



**Call for abstracts for upcoming book on  
'Global food security, climate change and agricultural responses;  
economics in integrated assessment approaches'**

**Rationale for the book**

Agricultural development, climate change and food security interact in complex ways. The effects of climate change on food production are evident in several regions of the world. Climate change will induce regional shifts of crop production and benefits may appear in some high latitude regions. The recent IPCC WGII report on food security and food production systems indicate the sensitivity of current markets to climate extremes. The same report also highlights that all dimensions of food security (access, supply and utilization of food) are potentially affected by climate change. Benefits could be reached through adaptation or mitigation strategies in agriculture.

The need to secure global food supplies and the efforts to strengthen the adaptive and mitigative capacity of farming are two major challenges driving agricultural development in the coming decades. There are potential win-win measures for mitigation that could actually reduce costs and emissions. European agriculture, for example, seeks for opportunities implementing climate smart agriculture, to balance mitigation/adaptation strategies, while maintaining productivity in agriculture.

A main challenge for scientists is to provide decision makers, among them farmers, stakeholders in the food supply chain and policy makers with the information they need to base their decisions on. For scientists it is hard to find appropriate methods of generalization (e.g. through aggregation) of outputs of models at different spatial scales, starting at farm

level and up until continental and global scales. The use of adequate approaches at various spatial levels will require an appropriate integration of different models that exist. International initiatives have been implemented to compare and improve the modelling capacity in the field of economics, crop and animal sciences. AgMIP (the Agricultural Model Intercomparison and Improvement Project) ([www.agmip.org](http://www.agmip.org)) has initiated work towards regional and global assessments, including inter-comparisons and improvements of agricultural models at different scales. The Knowledge Hub FACCE MACSUR (Modelling European Agriculture with Climate Change for Food Security) ([www.macsur.eu](http://www.macsur.eu)) brings together the excellence of research in Europe in crop, livestock and economic modelling.

Economic mechanisms are key drivers for agricultural development at every level (farm, sectoral, regional, European and global) while international trade is a main component. Advancements are made through modelling supply and demand at regional and sectoral level with economic, crop and livestock models. Apart from the complexity of linking models of various disciplines, issues of scaling and aggregation are considerable challenges. In order to enhance the validity of model results, good practices remain to be defined for down-scaling (e.g. global trends to be implemented into regional and farm level models) and up-scaling (e.g. up-scaling of sectoral models towards European and global levels). For this, knowledge gaps and the matches of supply and demand need to be examined. A comparative analysis is needed at regional level to identify cost advantages between regions and crop/livestock sectors, regarding labor and land, to meet cost effective measures within the agriculture sector. A question of particular interest is how to develop scenarios that will be relevant for decision makers in agriculture, the food chain and policy and which are consistent with the global-scale development of shared socio-economic pathways (SSPs).

### **The book**

The book will target at integrated assessment approaches addressing global challenges (climate change and food security) with regional and local responses (farmers and policy). Focus is on economics, complemented with input from crop and/or animal sciences. We envisage contributions from Europe, but other parts of the world as well (e.g. North America, Asia and Australia). The book will primarily be announced through the existing networks MACSUR and AgMIP, but you should feel free to distribute the Call for Abstracts through your networks.

The book is going to be edited by Floor Brouwer (LEI part of Wageningen UR, the Netherlands) and Franz Sinabell (WIFO, Austria). The editors invite you to submit an abstract for this volume. The abstract is in the range between 400 and 500 words (including title, authors and their affiliation), presenting (i) message related to your experience in using integrated modelling assessments, (ii) making explicit the link between food security, climate change and agricultural development and (iii) outline the structure of the chapter.

Edward Elgar has expressed an interest to publish a volume and the editors will prepare a full proposal to the publisher during the summer of this year based on the submitted abstracts. The editors envisage to inform the authors in September about the full book outline and have drafts of the chapters to be available by the end of this year.

### **Themes of the book**

We seek for abstracts on the following topics:

- a. *Overview of integrated assessment approaches, address the economics of food security, climate and agricultural development.* This part of the book covers state-of-the

contributions on the economics of food security – climate change – agriculture. What are the main research advancements in the field of economics of climate change risks? What progress is made in understanding the economics of adaptation of human societies to altered climatic conditions, agriculture and land use?

- b. *Integrated approaches in practice.* This part of the volume will present state-of-the art scientific work on integrated approaches linking economic modelling tools with tools of crop and/or animal science. Case studies are presented from different regions, that link food security and climate change with agricultural development. Scenarios that are consistent with SSPs will be developed and evaluated at various spatial scales. What are the challenges in economic models using scenarios and pathways, and how to overcome them? Advancements in the development of models, tools, approaches of integration and data are presented.
- c. *Scientific advancements in integrated assessment approaches.* Economic and climate change uncertainties are key elements in risk assessments and a better understanding of both types of uncertainties are crucial. How to cope with uncertainty and risks in crop and economic modelling? What are the experiences in long-term economic modelling (e.g. considering technological change)? Topics could also address the benefits of integrated assessments linking models from different disciplines. What advancements are made towards integrated approaches linking models across different spatial scales?

## Next steps

Send an abstract to Floor Brouwer ([floor.brouwer@wur.nl](mailto:floor.brouwer@wur.nl)) by 30 June 2014.

You are invited to submit the same abstract to Franz Sinabell ([franz.sinabell@wifo.ac.at](mailto:franz.sinabell@wifo.ac.at)) if you plan to participate at the TradeM Workshop on "Scaling in global, regional and farm models" which will take place in Vienna (Austria) on 24th of September. Deadline for abstract submission is 30 June 2014.

See also: [http://oega.boku.ac.at/fileadmin/user\\_upload/Tagung/2014/TradeM-WS-Vienna\\_1.pdf](http://oega.boku.ac.at/fileadmin/user_upload/Tagung/2014/TradeM-WS-Vienna_1.pdf)