



# Foresight Exchange Workshop

“How to integrate agriculture and environmental stakes in foresights?”

## REPORT

With the support of the following institutions



16th October 2011  
Beijing



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# Report of the Foresight Exchange Workshop

## I. Background

On Sunday October 16, 2011, more than 30 people gathered in Beijing to take part in a Foresight Exchange Workshop (FEW), one day before and at the same venue of the CGIAR Science Forum 2011 (SF 2011). This workshop was convened under the auspices of the Global Forum on Agricultural Research for Development (GFAR). It received support from several regional and international organisations<sup>1</sup>.

This one-day workshop was intended to give the opportunity for thinking forward about the nexus between agriculture and environment, the core topic of the SF 2011. As such, it was conceived as part of the Forward Thinking Platform, one of the three inter-connected components of the Global Foresight Hub<sup>2</sup>. The Global Foresight Hub is an open and inclusive mechanism within the GFAR for improving foresight and its role in shaping research and innovation systems to better address the needs of those they are intended to serve.

## II. Objectives and expected outputs

*The objectives* of the workshop were to:

- Exchange and debate about the interconnection between agriculture and environmental stakes within foresight activities.
- Identify key transversal issues for further work, with a goal to contribute substantially to the international research strategy on these themes,
- Discuss and propose actions for the future with an emphasis also on the preparation of the next GCARD in 2012 whose focus will be on foresight.

*Expected outputs* included

- A better mutual understanding of challenges in linking agriculture and environment in foresight.
- The establishment of a network / community of foresight practitioners in agriculture, exchanging information on their practices and results
- The selection of some transversal issues to focus on for further work, and to be reported during the Foresight Session of the SF 2011.
- An understanding of the Global Foresight Hub and possibly a proposal for actions and further commitment of the participants in relation with the Global Foresight Hub and the preparation of the GCARD 2012.

## III. Activities

*Workshop preparation*

During the months preceding the workshop, preparatory work included logistics arrangements and working on the content. A small group team of co-organizers worked on

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<sup>1</sup> Agrinatura, Agreenium, APAARI, CAAS, CGIAR ISPC, EFARD, FORAGRO and Iddri.

<sup>2</sup> For more information about the Global Foresight Hub, see Annex 5 and [www.egfar.org](http://www.egfar.org).

the logistics aspects with the support of the ISPC-CAAS organizing committee. The same team also prepared the content of the workshop.

The participants were selected and invited taking into consideration their potential contribution to the workshop core issue<sup>3</sup>, based on their past or current involvement in the production of future studies, foresight, scenarios or projections, in the field of agriculture but also environment. The list of all invitees who were contacted is in Annex 1.

Participants who confirmed their attendance were requested to bring a contribution under the format of a two-page paper with five open questions (see Annex 2), referring to the substance of the results of their studies, to the methods used, and to their expectation concerning the workshop. All contributions were collected, collated and circulated to all participants before the workshop. In addition, all participants who wished to present their experiences were free to do it, with the common objectives of highlighting the new, creative, original ideas in linking agriculture and environmental stakes in foresight.

#### *Workshop sessions and interactions*

The program of the workshop as finally implemented is in Annex 3. The morning session and the beginning of the afternoon were devoted to participants' presentations of the most innovative results of their recent experience in foresight. In total, 18 presentations were made. Then, a synthesis of participants' expectations based on their earlier contributions (see Annex 4) and a presentation of the Global Foresight Hub (see Annex 5) were made. Open discussions took place until the end of the afternoon sessions, to prepare the identification of key issues for further work and discuss possible objectives and modalities of further meetings of the group.

#### *Post workshop wrap up*

Due to the great number of relevant contributions, the different items to be addressed and the length of the discussions, the task of drawing conclusions from the workshop and highlighting the outcomes to be conveyed to the SF 2011 foresight session was given to a smaller Working Group upon proposition of the participants.

This Working Group was formed by 11 persons: Maurits van der Berg (PBL), Robin Bourgeois (GFAR), Hartwig de Haen (University of Göttingen), Hans Herren (Millennium Institute), Bernard Hubert (Agropolis International), Benoit Labbouz (AgroParisTech), Marie de Lattre (ANR), Siwa Msangi (IFPRI), Sebastien Treyer (Iddri), Lucia Wegner (Oxfam) and Duncan Williamson (WWF). The working group met on Monday, October 17, for more than three hours.

## **IV. Results**

### *Workshop Participation*

Of the 32 participants who had confirmed their attendance three could not attend either for reasons of flight delay or last moment overlapping agenda. A total of 21 contributions were received and 18 presentations were made. Papers and presentations will be revised by their

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<sup>3</sup> Some of them have participated in 2010 to the Forward Thinking working group, which has participated to the GCARD1 in Montpellier.

authors then edited and published on line as Workshop Proceedings on the GFAR and Agropolis websites ([www.egfar.org](http://www.egfar.org) and [www.agropolis.fr](http://www.agropolis.fr)).

#### *Outputs of the discussions*

While it is difficult to summarize the wealth and diversity of the discussion, some elements can be highlighted as follows:

- *Policies matter*: technology alone is not sufficient as a driver of future change; the role of today's and future policies, as determinants of future outcomes, repeatedly emerged from presentations and discussions.
- *Technology and resource efficiency might not be sufficient*: many of the presentations dealt with the fact that, because of possible rebound effects and other dimensions of sustainability, resource efficiency strategies might not be sufficient to deal with the sustainability challenges; changes of lifestyles, in particular reductions of resource-intensive consumption, might be needed in addition.
- *2050 and before*: 2050 is the time frame usually referred to for future studies involving climate change; it is a benchmark which does not, however, exclude the usefulness of also looking at mid term time horizons (2030), because some of the key social trends might lead to specific changes and/or crises already in 20 years' time.
- *Trade-offs might be as important as synergies*: Future scenarios put the stress on the fact that, although it is useful to look for synergies (e.g. between different objectives of agriculture production), it is also important to prepare for necessary and possible trade-offs, distributive effects, winners and losers; it is therefore useful to identify the corresponding political choices that will have to be made.
- *Modelling access to food is as important as modelling global availability of food*: Food security has to rely on both availability of food and access to food. There is an important methodological challenge in complementing existing modelling of global availability with models of access to food.
- *Complexity theory should be mobilised*: For many of the scenarios and themes studied, bifurcations, thresholds, and other phenomena linked to the complexity of systems were very central. The corresponding studies might be enhanced by a discussion about the possible uses of complexity theory.
- *Need for concrete and comprehensive strategies towards diversity*: Many of the scenarios presented insisted on the necessity to keep different options open, to have a diversity of research priorities, to maintain diversity in farming systems or ecosystems. But this does not mean that having a bit of everything is enough : ensuring diversity implies an organised strategy to keep options open but at the same time to set priorities, and to better specify what maintaining diversity means in terms of variety, disparity, and balance among the different elements that should remain diverse.
- *Clarifying the existence of different models is important, but beware of sterile oppositions*: Some of the studies presented insisted on the necessity of questioning and reframing common overly simplistic oppositions (for instance small vs. large farms), in order to better envision future options and challenges.

- *Clear foresight-based narratives count* for public debates and for improved decision making : making them explicit as well as their relationships is important for more transparent decision making, and for enabling transition management
- *Time is scarce*: the challenge is that rapid decision-making and action is needed while the considered process develops over a much longer time span (social change, climate change, biodiversity erosion, natural resources management, technology diffusion and appropriation, etc.)
- *The process counts* as much as the content (commitment, political decision aided by narratives...)
- *Foresight has to be useful, but it should not be seen as a problem solving approach*: Its usefulness is about sense-making, questioning, unveiling implicit stances, reformulating. Important outputs of foresight include relevant and prioritised questions, not just answers. Foresight is also linked to enabling change from a current situation; therefore its capacity to impact is not only a matter of efficient communication, but also a matter of embracing changes.

Participants also expressed their interest in different themes and questions they considered relevant for further work. A list of these questions is added in annex 6. They were the basis for the proposal of three key issues proposed by the Working Group as a conclusion of the FEW. They are important dimensions to be considered in further work.

The idea of a **community of practice** has thus emerged from this meeting with great challenges ahead, among them:

- i) its expansion to include people/organisations who did not attend and were not yet identified as potential participants, aiming at a pluralistic debate among different worldviews and methodological approaches,
- ii) the cross-fertilization of a diversity of types of approaches in future studies, by enabling a thorough discussion of the utility and limitations of those approaches and methods used for foresights, and of their underlying assumptions, in the perspective of designing improved approaches and of testing the robustness of the results,
- iii) a better contribution to setting research and innovation agendas as well as a better impact on and mobilisation of decision-makers, by pointing at convergences and divergences among foresight results and approaches, formulating both what are established results and also innovative questions.

Participants expressed a shared willingness to be involved in such a community of practice in the form of a continuous process of exchange through the Global Foresight Hub, especially the Forward Thinking Platform which could be the legitimate framework for supporting such an ongoing workshop of foresight practitioners, and for some of them also the Foresight Academy. It was agreed as a follow-up of the FEW that more information would be circulated for the participants to express their intended capacity to contribute. The Foresight Session at the GCARD 2012 and the Rio+20 meeting were identified as two benchmarks that participants considered opportunities for meeting and sharing progress on foresight as well as linking better foresight with development challenges. The task of making more detailed proposals was also given to the Working Group.

### *Working Group conclusions*

The Working Group confirmed that the FEW participants are very interested to take part in the Global Foresight Hub, particularly in the form of regular foresight exchange workshops in order to have the time to work together on some key issues.

In which of the different components (Forward thinking platform and foresight exchange workshops, Foresight academy, and Policy dialogue platform) people can engage on a continuous basis and how, will be subject to individual discretion, with the understanding that participants are not here as representative of their organisation. This will not affect their contributions to the Forward Thinking Platform, but institutional backstopping will be needed for their contributions to the Foresight Academy and Policy Dialogue Platforms. It was agreed that the need was to progressively build recognition of the group convened in Beijing as a community of practice, through regular working sessions, though not expecting immediate recognition from official agencies. Making cases at specific events (such as Rio+20, the GCARD 2012) was an important component of this process.

#### Conclusion 1: Identification of key issues

The Working Group highlighted three transverse issues resulting from the FEW discussions that are considered as i) new and high priority for foresight research because of their complexity, relevance for orienting research, directly linked with policy issues, and ii) enabling fruitful comparisons of tools and methods (qualitative as well as quantitative), engaging concrete partnerships amongst members of the group. These three transverse issues give room to explore the future of agriculture considered from a system approach with different angles which mobilize different skills, institutions, methods and interests. They will constitute the structure of further working meetings of the Foresight Exchange Workshop.

#### **Key issue 1. What could be the farming patterns of the future?**

The question is to explore alternative combinations of farming models and how they could affect/contribute to hunger reduction (food security), poverty alleviation (income and decent work), and caring for biodiversity and natural resources. This will require scaling down foresight approaches to handle and integrate social, historical, geographic, political and economic location-specific dimensions.

By tackling it with a forward-thinking posture it is intended i) to avoid the trap of a bipolarized focus (small/large scale), ii) to tackle questions of inequality, iii) to expand the issues to the future of rural areas and the links with other sectors including secondary and tertiary sectors, iv) to widen the scope beyond just food production (to include identities, rural and pastoral societies, multifunctionality, rural crafting and industries ...)

#### **Key issue 2. Sustainable consumption, sustainable production?**

The question is to explore how the linkages between agricultural products utilization and production could possibly evolve, considering the role of consumers, agro-industries and retailers, and their possible consequences on hunger, health, and pressure on natural resources.

By tackling it with a forward-thinking posture it is intended to i) consider the roles of actors (policy makers, agro-industries, retailers...) and downscale it to local level, ii) to explore, beyond those food chain stakeholders, what are the main drivers at the global but also at the local levels (demography, consumers' behavior, nutrition transition, post-harvest losses and

waste control ...), and iii) to identify levels at which and specific process on which relevant public policies could be beneficial (for example reduction of post harvest losses, excessive consumption of resource-intensive products (e. g. meat) and reduction of waste.

### **Key issue 3. What could be the future uses of land and their spatial distribution?**

This question was a concrete entry point to the Agriculture/Environment nexus, exploring the possible evolution of land uses in the future and how would they impact on food production, biodiversity, ecosystems functioning and local human development.

By tackling it with a forward-thinking posture it is intended, through examination of land use change studies combining quantitative and qualitative approaches, to i) better identify drivers (such as climate change, biofuels demand, nature conservation, urbanization, local economic dynamics, land and commodities prices...) and how they combine and ii) take into account the diversity of stakes and the complexity of their trade-offs and their significance.

### Conclusion 2: GCARD preparatory work

The principles of the preparatory work for the GCARD 2012 foresight session were discussed. It was proposed that the main case to be used for finding evidence of, and feeding debates on, improved foresight during the GCARD 2 foresight session would be the first of these key issues: the farming patterns of the future. This issue was also highlighted during the Summary made by K. Cassman at the close of the Science Forum 2011 as a question international research for development has to face without having yet the capacity to understand its entire dimensions. In addition, this question is of utmost importance and particular relevance for Farmer Organisations, NGOs and Civil Society Organisations. It is likely to provide the most relevant material for the preparation of the GCARD 2 foresight session through a comprehensive inventory of related foresight activities around the world. However, this will not exclude the consideration of the other two issues since these are also constitutive of the reflection on the farming patterns of the future.

### **V. Follow up by the GFAR Secretariat**

The GFAR Secretariat's mandate is to provide advocacy and technical support to facilitate the functioning of the Global Foresight Hub. Upon circulation of the FEW report, workshop participants will be consulted on their willingness, availability and commitment to engage at different levels in the Global Foresight Hub. Commitments will range from different levels of intensity including:

- Within the Forward Thinking Platform, it is intended that regular working meetings of the group convened in Beijing would be organised, their work being structured by the three key issues identified during the FEW, and some other participants being invited when identified as relevant foresight practitioners; building the backbone of the intended community of practice, two further sessions of foresight exchange workshops are for the moment foreseen in 2012, one linked to the Rio+20 UN Conference on Sustainable Development (June 2012), and one linked to the GCARD 2012 (Punta del Este, November 2012).
- In the short run, this might translate into active participation in the working group for the preparation of the Rio+20 foresight session (creating a core team). The principle of a meeting during the Rio+20 meeting in June 2012 was endorsed. This meeting will

provide the opportunity for i) carrying a vision about the three key issues to the Rio+20 discussion and ii) advance the preparation of the next session linked to GCARD 2012

- On-going contribution to the reflection on the three key issues, by sharing advances, questions ideas through a dedicated web space that will be supported by the GFAR website.
- Joining as a permanent and active participant the working group for the preparation of the GCARD 2012 foresight session (adding up to an existing core team of four persons, it is expected that three to four more persons would agree to engage significant time in facilitating the process, including contributions to the management of the e-consultations; direct interactions with potential contributors; participation to writing workshops...).
- Contribution to the preparatory work leading to the GCARD 2012 by committing time for occasional activities such as mobilising their networks for the e-consultation, reviewing and analysing the value of potentially relevant cases, helping in the conception of the reporting documents...
- Working on the foundation of the Foresight Academy, starting with a foundation workshop for the Africa initiative supported by FARA. (This workshop will be convened by FARA and bring together around 15 to 20 persons with profiles in foresight and African experience during 2 or 3 days early January 2012. Among participants from the FEW, it was proposed to give priority to A. Kingiri, K. Sivi Njonjo and T. Hichert. Activities will include (i) pre-workshop revision of draft proposals on principles, concrete pre-workshop propositions; (ii) active contribution in the workshop discussion, co-writing of the foundation and operational guidelines; (iii) promotion of the Foresight Academy activities including institutional support and personal commitment).

## ANNEX 1: List of attendees

<b>Last Name</b>	<b>First Name</b>	<b>Business Name</b>	<b>Nationality</b>	<b>Email</b>
Boping	Chen	WWF China	China	bpchen@wwfchina.org
Bourgeois	Robin	GFAR	France	robin.bourgeois@fao.org
De Haen	Hartwig	University of Göttingen	Germany	h.dehaen@web.de
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Dixon	John	ACIAR	Australia	john.dixon@aciar.gov.au
Dos Miranda Santos	Marcio	CGEE	Brazil	mmiranda@cgee.org.br
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Fengying	Nie	CAAS	China	niefy@mail.caas.net.cn
Hall	Tim	European Commission	U. K.	timothy.hall@ec.europa.eu
Herren	Hans	Millennium Institute	Switzerland	hh@millennium-institute.org
Hichert	Tanja	Institute for Futures Research	South Africa	tanja@ifr.sun.ac.za
Hoste	Christian	Agreenium	France	christian.hoste@agreenium.org
Hubert	Bernard	Agropolis International	France	bernard.hubert@avignon.inra.fr
Hutton	Jon	UNEP	U. K.	jon.hutton@unep-wcmc.org
Juech	Claudia	Rockefeller Foundation	Germany	cjuech@rockfound.org
Kingiri	Ann	African Centre for Technology Studies	Kenya	a.kingiri@acts.or.ke
Labbouz	Benoit	AgroParisTech	France	benoit.labbouz@wanadoo.fr
Meng	Xianxue	CAAS	China	meng@mail.caas.net.cn
Millstone	Erik	Sussex University	U. K.	e.p.millstone@sussex.ac.uk
Mruthyunjaya	Hedge	National Centre for Agricultural Economics and Policy Research	India	mruthyunjaya1947@gmail.com
Msangi	Siwa	Int'l Food Policy Research Institute	Tanzania	s.msangi@cgiar.org
Obersteiner	Michael	IIASA	Austria	oberstei@iiasa.ac.at
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Sivi Njonjo	Katindi	Institute of Economic Affairs	Kenya	katindis@ieakenya.or.ke
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Valceschini	Egizio	INRA	France	egizio.valceschini@paris.inra.fr
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Vernier	Philippe	CIRAD	France	vernier@cirad.fr
Wang	Ren	CAAS	China	wang@mail.caas.net
Williamson	Duncan	WWF UK	U. K.	dwilliamson@wwf.org.uk
Wongdeethai	Angkarn	APEC Center for Technology Foresight	Thailand	angkarn@sti.or.th
Zwart	Gine	Oxfam	Netherlands	gine.zwart@oxfamnovib.nl

## ANNEX 1: Invitees who were not available for the workshop

Dorin	Bruno	CIREC	France
Godfray	Charles	UK Foresight	UK
Lauk	Christian	Institute of Socio Ecology Vienna	Austria
Müller	Christophe	Potsdam Institut für Klimaforschung	Germany
Petit	Michel	Institut Agronomique Méditerranéen	France
Raskin	Paul	Stockholm Environment Institute, Tellus Institute	USA
Ribeiro	Teresa	European Environment Agency	Denmark, Portugal
Toulmin	Camilla	International Institute on Environment and Development	UK
Van der Mensbrugghe	Dominique	FAO	
Van Vuuren	Detlef	RIVM	Netherlands
Wilkinson	Angela	Smith School for Enterprise and the Environment, Oxford University	UK
Zurek	Monika	Bill&Melinda Gates Foundation	USA

## ANNEX 2: Format of the contribution paper

Each potential contributor was requested to provide no more than 2-page paper containing the following information:

1. To what extent an agriculture-environmental stakes nexus was incorporated (that is linking agriculture and environmental variables or dimensions);
2. The reasons for it (or why it was not);
3. What was the methodology used to deal with this nexus;
4. What were the resulting new ideas/reflections/outputs (particularly for those involved in the previous exercise in 2010 before GCARD 1);
5. Some elements of expectation from this Foresight Exchange Workshop, and what they would particularly want to discuss.

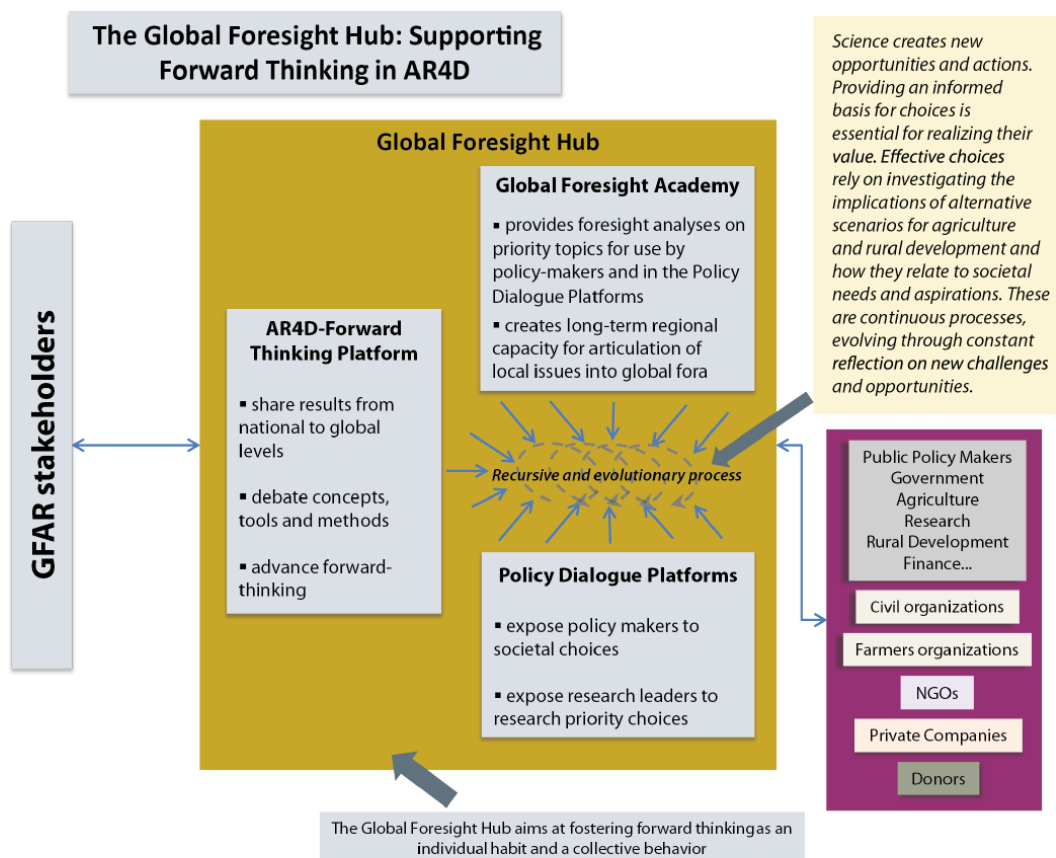
## ANNEX 3: Program of the workshop

<b>Introduction and presentation of the meeting</b>	<p>Introduction (M. Holderness)</p> <p>The Global Foresight Hub (R. Bourgeois)</p> <p>Strategic Thinking – a Tool to promote coherence Policy (B. Hubert)</p> <p>Presentation of the meeting (S. Treyer)</p>
<b>Session 1</b>	<p>Environmental impacts of biofuels policies within the U.S. (S. Msangi)</p> <p>Lessons from last PBL foresight experiences (M. van den Berg)</p> <p>The SCAR Foresight Expert Group Report (S. Treyer)</p> <p>Integrated modelling of links between agriculture and environment at IIASA (M. Obersteiner)</p> <p><i>Discussion</i></p>
<b>Session 2</b>	<p>Diets and food impacts – A WWF UK report (D. Williamson)</p> <p>Need for changes : The Rockefeller Foundation approach to foresight (C. Juech)</p> <p><i>Discussion</i></p>
<b>Session 3</b>	<p>Thailand Agricultural Foresight 2020 (A. Wongdeethain)</p> <p>PROCISUR Foresight Studies for the Southern Cone of Latin America (E. Ruz)</p> <p>Who will feed the world? The production challenge- A report for Oxfam (L. Wegner)</p> <p>Commentaries on the previous presentation (G. Zwart)</p> <p>Agriculture - Energy 2030 (M. de Lattre Gasquet)</p> <p>Sustainability and food security : the FAO approach (H. de Haen)</p> <p><i>Discussion</i></p>
<b>Session 4</b>	<p>The futures of agriculture and the rural world in Mayotte 2020 (R. Bourgeois)</p> <p>Future of agriculture in Africa study (T. Hichert)</p> <p>PARME – Forward Thinking Workshop for the Mediterranean (B. Hubert)</p> <p>UK Foresight Global Food and Farming Systems (E. Millstone)</p> <p>UK Foresight Global Food and Farming Systems (R. Bourgeois presenting J. Muir’s comments)</p> <p>UNEP – Green Economy Report (H. Herren)</p> <p><i>Discussion</i></p>
<b>Session 5 - Open discussions</b>	<p>Presentation of participants’ expectations from the meeting</p> <p>Discussion on key emerging issues</p> <p>Discussion on next steps of the process</p>

## ANNEX 4: Presentation of the Global Foresight Hub

The world's Agricultural Research for Development (AR4D) community recognizes the need for better foresight on the global challenges that lay ahead, to shape how agricultural innovation and knowledge can best help to meet these. Through the 2010 Global Conference on Agricultural Research for Development and the resulting GCARD Roadmap, stakeholders from all sectors have requested that Global Forum on Agricultural Research (GFAR) mobilize actions to **improve the prioritization and focus of agricultural research** and create more relevant and effective innovation systems that are **embedded in the needs of the societies they serve**.

The agricultural challenges ahead are diverse and complex; meeting future food and nutritional security needs directly interacts with economic, environmental and social factors. Many institutions are involved in forward thinking through a wide variety of approaches. However, the wider use and impact of their work has so far been bounded by the assumptions made in each and by insufficient integration of societal debates in policy making processes. In order to further forward thinking, **GFAR is fostering three key activities, which interconnect to form the Global Foresight Hub** (see Figure).



## ANNEX 5: Synthesis of participants' expectations

Five main themes (detailed below) emerged from the participants' expectations from the Foresight Exchange Workshop.

<b><i>Sharing information</i></b>	<i>What</i>	<ul style="list-style-type: none"> <li>• other foresight work and on-going work in the field;</li> <li>• other participants' experiences on topics, approaches, communication strategies to different target audiences,</li> <li>• the state of art development in particularly in technology forecasting, visioning and research prioritization and impact analysis (advances in methodology, cross-country experiences, and better interpretations...)</li> </ul>
<b><i>Building common knowledge and lasting links</i></b>	<i>How</i>	<ul style="list-style-type: none"> <li>• Regular exchanges in forward thinking methods</li> <li>• Long-term cooperation and networking.</li> <li>• Collaborative ways</li> <li>• Bringing agricultural and biodiversity scientists together</li> <li>• Expand the network of environmental and agricultural foresight researchers,</li> <li>• Establish dissemination networks</li> </ul>
	<i>What for</i>	<ul style="list-style-type: none"> <li>• Sharing and understanding relevant agriculture-environmental issues: lessons learned/obstacles and success.</li> <li>• Create mutual understanding</li> <li>• Identify potential future projects.</li> <li>• Other regions in the globe picking this approach for their work.</li> </ul>
<b><i>Discussing methods</i></b>	<i>Crossing approaches</i>	<ul style="list-style-type: none"> <li>• Opening a field for combining quantitative and qualitative methods,</li> <li>• Integrate quantitative analysis at high level of generalization with more specific 'how to' questions regarding measures on the ground and governance issues.</li> <li>• Engage a dialogue with the variety of foresight producers and users, among which particularly different modelling approaches of land use changes at different scales, on one hand, and on the other hand more qualitative approaches revealing implicit narratives in the design of foresights, projections and assessments,</li> <li>• Develop work that links together a more holistic approach to food, agriculture and the necessary research</li> <li>• Advance in linking multi-dimensional variables in comprehensive analysis,</li> <li>• Explore how we can link developed and developing world issues, and one that brings together environment, security, socio economic realities and health all under one roof.</li> <li>• Comparative studies</li> <li>• Assess agricultural potential, local stakeholders and critically important biodiversity in integrated process</li> <li>• Examine ways in which the trade-offs can be developed.</li> </ul>

	<i>Tools and data</i>	<ul style="list-style-type: none"> <li>• Which foresight tools are best suited towards tracking and quantifying the outcomes we care most about in our foresight analysis?</li> <li>• How to do foresight on complex issues that have to be looked on a large scale (e.g. land use);</li> <li>• How to better understand and try anticipate/mitigate systemic agriculture environment nexus risks</li> </ul> <p>What type of approach or combination of approaches works best for different types of issues and different types of target end users from a scientific perspective as well as</p> <ul style="list-style-type: none"> <li>• How and where to access (create) better data,</li> </ul> <p>What are the major data gaps the foresight community has to address to better understand and quantify the key linkages in the agriculture-environment nexus</p>
<b><i>Defining content</i></b>	<i>Global What</i>	<ul style="list-style-type: none"> <li>• Engage in a serious debate about the future of agriculture: what should it look like? What are the scenarios we should be looking at and what are the consequences of the different scenarios?</li> <li>• Which are the outcomes we care most about in our foresight analysis (Poverty, Greenhouse Gas emissions, etc.)?</li> <li>• Key issues which should be subject to scenarios and assessments within foresights covering major links between agriculture and the environment.</li> <li>• Identify some key issues that will need further commitment from foresight specialists worldwide in order to better understand future evolution and related current needs,</li> </ul>

	<i>Specific What</i>	<ul style="list-style-type: none"> <li>● Food consumption, the problems with under and over nutrition, both of which seem to be worsening in a world of increasing food availability and decreasing food security.</li> <li>● Impact on soil fertility of alternative levels of input use, mechanization (e.g. soils conservation technology), irrigation intensity etc.;</li> <li>● Effects on biodiversity of alternative cropping patterns;</li> <li>● Effects on climate change of alternative land use and farming systems causing different carbon foot prints;</li> <li>● Environmental implications for land and water use and for required productivity growth of alternative consumption patterns (e. g. raising the shares of resource-saving food items in the diets)</li> <li>● Impacting of climate change on food.</li> </ul>
	<i>What for</i>	<ul style="list-style-type: none"> <li>● Identify new priorities for development and investigation</li> <li>● Prioritizing research topics.</li> <li>● Set a tentative list of the most relevant agriculture-environment nexuses meriting further research</li> <li>● Strategically explore and anticipate value, concept, knowledge, and use evaluation criteria to envision</li> <li>● ‘Enrich’ the list of outcome indicators of foresight exercises (quantitative and qualitative) by those measuring expected implications for the state of natural resources, climate and environment.</li> <li>● Incorporate such nexuses into formal projection</li> <li>● Take a long-term view in recognition of shorter-term priorities and vested interests</li> </ul>
<b><i>Reaching impact</i></b>	<i>Linking foresight with decision making</i>	<ul style="list-style-type: none"> <li>● Develop a capacity to involve decision makers in forward thinking not only as end user but also as fully relevant contributors.</li> <li>● Methods to improve linkages between foresight and strategy</li> <li>● How to go from a close system to political arena.</li> <li>● How can these foresight studies be best used to inform GCARD’s deliberations and further the agenda of the new CGIAR?</li> <li>● Bridging the gap between strategic national to global level analyses and research ‘on the ground’, without loosing sight of the ‘big picture’ (i.e. upscaling, downscaling, crossscaling);</li> <li>● What type of approach or combination of approaches works best for different types of issues and different types of target end users from a perspective of stakeholder engagement (i.e. to ensure relevance to stakeholders, and to get the messages across effectively).</li> </ul>

## ANNEX 6: Extended list of relevant questions and themes

As a complement to the three key issues identified and to the main conclusions on the process that are presented in the synthesis, this annex presents some other relevant questions that might have to be integrated or taken care of in further work:

- How to organize approaches linking global foresights and local exercises?
- How is biodiversity dealt with in scenarios of the future of agriculture, and projections of land use change?
- What is going to be the diversity of animal production systems? The importance of the “feed” variable makes animal production systems a critical uncertainty for the future of agriculture and environmental issues.
- Agricultural trade is probably going to play a growing, central role in the global food system, and in its resilience to changes, but it might also have important impacts on development pathways. It is therefore a very controversial theme, on which further work is needed.
- The distributive impact of changes in the agricultural sector is going to be an important issue, and questions of justice and equity, but also of power relationships have to be taken into account.
- Societal changes (changes in food demand, changes in diets, investments, population dynamics, migrations, geopolitics, power shifts...) might be very relevant drivers of change in agriculture that would have to be endogenised in further works, therefore considered not just as context variables, but as central components of the system that is being studied.