



## Summary of Conclusions and Recommendations

### FACCE JPI Mapping Meeting

on Core Theme 1 of the Research Agenda:

### Sustainable food security under climate change

17<sup>th</sup>-18<sup>th</sup> October, 2012, Madrid

#### ***FACCE JPI Mapping meeting on Sustainable food security under climate change***

This document presents a summary of the Conclusions and Recommendations from the fourth FACCE - JPI Mapping Meeting that was held on 17-18 October 2012 in Madrid.

The topic that was debated is *Sustainable food security under climate change*. Today the world faces an overburdened food system; a system under such pressure that a concerted transition towards sustainability is urgently needed. There was consensus that an integrated approach will be necessary to meet the challenges in doing so. This requires a global view of food security, a participative way of acting, and technological and social innovations. It was also suggested that there was a need for *research* on this topic to be high on the agenda of development agencies, to align resources from those funds in a complementary way to those of science and innovation funding streams.

After studying the posters that provided information from participating countries about relevant funding, programmes and projects, the first and foremost message was that while there is a lot of research on food production (primary production, increasing yield, livestock systems) and there is a lot of research on climate change, but there is a major gap relating to research on food systems *under* climate change.

#### ***Topics recommended for joint actions***

The main recommendations to move towards better understanding of food systems under the impact of climate change are: to study food chains by a systems approach; to further strengthen scenario building and modelling, including progress towards interoperability; to assess consumer behaviour effects on all steps of the food chain and to assess and develop mechanisms to inform and influence consumer choices; to consider impacts of climate change on land use, linking from primary production through to food markets and price volatility; to undertake impact assessments of policy instruments and regulatory measures. A topic identified as a low hanging fruit is food waste; further research efforts are needed on quantifying food waste, assessing where it is produced, and assessing the effect on food availability, accessibility and use in the global perspective that can be achieved by measures and change of behaviour by producers, processors, transporters, retailers and consumers. Although the meeting focussed on overarching and post-farm gate food system topics, distinct from the topics of the other mapping meetings, the need for substantial increase in primary production, even when much of the losses can be reduced along the food chain, was emphasised.

#### ***Tools for and towards joint research***

Tools for implementing joint programs are focussed on the sharing of resources, be it money, infrastructure, expertise, or data. Based on the considerations raised above, recommendations with regard to sharing resources included: data sharing, with MACSUR flagged as an initial mechanism to develop good practice; participative approach and knowledge sharing (involving local knowledge); a think tank involving the scientific community to promote joint actions on food security under climate change; training on multi-disciplinarity, open access policy and incentives. Also, the sector was encouraged to promote research to be co-funded by EU, national and philanthropic development (aid) funds. Furthermore, FACCE should foster coordination among European initiatives, work with global research initiatives, and interlink with the industry.

### **Recommendations for the Belmont Forum**

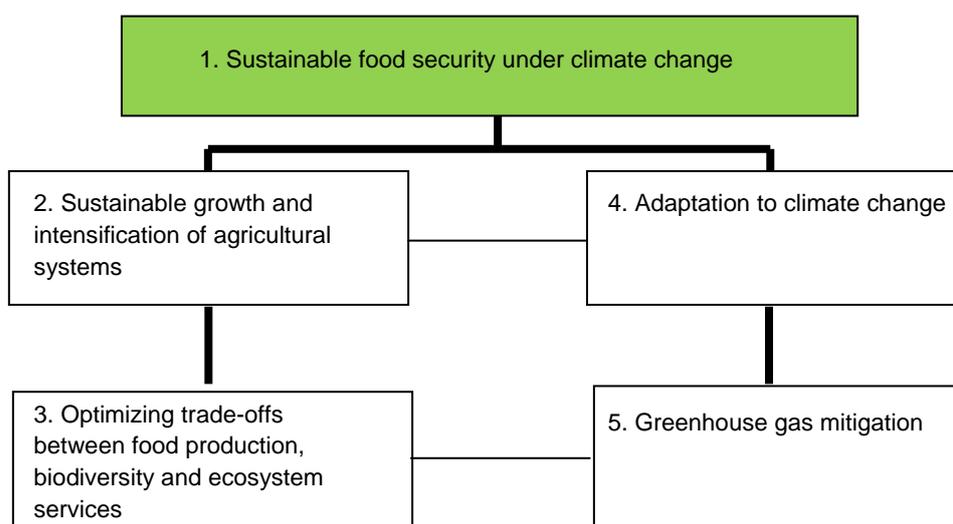
When asked for recommendations to input into the scoping workshop of Belmont Forum on “Food security and land use change”, some of the topics and tools already mentioned were re-iterated. These were complemented by recommendations specifically on the collaboration between FACCE and Belmont Forum, which can be summarized as follows:

- Collaborate with FACCE in bringing forward the importance of **food systems**. As Belmont functions as a **global environmental change agenda**, one goal is to bring agricultural and climate research together in a **multi-disciplinary** approach that assesses impacts of climate on food systems.
- Assessment of **land use change** in relation to **energy** and **food crop** allocation.
- Study the impact of **resource limitations** (e.g. phosphorous).
- Scoping of how to **increase access to idle/untapped grounds** (e.g. in Russia and Brazil).
- Extend standardized **scenarios** to include the **global** context, e.g. including various levels of intensification of agriculture in various regions.
- **Participative approach**. Involve scientists and other stakeholders from developing countries in preparation of calls and actual research.

### **Scope and approach of the mapping meeting**

The mapping and foresight activities of FACCE - JPI are organised in the framework of the coordination and support action FACCE-CSA. These mapping activities are organised by three of the CSA partners: Wageningen University and Research Centre (Wageningen UR); the Ministry of Economic Affairs, Agriculture and Innovation (EL&I) from The Netherlands; and the National Institute of Agriculture and Food Research and Technology (INIA) from Spain.

The theme of this mapping meeting (MM4) was “Sustainable food security under climate change”. This is one of the five research core themes (CTs) identified by the Scientific Advisory Board. These five themes are interlinked as indicated in the figure below. Each of these CTs is being subjected to mapping and foresight exercises.



The scope of CT1 is described in the Scientific Research Agenda as follows:

- Integrated food systems perspective, combining biophysical and socio-economic modeling with policy research perspective.
- Integrated risk analysis of the European agriculture (and food systems) under climate change: test responses to volatility both from natural and market phenomena.
- Global change impact and resilience of food systems (through the value chain and to the consumer).

- Europe's role in international markets, price volatility, global food security impacts.
- Develop contrasted scenarios involving perceptions and policy dialog.
- Combine observations, experiments and modeling through the development of appropriate European research infrastructures.

(source: JPI Scientific Research Agenda <http://www.faccejpi.com/FACCE-JPI-Home/FACCE-JPI-News/Scientific-Research-Agenda>).

Efforts were made to focus the discussions mainly on food systems and food security taking into consideration:

- i) Consumer preferences and needs;
- ii) Post-harvest losses and food wastes;
- iii) Institutional issues.

Since the content of CT1 has strong interconnections with the other CTs, the Mapping Meeting focused on issues that were not covered in previous MMs. Therefore special attention was paid to *post farm gate activities (food habits, processing, waste, consumption,...)* and *climate change impacts on European food systems* (avoiding those related to primary production).

The meeting was hosted by the National Institute of Agriculture and Food Research and Technology (INIA) from Spain and opened by the State Secretary on Research, Development and Innovation, Ms. Carmen Vela, and the Director of INIA, Mr. Manuel Lainez. The meeting brought together science and research policy representatives from sixteen countries. Furthermore, the Belmont Forum, the JPI *A Healthy diet for a healthy life* (HDHL-JPI), SUSFOOD ERA-NET on *Sustainable food production and consumption*, and RURAGRI ERA-NET on *Rural areas and agriculture in Europe* kindly had accepted the invitation and gave presentations on their objectives and achievements, and participated in the overall meeting activities.

After the introductory presentations, the participants analysed the information on funding programmes and research projects of the participating countries provided in the posters. This information, for which each of the Member States was responsible, was included in the meeting binder distributed at the meeting to all participants. There was also a poster on FP7 projects and a poster on ERA-NETs. Country delegates, invited speakers and other participants were divided into six working groups in which the funding and scientific information of the participating countries was analysed with the aim of identifying gaps and overlaps, and of proposing recommendations and topics for future joint actions. Each group presented a report in the plenary discussion.

Following the summary of the results of the first break-out session, the second session provided an opportunity for further discussion, focussing on identifying further messages, and deepened into the following:

- To provide ideas to be forwarded to the Belmont Scoping Workshop on "Food security and land use change" that will take place in São Paulo, 17-19 December.
- To define three top messages (key gaps, synergies, merging topics) emerging from the analysis on the posters and the discussions that followed.
- To suggest a top recommendation for a joint action and the appropriate tools to undertake cooperation to be forwarded to the Governing Board.

## Scope of food systems

According to the FAO definition, *Food Security* means **food availability** (having available sufficient quantities of food on a consistent basis), **food access** (having sufficient resources, both economic and physical to obtain appropriate foods for a nutritious diet) and **food use** (the appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation). In addition, during the meeting **food quality** was highlighted as an additional and important aspect of food systems to be considered in research.

## Recommendations for better understanding of food systems under climate change.

The main issues addressed in the group discussions and in the final general discussion can be outlined as follows:

- 1. Integrated food systems.** A major socio-economic challenge is how to make the European and the global food systems compatible. We are living in a globalized food system, with international trade of staple crops, fruits, vegetables and meat, with commodity chains starting with import of soya and other fodder to feed livestock in Europe. Approaches to understand food systems require integration of aims and methods and joint discussions between policy makers, science funders and researchers. In this regard, the following was flagged: i) integration of research on food economics (prices, drivers, markets, etc.) and climate change scenarios; ii) integration of primary production and post-harvest aspects.
- 2. Scenario building and modelling.** As was illustrated by the posters, there is currently a gap in research that assesses the effects of climate change drivers on aspects of the food system and *vice versa*. The FACCE Knowledge Hub MACSUR, which recently started, is addressing part of this topic by networking, on a European scale, research teams on livestock, crop and trade models. This is an example of modelling integration as a mechanism to create synergies and codify knowledge, to improve the cooperation of research community and to increase the value/reach of research outputs. This will result in better feed through of quantitative analysis to research strategies. There is a need to increase the effective use of modelling and standardised scenarios to better understand the impact of consumer behaviour on food chain impacts and decision making, and feedback loops. A more integrated approach examining life cycle analysis and diet is needed, looking at complementarity between foods, food nutrition and environmental consequences of food consumption.
- 3. Consumer behaviour.** Consumer's choices and behaviour have an important impact in all the steps of the food chain. It was highlighted that it is crucial to develop methods to quantify such impact as changes in the consumer habits may result in market repercussions (e.g. changes in food demand and availability). Moreover, although there is an emerging awareness in consumers about food-related health issues, food quality and the impact of food production, it is necessary to improve the abilities of consumers to make the healthy choice and the sustainable choice. Hence it is important to improve the access to information and to present it in ways that allow consumers to make informed choices and to understand their impact. This can only be accomplished through integrated socio-economic approaches. In this regard, the development of effective regulation (research on this is needed) should play an important role.
- 4. Food markets and price volatility.** There are strong links between local, regional and global food markets. Therefore the regionalised impacts of climate change on land use and primary production will have unprecedented effects on global supply/demand. Hence such changes may result in market disruptions and food price volatility with an impact on international food security. In order to establish control measures, further research on food price volatility and its relation with climate change is needed.
- 5. Impact assessment of policy instruments and regulatory measures.** While governments aim to regulate food availability and prices for consumers, and revenues for farmers, via agriculture and trade policies, the interrelationships/impacts of such policies on global food systems is not always sufficiently account for. Research on how development and evaluation of policy instruments takes place, and how to improve *ex-ante* impact assessment on various scales is highly recommended. Also, an appropriate regulatory framework is critical to face the challenges derived from climate change. Once a risk imposed by climate change hazards (increased temperature, floods, draught, etc.) is defined / quantified, appropriate regulatory measures can be established. Afterwards, the effectiveness of such policies should be evaluated. It is important to highlight that innovation (technology, measures) may present opportunities to effectively address the challenges of climate change, but regulatory hurdles may currently exist, e.g. for reasons of food safety or standards, that pre-empt the development of such solutions. There is a need to guard against regulation stifling innovative technological options that would improve food security under climate change, particularly where such consequences may be unintended.
- 6. Assessment of food waste.** Assessment requires looking at food losses in different parts of the food chain (farm level, post-harvest level, transport, processing, markets and consumers). Participants noted that we may not have sufficient empirical data to do this. In this regard, the situation in developed countries differs greatly from those of developing countries. The expectations on the impact of reducing food wastes on food security were considered too high – alleviating waste alone will not solve global food security, but it was acknowledged that reducing waste is an important component of increasing the efficiency of food production and supply.. Research was proposed on quantifying food waste, assessing where it is produced. There was a general agreement on the statement that 'food waste is bad'. It was however questioned how much more food would be available by decreasing food losses. Decreasing food

losses was considered a “low hanging fruit” but increase of primary production would probably have a much bigger effect.

In all the issues described above, there are strong interconnections between developed and developing countries, and the issue of food security cannot be addressed without taking into consideration global repercussions.

### Recommendations for tools to deal with food security under climate change.

Based on the considerations raised above, the following recommendations were considered pertinent:

- **Data sharing.** Data sharing is key to avoiding duplication and obtain maximum value from public research investments to compile synthesised datasets enabling validation of models, and thus to speed up progress towards understanding the complexity of food chains, and effective management of them. MACSUR is expected to become a good example of best practices in this respect.
- **Participative approach and knowledge sharing.** It was stressed that, to produce solutions that work locally, a shift is needed from knowledge transfer in the ‘old’ way of Western countries telling the developing countries how to do it to, to mutual knowledge exchange sharing local questions and local knowledge.
- **Think Tank.** To promote joint actions involving the scientific community, FACCE is recommended to open a call for a ‘think tank’ in order to help building networks on linking climate change and food security.
- **Foster coordination among European initiatives.** Among the initiatives relevant to food systems research, the linkages to HDHL JPI and SUSFOOD ERA-NET are obvious.
- **Working with global research initiatives.** We need an appropriate focus on engaging global dimensions, especially with regard to capacity building and international development. In this respect the need for effective networking for synergy of approaches is preeminent, e.g. with CGIAR, the Global Research Alliance and Belmont Forum.
- **Working with development funds as a source of funding.** When acknowledging that co-creation, involving local stakeholders and tailored innovation are key to local solutions and lead to a better standard of living for rural populations and increase of regional food security, the possibilities of EU development funds and national and international development aid funds (co-)financing research projects that take such integrated approach should be explored and exploited. FACCE should advocate funding of research to be high on the tools-agenda of those investing development-oriented funds.
- **Interlinking with food industry.** Collaborative research with companies to drive innovation for climate change resilient food systems. To increase visibility in this respect, FACCE could involve a senior personality from the private sector with a strong international network, a drive for food security, and enthusiasm for the vision and approach of this JPI, as a high-profile Industrial Ambassador.
- **Science culture and Training.** Interchange of best practices and training seminars on multi-disciplinarity and integrative approaches is recommended. But also the study of ignorance; research on technological and institutional gaps that firstly involves building the understanding that there is a gap in order to systematically find solutions. There is a need to embed more widely recent progress on data sharing that is happening in some partner countries, towards the development of a foundation of funder policies that promote and incentivise data sharing, and incorporate enforceable standards of engagement/accountability to ensure that a culture of data sharing maintains appropriate rights for data producers and does not negatively impact their scientific careers.



Group photo of FACCE JPI Mapping Meeting on sustainable food security under climate change, 17-18 October, 2012, Madrid