

IA INTERNATIONAL ASSOCIATION FOR ENERGY ECONOMICS
EE
Newsletter

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President's Message



Fereidun Fesharaki

The President's inaugural message reflects his vision of the organization and where it may go over the coming years. The message can also serve as a reminder of both our strengths and weaknesses and how we may improve our association.

Today, the IAEE is recognized worldwide as an important organization of professionals in the energy area - from all walks of life and from many countries. We have over 3,000 members and if we add the members of our affiliates, who are not members of the international organization, we can count several thousand additional members. The fall of the Soviet Union and the Communist governments in Eastern Europe has given us nearly a dozen new or potential affiliate members. Our colleagues in Eastern Europe and the former Soviet republics are facing a turbulent time and often have difficulty with foreign exchange for payment of their dues. I am committed to nurturing and cultivating our membership in this part of the world and will not let temporary hardships affect their sincere efforts to remain loyal members of IAEE.

We have also begun a strong drive to build new affiliates in the Middle East. Our European membership has grown and today constitutes more than 50% of the international membership. After a decade of negotiations, our new affiliates in China and Singapore are about to be officially constituted. Our North American membership remains strong, with the United States as the largest single affiliate. I would like to re-emphasize Ulf Hansen's target of 4,000 members and will strive to raise our membership - while ensuring our existing membership is retained.

I have been fortunate to inherit an association in relatively good shape. Financially, the association

is doing reasonably well, though additional fundraising will be extremely desirable. The *Energy Journal* is recognized as a premier scholarly journal and the *Newsletter* has improved significantly. For those who have seen the *Energy Journal* as too academic, the special issues on topical subjects have been a welcome addition. Not only have the special issues added to the substance of the energy debate, but they have also been financially attractive.

I am committed to improving communication among our members and would like to encourage more energy industry involvement in the IAEE. After all, energy analysts must be able to see both the theoretical and practical aspects of our business. I would work to increase the frequency of the publication of our *Newsletter* to help our members keep abreast of our network and our activities around the globe.

Finally, I look forward to meeting many of you around the world and hope to hear your comments and suggestions. I am looking forward to working with you and wish you the best for 1993.

Fereidun Fesharaki
President

Remember!

The AGM will be held on 29 July at 15.00 during the Bali International Conference.

From the editor:

Please note our new address, telephone and fax numbers on page 8 of this *Newsletter*. We have finally settled into our new offices and have become aware that we are not receiving contributions for the *Newsletter* from all our usual correspondents. The success of the *Newsletter* depends on up-to-date information about activities being passed on to the membership worldwide.

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North American Conference

11-13 October 1993

The 15th annual North American Conference gets underway in Seattle, Washington, this autumn. The Pacific Northwest (sometimes called Ecotopia) is an ideal setting for discussions about energy and the environment. Slated for presentations are a host of industry, government and academic experts on energy conservation, environmental balance, taxation, forecasting, planning and emerging technologies.

Participants can expect a strenuous debate on the effectiveness of energy conservation programmes and other energy issues. Lee Schipper, Daniel Kahzoom and other well-known analysts will lead a series of sessions focused on energy conservation in the 1990s. Arlon Tussing, a resident of Seattle, has promised to challenge, once again, the 'conventional wisdom' about energy markets.

A plenary session moderated by Bill Johnson on energy taxation will include Heather Ross from the National Economic Council and Phil Verleger from the Institute for International Economics. Will President Clinton's energy tax survive Congress intact and will it set a precedent for other countries? Only these panellists know for sure.

Don't miss a stimulating conference on energy and the environment. Submit your abstracts and papers to:

Sam Van Vactor and Bill Kemp
Programme Co-Chairmen
IAEE North American Conference
1101 Fourteenth St, NW, Suite 1100
Washington, DC 20005-5601
Fax: (202) 371 1090

IPGC '93

InterAmerican Petroleum and Gas Conference

Building on the success of the 1991 InterAmerican Petroleum and Gas Conference (IPGC) held in Houston, the East-West Center has announced a new conference, IPGC '93, which is scheduled for 27-28 September 1993 at the Fairmont Hotel in Dallas. IPGC '93 will focus on the transition to a more market-oriented business climate in the western hemisphere hydrocarbons sector and will explore the increased scope for expanding business opportunities for US companies in the oil, gas, petrochemicals and petroleum-related industries. Major sponsors and supporting organizations include USDOE, OLADE, ARPEL and IAEE.

A special discount is offered to all IAEE members on the registration fee. Registration materials were mailed in April 1993 to current IAEE members in the USA and Canada and to the Latin American affiliates. For more information, please contact:

Dr. Kennon Breazedale
IPGC '93 Coordinator
Program on Resources
East-West Center
1777 East-West Road
Honolulu, Hawaii 96848
Tel: (808) 944 7541. Fax: (808) 944 7559

European Foundation for Cooperation in Energy Economics

The EFCEE was formerly instituted, in early December, by the representatives of the European affiliates during their, by now, traditional London meeting; draft statements were approved and an Executive Committee and Executive Secretary were elected. All European affiliates decided to join the EFCEE, thereby committing themselves to an annual contribution of 1 ECU for members.

The representatives of the European affiliates constitute the General Assembly of this new organization which is established in Belgium as an international non-profit organization. Daily management is delegated to the Executive Committee which, for a first, three-year period, consists of Claude Bernardet (France); Edgardo Curcio (Italy); Ulf Hansen (Germany); Vidmantas Jankauskas (Lithuania); Tony Scanlan (UK) and Jørgen Søndergaard (Denmark). Kurt Lekas (Sweden) participates in his capacity as Vice President for International Affairs of the IAEE. Peter Vander Meiren (Benelux) serves as Executive Secretary.

Funds have been obtained from the European Commission (DG XVII) and the private sector will also be approached for a financial contribution.

The EFCEE will be operational in May 1993 and, at the Dusseldorf meeting on 5 June, the Executive Committee will set up guidelines for action during the second semester of this year, which will be discussed by representatives of the European affiliates who will also meet on 5 June at the invitation of our German colleagues.

It is now the responsibility of the national affiliates to present projects which might be partially funded by the EFCEE. One of the rules already adopted is that invitations are to be taken by national affiliates who will be responsible for the organization and funding of meetings, seminars, etc.

Further information may be obtained from members of the Executive Committee (for addresses please consult your latest IAEE Directory) or from P. Vander Meiren, *Tel:* and *Fax:* 32-15-204857. *Address:* Electriciteitsstraat 35, Ap 1105, Mechelen, B 2800, Belgium.

P. Vander Meiren
Benelux Association for Energy Economics

RECs move into telecoms

Two UK electricity companies have been granted nationwide telecommunications licences by Technology Minister, Edward Leigh.

Energis, a subsidiary of the National Grid Company, and Scottish Hydro-Electric plc both plan to make use of their existing electricity pylons to install new fibre optic telecoms networks.

Both companies have installed electricity infrastructure which will enable them to roll out networks much faster than would otherwise be the case. The first beneficiaries of the services will undoubtedly be businesses but the minister felt that all telecommunications users would ultimately benefit from having more operators in the trunk end of the market to help bring down long-distance transmission prices. Energis also plans to launch a countrywide easy access residential telephone service in spring next year.

Special issue of *The Energy Journal* Volume 14, Number 3

This Special Issue of *The Energy Journal* on North American Energy After Free Trade (Canada, Mexico, USA), edited by Campbell Watkins and Leonard Waverman, will be published in September and is sponsored by The Fraser Institute; it will contain the following papers:

- North American and World Oil Markets **Phil Verleger (IIE)**
 Oil Industry Development and Trade Liberalization in the Western Hemisphere **Stephen Randall (Calgary)**
 The Mexican Petrochemicals Sector in the NAFTA Negotiations
Georgina Kessel and C.S. Kim (ITAM, Mexico)
 North American Natural Gas Markets **André Plourde (Ottawa)**
 North American Free Trade: Another Challenge to Coal
Dick Gordon (Penn State)
 US Markets in Real Electric Networks Require Reactive Prices
William Hogan (Harvard)
 Intra North America Energy Trade
C. Watkins and Len Waverman (Toronto)
 Mexico's Economic Reform: Energy and the Constitution
Luis Rubio (CIDAC, Mexico)
 The Environmental Effects of NAFTA
Robert Kaufman and Peter Pauly (Project Link, Toronto)
 The Impact of Natural Gas Imports on Air Pollutant Emissions in Mexico
Alberto Bustani (ITESM, Mexico)
 The Economics of Natural Gas in Mexico - Revisited
Michelle Michot Foss (University of Houston)
William Johnson (Jofree Corporation, Houston)
Francisco Garcia Hernandez (ITESM, Mexico)

New head for RIIA Energy and Environment Programme

The Royal Institute of International Affairs has appointed Dr Michael Grubb to be Head of its influential Energy and Environmental Programme. The Programme is known for wide-ranging research work on energy policy issues, spanning energy security, regulation and the impact of environmental pressures on business. Dr Grubb, aged 33, was previously a Senior Research Fellow at the Programme best known for his publications on the policy implications and economics of global warming, and on the impact of emerging energy technologies.

Dr Grubb's promotion coincided with the release of three publications on the environmental side of the Programme's work: a book analysing the outcome of the Rio 'Earth Summit'; a study of 'Environmental Profiles in European Business'; and a report on the evolution of EC Climate Policy.

Dr Grubb is, however, keen to emphasise that the Programme would maintain a broad base of energy research. The Previous Head of Programme, Jonathan Stern, remains with the Programme as an Associate Fellow, and will spearhead the Programme's work on gas and post-Soviet energy issues. Other projects in progress include work on market structures in oil and electricity, and on the prospects for coal, and renewable energy, in Europe. Further information can be obtained from the Programme Administrator, Matthew Tickle, Chatham House, 10 St James's Square, London SW1Y 4LE, Tel: 071 957 5711; Fax: 071 957 5710.

UK energy policy Hit or myth?

Last autumn's pit closure dispute forced the UK government to produce a White Paper on energy policy. This document disappointed many people hoping for a more active energy policy. It contained a series of short-term measures which few believe gave much hope for the British coal industry's long-term future, nor does it offer a clear policy framework upon which market forces could be harnessed. However, energy policy is not an issue that will go away, even if subsidies and redundancy payments do paper over the immediate cracks in the UK's coal policy. The government's Nuclear Power Review has been brought forward to this year; a process guaranteed to provoke more controversy and the public is now awaiting answers from the Office of Electricity Regulation (OFFER) to many unanswered questions on the structure of the electricity supply industry.

A new report written by members of the Science Policy Research Unit at the University of Sussex concludes that the pit closures dispute has demonstrated the need for a more active energy policy than the strategy of leaving energy to market forces that the government has espoused. The key elements of such a policy should include: care of the environment; natural resource management; dampening of the effects of market fluctuations; allowing all energy sources the opportunity to compete on their merits; and ensuring a diversified and secure energy supply mix.

In greater detail, the report analyses: what the historic basis for energy policy in the UK was and how changes in it led to the current dispute; what is meant by security of supply and what the dangers of abandoning a British coal industry and depleting North Sea gas might be; how the growing influence of international bodies such as the European Community and the GATT restricts the UK's scope to act autonomously in this area; and how the UK's commitments on environmental protection now stand. From this, the authors examine various solutions to the present problems, including the physical means by which a larger coal burn might be accommodated and structural and regulatory changes to the electricity supply industry. They conclude by exploring what the elements of an energy policy appropriate for the 1990s might be.

Energy Policy: An Agenda for the 1990s, the Publications Office, Science Policy Research Unit, University of Sussex, Brighton BN1 9RF, UK; Tel: 0273 686758; Fax: 0273 685865, £20 Sterling.

Understanding Agenda 21

The Centre for Our Common Future has published a plain language guide to Agenda 21. The book does not offer viewpoints, nor does it attempt to analyse Agenda 21's technically complicated language or comment on its strengths and weaknesses: its 72 pages are not intimidating but adequately explain, in simple terms, the final, voluminous 500-page document.

Plain Language Version of Agenda 21 by Michael Keating. Contact: Ellen Permato, Centre for Our Common Future, Information Director, Palais Wilson, 52 Rue des Pâquis, CH-1201 Switzerland. Tel: (41 22) 732 7117; Fax: 738 5046.

IAEE 17th Annual International Conference Stavanger - Norway 25-27 May 1994

The IAEE has selected Stavanger, Norway as the venue for their 17th Annual International Energy Conference which is arranged in close cooperation with the 14th World Petroleum Congress, to be held in Stavanger, 29 May to 1 June 1994. The Norwegian Association for Energy Economics (IAEE Norway) will be the host for the conference. Energy Markets in Transition is chosen as the general conference theme. The conference will have three plenary sessions and a series of concurrent sessions. The first plenary session will tentatively cover global trends and developments in energy markets, using the oil market as a reference, and with special emphasis on the internationalization and integration of energy markets. The second and third plenary sessions will tentatively concentrate on developments in the electricity and gas markets respectively, with special emphasis on trends in market orientation. Within this framework, the Programme Committee is also investigating including a discussion of upstream investment conditions worldwide.



Odd Hassel

for 1994, is co-chairman for the Conference.

Odd Anker Hassel, Director, Cambridge Energy Research Associates (CERA), is General Conference Chairman for the Conference. Odd Hassel is an authority on energy economics, oil movements and the tanker industry, with broad experience in strategic planning, information systems and oil and coal markets. He has been Chairman of the Norwegian Association for Energy Economics (IAEE Norway) and is a member of IAEE's Council. Jean Masseron, IFP, France, IAEE President Elect



Jean Masseron

Einar Hope, President, Foundation for Research in Economics and Business Administration, Bergen, Norway is Chairman for the Programme Committee. Dr Hope, with a PhD from the Norwegian School of Economics and Business Administration (NSEBA), is also a Professor of Economics at NSEBA. He has broad experience in the field of energy and industrial economics.



Einar Hope

Einar Risa, Vice President, Statoil, Norway, is Chairman of the Organizing Committee. Mr Risa, with a Master's degree from the University of Wisconsin, has broad experience in the oil and gas industry. He has also been Deputy Minister for Norwegian Aid at the Norwegian Ministry of Foreign Affairs.



Einar Risan

Stavanger, the centre for Norwegian North Sea oil and gas activities, is an intimate city that spices both business and pleasure with an international flavour. Cultural life flourishes, while the city holds a strong position in the oil sector. These factors have interacted to produce an exciting blend of provincial town and stimulating multinational activity. As a visitor to Stavanger, the conference delegate will be greeted with a service which is at once personal and professional.

The conference will take place at the Atlantic Hotel, situated at Breiavatnet, at the heart of Stavanger, two minutes walk from 'Old Stavanger', the fish market and the shopping district. Reso Atlantic Hotel is one of the better hotels in Scandinavia, with 350 rooms furnished to a high international standard. The hotel offers a large and varied choice of restaurants, and their professionally flexible conference facilities will be specially tailored to suit the needs of IAEE's 17th Annual International Conference.



ATLANTIC HOTEL STAVANGER

For further information please contact:

IAEE Norway, P.o.b. 72, N-1321 Stabekk, Norway. Tel: +47 67 53 10 34; Fax: +47 67 53 43 08

14th World Petroleum Congress

The eight plenary speakers at the 14th World Petroleum Congress will be as follows:

- Mrs Gro Brundtland (Prime Minister, Norway)
- HE Dr Subroto (Secretary General, OPEC)
- Sir Peter Holmes (Chairman of the Committee of Managing Directors, Shell)
- Mr Helmut Werner (Deputy Chairman, Board of Managers, Mercedes-Benz)
- Mr Lev D. Churilov (President, Rosneftgas Corp. Moscow)
- Mr Dino Nicandros (President and Chief Exec, Conoco, USA)
- Mr Serge Tchuruk (Chairman and CEO, Total, France)
- Mr Masamoto Yashiro (Executive Vice President, Citicorp/Citibank, NA, Japan)

Fossilized?

Greenpeace has published a major global energy and climate study, 'Fossil Fuels in a Changing Climate', carried out over an 18-month period and based on analyses by the Stockholm Environment Institute - Boston (SEI-B) and other technical experts. Despite using conventional assumptions for economic and population growth, which Greenpeace does not support, the study concludes that it is technically and economically feasible to halve current global fossil fuel use within 40 years. The use of oil and other fossil fuels could be entirely phased out over the next century and nuclear power phased out by 2010.

The Greenpeace study is, perhaps, unique in setting tough ecological targets for saving the climate from severe damage, and then demonstrating how it is possible to reach these targets by transforming the current energy system. The study attempts to show that the world can do without fossil fuels and nuclear power, that the technical options are already available, and that such a transition would not bankrupt economies.

Whether or not you agree with the conclusions, the report is both challenging and thought provoking.

The *Fossil Fuels in a Changing Climate* study is available from the Climate Campaign, Greenpeace International, Keizersgracht 176, 1016 DW Amsterdam, Netherlands. Price \$10 including postage.

The Full technical report - *Towards a Fossil Free Energy Future: The Next Energy Transition* - is available from the same address priced \$75, or \$125 with full technical appendices (for businesses) and \$40 and \$70 respectively for non-profit environmental and other NGOs.

Money for old smoke!

The Europeans Community's commendable international leadership at the UNCED conference in Brazil of last year is in danger of being lost. Whereas the US administration has adopted the EC proposal to freeze carbon dioxide emissions at 1990 levels by the turn of the century, the Community's own action plan is languishing. Faced with widespread recession and unemployment, governments are groping for ways of harmonizing economic and environmental goals.

Official estimates indicate that the recently proposed EC energy/carbon tax would eliminate only a portion of the projected 1990-2000 growth in Western Europe's emissions. Various constituencies are concerned that much higher energy taxes will have to be imposed to achieve a freezing of emissions. EC governments, meanwhile, want to avoid placing competitiveness burdens on their industries.

Is there a way out of this dilemma? A new and provocative study by IPSEP on the economics of greenhouse prevention suggests that the current policy proposals that rely mainly on energy taxes are out of balance; there are much cheaper options than high energy or carbon taxes for reducing carbon emissions effectively. According to the IPSEP study, an alternative approach can reduce carbon emissions, save a nation money and boost economic competitiveness. This least-cost policy approach would emphasise strong programmes to correct a variety of market barriers to the efficient use of energy, complemented by modest energy taxes and targeted recycling of tax revenues into investments. The IPSEP report compares 12 key studies from the

USA, Canada and Europe that represent the two modelling approaches and schools of thinking on this important issue. It covers the full range of economic issues related to carbon reductions, ranging from impacts on the international price of oil, trade effects, industrial migration, technological competition and prospects for Third World participation in a global climate stabilization campaign.

Cutting Carbon Emissions: Burden or Benefit? The Economics of Energy-Tax and Non-Price Policies, International Project for Sustainable Energy Paths, 7627 Leviston Ave, El Cerrito, California 94530, USA. Tel:/Fax: (510) 525 4446.

Call for papers

Models of sustainable development: Exclusive or complementary approaches of sustainability?

International symposium organized by the Centre
Economie Espace Environment of Paris I Panthéon
Sorbonne University (URA CNRS 919 METIS)
16-19 March 1994, Paris

The aim of the symposium is to clarify the relationship between the different sustainable development models and approaches concerning the links between the natural environment and economic activities which should be viewed as complementary rather than exclusive.

The symposium will include invited papers by noted academics and parallel sessions of presentations on a variety of different themes. Symposium languages will be French and English with simultaneous translation for plenary sessions.

Papers are solicited on the following areas of research:

1. Growth models and general equilibrium models of sustainable development
2. Ecological-economics and systems dynamics models of sustainable development.
3. Neo-Austrian, Institutional, Schumpeterian and Evolutionist models of sustainable development.
4. Implementation of sustainable standards and indicators in sustainable development models.
5. Implementation of the technology, social organization and structure of the ecosystems in sustainable development models.
6. Implementation of intra- and intergenerational equity in sustainable models.
7. Hypotheses of rationality underlying sustainable development models.
8. Application possibilities for sustainable development models.

Authors are invited to submit four copies of an abstract of their paper, in French or in English, before **30 September 1993**. Each abstract will be reviewed by two members of the International Programme Committee and selected papers should be sent before 9 February 1994.

Those interested in submitting abstracts or who would like more information on the Symposium should contact Professor Sylvie Fauchoux, c/o AFCET, 156 Boulevard Péreire, 75017 Paris, France. Tel: +33 (1) 47 662419; Fax: +33 (1) 42 679312.

Can commercial and environmental objectives be reconciled in investment decision-taking?

**4th BIEE seminar on energy investment
Chatham House, 23 September 1992**

The discussion was opened by Dr Hans DuMoulin of ETE21 (Energy Technology and the Environment - A Circle to Promote Rational Action for the 21st Century). The main points of his presentation were:

1. There are fundamental difficulties between the objectives of a commercial enterprise, and those of an environmental authority (whether government or regulatory agency). In the case of the former, objectives to maximize the profit for the 'stake-holders', with environmental factors being regarded as constraints, not objectives. By contrast, environmental objectives reflect political and societal concerns in a variety of ways.
2. The 'Polluter Pays' principle which should, in theory, allow for the internalizing of external environmental costs can open a Pandora's Box in terms of the yard-sticks to be used, as issues of international competitiveness. Proper instruments on environmental costing are essential pre-conditions for reconciling environmental and commercial decision-making. This may involve a certain degree of arbitrariness, but this will be better than making no attempt to 'green the invisible hand'. If energy economists/advisers fail to propose constructive solutions, 'command and control' measures are more likely to be introduced by governments.

In the ensuing discussion, points raised included the following:

- (i) The 'Polluter Pays' principle meant that the consumer pays except in very competitive markets.
- (ii) The problems of measurement in determining the balance between environmental costs and benefits, should not be under-estimated. Environmental measurement was very much more imprecise than measurement of 'conventional' costs and prices.
- (iii) If the 'Single Market' in energy in the European Community has raised difficulties, how is it possible to contemplate a 'harmonized regime' of

(for example) carbon taxes throughout the world?

(iv) The income distribution or 'Equity Issue' aspects of environmental policies needed to be considered, both within and between countries.

(v) The problem of DCF and inter-generational effects had not been solved. This was central to the whole question of 'sustainability'.

(vi) 'Energy and Environment' was a multi-dimensional problem that could not be contained within the single dimension of money. Political and economic trade-offs were a necessary feature. The challenge lies in striking a balance.

(vii) There was a need for as much transparency as possible on the rationale and costs of environmental protection measures.

*M.J. Parker
BIEE*

**Reconciliation of commercial and environmental objectives
BIEE seminar
Chatham House, 17 March 1993**

The meeting considered a discussion paper prepared by Mike Parker and Hans DuMoulin. This note indicates the main comments which arose.

Objectives:

1. The starting point has to be the recognition that there can be inherent conflicts between commercial and environmental objectives, since the objectives of commercial enterprises and environmental protection authorities may be quite different. While the 'voluntary regulation' approach may be desirable where practicable, in many cases it will be insufficient, so that the basis of any reconciliation between commercial and environmental objectives will be in the rules and regulations which are imposed by political authorities to meet certain environmental aims. These rules act as legal constraints on economic activity, but then allow commercial organizations to follow their self-interest within those constraints. The purpose of these seminars is to see whether a rational framework can be devised in the main areas relevant to energy, particularly pollution and climate change.

Comment:

- (i) Some felt that the conflict between commercial and environmental interests had been drawn too firmly. Others pointed out that governments were also involved in other trade-offs as well (such as with 'security of supply' and 'social costing').
- (ii) Environmental objectives were often imprecise: was the aim sustainability, avoiding deterioration of the status quo, or restoring the status quo ante?

The Problem of Measurement:

2. A necessary pre-condition for determining what abatement targets etc should be put in place will be the measurement of various environmental impacts, and hence their 'costs'. Unless these impacts can be quantified in some way, it is not possible to strike the balance between costs and benefits. But measurement often presents great difficulty. Different methodologies can give very different results. Are objective criteria possible here? Or will environmental 'targets' remain essentially arbitrary political acts? Under what circumstances should the 'precautionary principle' be invoked to overcome problems of uncertainty?

Comment:

- (i) The problem of measurement, and associated uncertainty, has a number of aspects: cost of prevention, cost of mitigation, assessment of damage. These could give rise to quite different values of 'environmental costs'.
- (ii) Some environmentalists would argue that the appropriateness of the cost-benefit approach to environmental protection was limited where subjective value judgements were involved. Others would go even further and argue for 'moral imperatives' and 'absolute values', which made quantitative analysis not only futile, but objectionable. There was much discussion on the limits of 'objective analysis'.
- (iii) Precise measurement techniques were essential for legal enforcement of controls.

Choice of Instruments:

3. To meet any given environmental 'target', there is a choice to be made between voluntary measures (persuasion and education), 'command and control', or 'economic instruments', the latter will include taxes and levies (whether applied to individual fuels or energy use), subsidies to promote energy conservation or environmentally 'benign' fuels/technologies, and tradeable permits. How are the relative merits of these approaches to be determined in terms of effectiveness, certainty, minimum costs, or political acceptability?

It is often argued that the 'Polluter Pays' principle should be the general guide; but in the last analysis, what does this really mean? For example, the impact on prices rather than profits will depend on the degree of competitiveness in the market sector concerned.

Comment:

- (i) Uncertainties over measurement overflowed into uncertainty on the efficacy of particular instruments. Often it was a matter of 'trial and error'.
- (ii) 'Command and control' and 'economic instruments' could often be complementary rather than in opposition. 'Command and control' can cover a wide variety of measures. In practice a mix of measures will be required: the important point was coherence.
- (iii) One view put forward was that an 'economic instrument' required a target to be pre-set; another was that 'economic instruments' could be used to determine the optimal level of environmental control.

The Issue of Investment:

4. Energy production and use, and the associated environmental issues, raise, in a particularly fundamental way, the old issue of short- versus long-term. This is in part due to the fact that the environment raises questions of 'sustainability' with inter-generational/ethical overtones; but also in a practical way because solutions to environmental problems generally require large changes in the capital stock of energy production and use: inherently a lengthy process. Once again, the old issue of the discount rate (and indeed the use of DCF) is raised. Is there a fundamental conflict between 'commercial' discount rates, and those appropriate for environmental protection? How are we to address the observed imbalance of incentives to invest in energy supply rather than energy efficiency? How far should governments be involved in funding the development of more 'benign' technologies?

Comment:

- (i) The issue of 'investment' was only one of the problems associated with time. Public perception and scientific knowledge may change considerably over time; and new problems may emerge because rates of change are different from those expected.
- (ii) In addition to investment and changes in the capital stock, other measures of environmental protection in

the energy field have long and uncertain response times.

Institutional/Political Framework:

5. Much thinking still needs to be done on many of the questions raised above. What are the most appropriate mechanisms for developing policy? Who should be consulted, and how far should public opinion be led or followed? In the UK, privatization has given rise to industry-by-industry regulation, as well as 'general competition and environmental regulation'. How should these activities be coordinated and potential conflicts be resolved? A further raft of problems arise given the increasingly international nature of the energy/environmental debate. How are environmental aims and economic objectives to be reconciled at the international level, whether in the EEC or wider international protocols?

Comment:

- (i) 'Striking the balance' between energy economics and environmental protection was a political process but this did not preclude objective analysis.
- (ii) There was a danger that objective analysis and political action would be seen as necessarily in conflict. Regulatory development was often made in consultation with the various 'stake-holders', but against the background of the best scientific knowledge available.

Topics for Subsequent Seminars:

The meeting endorsed the view that the following topics could profitably be debated at greater length:

- (i) The setting of environmental targets: how to balance costs and benefits.
- (ii) Choice of instruments: voluntary, 'command and control', or 'economic instruments'?
- (iii) How should thinking, including long-term investment and R&D take account of environmental objectives?
- (iv) Is the present institutional/political framework appropriate for resolving the problems concerned?

M.J. Parker
BIEE

Publications

Architect's and Engineer's Guide to Energy Conservation in Existing Buildings (DOE/RL/01830P-H4) Volume I, U.S. Department of Energy, CE-44, Room 5E-080, 1000 Independence Avenue, SW, Washington, DC 20585, USA, Tel: (202) 586 9330.

Cars and Climate Change OECD Publications, 2 rue André-Pascal, 75775 Paris cedex 16, France, 1993, £43.00, US\$60.00, DM100.00.

Car Trouble, Steven Nadis and James McKenzie, World Resources Institute, 1709 New York Avenue, NW, Washington, DC 20006, USA, 1993, Tel: (800) 822 0504, pp300, \$12.00.

Challenging OPEC: World Oil Market Projections, 1992-2007, Canadian Energy Research Institute, Suite 150, 3512 33rd Street, NW, Calgary, Alberta, Canada, 1993, Tel: (403) 282 1231, Fax: (403) 284 4181, \$125 (Cdn).

Changing by Degrees: Steps to Reduce Greenhouse Gases, U.S. Congress Office of Technology Assessment, Cutter Information Corp., 37 Broadway, Arlington, Massachusetts 02174-5536, USA, 1992, Tel: (617) 648 8700, Fax: (617) 648 8707, pp354, \$49 USA and \$59 non-USA.

Clean Cheap Heat: The Development of Residential Markets for Natural Gas in the United States, John Hebert, Praeger Publishers, New York, New York, USA, 1992, pp190, \$42.95.

Demand Side Management for Electricity: Pushing Back Barriers, Canadian Energy Research Institute, Suite 150, 3512 33rd Street, NW, Calgary, Alberta, Canada, 1992, Tel: (403) 282 1231, Fax: (403) 284 4181, \$400 (Cdn).

Demand Side Management for Gas: Searching for a Rationale, Canadian Energy Research Institute, Suite 150, 3512 33rd Street, NW, Calgary, Alberta, Canada, 1992, Tel: (403) 282 1231, Fax: (403) 284 4181, \$300 (Cdn).

Electric and Hydrogen Vehicles, James McKenzie, World Resources Institute, 1709 New York Avenue, NW, Washington, DC 20006, USA, 20006, (1993) 1-800-822-0504, 75 pp., \$14.00.

Evaluating the Carbon Sequestration Benefits of Sustainable Forestry Projects in Developing Countries, Paul Faeth, Cheryl Court and Robert Livermash, World Resources Institute, 1709 New York Avenue, NW, Washington, DC, USA, 1993, Tel: (800) 822 0504, pp75, \$14.95.

Keeping it Green: Using Tropical Forestry to Mitigate Global Warming, Mark Trexler and Christine Haugen, World Resources Institute, 1709 New York Avenue, NW, Washington, DC, USA, 1993, Tel: (800) 822 0504, pp75, \$14.95.

Long-term Outlook for World Gas Trade: 1990-2015, Canadian Energy Research Institute, Suite 150, 3512 33rd Street, NW, Calgary, Alberta, Canada, 1992, Tel: (403) 282 1231, Fax: (403) 284 4181, \$500 (Cdn).

Managing Energy Price Risk Through Swaps and OTC Options by Peter C. Fusaro, Global Change Associates, 20 Harwood Avenue, White Plains, NY 10603, USA, 1993, pp167.

North American Gas Trade, Canadian Energy Research Institute, Suite 150, 3512 33rd Street, NW, Calgary, Alberta, Canada, 1993, Tel: (403) 282 1231, Fax: (403) 284 4181, \$200 (Cdn).

Oil in the Former Soviet Union, Historical Perspectives and Long-term Outlook, Canadian Energy Research Institute, Suite 150, 3512 33rd Street, NW, Calgary, Alberta, Canada, 1992, Tel: (403) 282 1231, Fax: (403) 284 4181, \$250 (Cdn).

Realizing the Benefits of Community Integrated Energy Systems, Canadian Energy Research Institute, Suite 150, 3512 33rd Street,

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Publications continued...

NW, Calgary, Alberta, Canada, 1992, *Tel:* (403) 282 1231, *Fax:* (403) 284 4181. \$250 (Cdn).

The Going Rate: What it Really Costs to Drive, James McKenzie, Roger Dower and Don Chen, World Resources Institute, 1709 New York Avenue, NW, Washington, DC 20006, USA, 1992, *Tel:* (800) 822 0504, pp32, \$12.95.

The New Power Base: Renewable Energy Policies for the Nineties and Beyond, Keith Kozloff and Roger Dower, World Resources Institute, 1709 New York Avenue, NW, Washington, DC 20006, USA, 1992, *Tel:* (800) 822 0504, pp100, \$14.95.

The Right Climate for Carbon Taxes: Creating Economic Incentives to Protect the Environment, Roger Dower and Mary Beth Zimmerman, World Resources Institute, 1709 New York Avenue, NW, Washington, DC 20006, USA, 1992, pp40, \$14.95.

U.S. Department of Energy New Technology, Sharing New Frontiers, Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, Tennessee 37831, USA, 1993, *Tel:* (615) 576-8401, pp96.

Calendar

24-25 June 1993, Arlington, USA: DSM and the Global Environment. Contact: Sharon Limaye, The Conference Connection, Inc, 111 Presidential Blvd, Bala Cynwyd, PA. *Tel:* (215) 667 3114. *Fax:* (215) 667 5593.

30 June 1993, London, UK: 3rd BIEE Chatham House Seminar, The reconciliation of commercial and environmental objectives in energy. Contact: Mary Scanlan, 37 Woodville Gardens, London W5 2II. *Tel:* 081 997 3707; *Fax:* 081 566 7674.

14 July 1993, London, UK: Joint meeting with World Petroleum Congress, 'Politics of Middle East Oil'. Britannic Tower, Moor Lane, EC2. For details see Calendar entry 30 June 1993.

20 July 1993, London, UK: Talk by Dennis de Wylde (BP), 'Prospects for North Sea Oil'. Britannic Tower, Moor Lane, EC2. For details see Calendar entry 30 June 1993.

27-29 July 1993, Bali, Indonesia: 16th IAEE International Conference. Contact: Conference Secretariat, c/o REDECON, Gedung Patra Lt. 1, Jl. Gatot Subroto 32-34, Jakarta 12950, Indonesia. *Tel:* (62 21) 511 821, 511 824. *Fax:* (62 21) 515 133.

28-29 July 1993, Las Vegas, Nevada, USA: Integrated Resource Planning, Series #5 - IRP Development, Testing & Evaluation. Contact: Western Power Administration. *Tel:* (602) 352 2661.

23-27 August 1993 Budapest, Hungary: ISES Solar World Congress. Contact: Laszlo Imre, Technical University, 1521 BME Budapest, Hungary.

26-27 August 1993, Muroran, Japan: International Symposium on Ocean Energy development for Over-coming Energy and Environmental Crises. Contact: Prof. Hideo Kondo, Muroran Institute of Technology, Dept. of Civil Engineering and Architecture, 27-1 Mizumoto-cho, Muroran, Japan 050.

10-13 October 1993, Seattle, Washington, USA: 15th Annual North American Conference of the IAEE. Contact: Joan Walsh Cassidy, 1101 14th St., NW, Suite 1100, Washington DC, USA. *Tel:* (202) 371 1191. *Fax:* (202) 371 1090.

18-20 October 1993, Amsterdam, Netherlands: Coaltrans '93, world coal trade conference. Contact: Susie Constable, Coaltrans Conferences Ltd, *Tel:* 081 944 6688; *Fax:* 081 944 5385

7-10 November 1993, Colorado, USA: Tenth Annual International Symposium on Alcohol Fuels at

Colorado Springs.

30 November - 3 December 1993, Hong Kong: 2nd IEA International Conference on the Clean and Efficient Use of Coal and Lignite: Its role in energy, environment and life. Contact: Quote conference title to Conference Secretariat, 18757 North Frederick Rd, Gaithersburg, Maryland 20879, USA. *Fax:* (301) 670 1942.

9-11 February 1994, Tampa, Florida, USA: Innovative Electricity Pricing Conference. Contact: Pam Turner, Conference Coordinator, EPRI, 3412 Hillview Ave, Palo Alto, CA 94303-9743, USA

25-27 May 1994, Stavanger, Norway: 17th IAEE International Conference. Contact: Odd Anker Hassel. *Tel:* +47 2 53 10 34. *Fax:* +47 2 53 43 08.

29 May - 1 June 1994, Stavanger, Norway: 14th World Petroleum Congress. Contact: Congress Secretary, Mrs AG Ellingsen, 14th World Petroleum Congress, c/o Statoil, PO Box 300, N-4001, Stavanger, Norway. *Tel:* +44 4 80 60 81; *Fax:* +44 47 4 80 60 20.

15-17 August 1994, Espoo, Finland: Sixth International Conference on Thermal Energy Storage. Contact: Helsinki University of Technology, *Tel:* (358-0) 451 3193.

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