On the second day of the Conference, when stress was being laid upon hydrogen as a carrier and there were many good papers, a peculiar thing happened: a lady from China spoke favourably of the use of coal (*sic*); and a gentleman from the Soviet Union thought that they would continue to use natural gas for about 30 to 40 years. When asked why they made these extraordinary announcements, they said 'But it is cheaper', and had to be carefully educated about net cost *versus* apparent initial costs!

There is little doubt that natural gas will progressively replace petroleum as an energy-source, if only as a transition towards a fully-integrated hydrogen economy. In the transition period, to start with, small amounts of hydrogen could be added to natural gas, both for transportation purposes and for other use. The investments would be reasonable.

This process was described by one of the speakers, Dr J. Selzer, for supply to vehicles. He proposed the name of HYTHANE for the mixture of HYdrogen and meTHANE.

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GLOBAL WARMING — A CALL FOR INTERNATIONAL COOPERATION, BEING THE SECOND INTERNATIONAL CONFERENCE ON THE SCIENCE AND POLICY ISSUES FACING ALL GOVERNMENTS, HELD IN CHICAGO, ILLINOIS, USA, DURING 8–11 APRIL 1991

As with so many meetings scheduled in early 1991, this conference suffered from the Persian/Arabian Gulf events. Attendance declined markedly compared with the preceding year, although well over one hundred delegates, representing 17 countries, showed up; the number of attendees from Third World nations, or originally from such nations, was impressive.

An attempt was made to reach a wide range of professionals as well as the public at large. Both international cooperation and coordination were urged in the broader aspects of natural resources management, current technologies, policy options, and legal constraints. Global climatic changes were considered, as well as effects of 'greenhouse' phenomena, reforestation, and employment of biomass energy. Educational aspects were touched upon, stressing the universities' informational role.

Global Warming and Other Changes

Global warming was accepted as factual by all speakers, and several effect-mitigating factors were discussed or proposed: biomass energy, biocrops, biofuels, etc. One session dealt almost exclusively with forests and their effect of reducing atmospheric CO_2 concentrations. Canadian, Indonesian, Mexican, Bulgarian, and Tropical, forests' role assessment analyses were used as examples. A cooperative US–USSR ecosystem study was described in considerable detail and, though of modest scale, shows very promising aspects.

Climate change indicators and the global climate linkage received the largest totality of time. Here the coral-reef system and the subarctic biological realm were linked to current climate oscillations, the use of models was highlighted, and Man's influence put in focus.

Methane and Water Shortage

Two other topics handled at some length were methane and water shortage. The Gas Research Institutes' environmental programme in global change was reviewed, and methane fluxes in urban and agricultural settings were described. Three papers dealt with desertification and water supply in the Sahel, particularly Chad; hydrologic systems were handled on a global scale, and specifically for Indonesia.

In the cadre of Man's impact upon global changes, alternative energy sources were proposed, ranging from wood and herbaceous plants to the ocean. Activities of several US agencies received some favourable echoes. Unusual, however, was a proposal for reducing global warming while promoting preservation of endangered species: a forest of several species of *Eucalyptus* could support a large population of marsupials and simultaneously reduce the 'greenhouse' effect!

Further Gleanings

Gleaning among the environmental topics touched upon, constructive proposals were made or practical thoughts expressed. Thus biofuels could alleviate over-production of CO_2, and technologies for this are at hand. An eight-nations experiment is under way to use the tree-line as a climate-change indicator. If 84% of carbon emission due to production and consumption are ascribable to developed countries, a substantial proportion is nevertheless generated by China.

In the context of the over-emission of CO_2, alternatives focus on changing energy policies, controlling 'greenhouse' gas emissions, and changing patterns of land-use and -adaptation. Where the US is concerned, mass education, tighter efficiency-standards, more research and development, and more economic incentives, could be key steps. An enormous educational task lies on the universities' front door-step, so that a constant global population might be enabled to live in happy equilibrium with the Earth System.

The Third International Conference on the Science and Policy Issues Facing All Governments will be held, again in April, in 1992 in Chicago, and efforts will be made to increase West European, female, and developing countries' input, while diversifying even further the range of subjects covered.

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TENTH EUROPEAN PHOTOVOLTAIC SOLAR ENERGY CONFERENCE, HELD IN THE FIL CONGRESS CENTRE, LISBON, PORTUGAL, DURING 8–12 APRIL 1991

It is now widely evident that a large proportion of our environmental problems are linked in some way to our frantic consumption of energy. Hence, progresses in environmentally-friendly renewable energies are of paramount importance, and it is happy to relate that this event was a distinct success. Some 700 participants came to it from 49 different countries — mostly European countries but including some more distant overseas countries.

There is currently an upsurge in photovoltaic (PV) activity in Europe, where sales of the product increased 25% from late in 1989 to the end of 1990. It is also encouraging to note the very broad public and a governmental support in Europe, where several projects reached the megawatt range — for example the Roofs (Germany), Sahel (CEE), and Enel (Italy), enterprizes.

For crystalline silicon cells, efficiencies are increasing — from 12% to a range of 13–14% for commercial products. Life-expectancy of solar cells and modules is also increasing — from 20 years to 25 and even 30 years. But prices, unfortunately, are not decreasing according to expectations. Moreover the stage of large-scale industrial production has not yet been reached.

Speaking at a press conference during the Conference, Dr Hermann Scheer, President of Eurosolar and Representative in the German Bundestag, declared: 'We are going to base ourselves on politics and take a giant leap forward in order to build large-scale production lines and quickly reduce manufacturing costs.'

Also outspoken was Dr Woflgang Palz, Head of the Renewable energies section, CEC, Brussels, who said 'There is widespread concern about the environmental effects of conventional energy consumption and in particular global warming. At the heart of the notion of sustainable development ('Brundtland Report') is the ethical imperative that the stock of environmental capital must be preserved for future generations. An ever-increasing world population and further economic growth... will stimulate energy consumption. This energy must be clean. The further development of renewables is of high priority because "it is better to prevent pollution than to cure it".'

Furthermore, 'Renewable energy sources are potentially capable of providing a significant fraction of Europe's energy needs in the 21st century'. Suitable technologies are available, of which some are also competitive. Large-scale applications will depend on appropriate political decisions.

The 11th European Photovoltaic Solar Energy Conference will take place in Montreux, Switzerland, during 12–16 October 1992.

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INTERNATIONAL SEMINAR ON BANKING, THE ENVIRONMENT, AND EDUCATION, HELD AT THE OFFICES OF THE FIRST NATIONAL BANK OF CHICAGO, LONDON, ENGLAND, UK, ON 9 APRIL 1991

Building a Network for Bankers

Networks are 'all about building bridges', and this was the central activity at the Banking, the Environment, and Education, Seminar held at 90 Long Acre, London WC2E 9RB, England, UK, on 9 April 1991. The gaps between the worlds of environmental activists, educationalists, and bankers, were narrowed, and for a whole day there was an exchange of views and participation in an agenda set by four main speakers. Ten bankers, representing nine major banks, were complemented by representatives from a 'green' trust, the World Wide Fund for Nature (3), and the Education Network for Environment and Development (3). Speakers from the World Bank, the Education Network for Environment and Development (ENED), the Science Policy Research Unit (SPRU), and the London law firm of Wilde Sapte, completed the scene.

But, readers may well ask, why bring together such a varied group representing such disparate fields? It is tempting to reply that desperate circumstances require desperate remedies, but in fact we probably have several decades before any global environmental crisis engulfs us, so may well be able to afford a rational though radical approach.

The reasons for the seminar lie embedded in the reasons for which WWF (UK) funded the setting-up of ENED. The environmental crisis may be some way off, but its nature and major dimensions are now apparent. It is clearly not sufficient to rest our hopes on educational programmes for schoolchildren, donations to charities, and convenient 'technical fix' solutions to 'inconveniences' such as pollution and famine. The depth of our problems means that we will require to change our lifestyles, restructure our major institutions, and change our values, so that manufacturing industry and agriculture have differently-structured markets and new legal constraints within which to operate. It is a huge job and, as the participating nations at the 1990 Bergen Conference recognized, we will need to develop an educational process within all our major institutions — especially our places of work — in order to achieve it.

It should now be crystal clear why bankers are so important. Banks play a crucial role in shaping the future. Investment decisions that are made now may help to predict and determine the future. It is essential that bankers be informed about what the future may bring if we continue as we are and do not make changes. We need to support each other in thinking through problems that are quite unique in the history of Humankind.

Contributions to The Debate

The day began with the undersigned setting out the major arguments for believing in the seriousness of our situation. He chose one topic, Global Warming, and presented detailed evidence from a number of authoritative sources. The scale and scope of the changes that will be required are measured in one of the recommendations from IPPC that carbon dioxide emissions be cut by 60%. The seriousness of this requirement is gauged by the reasonable demands of developing countries that they be allowed to increase their output. The role of education in achieving new levels of intelligence with which to tackle this problem was stressed.

Dr Robert J.A. Goodland followed this presentation with an account of the World Bank experience. In the early days it failed almost entirely to take account of the environmental impact of its major development schemes, particularly in power generation. Its experience of political opposition and justified criticism led to a