Book Review

ARIEL DINAR and ROBERT MENDELSOHN (eds.) (2011): **Handbook On Climate Change And Agriculture.** Edward Elgar, Cheltenham, UK; 544 pages; ISBN-978-1-84980-116-4; £40

Climate change is currently one of the most prominent topics in agricultural research. This is due to the fact that agriculture is intimately linked to climate and thus one of the most vulnerable economic sectors to changes in climatic conditions. Furthermore, the agricultural sector holds an important share of greenhouse gas emissions and can thus contribute to mitigate climate change. Analyses of climate change impacts, adaptation and mitigation are highly relevant to improve our knowledge with regard to changes in food production and land use as well as to support policy making. In the last two decades, an enormous amount of publications has appeared in this research field. In fact, leading (applied) climate science journals such as Climatic Change list agriculture explicitly in their aims and scope, and journals in the agricultural research domain (e.g. Agricultural Systems, The Journal of Agricultural Science) devote particular attention for climate change related investigations. The topic climate change and agriculture has also led to numerous publications in the highest ranked journals such as Nature, Science and the American Economic Review. Along these lines, there have been several attempts to integrate different research domains in the field, summarize research methods as well as to integrate results from different scales and different agricultural systems. One of the very successful attempts is provided by Ariel Dinar and Robert Mendelsohn with their Handbook on Climate Change and Agriculture.

The book contains 20 chapters of various authors as well as introductory and concluding chapters provided by the editors. The book covers 5 main parts: I) Agronomic Studies of Climate Impacts and Adaptation, II) Economic Studies of Climate Impacts on Agriculture, III) Agricultural Impacts on the Economy, IV) Agricultural Mitigation and V) Adaptation to Agricultural Impacts.

The first part of the book provides a wide range of scientific background information on the relationship of climate, climate extremes and different agricultural systems. Furthermore, Iglesias et al. (ch. 4) develop an overview and review of current literature on different approaches to model impacts of climate change on agriculture, covering process-based models, production functions, as well as Ricardian and macroeconomic models. These first chapters thus form a very consistent base for the subsequent parts of the book.

Parts II and III contain studies on the impacts of climate change, which focus on potential implications for farmers' income, regional GDPs, farmland values and food supply. These studies address different scales ranging from farm-level investigations (e.g. Peck and Adams, ch. 6) to large-scale impact analyses that comprise several countries (Calzadilla et al., ch. 9). The models used to assess impacts of climate change comprise programming and Ricardian models (e.g. Massetti and Mendelsohn, ch. 8) as well as integrated assessment approaches that combine different models (e.g. Leimbach et al., ch. 10).

After briefly discussing aspects of mitigation in part IV, eight chapters in part V of the book address the adaptation to climate change. Aisabokhae et al. (ch. 14) set the stage for this subject by reviewing and structuring adaptation measures. The remaining chapters deal with specific case studies on adaptation and focus on aspects of technology adoption (e.g. Fleischer and Kurukulasuriya, ch. 16), insurances (Garrido et al., ch. 19) as well as agricultural water use and resource allocation (e.g. Medellin-Azuara et al., ch. 15).

Besides providing a wide range of in-depth case studies, the book offers concise reviews of the recent literature on all main topics covered. The book is thus is a very valuable source for researchers to get overviews on a wide range of aspects of climate change and agriculture. The topics climate change impacts, adaptation and mitigation have a considerable overlap, which is also reflected in the different chapters included in the book. Due to this fact, the structure of the book at large can be slightly confusing for the reader.

The content of the book perfectly reflects the current developments in the research field. For instance,

it does not only focus on climate change and crop production system, but also addresses potential impacts and adaptation in livestock as well as mixed crop-livestock production systems (e.g. Mader and Gaughan, ch. 3; Thornton et al., ch. 18; Seo, ch. 20). Furthermore, special attention is given to the role of climatic extreme events such as droughts and heat waves (e.g. Hayes et al., ch. 5; Deschenes and Greenstone, ch. 7).

The geographical focus of the presented case studies is mainly the US and Africa. Questions of climate change and agriculture in these regions are also subject of earlier books edited by ARIEL DINAR and ROBERT MENDELSOHN (e.g. DINAR et al., 2007; MENDELSOHN, 2001). Readers interested in aspects of climate change impacts and adaptation with respect to European agriculture find recent overviews of the literature, for instance, in BINDI and OLESEN (2011).

References

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