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0521008883 - Primer on Climate Change and Sustainable Development: Facts, Policy Analysis, and Applications

Mohan Munasinghe and Rob Swart

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Primer on Climate Change and Sustainable Development

Facts, Policy Analysis, and Applications

Climate change and variability have become the primary environmental concern of the twenty-first century; the potential impacts and mitigation of climate change need to be analysed within the context of sustainable development. How does climate change affect sustainable development prospects? How can climate change response measures best be incorporated into broader development strategies?

This *Primer on Climate Change and Sustainable Development* gives an up-to-date, comprehensive and accessible overview of the links between climate change and sustainable development. Building on the main findings of the last series of Intergovernmental Panel on Climate Change (IPCC) assessment reports, in which both authors were involved, the book summarizes the latest research linking the two. Our current knowledge of the basic science of climate change is described, before moving on to future scenarios of development within the context of climate change. The authors identify opportunities for synergies and resolving potential trade-offs. Discussing theory, policy analysis and applications, they analyse effective implementation of climate policy at scales ranging from the global to the local. The book contains a foreword from the chair of the IPCC.

The book will be compulsory reading for those policy-makers, scientists, students and engaged citizens around the world who have an interest in any aspect of climate change and sustainable development.

Professor MOHAN MUNASINGHE has postgraduate degrees in engineering, physics, and development economics, from Cambridge University, the Massachusetts Institute of Technology, McGill University, and Concordia University. Presently, he is chairman of the Munasinghe Institute for Development (MIND), Colombo; vice-chair of the IPCC, Geneva; visiting professor at Yale University, USA; and honorary chief energy advisor to the Government of Sri Lanka, Colombo. From 1974 to 2002, he worked for the World Bank, Washington DC, in various positions, including director and senior advisor.

From 1982 to 1987, he was the senior energy advisor to the president of Sri Lanka. From 1990 to 1992, he served as advisor to the United States President's Council on Environmental Quality. He has implemented international development projects for three decades, and contributed to IPCC work for 15 years. He has won a number of international awards and medals for his research, authored over eighty books and several hundred technical papers, and serves on the editorial boards of a dozen international journals.

Doctor ROB SWART was trained as an environmental engineer at Delft Technological University and received his Ph.D. on the risks of climate change from Amsterdam Free University. He has held various positions at The Netherlands National Institute for Public Health and Environment (RIVM) since 1980, and also spent time working for the World Health Organization and the US Environmental Protection Agency. He has also worked on projects in the area of global change and sustainability for the Stockholm Environment Institute, the Organization of Economic Development (OECD) and the United Nations Environment Programme (UNEP). He was head of the Technical Support Unit of Working Group III of the International IPCC, and co-editor of the IPCC's *Climate change 2001: mitigation. Contribution of Working Group III to the Third Assessment Report*, Cambridge University Press, 2001) and the IPCC's *Emissions scenarios: A Special Report of the IPCC Working Group III* (Cambridge University Press, 2000). Currently, he is manager of the European Topic Centre on Air and Climate Change of the European Environment Agency.

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Foreword

It is becoming increasingly clear that the problem of climate change cannot be viewed in a narrow and limited context. Scientifically, it is now established that, irrespective of what the world does to reduce emissions of greenhouse gases in the immediate future, the concentration of these gases (and particularly of carbon dioxide) would remain high for a long period of time, thereby making future climate change inevitable. Hence, whatever the human race does to reduce emissions of greenhouse gases, the world is committed to continuing climate change for several decades, and possibly for centuries.

The work of the Intergovernmental Panel on Climate Change (IPCC) has highlighted both the scientific evidence for climate change, and the twin challenges it poses for humanity. Firstly, we must display our responsibility to all living beings and the delicate ecosystems that nature has kept in balance for aeons. Secondly, we need to ensure that future generations are able to survive without undue hardship and intolerable risk. Our development path has to ensure minimal interference with the world's climate system and adequate adaptation to the change that is inevitable.

This book is co-authored by Professor Mohan Munasinghe, vice-chair of the IPCC, who is recognized as a leading international expert in assessing the nexus between climate change and sustainable development, and Dr Rob Swart, former head of the IPCC Working Group 3 Technical Support Unit, and a very knowledgeable and accomplished researcher. The book fills an important vacuum on a subject that the world cannot ignore any longer. It is essential that we make development truly sustainable such that climate change remains within acceptable limits.

The volume is written in a simple and lucid style, providing an in-depth analysis of the impacts of climate change on the poor, including the worsening of existing income inequalities. It also applies the powerful new sustainomics framework, unveiled by Professor Munasinghe at the 1992 Earth Summit in Rio, to analyse and explain the imperative of making existing development patterns more sustainable.

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Important elements of such a strategy include the mitigation of greenhouse gas emissions, and adaptation to minimize future climate change impacts. All in all, this is a book that, if read carefully, truly can make a difference. For this, the authors deserve acclaim. Furthermore, the human race deserves a second chance to set a course that would not pose a danger to all forms of life on the planet. This book will help a wide range of stakeholders, including decision-makers, policy analysts, researchers, students, practitioners and the informed public, to seize the moment for that second chance.

RAJENDRA PACHAURI
Chairman, Intergovernmental Panel on Climate Change, Geneva
and director-general, The Energy and Resources Institute, Delhi

January 2004

Preface

The genesis of this book may be traced to the work of the Intergovernmental Panel on Climate Change (IPCC), and several decades of our own independent experiences in the climate and development fields. We have both been involved in the work of the IPCC since the beginning, and continue to have confidence in the comprehensiveness, high quality and neutrality of its assessments.

However, we have found also that the sheer volume and number of the reports, as well as the overly technical language, make them less attractive to non-scientists, including key decision-makers, students and other interested audiences around the world, especially in the developing countries. Thus, one important motivation behind the writing of this book is our belief that a more concise, less technical, but nevertheless comprehensive and rigorous account of the findings of the IPCC, as well as more recent developments, will be attractive to an even wider audience.

Another objective of this book is to strengthen the growing conviction that climate change and broader sustainable development issues cannot be treated in isolation. Indeed, policies to address both topics will be mutually beneficial, to the extent that they are formulated and implemented within a common and consistent framework, along the lines that we present in this volume.

We hope that our efforts will help policy-makers, researchers, students and the concerned public to become more aware of the salient issues arising from the nexus of climate and development. While we draw heavily on IPCC work, the responsibility for the selection of issues from its reports and their interpretation rests solely with us. Our ideas do not necessarily represent the views of the IPCC or the institutions to which we are affiliated.

This book could not have been written without the basic groundwork laid by leading colleagues and researchers from around the world. We are grateful particularly for the commitment shown by thousands of experts who

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contributed voluntarily to the IPCC assessment reports, as well as various national and international research programmes in the areas of global change and sustainable development.

The list of specific persons who have provided us both with ideas and encouragement is too long to mention here. Nevertheless, we would like to express our gratitude to members of the IPCC bureau who have guided the development of the IPCC reports over recent years, especially those individuals who inspired and supported our goals of bringing climate change and sustainability together. Thanks are also owed to Yvani Deraniyagala and Nishanthi de Silva of the Munasinghe Institute for Development, who helped to prepare the draft manuscript. Support received from the government of the Netherlands, RIVM, Netherlands and MIND, Sri Lanka, is gratefully acknowledged.