

---

# CLIMATE CHANGE

---

The IPCC Response Strategies



---

# CLIMATE CHANGE

---

The IPCC Response Strategies

---



*World Meteorological Organization/United Nations Environment Program*

INTERGOVERNMENTAL PANEL  
ON CLIMATE CHANGE



---

## *Note to the Reader*

---

The report of the Response Strategies Working Group (RSWG) was compiled through an unprecedented international cooperative effort to deal with the many climate change response strategies. The chairs of the four RSWG subgroups and the coordinators of the five RSWG topic areas took the responsibility for completing their individual reports. Along with their respective governments, they contributed generously of their time and resources to that end.

It was not possible or intended to review each subgroup report and topic paper in plenary session. The RSWG report thus constitutes a series of independently prepared underlying documents which attempt to analyze as thoroughly as possible the issues addressed in each subgroup or topic area. The synthesis of the concepts from these underlying reports is the RSWG Policymakers Summary, on which consensus was reached at the RSWG's Third Plenary Session in Geneva on June 9, 1990.

—F. M. B.



---

The Intergovernmental Panel on Climate Change (IPCC) was jointly established by us in 1988. Prof. B. Bolin is the Chairman of the Panel. The Panel's charge was to:

- a) assess the scientific information that is related to the various components of the climate change issue, such as emissions of major greenhouse gases and modification of the Earth's radiation balance resulting therefrom, and that is needed to enable the environmental and socio-economic consequences of climate change to be evaluated; and
- b) formulate realistic response strategies for the management of the climate change issue.

The Panel began its task by establishing its Working Groups I, II, and III respectively to:

- a) assess available scientific information on climate change;
- b) assess the environmental and socio-economic impacts of climate change; and
- c) formulate response strategies.

The Panel also established a Special Committee on the Participation of Developing Countries to promote, as quickly as possible, the full participation of the developing countries in its activities.

The Panel has completed its First Assessment Report (FAR). The FAR consists of

- the Overview;
- the policymakers summaries of the IPCC Working Groups and the Special Committee;
- the reports of the IPCC Working Groups.

The Overview and the policymakers summaries are to be found in a single volume. The reports of the Working Groups are being published individually.

The present volume is based upon the findings of Working Group III. In order to appreciate the linkages among the various aspects of the climate change issue, it is recommended that it be read in the context of the full IPCC First Assessment Report.

The Chairman of Working Group III, Dr. F. M. Bernthal, and his Secretariat have succeeded beyond measure in mobilizing the cooperation and enthusiasm of literally hundreds of experts from all over the world. They have produced a volume of remarkable depth and breadth and a policymakers summary that is a model of writing aiming at explaining complex issues to the non-specialist.

We take this opportunity to congratulate and thank Dr. Bernthal for a job well done.

G. O. P. OBASI  
Secretary-General, WMO

M. K. TOLBA  
Executive Director, UNEP

---





---

## OFFICERS OF WORKING GROUP III

### CHAIRMAN:

F. Bernthal (U.S.A.)

### CO-CHAIRS:

E. Dowdeswell (Canada)

J. Luo (China)

D. Attard (Malta)

P. Vellinga (Netherlands)

R. Karimanzira (Zimbabwe)

---

## LEAD CONTRIBUTORS

### RSWG SUBGROUP CO-CHAIRS

#### ENERGY AND INDUSTRY:

K. Yokobori (Japan)

Shao-Xiong Xie (China)

#### COASTAL ZONE MANAGEMENT:

J. Gilbert (New Zealand)

P. Vellinga (Netherlands)

#### AGRICULTURE, FORESTRY, AND OTHER HUMAN ACTIVITIES:

D. Kupfer (Germany, Fed. Rep.)

R. Karimanzira (Zimbabwe)

#### RESOURCE USE AND MANAGEMENT:

R. Pentland (Canada)

J. Theys (France)

I. Abrol (India)

### TASK A (EMISSIONS SCENARIOS) COORDINATORS

D. Tirpak (U.S.A.)

P. Vellinga (Netherlands)

### TASK B (IMPLEMENTATION MECHANISMS) COORDINATORS

#### PUBLIC EDUCATION AND INFORMATION:

G. Evans (U.S.A.)

Ji-Bin Luo (China)

#### FINANCIAL MEASURES:

J. Oppenau (France)

P. Vellinga (Netherlands)

A. Ibrahim (Egypt)

#### TECHNOLOGY DEVELOPMENT AND TRANSFER:

K. Madhava Sarma (India)

K. Haraguchi (Japan)

#### LEGAL AND INSTITUTIONAL MECHANISMS:

R. Rochon (Canada)

D. Attard (Malta)

R. Beetham (U.K.)

#### ECONOMIC (MARKET) MEASURES:

J. Tilley (Australia)

J. Gilbert (New Zealand)

---



---

## *Acknowledgments*

---

The work of the Response Strategies Working Group was organized and coordinated by a network of officers from all over the world. I take this opportunity to thank the RSWG Vice-Chairs for their dedication in ensuring that Working Group III was able to fulfill the mission assigned to it. Special credit should go to the co-chairs of the four RSWG subgroups and the coordinators of Task A (emissions scenarios) and Task B (implementation measures), who guided the efforts of the hundreds of experts in scores of countries around the world who contributed to the preparation of the specific sections of this report.

In addition, I would like to express my gratitude to the staff of the Office of Global Change in the U.S. Department of State, (Daniel Reifsnyder, Frances Li, Stephanie Kinney, Robert Ford, and Granville Sewell), for their support as Secretariat to the RSWG. Special thanks are due the staff of the U.S. National Science Foundation who, under the supervision of Dr. Li and Dr. Beverly Fleisher, oversaw the publication of this entire compendium. Finally, the Response Strategies Working Group owes an enormous debt of gratitude to IPCC Chairman, Prof. Bert Bolin, for his guidance and counsel, and to the IPCC Secretariat, Dr. N. Sundararaman and his staff.

—FREDERICK M. BERNTHAL



---

# *Contents*

## *Climate Change*

### *The IPCC Response Strategies*

---

I	POLICYMAKERS SUMMARY	xix
II	IPCC RESPONSE STRATEGIES WORKING GROUP REPORTS	1
	1 Introduction	5
	2 Emissions Scenarios	9
	<b>Subgroup Reports</b>	
	3 Energy and Industry	45
	4 Agriculture, Forestry, and Other Human Activities	73
	5 Coastal Zone Management	129
	6 Resource Use and Management	161
	<b>Implementation Measures</b>	
	7 Public Education and Information	209
	8 Technology Development and Transfer	219
	9 Economic (Market) Measures	229
	10 Financial Mechanisms	245
	11 Legal and Institutional Mechanisms	257
	List of Acronyms and Chemical Symbols	269

