

CLIMATE CHANGE AND FOOD SYSTEMS RESILIENCE IN SUB-SAHARAN AFRICA

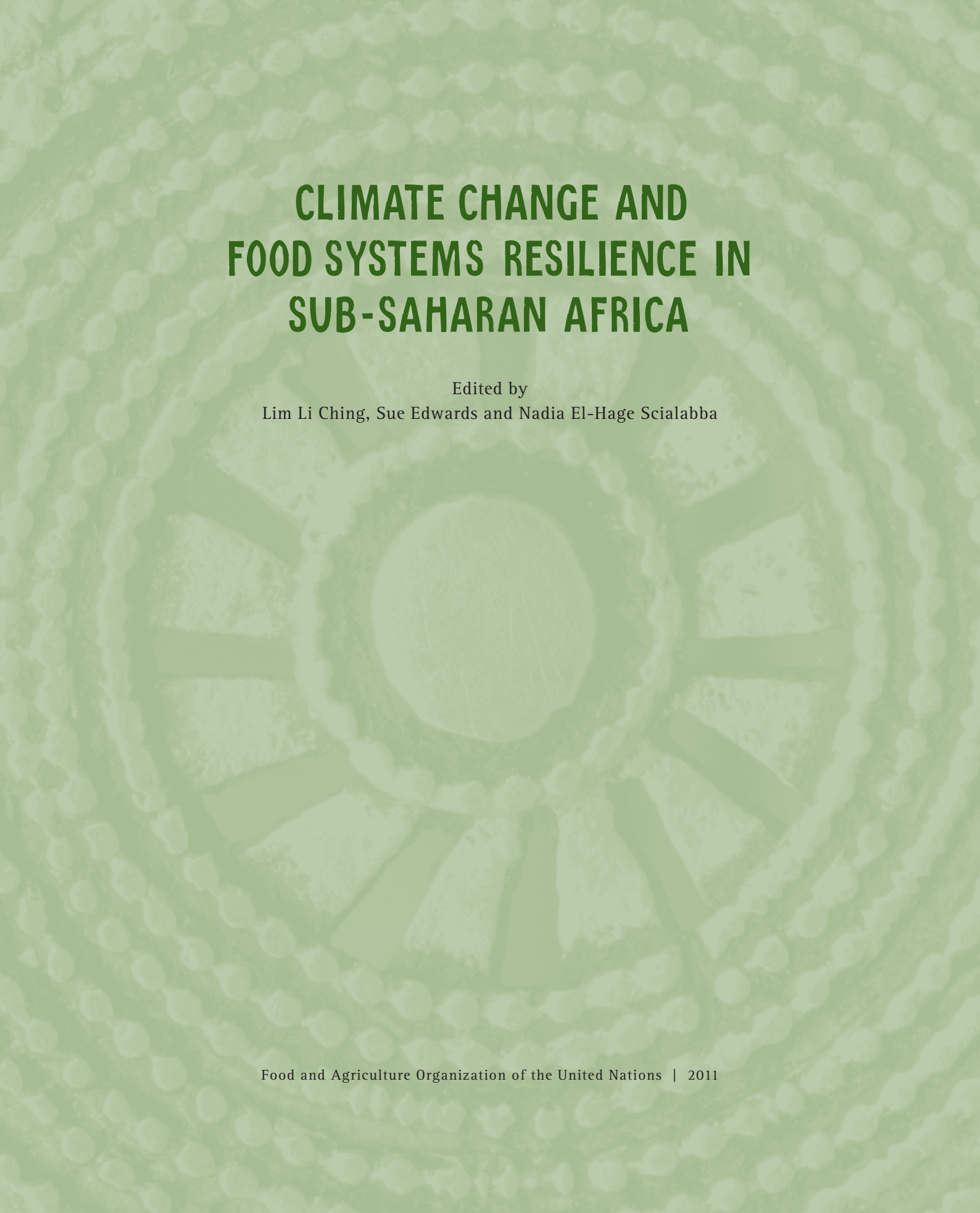


Institute for Sustainable Development



Third World Network





CLIMATE CHANGE AND FOOD SYSTEMS RESILIENCE IN SUB-SAHARAN AFRICA

Edited by
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PREFACE

This volume is published at a critical juncture in the history of human impact on the biosphere – a history we can trace back some 10 000 years – to the era of the agricultural revolution. Now, in retrospect, we see a revolution that was indeed slow and by today’s definition, hardly a revolution. Nevertheless, it was fast enough to feed a growing population and see it through several food crises. But it also was a time during which the rate of species extinction rose dramatically and changed the natural environment. This loss of the genetic wealth of our biosphere was slightly compensated by the agricultural biodiversity that humans ingeniously developed in their fields which ultimately spread and evolved into components of our diverse agricultural ecosystems.

Only lately, just two or three centuries ago, came the more fast-paced industrial revolution and its machines that took on many of humanity’s tasks – machines powered by an ever-increasing burning of fossil fuels. As a consequence of this fuel-driven power, the greenhouse gas content of the atmosphere increased as did the temperature of the biosphere.

The fast rate of changing environmental conditions, namely temperature and rainwater levels and variability, could no longer be matched by species adaptation.

The industrial revolution also led to mass production, because of the ease with which the new machines could spew out identical copies of tools and furniture and cars, more efficiently and cheaply than handmade versions. In following decades, this acceptance of homogeneity spread from factories into fields. Agriculture's focus shifted to commercial crop varieties with their improved output, at the loss of those "handmade" or indigenous varieties adapted to unique environments and resistant to pests and diseases. The result: erosion of agricultural biodiversity which, in turn, has weakened the ability of agro-ecosystems to adapt to climate change and increased weather variability.

There is absolutely no doubt that there is need to increase global food production to meet the demand of a growing population. However, the critical issue in increasing production is recognizing the need to support, rather than disrupt, the nutrient and energy dynamics and the biodiversity of agricultural systems and of ecosystem services as a whole. These dynamics and this diversity must be used to maximize the efficiency of energy use and nutrient cycling in both agricultural and non-agricultural systems. Today, due to climate change and volatile fossil fuel prices, the over-simplified solution of replacing lost nutrients with agrochemicals that are themselves derived from fossil fuels is no longer viable.

The need to create resilient and productive agro-ecosystems can be met by starting with biomass-rich soils, which have the potential to sequester carbon. But that is just part of the story. The biomass also improves soil structure which means better moisture-holding capacity, nutrient retention and, ultimately, reduced vulnerability to water and wind erosion. In addition, the soil's improved capacity to retain nutrients and water has a direct positive

effect on crops and other produce, and the coverage offered by rigorous vegetation reduces wind erosion. In the big picture, healthy agro-ecosystems mean improved environmental well being as well as increased yields.

This volume, *Climate Change and Food Systems Resilience in Sub-Saharan Africa*, demonstrates the possibility of harmonizing agricultural production with the wellbeing of the biosphere – and that this can be achieved in Africa, our biosphere’s least developed continent, and the continent which is likely to suffer most from climate change.

The work presented in this volume stems from a Conference on Ecological Agriculture held in Ethiopia in 2008. Through the discussions held during this Conference and field visits to Tigray, a region struck by hunger in the eighties and largely food secure today, participants shared insights on Africa’s potential for intensifying its agriculture through a better use of natural resources and ecosystem services. This volume represents the collective knowledge and subsequent writings of this Conference’ participants.

The different chapters capitalize on assessments and experiences such as: lessons learned from Asia’s Green Revolution on agricultural communities; trends in African agricultural knowledge, science and technology; trade policy impacts on food production; conditions for success of water interventions for the African rural poor; and climate change implications for agriculture and food systems. Case studies share the practical experiences, lessons and successes from across Africa, demonstrating that it is possible to produce food sufficiently and at the same time, care for the biosphere. The chapters documenting Tigray’s experience in rehabilitating watersheds for local food security show us how social and environmental goods and services go hand in hand.

The chapters on organic agriculture and fair trade in West Africa and Uganda demonstrate that the impacts on food security and trade need not to be negative. The chapters depicting smallholder practices for making compost and maintaining local seed supplies under low-input conditions offer guidance to communities seeking resilience.

In short, this book offers hope – hope that we can continue to produce – enough nutritious food to enable us, our children and our grandchildren to live healthy lives and that our biosphere can exist in harmony with the life that it has generated.



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This book was edited by Lim Li Ching, Third Work Network (Malaysia), Sue Edwards, Institute for Sustainable Development (Ethiopia) and Nadia El-Hage Scialabba, FAO (Italy). The editors wish to thank all authors who have contributed to this volume, as well as the Swedish International Development Cooperation Agency (SIDA) for its generous financial support.

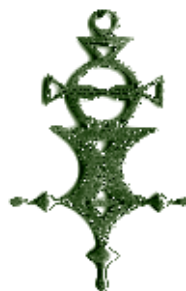
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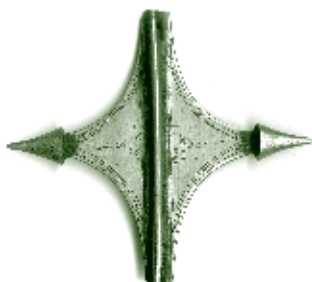
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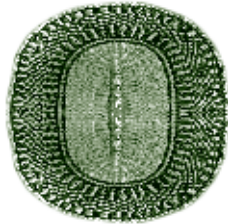
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