

## FOREWORD

The agricultural sector is closely linked to climate change, both through its impacts on the process as well as through the potential effects of climatic change on agricultural production. There is still considerable uncertainty surrounding the implications of climate change for agricultural production and the most effective ways to mitigate undesirable impacts. The two studies included in this publication deal with issues related to major sources of uncertainty surrounding the relationship between agricultural production and climate change.

The first study, by Robert Mendelsohn, addresses the impact of climate on agriculture. It provides an analysis of the various methodologies that have been employed in the attempt to measure the potential impacts of climate change on agricultural production. The paper describes the strengths and weaknesses of the models which have been used to predict climate change impacts on agriculture, particularly in the context of developing countries. The results of each model are reviewed and quantitative assessments of the impacts are given for different assumptions on global temperature increases and on the sensitivity of the agricultural sector to climate change, including its capacity to adapt to changing circumstances. The paper concludes with recommendations for future modelling work directed towards the impacts of climate change on developing country agriculture.

In the second study, by Dirgha Tiwari, the impact of agriculture on climate is the subject. A detailed analysis is made of the potential of, and policy requirements for, the implementation of the Clean Development Mechanism proposed under the Kyoto Protocol Convention on Climate Change, in the agricultural sector of developing countries. The CDM could potentially result in a major decrease in greenhouse gas emissions through the promotion of carbon trading credits between industrialized and developing countries. However there remain several outstanding issues in the negotiations establishing the CDM, including the need for an assessment of the potential which exists in developing countries for carbon sequestration, the extent to which carbon trading markets will benefit the developing countries while contributing to the goal of sustainable agricultural development, and the type of policy regime which is necessary for successful implementation in developing countries. These issues are addressed in detail in this paper. It presents estimates of the current and future potential of the agricultural sector to sequester carbon under varying scenarios, analyses of the links between the Kyoto Protocol and other UN Conventions, and the policies which could promote the development of the CDM in developing countries. The paper concludes with remarks on the role an international agency like FAO can play in the implementation of the CDM and how this is tied to the implementation of Agenda 21.

I am pleased to present the readers with these two contributions to a debate of paramount importance to the overall issue of sustainability and development. Clearly, it is a debate still fraught with considerable controversy, as well as gaps in knowledge and analysis of policy and institutional adjustments.

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**ABBREVIATIONS USED**

AJI	Activities Jointly Implemented
C	Carbon
CDM	Clean Development Mechanism
CERs	Certified Emission Reduction (units)
COP	Conference of Parties
CT	Conservation tillage
ECOSOC	Economic and Social Council of the United Nations
FAO	Food and Agriculture Organization of the United Nations
GAEZ	Global Agro-ecological Zones
GHG	Green House Gases
IIASA	International Institute for Applied Systems Analysis
IISD	International Institute for Sustainable Development
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
KP	Kyoto Protocol
LUCF	Land Use Change and Forestry
M tons	Million tons
NASA	National Aeronautical Space Agency of the United States
ppmv	parts per million by volume
SARD	Sustainable Agriculture and Rural Development
SOC	Soil Organic Carbon
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNFCC	United Nations Framework on Climate Change