

① THAILAND DEVELOPMENT  
RESEARCH INSTITUTE.

② International Conference on  
Global Warming and Sustainable  
Development: an Agenda for the  
90s, Bangkok, 1991.  
(Conference Statement...)

## CONFERENCE STATEMENT

### International Conference on Global Warming and Sustainable Development: An Agenda for the 90s

Organized by

The Thailand Development Research Institute  
Bangkok, Thailand

The Institute for Research on Public Policy  
Ottawa, Canada

and

The Woods Hole Research Center  
Woods Hole, Massachusetts, USA

Bangkok, Thailand  
10-12 June 1991

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**The Woods Hole Research Center  
Woods Hole, Massachusetts, USA**

**Bangkok, Thailand  
10-12 June 1991**

## **SUPPORTERS**

As organizers of the conference, the Thailand Development Research Institute, the Institute for Research on Public Policy and the Woods Hole Research Center would like to acknowledge the following organizations and thank them for their financial support:

Canadian International Development Agency, Ottawa, Canada  
Ford Foundation, New York, NY, USA  
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Sasakawa Peace Foundation, Tokyo, Japan  
Swedish International Development Authority, Stockholm, Sweden  
United Nations Development Programme, New York, NY, USA  
United Nations Environment Programme, Nairobi, Kenya  
U.S. Environmental Protection Agency, Washington, D.C.  
Woods Hole Research Center, Woods Hole, MA, USA

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# **THE ORGANIZERS**

## **The Woods Hole Research Center**

The Woods Hole Research Center, founded in 1985, addresses global environmental problems generated by the expansion of the human enterprise over a finite earth. The Center's purposes are discovery and management: formulating the principles that govern nature and helping to draw the actions and laws of people into congruence with the laws of nature. The tools are basic research in ecology, policy analysis involving science applied to public affairs, and education. The subject is ecology, applied to the common interest in a habitable earth. The Woods Hole Research Center is a non-profit and non-governmental institution which enjoys a tax-exempt status conferred by the U. S. Government.

## **The Institute for Research on Public Policy**

Founded in 1972, the Institute for Research on Public Policy is an independent, national, non-profit organization with offices across Canada. The mission of the Institute is to improve public policy in Canada by promoting and contributing to a policy process that is broadly based, informed and effective. In pursuit of this mission, the Institute: 1) identifies significant public policy questions that will confront Canada in the longer term future, and undertakes research into those questions; 2) promotes wide dissemination of key results from its own and other research activities; 3) encourages non-partisan discussion and criticism of public policy issues in a manner which elicits broad participation from all sectors and regions of Canadian society and links research with processes of social learning and policy formation.

## **The Thailand Development Research Institute Foundation**

The Thailand Development Research Institute Foundation was established in 1984 to conduct policy research and disseminate results to the public and private sectors. TDRI is registered as a non-profit, non-governmental foundation, and is recognized as such by the Royal Thai Government. The Institute performs technical and policy analysis to support the formulation of policies with long-term implications for sustaining social and economic development.

# BACKGROUND OF THE CONFERENCE

## Introduction

Avoiding a continuous global warming requires joint action by both the industrialized and developing nations. While the industrialized nations may be able to accommodate a 50% reduction in reliance on fossil fuels, such a change in the less developed nations presents a major challenge.

Experience suggests that the developing countries might be reluctant to participate in international efforts to avoid global warming, especially if those efforts were seen to threaten economic development. Before the developing countries agreed to participate in the Stockholm Conference on Human Environment in 1972, a significant effort was required to persuade them of the need, even the necessity of their involvement. This effort involved regional conferences before the Stockholm Conference where issues of concern for developing countries were addressed.

The suggestion that nations alter their expectations and that governments in the developing world take drastic steps of the kind required now to deal with the global warming problem is as radical a suggestion as those made in 1971. A significant effort, comparable with the effort of 1971, is needed to lay the groundwork for the global actions required in the future to preserve a planet that is habitable.

## The Proposal

The Thailand Development Research Institute (Bangkok, Thailand), the Institute for Research on Public Policy (Ottawa, Canada) and the Woods Hole Research Center (Woods Hole, Massachusetts, U.S.A.), in collaboration with the United Nations Development Programme, the United Nations Environment Programme, and the World Resources Institute, propose to organize and conduct an international conference in Bangkok, Thailand June 10-12, 1991, to address the global warming and climatic change issue with emphasis on sustainable development from the perspective of the developing nations. The purposes of the conference are:

- o to define the global climatic changes, their potential rate of development, and consequences;
- o to stimulate discussion among scientists, policy-makers, nongovernmental organizations and governments of developing countries as to how these nations may respond to climatic change and rising sea levels;
- o to open the discussions with the developing nations of their participation in global agreements for stabilizing the composition of greenhouse gases in the atmosphere and in attaining sustainable development; and
- o to enhance cooperative research among policy research institutes in the region on global warming and sustainable development.

This conference is a direct response to the conclusions drawn by participants at the recent international workshops on climatic change held in Villach, Austria (1985 and 1987); Bellagio, Italy (1987); Toronto, Canada (1988); New Delhi, India (1989); Nairobi, Kenya (1990); and São Paulo, Brasil (1990).

A broad consensus among scientists anticipates a global warming during the next decades that may average 0.5-1.0 degree C per decade and may exceed that rate in higher latitudes. Such rapid changes present severe challenges to the entire human enterprise, raising serious doubts about the productivity of agriculture, the survival of forests, and effects on coastal regions as the sea level rises against the land. Recently, there has been evidence that the warming may cause further increases in temperature as organic matter in soils and forests decays and releases additional heat-trapping gasses, especially carbon dioxide and methane, into the atmosphere. This effect, combined with the warming of the surface oceans, has the

potential for a large but unmeasured surge in the rate of accumulation of the heat trapping gasses in the atmosphere and in the projected rate of warming.

Global warming is underway and is expected to accelerate unless steps are taken to reduce the emissions of heat-trapping gasses, especially carbon dioxide. This calls for a review of a host of major decisions since, as the UNEP/WMO 1985 document pointed out, "Many important economic and social decisions are being made today on major irrigation, hydro-power and other water projects, on ... land use, on structural design and coastal engineering projects, and on energy planning, ... based on the assumption ... that past climatic data are a reliable guide to the future. This is no longer a good assumption ... ". The challenge is two-fold: first, to reduce the cause of the problem by reducing the rate of accumulation of heat-trapping gasses in the atmosphere; second, to assure that the changes in climate are incorporated into decisions on further development.

Achieving an effective reduction in the emissions of heat trapping gasses will require a major reduction in the use of fossil fuels globally, cessation of deforestation, and a substantial effort at reforestation. Such efforts will put major burdens on all nations. However, particularly awkward burdens will fall on the less developed nations unless specific early steps are taken to ease the transition to greater efficiency in use of energy and reliance on renewable sources.

### **Participants**

The participants include presidents and senior researchers from policy research institutes, policy makers from several countries in Southeast Asia, Eastern Asia and the Pacific; representatives from international and regional organizations; and representatives from non-governmental organizations.

### **Products**

The products of the conference include: 1) a major publication addressing the issues raised and solutions offered by participants in the conference. This will form the basis for future discussions on the topic and provide a framework for similar conferences in other developing regions of the world; and 2) identification and establishment of formal links with a core group of policy research institutions from Asian nations concerned about climatic change and its effect on their countries, who would use the conference as a point of departure for further activities designed to contribute to policy development at the national and regional levels.

# INTERNATIONAL STEERING COMMITTEE

## Honorary Chairmen

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Chairman of the Board, International Development Center  
Japan

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Minister of Science, Technology and Energy  
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Dr. Emil Salim  
Minister of State for Population and Environment  
Indonesia

Dr. Maurice Strong  
Secretary General  
United Nations Conference on Environment and Development, 1992  
Switzerland

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President, Thailand Development Research Institute  
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Dr. George M. Woodwell  
President, The Woods Hole Research Center  
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Director, The Stockholm Environment Institute  
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Dr. Jim MacNeill  
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Senior Associate, The Woods Hole Research Center  
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## CONFERENCE STATEMENT

Experts from twenty countries met in Bangkok on June 10-12, 1991 to explore the implications of the heating of the climate for further economic, social, and political development of the Asia-Pacific region. The climate heating, a consequence of the accumulation of heat-trapping gases in the atmosphere, will soon join the group of interlocking problems that already confront industrial countries in Asia with difficult choices for their future evolution. This phenomenon will present the developing countries of the region, already beset by problems of debt, local environmental degradation, and rapid population growth, with the added burden of preparing for a human-induced change in their climate while they are also joining the other countries of the region and the world in steps - perhaps troublesome steps - to slow the rate of this change.

The causes of the heating of the climate are recognized as being associated with the intensifying human use of fossil fuels and biotic resources. The combustion of lignite, coal, oil, and gas releases carbon dioxide and methane into the atmosphere. These gases absorb radiant heat and increase the temperature at which the lower atmosphere and the earth's surface reach equilibrium with solar radiation. Deforestation, which hastens the extinction of species and contributes to soil erosion, also stands accused of adding significantly to the further increase of heat-trapping gases in the atmosphere. The coastal regions of the oceans, which may serve as an important reservoir of carbon and hence a factor in determining the composition of the atmosphere, are today subject to influxes of silt, airborne and river-carried toxic chemicals, agricultural residues of pesticides and fertilizers, and physical assaults of coral mining and explosion fishing, all of which may change their atmospheric impacts.

The Conference participants reaffirmed the seriousness of these rapidly developing changes in the earth's biosphere and climate system. They proposed policies and activities to move the region towards a pattern of development designed for the long-term amelioration of these problems.

The science of climate change has been reviewed frequently in the last decade - most authoritatively by the Intergovernmental Panel on Climate Change (IPCC). The work of the IPCC represents the first intergovernmental assessment of the climate change issue, and it involved more than 1000 scientists and other experts from 70 countries as contributors and reviewers.

The Report of the IPCC, issued in August 1990, concludes that a heating of the climate is a well-understood consequence of an addition of heat trapping gases to the atmosphere. It goes on to discuss the rate of this heating. The Report estimates that if we continue the current patterns of emission of these gases, the earth's surface will soon experience a global average heating rate of 0.2C to 0.5C per decade, accompanied by a rise in sea level of 3 to 10 centimeters per decade. These numbers display a wide range of possible values, but the Conference participants noted that, throughout that range, the rates are faster than any experienced over extended periods by human civilizations, and that they are clearly unsustainable.

Biologists at the Conference warned that a warming of the earth's climate can be expected to speed the decay of large quantities of organic material held in forests and soils in the northern hemisphere - a process that may place additional carbon dioxide in the atmosphere and thereby accelerate the heating. This observation, joined with published warnings of sudden, significant responses of the earth system to climate heating, suggests that the impact of climatic change on society and the biosphere will be intensified by rapid and unpredicted shifts in the rate of heating and in the regional manifestations of climatic change.

The primary effects of the rapid heating of the climate on the human population will be the expansion and acceleration of a series of trends towards the degradation of living resources, including the reduction of agricultural productivity, the decreased viability of trees, and the reduction of the vitality and productivity of forests and fisheries. This systematic erosion of living systems includes the loss of species; a shift to hardy, small-bodied, rapidly reproducing species; and the loss of fertility of land and water. Such changes now claim large segments of once productive regions. The causes are numerous and include virtually any chronic disturbance, physical, chemical, or biotic. To the extent that species are lost and soils are eroded or rendered unproductive, the impoverishment is difficult to reverse. And to the extent that forests or other natural communities containing large stocks of carbon are destroyed, the changes will

speed the accumulation of carbon dioxide and methane in the air and accelerate both the heating and the spread of impoverishment globally.

The seriousness of this transition was emphasized by recognition that there is a continuing unsustainable transfer of land from forests into roads and cities, pasture and cropland, and degraded lands. The flow is especially large in the tropical region, where forests are currently under greatest pressure. The extent of accumulation of impoverished lands is commonly overlooked.

These trends emphasize the extent to which current human activities are reducing the capacity of the earth for supplying fundamental human needs. This issue has been elaborated in detail in the Brundtland Commission report, Our Common Future, which defined the now widely accepted objective of a shift to economic development that can be sustained and that can assure future generations of opportunities comparable to our own.

If our knowledge of climate processes were very great, it might be possible to decide on an optimum concentration of each heat-trapping gas for human purposes, and to devise policies to move toward those values. Lacking that degree of understanding of the weather and climate, we note that a prudent course of action is to stabilize the atmospheric composition promptly at whatever level we can in order to reduce the rate of any human-induced climate change.

The Second World Climate Conference (SWCC) (October/November 1990) attended by 747 scientific and technical experts from around 116 countries considered the Report of the IPCC as well as other information in the preparation of its Conference Statement. It pointed out that climate change has important implications for the sustainability of development, that policy responses, and the commitment of financial and other resources, are justified. The statement further pointed out that if the developing countries are to avoid the potentially disastrous course followed by industrialized countries in the past, they need to adopt environmentally sound technologies early in the process of development. Developing countries need not go through the evolutionary process of previous industrialization but rather, they must "leapfrog" directly from a status of underdevelopment through to economically efficient, environmentally benign, technologies.

The Ministerial Declaration of the Second World Climate Conference, endorsed by 137 countries, agreed that the ultimate global objective should be to stabilize greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with climate.

The principal alternative is solar energy, wind and other renewables like hydro power. The 21st century promises to be the century of solar energy. The earlier that transition takes place, the earlier the transition to the sustainable use of the biosphere and the earlier the possibility of effective and enduring economic development of the lower latitude nations. The transition offers many advantages, including rapid reductions in pollution, reductions in currently severe balance of payments problems, and opportunities for re-industrialization as well as the growth of new industries based on newly-efficient or low-energy technologies. The transition is seen as an opportunity rather than as a burden. But, realizing the opportunities will require substantial investments in new directions. Initiatives can come from the developing nations and must come early to avoid further investments in industrial ventures that cannot be continued.

The United Nations, in response to the challenge issued by governments through the IPCC and the SWCC, called for a global convention on climate change. The General Assembly adopted a resolution establishing the Intergovernmental Negotiating Committee, the task of which is to work on a framework convention on climate change for possible adoption at the United Nations Conference on Environment and Development (UNCED), 1992. The time therefore has come to work on what might be contained in such a convention and the roles that different countries in the world play in its adoption.

The United Nations General Assembly (UNGA) discussed this matter in December 1990 and adopted a resolution calling for negotiations on an effective framework convention on climate change which contains appropriate commitments and any related instruments that might be agreed upon on the basis of consensus to be signed in Rio de Janeiro during the UNCED, 1992. In addition the UNGA also

decided to entrust the negotiations to a newly created body, the Intergovernmental Negotiating Committee assisted by an ad-hoc secretariat located in Geneva.

The participants at the conference addressed the question of how best to ensure that questions of equity and developing countries viewpoints are addressed. One of the suggestions was to look at the experiences of regional networks among policy research institutes. The participants felt that there is a great potential for collaboration on climate change and sustainable development in the Asia-Pacific region. The analysis of many environmental issues related to sustainable development, including global warming, require regional if not global data, and yield policy implications of a similar scale.

While action on a global scale is being taken by international bodies, increased collaboration on a regional level would have unique advantages. Regional networks provide a more practical context for formulating policies since they can take greater account of the specific conditions and constraints faced by individual nations in the region. Drawing on the resources of policy research institutes provides access to a wealth of relevant information and expertise in interdisciplinary research. Pooling these resources in a collaborative regional framework would clearly enhance the institutions' capacities.

The participants also agreed that networks encourage the coordination and prioritization of regional issues, and can serve as vehicles for advocating regional strategies on sustainable development and global environmental issues. Ultimately, a regional consensus and strategy would strengthen the position of the region in the world forum. While many institutions currently are called upon by their national governments for policy analysis and recommendations, a regional consortium could help expand their influence beyond national boundaries. Consensus building itself is an area in which regional networks would have an advantage over global bodies, as the scale of negotiations would be more manageable and the countries involved would likely share a greater degree of common purpose.

The strengthening of existing networks and the establishment of new ones where needed as well as the formulation of regional strategies encourage greater understanding of issues and freer access to information which, in turn, will benefit national development policies.

Networks in the Asia Pacific region reflect a variety of organizational structures and issues of interest. Networks range from those designed to facilitate an exchange of information to those coordinating collaborative training and research. The experiences discussed by the participants made it clear that networks present a flexible and powerful mechanism for mutually beneficial collaboration in research related to sustainable development.

## RECOMMENDATIONS

To accomplish the objectives discussed above, the participants of the conference recommend the following actions to the preparatory committee of UNCED and the United Nations Intergovernmental Negotiating Committee for Framework Convention on Climate Change (INC/FCCC).

Both developed and developing nations must address the problem of global warming by devising and following an appropriate development path to a sustainable future. Industrialized nations, because of their greater resources and larger contribution of greenhouse gases, have the responsibility to take the lead in lowering their own emission rates, and in developing efficient and renewable technologies that they and the developing countries can utilize.

1. Sustainable development in accordance with the principles laid down by the Brundtland Commission must be the basis of national and international strategies to combat global warming. Each nation must interpret these principles in a way that is compatible with its own social, cultural and political traditions and its natural, economic and human capital resources. The principles include:

- \* Greater equity within and between countries, and across generations both in capital and trade flows;
- \* Popular participation in decision-making;
- \* Living off the interest and not drawing down the principal of the earth's ecological capital;

- \* Integrating economics and the environment in decision-making;
- \* Reducing the energy and raw material content of growth;
- \* Curbing population growth;
- \* Transferring non-polluting technology from North to South;
- \* Redefining national security to include environmental security.

2. Developing countries are at the beginning of their industrialization process. They can take advantage of the current state of technology and knowledge to avoid technologies that degrade the natural environment, cause local pollution problems and contribute greatly to global climate change, thereby avoiding the development path taken by the presently industrialized nations. Industrialized nations and international funding agencies have an obligation not to burden developing countries with obsolete, inefficient, polluting technologies, but to make available on favorable terms appropriate technology at competitive costs that will assist developing countries achieve their development goals while minimizing greenhouse gases and other pollutants. These steps will also insure that developing countries do not become trapped by an obsolete technological infrastructure.

3. To ensure that developing countries can afford those technologies that might initially be more costly, developed countries and international funding agencies must make additional funding available on a bilateral, regional and/or multilateral basis.

4. The transition to sustainable development will require a significant shift in current patterns of investment in energy, forestry, agriculture, industry, transportation and other sectors. The net \$ 50 billion annual transfers from the poor to the rich can and should be reversed. Beyond that, substantial additional resources will be needed to finance front-end costs of the transition. In the case of climate change, some preliminary studies suggest that funding of the order of \$ 20 - \$ 50 billion per annum will be needed to assist developing countries finance limitation and adaptation strategies. The Conference felt that this will require new mechanisms of financing.

5. It is essential that equitable allocation schemes and mechanisms for reducing the production of greenhouse gases be developed so that the needed technological and economic transition can be effected without undue burdens being placed upon those nations with the least financial and other resources. Within each country, attention must be given to assure equity among groups within the population with special attention given to the critical role played by women in economic development and environmental protection. This will require the empowerment of individuals and local communities, and an active role by NGOs and political leadership at the highest levels of government.

6. The potential effects of rapid climate change could increase tensions in many parts of the world by raising sea levels and shifting rainfall and other weather patterns. These effects could create environmental refugees and significant national disagreements over water and other resources. Global warming and the irreversible loss of renewable biological resources should therefore be considered crucial security issues.

7. It is an appalling fact that the greatest transfer of technology from the industrialized nations to the developing countries is military hardware. It is critical that expenditures for traditional military security be curtailed in order that financial resources become available for sustainable development. Industrial nations that produce weapons have an obligation to reduce their sale and distribution, and developing nations have an obligation to lower their appetite for weapons.

8. Since the energy sector is the major contributor of greenhouse gases, economic development plans should emphasize the efficient production and use of energy as an integral part of an overall energy strategy. In addition, all nations should utilize renewable energy supply technologies and cogeneration facilities for fossil fuels as they become commercially available. An additional portion of development assistance by international funding agencies should be directed toward assisting nations in discovering the most environmentally and economically effective combination of efficient supply side and end use expenditures.

9. The primary cause of the greenhouse problem is the consumption pattern of the rich industrialized countries. Any solution, therefore, must involve the reduction of their energy and resource consumption.

Until new technologies are developed, all efforts must be made at energy conservation and demand reduction through appropriate energy pricing.

10. Foreign debt is a major cause of resource depletion and forest degradation, because it forces countries to increase the rate of resource exploitation to earn the foreign exchange necessary to pay this debt. This, in turn, reduces the capital available for investment in new energy technologies. Debt reduction agreements linked to forest protection, reforestation, agricultural lands improvement and renewable and efficient energy investment should be developed. The Conference noted with appreciation the suggestion by the Philippine Government to free up substantial additional resources for sustainable development by "swapping" \$6 billion worth of external debt in exchange for a massive program to reforest six million hectares in the Philippines.

11. Since trees play such a critical role as sinks for carbon, and provide other benefits in terms of resources and biodiversity, they must be managed on the basis of principals of sustainability. The need for fresh agricultural land spurs deforestation. Government policies need to be changed so that there is an incentive to conserve forested land and restore degraded agricultural land. International funding agencies must provide adequate assistance to help nations address these major challenges.

12. The interdependence of the earth's economy and its environment demands that environmental consequences must be taken into consideration in economic decision-making processes. The accomplishment of such structural change requires the active participation and leadership of Heads of Government. The Conference therefore commends the General Assembly and the organizers of the Earth Summit for involving these leaders in the Conference and recommends that a high priority be given to providing similar, regular opportunities for these issues to be discussed at that level within the United Nations system.

13. The participants of the conference strongly endorsed the efforts of the INC/FCCC in developing a framework convention on climate change. They urge all nations to participate fully in the process, support a strong framework convention containing appropriate commitments and work toward the rapid development of specific protocols that will assist all nations in reducing their contributions to global warming.

14. Given the interconnections between stabilizing the composition of the greenhouse gases and a country's economic development, the world community and the developing countries in particular have an opportunity to address many of their environment and development concerns in the forum provided by the INC/FCCC. Such an opportunity as this is rare. All nations must take full advantage of it to promote a more just and favorable world order.

15. The participants noted that in the developing countries, there are too many issues and too few people adequately trained to address them. The scientific and policy research institutions in the Asia-Pacific region have a vital role in both identifying key issues and suggesting possible solutions both for the clarification of what needs to be done for the benefit of governmental representatives involved in the process and for keeping the public at large informed of the progress. To accomplish this, participants in the conference propose the establishment of a regional network of policy research institutions focusing on global warming and sustainable development. A parallel network of regional scientific institutions should also be established to investigate problems of global warming and interact with the policy institutions.

16. A review of networking in the region on several allied topics suggests that for a network to be successful it should at a minimum: focus on a well-defined area; establish a simple organization; identify start-up activities; maintain a long-term view.

17. Plans being made for national and global networks by the World Meteorological Organization, the World Climate Programme and the United Nations Environment Programme should be taken into consideration in the establishment of regional networks.



# PROGRAMME

**June 10, 1991**

## **Session 1: The Ceremonial Session**

- Welcome Speeches:** Dr. Ammar Siamwalla, President, Thailand Development Research Institute, Bangkok, Thailand  
Dr. Jim MacNeill, Senior Fellow, Institute for Research on Public Policy, Ottawa, Canada  
Dr. George M. Woodwell, Director, The Woods Hole Research Center, Massachusetts, U.S.A.
- Inaugural Address:** Dr. Sanga Sabhasri, Minister of Science, Technology and Energy, Thailand.
- Keynote Speeches:** Dr. Saburo Kawai, Chairman, International Development Centre, Yokohama, Japan  
Dr. Joseph C. Wheeler, Director for Programme Integration, United Nations Conference on Environment and Development, 1992, Geneva, Switzerland

## **Session 2: The Basis for Concern: Scientific Considerations**

- Chairman:** Dr. George M. Woodwell, Director, The Woods Hole Research Center, Massachusetts, U.S.A.
- Panelists:** Dr. John Firor, Advanced Study Program, National Center for Atmospheric Research, Colorado, U.S.A.  
Dr. Tom Wigley, Climatic Research Unit, University of East Anglia, U.K.  
Dr. Graeme Pearman, C.S.I.R.O., Division of Atmospheric Research, Australia  
Dr. Fred MacKenzie, Department of Oceanography, University of Hawaii at Honolulu, U.S.A.  
Dr. Richard A. Houghton, The Woods Hole Research Center, Massachusetts, U.S.A.  
Dr. Howard Ferguson, Co-ordinator, Second World Climate Conference, Geneva, Switzerland.  
Dr. William Moomaw, Center for Environmental Management, Tufts University, Medford, Massachusetts, U.S.A.

## **Session 3, Part 1: Socio-economic, and international policy responses**

- Chairman:** Dr. Jim MacNeill, Senior Fellow, Institute for Research on Public Policy, Canada
- Panelists:** Dr. M. S. Kismadi, Assistant Minister of State for Population and Environment, Indonesia  
Dr. Gregorio Magdaraog, Assistant Secretary for Field Operations, Department of Environment and Natural Resources, Philippines.  
Dr. Kirit Parikh, Director, Indira Gandhi Institute of Development Research, Bombay, India.

**June 11, 1991**

## **Session 3, Part 2: Socio-economic, and international policy responses**

- Chairman:** Dr. Jim MacNeill, Senior Fellow, Institute for Research on Public Policy, Canada
- Panelists:** Dr. David Runnalls, Director, Environment Programme, Institute for Research on Public Policy, Canada.  
Dr. Toufiq Siddiqi, Research Associate, Environment and Policy Institute, East-West Center, Hawaii, U.S.A.



Dr. Stephen C. Loneragan, Director, Center for Sustainable Regional Development,  
University of Victoria, British Columbia, Canada.  
Dr. Ola Ullsten, Ambassador of Sweden to Italy and Chairman, Tropical Forestry Action  
Plan Independent Review Team.  
Dr. Obaidullah Khan, Regional Representative, Food and Agriculture Organization,  
United Nations.  
Dr. Kilaparti Ramakrishna, Senior Associate, The Woods Hole Research Center,  
Massachusetts, U.S.A.

**Session 4: Collaborative Regional Program of Policy Research on Environment**

**Chairman:** Dr. Dhira Phantumvanit, Director, Thailand Development Research Institute, Bangkok,  
Thailand

**Panelists:** Dr. Tho Yow Pong, PECC Task Force on Tropical Forest Cooperation, Malaysia.  
Dr. Zin Oh Kim, Asian and Pacific Development Centre, Kuala Lumpur, Malaysia.  
Dr. Dick Cirillo, Argonne National Laboratories, USA.  
Dr. Wang Yuzhao, Vice-President, Development Research Center, People's Republic of  
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Dr. Ponciano Intal, Director, Philippine Institute for Development Studies, Philippines.  
Dr. Rozali Mohamad Ali, Assistant Director-General, ISIS, Malaysia.  
Dr. Richard Carpenter, Environment and Policy Institute, East-West Center, USA.  
Dr. Phil Noyce, Director, Greenhouse Action Australia, Australia.

**June 12, 1991**

**Session 4, Part 2: Collaborative Regional Program of  
Policy Research on Implications of Global Warming**

**Chairman:** Dr. Dhira Phantumvanit, Director, Thailand Development Research Institute, Bangkok,  
Thailand

**Panelists:** Dr. Morita Tsuneyuki, Center for Global Environmental Research, Japan  
Dr. Kenneth T. Mackay, Director General, International Center for Living Aquatic  
Resource Management, Manila, Philippines.  
Dr. Jayant Sathaye, Lawrence Berkeley Laboratory, USA  
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**Final Plenary: Conference Statement**

**Chairman:** Dr. Ammar Siamwalla, President, Thailand Development Research Institute, Bangkok,  
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**Co-Chairman:** Dr. George M. Woodwell, Director, The Woods Hole Research Center, Massachusetts,  
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Presentation of Draft Statement

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