the Environment (1991b).

-----, *Viewpoint 1991: A Selection of Speeches by the Secretary General and Presidents of the OPEC Conference* (1992).

-----, *OPEC Seminar on the Environment*, 13–15 April 1992 (1992b).

Openshaw M., 'The role of the IEA in energy and environment policy making' in Pachauri (1991), pp. 154–8.

Oppenheimer P.M., 'The effects of environmental issues on the Middle East oil and gas sectors' in *Energy and Environment* Vol 1 No 2 (1990), pp. 114–30.

Oxford Analytica, *Latin American Perspectives* (1992).

-----, *The Role of the Public Sector in Latin America in the 1990s and Beyond* (1994) Chapter 4 Managing the Environment.

Noreng O. and J-M. Bourdaine, 'Beyond the crisis -- Middle East oil supplies after the Gulf conflict -- the strategic and economic issues' in Mallakh (1992), pp. 16–42.

Pachauri P.K., *The Political Economy of Global Energy* (1985).

-----, 'Developing economy responses' in Flannery and Clarke (1991), pp. 217–26.

-----, Welcome Address in Pachauri (1991), pp. 31–33.

Pachauri P.K., L. Srivastava and K. Thukral (eds), *Energy-Environment-Development Vol I Proceedings of the 12th International Conference of the IAEE in New Delhi* (1991).

----- (eds), *Energy Environment-Development Vol II*. (1991b).

Pariente-David S., 'Economic assessment of CO<sub>2</sub> control policies' in Flannery and Clarke (1991), pp. 199–216.

Parra A.A., 'Remarks prepared for the panel discussion on OPEC after the Gulf War: A critical assessment', 12th Oil and Money Conference (1991).

Pavle J., 'The role of natural gas in offsetting oil' in Mallakh (1992), pp. 47–55.

Pfeifer T., U. Fahl, A. Voss, 'Possibilities and limits of cogeneration with regard to energy saving and CO<sub>2</sub> reduction' in IAEE (1992), I-79–I-86.

Piel J., Foreword to *Scientific American* (1991).

Postel S. and C. Flavin, 'Reshaping the global economy' in Brown et al (1993), pp. 170–88.

Price R.S. Jr, 'Regional trading blocs: Expanding energy trade and investment' in Mallakh (1993), pp. 143–6.

Rahmat H., 'Investment requirements in the oil industry of the independent oil exporting countries in the face of environmental challenges' in OPEC (1992b), pp. 123–34.

Rainbow R., 'The role of energy in development' in Flannery and Clarke (1991), pp. 57–64.

Ramirez N.G., 'Venezuela's energy future' in Mallakh (1992), pp. 5–7.

Razouki S., Kuwait National Paper on Environment, OPEC Workshop on the Environment (1991).

Ruckelshaus W.D., 'Energy, Environment and Development' in Helm (1990), pp. 205–12.

Sabban M. Al-, 'The impact of response measures by industrialised countries on the world economy' in Flannery and Clarke (1991), pp. 227–38.

-----, 'World economic impact of response measures by industrialised countries' in OPEC (1992b), pp. 43–54.

-----, 'Additional taxes on oil and producing countries' response: Overreaction or protection of interests' in *MEES*, 26 April (1993).

Salman R., 'Energy, economics and environment: Imperatives, realities and balance' in Mallakh (1993), pp. 1–8.

Sanchez J.C., 'Implications for the Venezuelan oil industry of new environmental regulations in consumer countries' in OPEC (1992b), pp. 23–34.

Sand P.H., 'Regional approaches to transboundary air pollution' in Helm (1990), pp. 246–64.

Sathaye J.A., *Developing Countries and Climate Change*, EED Report (1990).

Schelling T.C., 'Global environmental forces' in Helm (1990), pp. 75–84.

Scientific American, *Energy for Planet Earth* (1991).

Sexton B.J., 'A new environmental world order: The UN Conference of Environment and Development and the strengthening of international agreements' in IAEE (1992), I-151–I-158.

Sherbiny N.A., *Trends in Alternative Energies: Their Implications for Arab Members of OPEC*, IBK Papers (June 1989).

Shiller, 'Environmental issues and the future of the transport industry' in OPEC (1992b), pp. 55–86.

Sidayao C.M. and J. Percebois, 'Energy and the global warming issue in developing countries. Analyzing the incidence of the fuel carbon tax and its policy implications' in IAEE (1992), I-159–I-170.

Sioshansi F.P., 'Do renewable and non-conventional power generation technologies make sense with today's low oil prices?' in Pachauri (1991), pp. 159–69.

Skolnikoff E.B., 'Implementation strategies, mechanisms and institutions' in Flannery and Clarke (1991), pp. 109–20.

Steeg H., 'Changes in the energy sector' in IAEE (1992), pp. 35–40.

Strong M., Closing Speech to the Plenary Session of UNCED, in UNCED (1993), pp. 519–24.

Subroto, in *Viewpoint 1991* (1992) see OPEC.

-----, 'Energy, environment, and development: The issues involved' in OPEC (1992b), pp. 199–203.

-----, (Wecoming Address) 'The environmental challenge' in OPEC (1992b), pp. 1–2.

Takagi M., 'The prospect for the Asia-Pacific oil situation and Japan's role' in Mallakh (1993),

pp. 107–16.

Tempest P. (ed.), *The Politics of Middle Eastern Oil* (1993).

-----, 'The global energy fulcrum' in Tempest (1993), pp. 249–52.

Thomas C., *The Environment in International Relations*, RIIA (1992).

Trudeau P.E. (ed.), *Energy for a Habitable World: A Call for Action*, InterAction Council (1991).

-----, 'Ecology and energy options' in Trudeau (1991), pp. 5–18.

-----, 'Energy for a habitable world: Excerpts from the final statement adopted by the InterAction Council at the Seventh Session', in Trudeau (1991), pp. 1–4.

Tussing A.R. and S.A. Van Vactor, 'Prospective on world energy markets: Real costs will continue to fall' in IAEE (1989), pp. 36–45.

UNCED, *The Earth Summit: The United Nations Conference of Environment and Development*, Introduction and Commentary by S.P. Johnson (1993).

le Vine D.G., 'Goals for the symposium, IPIECA Symposium on Global Climate Change' in Flannery and Clarke (1991), pp. xvii–xix.

-----, 'Criteria for policy analysis' in Flannery and Clarke (1991), pp. 253–8.

Walker I.O. and F. Birol, 'A holistic approach in analyzing the impact of a carbon tax in the OECD: A framework for further discussion' in IAEE (1992), I-23–I-33.

Weinberg A.M., 'Energy in retrospect: Is the past prologue?' in Helm (1990), pp. 21–34.

Williams J-O. and U. Goluke, *From Ideas to Action. Business and Sustainable Development* (1992).

Williams R., 'The prospects for renewable energy on a large scale', in Trudeau (1991), pp. 51–116.

Winpenny J.T. (ed.), *Development Research: The Environmental Challenge* (1990).

Wirth T.E., 'Energy and the environment: The new agenda' in Mallakh (1990), pp. 49–55.

World Bank, *Trends in Developing Economies 1993* (1993).

Yamani Z., 'Saudi Arabia – consumer–producer understanding', in Tempest (1993), pp. 173–83.

**OXFORD INSTITUTE FOR ENERGY STUDIES**  
**57 WOODSTOCK ROAD, OXFORD OX2 6FA ENGLAND**  
**TELEPHONE (01865) 311377**  
**FAX (01865) 310527**  
**E-mail: [publications@oxfordenergy.org](mailto:publications@oxfordenergy.org)**  
**<http://www.oxfordenergy.org>**

---