



# **Towards a long-term strategy for European agricultural research and innovation by 2020 and beyond**

19 June 2015, EU Pavilion at EXPO Milan

*Report, September 2015*



Agriculture  
and Rural  
Development

## Table of Contents

<b>Summary</b>	<b>4</b>
<b>How to build a long-term strategy for European agriculture Research and innovation?</b>	<b>4</b>
Five core priorities to initiate the discussion	4
At a glance: overview of the main research priorities	5
<b>Report</b>	<b>6</b>
<b>Opening session: setting the scene</b>	<b>6</b>
<b>Session 1: a research agenda to produce more sustainably</b>	<b>8</b>
<b>Session 2: a research agenda for innovative rural areas</b>	<b>13</b>
<b>Panel discussion: How to build a long-term strategy for European agriculture R&amp;I?</b>	<b>17</b>
<b>Conclusions</b>	<b>21</b>
<b>Appendices</b>	<b>23</b>

## More information

Workshop web page:

<http://ec.europa.eu/programmes/horizon2020/en/news/towards-long-term-vision-european-agricultural-research-and-innovation>



## Disclaimer

This report assembles the contributions made by participants in the context of a workshop held on 19 June 2015. These contributions do not represent the views of the European Commission.

## Summary

### How to build a long-term strategy for European agriculture Research and innovation?



**Challenges faced by farming systems today, such as climate change, food security, emerging diseases or rural transitions are of a long-term nature and need to be addressed through a long-term strategy for European agricultural research and innovation.**

**What could be the building blocks of such a strategy? What should it focus on? These were the core questions tabled by the European Commission to kick-start the discussion in Milan.**

The European Commission invited **90 experts** to assemble for a workshop on 19<sup>th</sup> of June in the EU Pavilion at EXPO Milan. The objectives of the workshop were to **initiate a discussion on how to elaborate a long-term strategy for European agriculture research and innovation** and to **contribute to EXPO discussions** on the theme 'Feeding the planet' by providing views on agricultural research and innovation priorities.

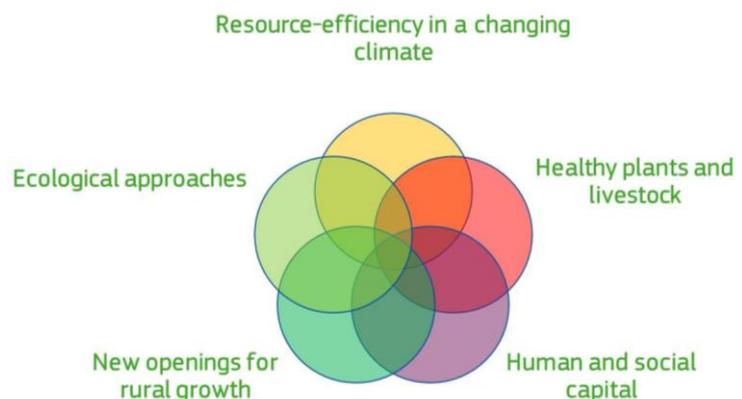
#### Five core priorities to initiate the discussion

The European Commission had put forward initial ideas in a background paper sent prior to the event. **Jerzy Plewa, Director-General of European Commission Directorate-General for Agriculture and rural development** opened the workshop and presented these first ideas as well as the timeline of the process which will lead to a larger conference in Brussels on 26-28 January 2016.

The background paper is structured around **five core priorities and a cross-cutting issues section**. Participants were invited to discuss whether this structure seemed relevant and useful to them and whether the most important issues received adequate attention, overall and within each of the five priorities.

Five "**discussants**" of international reputation provided their views on each of the five priorities. Prior to their interventions, Erik Mathijs, Chair of the 4th Standing Committee for Agricultural Research foresight exercise, set the scene and presented the challenges to factor in a long-term agriculture research strategy. A panel assembling representatives of farmers, civil society, universities, research institutes and innovation support services was finally invited to debate how to build a long-term strategy for agriculture research and innovation.

Participants came from **research institutes and universities, government bodies, European technological platforms, farming sector and related industries and civil society from 23 European countries, USA and Ghana**. The Global Forum for Agricultural Research (GFAR), the Forum for Agricultural research in Africa (FARA) and Organisation for Economic Cooperation and Development (OECD) attended along with several international agricultural research institutes participating in the Consultative Group for International Agricultural Research (CGIAR). Ann Tutwiler, Director General of Bioversity international moderated the workshop.



## A long-term strategy is most welcome

Participants welcomed the European Commission's initiative to prepare a long-term strategy and the **background paper received much praise for the richness of issues and topics addressed**. A wide majority of them saw the building blocks as important. However, several questioned the divisions between the first three priorities and suggested a food systems approach.

## A vision of European agriculture by 2050 as a preamble

Participants missed a **vision of what European agriculture should look like by 2030 or 2050** and saw such a vision as a condition to design a research agenda. The question of whether Europe should produce more, the trade-offs between quantity and quality, food and non-food and between different ecosystem services, the role of EU agriculture regarding other parts of the world and the type of rural growth that we actually want were discussed. "Food first" was suggested as a principle but speeches also showed that food and non-food should not be seen as zero-sum game and that synergies could be found in combined agro-ecosystems. Multi-stakeholder assessments and social dialogue were seen as necessary to encourage policy makers to design clear policy objectives. The adoption of **Sustainable development goals in September 2015** will provide an opportunity to set ambitious targets for agriculture.

## Several points need strengthening

The audience considered that the analysis should favour **systems approaches** integrating **market dynamics, consumer behaviour** and **dietary changes** as well as the **influence of industry and retail** on farming systems. "*Resource-efficiency does not stop at the farm gate*" said Aurélien Esposito-Fava (COPA-COGECA). Beyond resource-use efficiency, the challenge is to achieve **greater efficiency in how we use ecosystem services**, in the context of climate change, but also to act on drivers at value chain and consumer levels. More space should be made for **digital development opportunities**, open data, big data and new technologies. The potential of **genetics** should be better presented and **soils** should be also higher on the agenda. There was strong support for investing in **one health** and **emerging diseases**. Increased attention should be paid to the developing **non-food uses of biomass** (including energy). Attendees highlighted the need to look at challenges such as **demography, migration** or trends **in services** and see how these would impact rural areas. We also need to assess the impact of various types of food and non-food value chains at territorial level, paying attention to **risks of jobless growth**. Analysing how to create **markets for ecosystem services**, assess values of ecosystem services, better remunerate them and evolve towards true costing of food was also deemed necessary.

## The crucial challenge for research of making a difference

The question of how to transfer research into practice and activate change at policy and farmer levels was at the heart of the debate. Participants insisted on the need to translate results into understandable language and easy tools but also on the necessity of **bottom-up processes** helping society and policy makers to take decisions more rapidly, despite the influence of vested interests. "*We know so much, we have lost the sense of urgency*" said Hans Herren. Participants recommended more research on political economy, balance of powers and the role of institutions. On producers' side, the approach initiated with multi-actor projects under the EIP-AGRI seems to be the right one. However more research is needed to support it as well as more **exchange of experience** on how to innovate in agriculture and tools to **detect farm-level innovation**.

## Approaches and instruments: finding the right balances

The discussion also tackled issues around approaches and instruments. Systems and holistic approaches should be the rule, but more mechanistic and specific studies may be needed too on some aspects. Basic research and applied research are equally important. A balance needs to be found between local participatory research and higher-scale approaches with more generalizable results. Participants insisted on the importance of international cooperation, which will be eased by compatibility of research objectives between Europe and its partners.

# Report

## Opening session: setting the scene

After a welcoming word from Giancarlo Caratti, Head of the EU EXPO task force, **Ann Tutwiler**, Director General of Bioversity International [introduced](#) the event by setting the scene and presenting the **objectives** of the meeting, which were to:

- **Kick-start the discussion on a long term strategy** for the future of EU agriculture research and innovation
- Contribute to the discussion on outcomes of EXPO on 'Feeding the planet-energy for life'

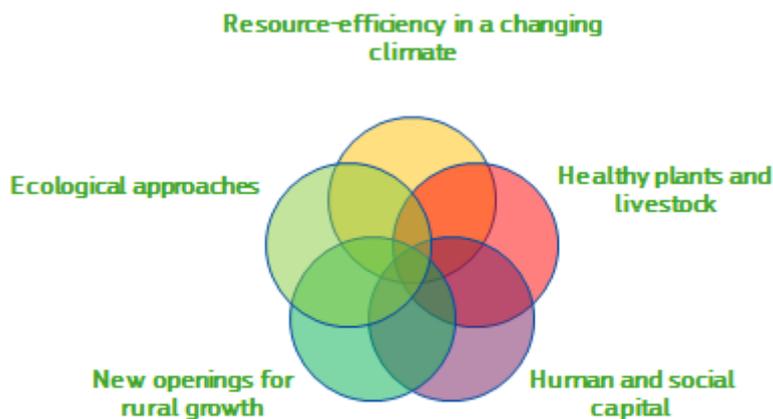
Referring to the background paper sent prior to the event, she then introduced the **core questions to be addressed** by the speakers and participants during debates. She insisted on the main question which is whether the proposed structure arranged around five building blocks is relevant and useful.

*Is the proposed organisation based on five building blocks relevant and useful to structure our approach for a long-term strategy?  
Are the most important aspects properly highlighted and is the attention on the right issues?*

## A long-term and strategic approach to research programming in agriculture

**Jerzy Plewa**, Director General of European Commission's Directorate general for agriculture and rural development, then [opened the meeting](#). He first explained the **reasons** for launching this process, insisting on the long-term and global character of challenges facing agriculture, on the long-term character of research itself and on the increased resources devoted to agriculture

research and innovation, through both the CAP and the Horizon 2020 programme, which call for a more strategic approach to programming which will improve consistency, efficiency and impact.



He also presented the **roadmap for the elaboration of the strategy**.

He finally introduced the **five core priorities** proposed as a structure for the future strategy in the workshop's background

### Five building blocks

paper and warmly encouraged participants to discuss this structure and enrich it.

## Challenges and trends to factor in a long-term strategy for agriculture research and innovation

Invited to focus on challenges and trends facing agriculture, **Erik Mathijs** organised his [speech](#) around the provisional outcomes of the 4<sup>th</sup> Foresight exercise of the Standing committee for agricultural research (SCAR). He highlighted how the vision and scenarios elaborated in the wider framework of the Bio-economy can contribute to the thinking on R&I for the primary sector.

Starting from a comparison of challenges highlighted in the 4<sup>th</sup> foresight exercise and in the workshop's background paper, he elaborated on important **trends which should be factored in a future research and innovation strategy** and would need to be strengthened compared to what was initially in the background paper.

These include:

- **competing trends in dietary and nutrition patterns;**
- **market dynamics:** increasing market concentration in food and retail, integration of food and energy markets, evolving relationships between consumers and retailers;
- **digital revolution:** big data, precision farming, new technologies in general;
- **new energy landscape:** developments around bio-based energy sources and related questions around cascading use of biomass;
- **increasing demand for non-food uses of biomass:** how to deal with it sustainably, in particular through circular economy strategies for biomass using by-products and waste streams.

He then presented the three scenarios elaborated in the context of the 4<sup>th</sup> SCAR foresight and what their implications are for research and innovation strategies. Conclusions indicate research themes identified are robust and remain the same whatever the scenarios. However priorities would change from one to the other. In all cases, governance will be crucial to tackling challenges and major regional differences are to be taken into account.

**Erik Mathijs** finally made explicit recommendations regarding the framing of a future research and innovation agenda. Firstly he recommended integrating five underpinning principles applying to the whole Bio-economy to define the R&I agenda: **food first, sustainable yields, cascading, circularity and diversity**. Secondly, he recommended to broaden the scope of the R&I agenda on the primary sector, both **horizontally** (take into account different types of biomass sources together) and **vertically** (integrating upstream and downstream sectors in primary sector research). Finally, he recommended to follow some organisational principles for research and innovation activities which mirror current orientations of Horizon 2020 around **challenge-oriented** actions and **interactive innovation**. He stressed the need to come up with new ways and standards to assess research results and to strengthen research and innovation capacities and the link to education.

He concluded insisting on the **importance of governance** and warning against the risks of jobless growth and very large scale systems endangering necessary diversity which could result from wrong uses of current trends around energy and digital revolutions.

#### Key-note speech contribution at a glance:

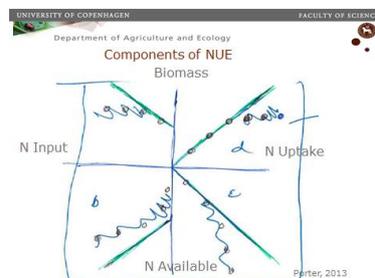
Challenges needing strengthening:	Priorities:	
- digital revolution	- SCAR themes well captured in 4 core priorities, except for 'energy landscape' and 'foresight for the biosphere'	
- new energy landscape		
- market dynamics		- Need to strengthen socio-economic issues, policies and governance in new openings for rural growth
- dietary changes		
- non-food uses		- organisational principles to be taken into account in Human and social capital and cross-cutting issues

## Session 1: a research agenda to produce more sustainably

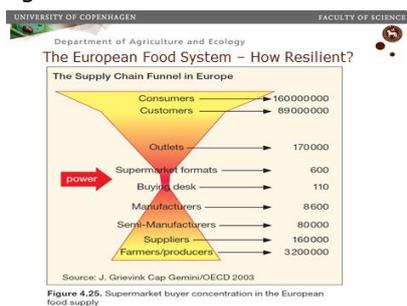
Three discussants provided their insights on the first three core priorities before the floor was opened to the discussion: John Porter from University of Copenhagen, Niels Halberg from ICROFS and DCA and Marta Hugas from EFSA.

### A more resource-efficient agriculture

**John Porter** first contributed his views on [how to move towards a more resource-efficient agriculture](#). Recalling that IPCC projects that yields will decrease in the coming decades, he offered thoughts on how to approach the question of resource efficiency: **should we look at resource efficiency of agriculture or of the entire food system? Which resources should be considered: renewable or non-renewable?** He also emphasized that understanding for example nutrient use efficiency in agriculture requires understanding underlying processes represented by different ratio (illustrated on the right side) and coming up with cropping systems which are efficient in these different respects.



Building on 20 years of experience on **combined food, fodder and energy systems (CFE)**, he introduced the concept of "*Ecosystem services rich agro-ecosystems*", in which ecosystem services delivered by some parts of the farming system, such as energy belts, enable to increase yields on the remaining part of the cropping area. He illustrated the capacity of these systems to deliver significant benefits both in economic and non-economic terms. He called for **moving from the analysis of "resource use efficiency" to "ecosystem service use efficiency"** and to seek improvement of the balance between renewable resources and non-renewable resources used in agriculture.



Source: J. Grievink Cap Gemini/OECD 2003  
Figure 4.25. Supermarket buyer concentration in the European food supply

As a conclusion, he invited the audience to reflect on **what a resilient European food system should look like**. He illustrated the distribution of power in the food supply chain (see picture on the left) and argued for a **food system approach to efficiency and resilience**.

### Agro-ecology: how can this approach support research and development of agri-food systems

**Niels Halberg** introduced the notion of sustainable intensification understood as "*more clever use of inputs*" using more knowledge per ha rather than higher use of inputs and as a way to produce which "*draws on nature's contribution to crop growth*" (FAO). He also introduced the notion of agro-ecology and the different functions that underpin agro-ecosystems. He advocated for the adoption of a systems approach in research, looking at how to use ecosystem services better in crops, in livestock and in the interaction between both.

For crops, he insisted on integrated pest management, where we need more research on **sensors, monitoring systems, disease-resistant genes** to manage diseases cleverly. He also suggested investing in breeding techniques, including not only molecular methods and genomics, which are necessary and well taken-up by industry, but also **new ways of phenotyping** for which research is really needed. He invited to develop market opportunities for perennial crops, which could provide biomass for bio-based products, using the cascading principles and not competing with food, thus providing incentives for farmers to diversify their rotations. For animals, he promoted **resilience**

*"Organic agriculture is not the backwards back to nature type of farming. It is a mostly modern farming system that needs new technologies and organics are the world leaders in robots for weed management for instance".*  
**Niels Halberg**

as a **dynamic health concept**, suggesting analysing, through for example **biomarkers**, the link between animal recuperation capacity and farming conditions. He also picked the example of the dairy sector as one where lessons could be learnt from the organic sector in a pretty intensive type of farming system. He finally detailed the specific research **needs of the organic sector**, suggesting *inter alia* dependance on **new technologies**.

To conclude, he focussed on the necessary **linkage to the consumer and the food system**. He also stressed the need to build a coherent research agenda to tackle all these complex challenges in the longer run **combining system approaches with more mechanistic studies**. "We cannot always be holistic, we need also mechanistic studies but they should be guided by the system, not the other way around" he said. He finally encouraged participatory research, highlighting the difficulties in conducting such research and the trade-offs between highly context-dependent research and research which produces generalizable knowledge.

## Healthier plants and livestock

**Marta Hugas** introduced EFSA's risk assessment activities on food safety and the focus on risks to agriculture and the environment caused by diseases.

She then presented the concept of **one health**, illustrating the linkages between **animal and human health**, which are now better acknowledged, especially in the context of zoonoses and anti-microbial resistance but also between **plant and human health**, in relation with, for instance, reduction of pesticide use and control of active substances.

Going through the threats facing agriculture, she highlighted **emerging plant and trans-boundary animal diseases** as the most important threats likely to impact agriculture in Europe and which are already experienced.

Emergence and spread of infectious diseases result from a wide combination of global and local drivers which are not only related to agriculture but to more general drivers like demography or politics, she explained. Understanding the drivers of emergence and spread of infectious diseases requires "*well-structured and transparent approaches*". She presented **network analysis** as an interdisciplinary framework and methodology particularly adapted to conduct such analyses. She illustrated how this methodology was currently applied to analyse the drivers of Ebola in a broad context and suggested it could be successfully transferred to research on plant and animal diseases, elaborating on the examples of the citrus black spot and xylella fastidiosa. "*The main conclusion of this work is that we need research on drivers of emergence of infectious diseases to take a holistic multidisciplinary approach*", she said.

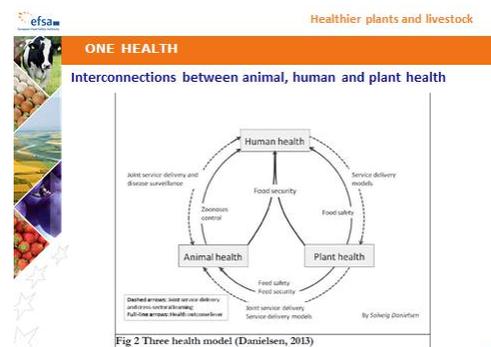
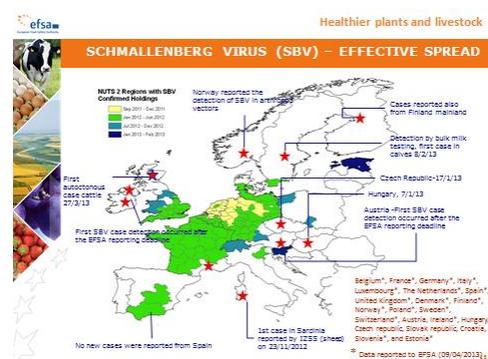


Fig 2 Three health model (Danielsen, 2013)



Evidence provided by research is essential to the conduct of risk assessment, be it from computational science, from actual experiments in laboratories or from the field. Marta Hugas called for cooperation between different services to determine how to best **join forces to produce the evidence that is needed**. She presented the experience gained with the fight against the Schmallenberg virus as an example of good cooperation. It involved in particular the use of a model developed to anticipate how infectious diseases would spread, which proved to bring very good predictions, indicating that investing in research on modelling would be warranted.

She concluded by highlighting the mutual needs of research and risk assessment. Research is needed to develop technologies and methodologies that help better understand the diseases and the best ways to tackle them. In return, risk assessment activities can help identifying knowledge gaps which need to be filled by research and help prioritize research activities.

## Discussion with the audience

Ann Tutwiler then opened the floor to questions from the audience, also inviting Jerzy Plewa and Erik Mathijs to interact with participants. The debate tackled the following aspects:

- **Global versus European dimension:** participants recommended taking a global approach to food security as it is a global issue on which decisions will be taken at global level, (in particular sustainable development goals). Some stressed also the importance of looking in particular at neighbouring countries, where recent upraises were linked to food security, and pleaded for a vision to be built in this respect.
- **Producing more with less and agriculture versus food system approach:** one participant questioned the objective of "producing more with less" and asked which parts of this objective should apply to Europe: producing with fewer resources, which is well understood, or producing more, which means producing for the other parts of the world as the European population will not grow significantly. Jerzy Plewa answered that the objective of producing more with less applies at global level. However, the EU has favourable conditions to produce food and therefore can contribute to food security beyond its borders (or at the global level). Of course this has to be done sustainably. "*We need to think of future generations and ensure we produce food in such a way that our resources will not be exhausted*" he said. Research has a role to play, for example precision farming has a potential to decrease the use of resources. But we need to look at the system as a whole, also looking at changes in demand, diets and investing in education, like the EC does with programmes targeting children to teach better eating habits. John Porter further stressed that producing more with less is a question of efficiency, but the question of efficiency can only be addressed at a food system level, considering in particular that we waste 30% of the food we produce. Agriculture is an important component of it but not all of it. He called for a common food policy instead of a common agricultural policy. Jerzy Plewa agreed that a food system approach is needed and commented that, within the limits of the EU treaty which enables the EU to have a common agricultural policy, the action taken at EU level covers already different aspects related to food systems. He agreed that discussions on how to best address this in the research agenda should take place. Niels Halberg further elaborated on the role of regional food policies and public procurement in shifting diets towards better nutrition and healthier foods.
- **Food first? Environment first? Biomass first?** Reacting to the SCAR foresight recommendation to adopt "food first" as a principle, participants questioned how this could be achieved in practice taking into account policy incentives to increase incorporation of biofuels in the energy mix and market drivers in general. They also questioned whether ecosystems services and environment should not come first, warning that looking only at delivery of food and timber (and not at the huge range of ecosystem services provided by farming and forestry systems) would lead to less diverse farming systems. Erik Mathijs replied that policies should be adaptive, favour food but allow use of biomass for other uses, building on monitoring mechanisms allowing adaptation to circumstances. John Porter further commented that energy should be produced primarily from perennial crops and fast growing trees which have the advantage of producing ecosystem services improving food crops yields. Niels Halberg encouraged to avoid seeing this as a zero sum game. We should rather seek to improve, through research and innovation, the total amount of biomass delivered for food and for other, preferably high value-added, products.
- **Divergence between regions:** one participant recommended taking into account the risk of divergence between regions which will thrive and others which will decline, as highlighted in the SCAR foresight report and also in a study on sub-saharan Africa. He questioned whether agro-ecology could be a response to this risk.
- **Overlap and complementarity between priorities:** one participant suggested that core priorities on resource-efficiency and agro-ecology should be merged acknowledging that

agro-ecology is not just an approach but a cross-cutting concept which should be used to design all research activities. Another participant welcomed on the contrary the existence of the two priorities, however insisting on the cross-fertilising effects between the two. The latter highlighted in particular the potential for innovation from the organic sector to diffuse into the conventional sector.

- **Resource-use efficiency (RUE) versus eco-system use efficiency (ESUE):** asked to clarify the concept of ESUE that he introduced in his presentation and the consequences of this concept for the research agenda, John Porter explained that the idea is to look first, as a default position, at how we can use ecological processes to reduce the amount of non-renewable resources we use in agriculture. *"The business as usual scenario should be 'how can we maximise the use of ecosystem services?'"* he said, arguing that better use of ecosystem services can help reduce pesticides, fertilizers and fossil fuel based inputs use.
- **Soil quality:** the importance of soil quality as a determinant of quality of food and quality of life was highlighted.
- **Cross-fertilisation or mutual inspiration between conventional and organic:** participants and speakers agreed that there was room for greater knowledge exchange between organic and conventional farming systems. Faced with increased legal and policy constraints, conventional farmers will be looking for solutions to use less inputs and can get inspired by organic farmers who *"needed to test radical innovations because they have bound themselves to use less inputs"*, Niels Halberg said. He mentioned in particular the examples of **weeding**, techniques to **test seeds for diseases at harvest and before sawing**, increase **roughage in animal feed** (with very positive results in the milk sector) and **reduction of antimicrobial use**. Organic pig farmers can produce 3 000 to 5 000 pigs a year with only 5% of the antimicrobials used by similar conventional farmers he explained. Marta Hugas further commented that EFSA was working on a study about reducing antimicrobial use which will deliver results at the end of 2016.
- **Curing versus prevention in health:** one participant suggested the research agenda should not only look at how to cure diseases but how they can also be prevented. Marta Hugas commented that prevention is a typical area where risk assessment applies and mentioned discussions on biosecurity. Diseases are spread often by vectors, like insects that fly. It is a challenge to control vectors and extensive farming systems are particularly exposed. The idea is to identify drivers which influence the spread of diseases, with the objective to control drivers and ultimately the diseases.
- **Multi-stakeholder approaches:** responding to comments from speakers that multi-actor approach must be implemented with actors *"which can deliver"*, participants questioned what was expected of stakeholders outside science. Erik Mathijs and Niels Halberg clarified that all actors must have the right competences and resources to exchange in interactive innovation projects: professors and researchers must have the capacity to talk to farmers and farmers organisations or groups must have the necessary resources and time to engage in such projects and this appears as a bottleneck at the moment.
- **Involving consumers and citizens:** several participants highlighted the role of consumers and citizens in driving the food system and therefore primary production. They recommended greater emphasis on this in the research agenda. Societal expectations should be taken into account at a very early stage of the research planning process, to avoid proposed solutions to lead to criticism in the end (and difficulties in selling products). Mark Holderness explained that the health bill for non-communicable diseases in the USA is 3 trillion €/year when the entire agricultural value is 1 trillion €. More efforts are needed on how to get this balance right in terms of changing consumption behaviour to drive production behaviour.

- **Political economy, distribution of power and governance:** several participants highlighted the role of consumers, the industry and retailers in driving the food system. They recommended putting more emphasis on research questions related to the influence of the players downstream from agriculture. Erik Mathijs elaborated on recommendations from the SCAR foresight report in this respect. The foresight indeed identified a need for more ex-ante or institutional analysis in research projects to better take into account the role of power distribution, institutional context, social aspects, food justice, etc. He highlighted in particular the interest of agro-ecological systems in this respect "*if you rely less on external relationships, it means that your power relations are completely different in agro-ecological systems than in conventional systems*" he said.
- **Evidence-based policy-making and better exploitation of research results:** participants questioned how we could improve the uptake of research by policy-makers on the one hand, so that they are sure to back their decisions on evidence (the case of greening was mentioned) and on the other hand the farmers, which may see research as another layer of bureaucracy, in particular small farmers. Jerzy Plewa acknowledged the importance of these issues and explained what actions and measures are currently implemented under the **European innovation partnership for agriculture productivity and sustainability** (EIP-AGRI). *'The idea of this EIP is to put together researchers, universities, businesses and also farmers, not only to discuss what we have to investigate through research activities but also how to implement results of research which are not fully used'*. He referred to specific measures such as operational groups and also to ideas to help small farmers to come together as groups for group certification or to build short supply chains. He recalled that the rural development policy is under shared management and so these measures can be applied only if they are retained by the managing authorities at programming stage.

#### Outcomes of session 1 at a glance:

Challenges needing strengthening:	Priorities:
<ul style="list-style-type: none"> <li>- consumer behaviour as a driver of primary production, link between farming practices, food and health</li> <li>- influence of industry and retail on the primary sector, balance of powers</li> <li>- avoid considering food vs non-food as a zero-sum game: see how to increase jointly food, non-food and other ecosystem services in rich agro-ecosystems</li> <li>- better acknowledge the importance of political economy, institutions, governance</li> <li>- global dimension, neighbourhood policy, link with SDGs</li> <li>- integrate risk of divergence of regions in the thinking</li> </ul>	<ul style="list-style-type: none"> <li>- ecosystem use efficiency first, efficiency of use of non-renewable resources next – look into combined systems.</li> <li>- IPM, sensors, phenotyping, dynamic health concepts, biomarkers, new technologies, also for the organic sector.</li> <li>- favour mutual inspiration between conventional and organic (weeding, IPM, feed, antimicrobial use).</li> <li>- One health, preventing diseases rather than curing. Using risk assessment to prioritize. Identifying drivers influencing disease spread, modelling. Priority on emerging diseases.</li> <li>- factor in questions regarding consumption and societal expectations at early stage. Involve consumers and citizens, as well as farmers etc. in the agenda setting.</li> <li>- continue and strengthen EIP approach and increased exploitation of results (policy and sector)</li> </ul>

## Session 2: a research agenda for innovative rural areas

Two discussants provided their insights on the last two core priorities before the floor was opened to the discussion: Richard Wakeford from University of Birmingham and Krijn Poppe from LEI Wageningen.

### New openings for rural growth

**Richard Wakeford** opened by illustrating the diversity of Europe's rural areas and of urban-rural dynamics which make any European level approach challenging. He emphasized the two-way relationship between urban areas, which consume rural outputs, and rural areas, which consume urban services, illustrating how that is evolving due to infrastructure and digital development. Although the boundaries between different types of areas are not so clear, he **advised against further work on delineation**, as urban/rural boundaries are often diffuse and change very rapidly; rural development should be looked at in the context of a globalised economy.

He questioned whether externally driven **large scale industrial developments in rural areas should be seen as successful** in terms of meeting *rural* policy goals. "*Rural growth opportunities need to take account of rural challenges - which are actually different from urban challenges*", he said. Among the particular differences he mentioned innovation, which may be hampered by the lesser density of population (a constraint which may be softened by IT developments) and lack of young people. He also questioned **where the GDP of products based on rural products should be scored**, as most added value steps happen down the chain (often in urban areas); but those steps could not happen without raw material conveying a rural identity to the final product. A fair share of the value of the final product was not attributed to rural accounts. The same could be said for the ecosystem services delivered by rural areas; he questioned whether these should be **remunerated and scored against GDP based on their real value to society** rather than based on compensation of income foregone as nowadays.



Recalling that much research had been done already on rural development, with little evidence of how the results have been used by policymakers in member states, he insisted on the need to look into '*big challenges that are ahead of us and see how these are likely to change rural policies*', pleading for **future research to make a real difference**. He mentioned in particular migration, alongside the familiar big challenges of climate change and globalisation of trade.

He ended on a set of concrete recommendations for the research agenda. He first recommended to **pool the results of past research projects into a single analysis** on rural development, in language accessible to policymakers. Going forward from that, '**Scenario**' analysis projects

*Communicate findings in appropriate language to ministers, other politicians, executive staff, mayors, local government, and motivate rural actors!*

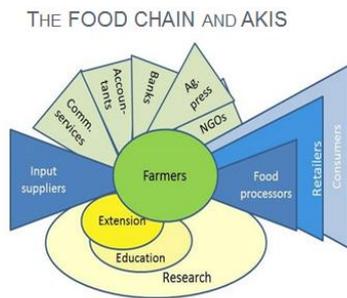
**Richard Wakeford**

(2030, 2040) could then explore how the big challenges would influence rural development and growth priorities. He proposed research on **better specifying mechanisms for valuing and remunerating ecosystem services** and assessing the **potential of spin-offs based on them**. Bringing together these themes and drawing on the increasing array of big data available would help identify where the rural potential

really lay in the increasingly global economy. Finally he concluded with a reminder that distinctive rural growth opportunities needed to be based on rural place-based assets. Comparative research should identify **best practices to inspire rural communities** to act and remove some of the bottlenecks to rural decision-making. All these results needed **translation into easily understandable language for busy policy-makers to grasp**.

## Developing the human and social capital

**Krijn Poppe** started by emphasizing the driving role of consumers and other food supply chain actors in agricultural innovation. He also highlighted the differences between agricultural



knowledge and innovation systems (AKIS) in different countries and regions and elaborated on the various trends regarding organisation of research, public-private partnerships and budget cuts. *'Innovation is very much a learning process, for farmers but also for policy-makers'* he said, commenting that this aspect was well reflected in the background paper and that the tools currently available such as the EIP, operational groups, thematic networks and multi-actors projects cater for the needs for cooperation and learning between different types of actors. He suggested we should however evaluate how that works and **strengthen the science backing this policy and exchange experience.**

Commenting on the paper, he suggested **looking more into demography** (less food demand in Europe, urbanisation, migration...) and **exploring what that means for agriculture.** He also recommended **clarifying what the strategy for European agriculture will be** before we decide on research to undertake for the next 20-30 years: *'are we going to export commodities to Africa? Or very safe products like baby milk to China? Or Italian delicacies to New York? Or advice?'* he asked. He then suggested looking more into the **relation between food and health**, on which we will learn increasingly in the coming decades thanks to progress in life sciences and the development of IT tools enabling greater acquisition of data. Finally, he proposed going back to the third SCAR foresight, in particular to the sufficiency narrative, inviting to programme research to test assumptions which back the overall research agenda (insects, algae, vertical farming, meatless meat).

### EMERGING TOPICS IN HUMAN AND SOCIAL CAPITAL IN RURAL AREAS – SUGGESTIONS

- *How to organise (new) food and bio-economy chains with new demands and technologies?*
  - Cooperatives, contracts, manage price-volatility, (new) business models, E-platforms, ict-virtualisation, logistics, clusters and agglomeration effects, network management; role of social networks in cooperation, resilience of systems, life cycles.
  - farm take-over/young farmers; management of larger, complex farm structures; risk-management, role of taxes in family farm.
- *How to manage rural areas under future conditions (emptier, less influence of town and city)?*
  - Social innovation, region-branding, multi-level governance (EU-MS-Region-Village / private-public) in organising public services, paying for eco-services
  - How to prevent a-social behaviour, social inequality?
- *How to keep cities and citizens interested in and well informed on rural areas and (modern) farming?*
  - Citizen-participation in (agri-)policies, co-creation in products and services, role of urban farming, transition "management"

On human and social capital he identified three main challenges around i) **how to organise the food and bioeconomy taking into account new demands and technologies** (impact of ICT on contractual relationships, data ownership, issues around logistics, network management, cooperation and trust at different levels of the chain); ii) **how to manage rural areas and communities in particular regarding delivery of services**, iii) **how to foster mutual interest of urban and rural areas.**

He then presented three scenarios for the long-term evolution of the AKIS named *'high-tech'*, *'self-management'* and *'collapse'* which the SCAR AKIS Strategic working group is currently studying to assess whether the current European agriculture knowledge and innovation systems are future-proof and could accommodate these different scenarios. Recommendations which will be delivered at a later stage will probably include **creating European research infrastructures** and **European level management and sharing of data** for **more robust analysis.** He concluded on the role of the EU, which could very much be around organising exchange of experience and fostering spillover effects between regional level AKIS in particular.

## Discussion with the audience

Ann Tutwiler then opened the floor to questions from the audience. The debate tackled the following aspects:

- **Value chain dynamics:** the audience recommended focusing on the dynamics of value chains and on their impact on farming systems at the local level. Richard Wakeford further elaborated on how subsidies to farming in Scotland had allowed strengthening the agri-food industry with all the economic and social benefits associated to it and maintaining rural landscapes that would have otherwise disappeared. But indeed it is hugely important to look at how the value is distributed along the food chain and what the consequences are. Krijn Poppe further commented that we need not only to look at what does not work properly in the current value chains systems but also at what is coming in terms of new types of value chains (retailers for restaurants, restaurants selling food, online sales, etc.)
- **Urban sprawl:** the audience raised the urgency to act on the reduction of land resources due to urban sprawl, starting with mapping urbanisation. Richard Wakeford further elaborated on these aspects taking the example of the United Kingdom and highlighted the role of different drivers such as conflicting objectives of government and developers, role of industry in restoring the quality of land after they close factories, environmental capital of regions threatened by inadequate land use planning objectives and incentive systems through fiscal policy.
- **Indicators to qualify good practices:** there was a plea for indicators helping to qualify what are good practices or bad practices, a question to which research could contribute.
- **Societal acceptance of technical changes:** responding to a question on how we can 'convince' society that the agricultural sector is working properly, Krijn Poppe pleaded for using the word "dialogue" instead; societal acceptance will only come from discussion with society and consumers ahead of investing in big technological changes that they do not understand yet.
- **Waste of knowledge and scientists career reward systems:** *'we are always appalled by the figures communicated for food waste which are around 30% but my guess is that the waste of knowledge is probably greater'* commented one participant. He further elaborated on the problem of silos between different disciplines, on the education system not preparing people for greater integration of research results in decisions and on the limits of a system rewarding researchers mainly on the basis of bibliometric data. Krijn Poppe agreed and talked about ongoing initiatives to try to change this system based on other measurable criteria.
- **Consistency of SCAR foresight and AKIS foresight scenarios:** responding to a question on this topic, Krijn Poppe clarified that scenarios of both reports were developed in parallel because they addressed different issues with different means. However, they use the same challenges and drivers and lead to consistent recommendations.
- **Innovating in changing the CAP:** responding to an invitation from a participant to indicate what he would do if he could change the CAP tomorrow, Richard Wakeford proposed to base payments to farmers on the real value of ecosystem services provided to society and to make these commitments public, not by individual but by land parcel, to allow communities to be aware of what is being paid on their behalf, maybe providing them also with an incentive to pay themselves for some services.
- **Scale of research and innovation projects:** Horizon 2020 was criticized for focusing on large-scale projects therefore leaving no place for small-scale innovation. Krijn Poppe referred to the limited management capacity at European level which constrains the number of activities to be supported and implies larger projects. He referred to a type of

action funded by the European Commission Directorate general in charge of digital development which finances projects which in turn can fund smaller-scale operations using competitive bids (cascading grants<sup>1</sup>). It was also recalled that small-scale projects are financed under the Rural development policy in the framework of the EIP-AGRI.

- **Involving farmers in projects:** a participant recalled the importance of putting farmers in the driving seat of applied research if results are to be used and farmers' knowledge valorised. He welcomed the approach of the EIP. Krijn Poppe further highlighted examples of regions where the EIP has been launched more quickly and invited regions to exchange experience on implementation.

### Outcomes of session 2 at a glance:

Challenges needing strengthening:	Priorities:
<ul style="list-style-type: none"> <li>- rapid evolution of boundaries between different types of regions and between urban and rural areas</li> <li>- difficulty, and therefore crucial importance, to channel results of rural research to policy makers.</li> <li>- demography: ageing, migration (external, internal, different age groups) and their consequences on rural policies and on agriculture</li> <li>- relation between food and health</li> <li>- value chain dynamics, their impacts on farmers and territories</li> <li>- distribution of added value along the food chain; interdependency of the different steps</li> <li>- keeping mutual interest and understanding of urban and rural areas,</li> <li>- radically new farm systems – algae, insects, vertical farming, meatless meat, food printers</li> <li>- social acceptance of technological changes and building dialogue on this</li> </ul>	<ul style="list-style-type: none"> <li>- <i>negative priority</i>: no more research on drawing boundaries/delineating – Some interest on mapping urban sprawl however</li> <li>- pool results of past projects and translate them in understandable language for politicians. For new projects, prioritize communication.</li> <li>- scenario type of research analysing big challenges and how they may effect rural areas policies (including using big data)</li> <li>- identify indicators to qualify what is a good or a bad practice in terms of rural development and identify best practices serving as inspiration</li> <li>- value chain organisation as a result of new demands, technologies, changing structures and cooperation modes</li> <li>- social innovation, regional branding, organisation of public services in rural areas</li> <li>- improve mechanisms for remuneration of ecosystem services, assess potential spin-offs based on them</li> <li>- creating European level research infrastructures</li> <li>- creating European level management and sharing of data</li> <li>- organise exchange of experience between regional-level AKIS</li> <li>- explore large-scale funding schemes allowing support to small-scale operations</li> <li>- adjust career-reward systems</li> <li>- social dialogue on farm-technologies, co-creation, involvement in policy-making</li> </ul>

<sup>1</sup> However, Horizon 2020 regulations and the EU Financial Regulation put quite strict limits to the possible use of cascading grants.

## Panel discussion: How to build a long-term strategy for European agriculture R&I?

Six panellists were invited to debate how to build a long-term strategy for European agriculture research and innovation. They were chosen to reflect a variety of interests and profiles and cover European as well as global dimensions, science, farmers and civil society.

*Ann Tutwiler started with a round of individual questions to the panellists.*

### How do the discussions from the day fit with the outcomes of the European Scientific Steering committee exercise and its report on the role of agricultural research for global food and nutrition security?

Claudia Sorlini opened by welcoming the initiative of building a long-term strategy for research supporting agricultural development. She then focused her intervention on two points of crucial importance for agricultural sustainability and food security: improving the **use of genetic resources which are already there**, and **protecting soil fertility**. She insisted on the need to make the best possible use of the global genetic heritage. Illustrating with various examples in relation with climate change, she pleaded for searching for adequate resources in countries which are already facing the climatic conditions that Europe will be facing tomorrow and provided examples of crop varieties (legumes, rice...) which already exist (in particular used by smaller farms) and could replace varieties cultivated in Europe and which require high level of inputs. She **warned against the depletion of European soils**, recalling that 84% of European soils contain less than 3.5% of organic matter. Soil fertility cannot be ensured in the long term by the use of chemical fertilisers. On the contrary, a much higher focus must be put on biofertilisation, on the soil microbiome, its benefits for the plants, how they can be maximized and maintained under changing climatic conditions. She ended questioning how Europe could take a role in the debate on **urban farming** and explained how a greater **use of regional products can contribute to develop the regional economy**.

### How do challenges identified at European level in particular in the fourth SCAR foresight match the outcomes of the IAASTD<sup>2</sup> conducted at International level?

Hans Herren recalled that the IAASTD has gone through a similar process of assessing the situation, projecting what the future could be and designing scenarios and then invested a lot of efforts in crafting messages for the policy makers of the different regions of the world, with very little outcomes in terms of policy change so far. The SCAR scenarios look like a nice work but they are not going to lead us anywhere, he said, unless there is first a bottom-up process to define where we want to go and then decisions made on how to get there. The IAASTD concluded that **business as usual was not an option** and that we needed to change paradigm. Indicators at disposal in particular Sustainable Development Goals which will have to be met in 2030, i.e. 'tomorrow', by all countries show that the objectives are not reached. **IAASTD results are still valid and need implementation**. One of the recommendations was to **conduct multi-stakeholder assessments of the situation at national level**, as national policy makers will only decide on the basis of an analysis of their own national situation. These assessments are not there yet. One important question is also to know who leads. Knowledge exists already to operate change but change is not happening



*"We know so much, we have lost the sense of urgency."  
Hans Herren*

<sup>2</sup> [International Assessment of Agricultural Knowledge, Science and Technology for Development](#)

because of power issues, one more reason to create multi-stakeholder arenas for discussion to take the right decisions. "*We know so much, we have lost the sense of urgency*", he said, agreeing that more research needs to be done but that the crucial question is how knowledge is going to turn into action and how to make sure everybody is on board.

### Among the questions debated during the day, which ones will be the most important for the farmers tomorrow?

Aurélien Esposito-Fava, Chairman of COPA-COGECA working party on research and innovation (substituting Albert-Jan Maat who was initially foreseen on the agenda) thanked the EU for giving the opportunity to farmers express their views at the early stage of preparing the research and innovation agenda. As regards contents and types of research, he emphasised the crucial importance of **plant and animal health** (on which we need a lot of basic research and also applied research he said), and of applied research on **adaptation of farming systems to climate change**. Resource efficiency and ecological approaches matter a lot he said but **'do not stop at the farm gate'**. Farm systems can only evolve if progress is made on **valorisation of new crops and products** produced in different ways. He recommended strengthening even more the **systemic approach at farm level** mentioned in the background paper and the involvement of farmers. He welcomed the efforts put on multi-actor projects. However, *'asking for farmers to be involved in research projects is not enough'* he said. He explained we do not know enough yet on how to involve farmers and need to explore different ways to do that. It is also necessary to investigate how innovation can be **detected and assessed at farm level so as to capitalise on it** at European level. Finally, he highlighted the importance of agricultural advice and suggested researching how advisors can best support farmers on innovation.

### What are the issues which matter most to the young generation and how can students and civil society play a role in agricultural transitions?

Anna Grosmanova first suggested that students should be introduced to the complexity of food systems and how food is produced, as many of them are familiar only with the retail stage. She recommended **strengthening the importance of practical knowledge in research activities**, also those conducted in universities. She regretted that many students tend to get very well educated and specialised on very narrow topics, with outcomes of their research hardly being implemented and job opportunities ending up as narrow as their specialisation. Holistic approaches would on the contrary improve young people's mind set and preparedness for exchanges. **Information sharing** in agricultural sciences appears to her as fundamental and she explained young people need to be encouraged in that direction as many are scared. "*We need people who can speak both the academic language and the language on the ground*" she said, referring to examples of Slow Food actions on food waste which have been successful. She argued that young people can react very quickly to relevant information. She recommended using **easy visuals, powerful images or graphs** which immediately convey messages to communicate results to the public and trigger reaction. She also mentioned science film festivals or **movies** as media which can be very scientific but also very easy to grasp for the average citizen.



### How do the issues which have been raised in the background paper and those discussed during the day match what INRA sees as the biggest priorities for the future? What is missing? What has been over represented?

Hervé Guyomard first welcomed the initiative to develop a research strategy and to define priorities as a very good idea. The challenges are very well presented in the paper, he said. However "*summarizing it with the phrase 'doing more with less' is not an appropriate way to present it*". He argued that the **agricultural sector needs to display a vision**. INRA considers that the narrative to put forward is that food has developed in the past in close relation with the use of chemicals. In the future, **"we have to decouple agricultural and food production from the use of**

*"We have to find a new link between agriculture and the management of natural resources and ecosystem services"*

**Hervé Guyomard**

**chemicals, and to find a new link between agriculture and the management of natural resources and ecosystem services"**, he said, insisting that provisioning services generating economic revenues are part of these ecosystem services. He then suggested **strengthening the link between what is proposed in the paper and basic research** which is undertaken in

different parts of the world. On soils for example, on-going work on metagenomics which studies what is happening in soils can bring a lot of interesting knowledge on services delivered by soils and how to manage them in farming systems. As it takes approximately 15 to 20 years for a research programme to impact innovation on the ground, he recommended having a real, long-term commitment and focus on issues chosen as priorities. Regarding what is under-developed in the paper, he mentioned **soil research, agro-ecology, genetics and genomics**. The issue of agro-ecology is tackled in the paper but what is overlooked is the need for an **information system to collect data and results of the very numerous on-going studies** and turning them into **information which farmers will be able to use**. Building this system should be a priority. The issue of genetics, genomics, links between genotyping and phenotyping and what biotechnologies can deliver is also perhaps underdeveloped. On the rural growth priority, he invited to consider **not only short food chains but also long value chains** as contributors to growth and to **strengthen attention to public and private services** which play a major role in rural attractiveness. He ended by commenting on the context of international cooperation in agricultural research, quoting the wheat partnership in the framework of the G-20 which has the objective to increase the yield potential by 50% in a sustainable way. In this initiative, the yield objective comes first, whereas in the background paper, sustainability comes first. We have to make sure that our research agenda remains compatible with international approaches to be able to cooperate.

**How does the discussion of today echo with similar international debates? What are the links between dietary diversity and the diversity of production systems? How can big data be better used?**



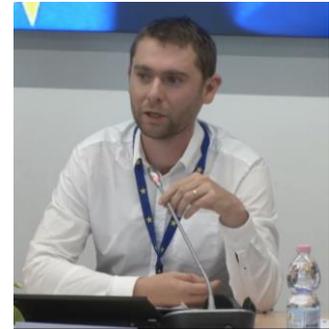
Janny Vos opened by referring to the European year of development and to the 800 million malnourished people in the world, half of which are poor farmers. She claimed that low **income** from agriculture and related services is a global issue and that access to food should be considered a human right. She invited the European Commission to **design a research agenda that will aim at providing food and nutrition security for all**. She then commented that nutrition has been forgotten in the race for higher yields and

resistance to pests along the past decades. However, research has shown that **it is possible to bring back higher nutritional contents** through conventional breeding. She also referred to studies which demonstrate that diets are becoming increasingly homogenous around the world, raising vulnerability of food systems to threats which are likely to increase with climate change. *"We need to move to more complex and knowledge intensive systems"*, she said. **"Knowledge is key to changing the story and it should not get wasted"**. She mentioned on-going work from CABI aiming at collecting and indexing decades of information on agriculture and food systems and transforming it into knowledge that can be used. She mentioned in particular the [CAB abstracts](#) database which contains around ten million records. She argued that new technologies should increase possibilities in this area and that **coordinated research on open data at global level** should be considered as a cross-cutting issue for the research agenda. She mentioned [GODAN](#) (global open data for agriculture and nutrition) as an interesting initiative in this respect. She finally suggested including in the strategy activities to assess the impact of **invasive species** on agriculture, as well as activities to better understand the role and functioning of micro-organisms. As a conclusion, she proposed that the strategy pays more attention to attracting more, in particular young, people to agricultural research into the future.

Ann Tutwiler then proposed several questions which were collectively answered by panellists, based on their preferences.

### Research takes time: are we researching the right things at the moment to produce the knowledge that we will need in 20 years? Have we done enough in the past?

Claudia Sorlini gave examples of research which has been conducted and would allow addressing the challenges of today. For example, at least five methods to decrease cattle emissions have been elaborated by EU-funded research but the problem is that it is not implemented. Why? On this question Aurelien Esposito-Fava replied that, to improve implementation of research results on the ground, **more efforts should be put on outdoor research**. Basic research may not be sufficient, but we certainly also need outdoor research where farmers can experiment in real conditions individual solutions, using systemic approaches. Janny Vos added that the success factor is really to have a two-way feedback process in which i) research results are communicated in the most understandable way to the farmers, ii) farmers have an opportunity to feedback on how it works and on further needs.



Anna Grosmanova suggested that we should invest more on nutritional aspects. She proposed to research for example how locality may influence digestibility of food. Hervé Guyomard stressed that there is already sufficient knowledge to improve sustainability of agriculture but the question again is how to use it. Hence, it is necessary to **build an information system at EU level allowing to use this data, conduct multi-criteria analysis**, etc. He also considers that we need **more research if we really target major systemic changes**. "Current knowledge enables us to decrease pesticide use by 20-25% for example but if we want to reduce much more by better using ecosystem services, more research is needed", he said. Janny Vos invited not to oppose basic research, from which '*we all benefit every day*', and applied research. Both are needed. She also invited to invest much more in the digital technologies given the potential they provide to do research and extension in a different way. Overall panellists consider that **research efforts should be sustained or even increased**.

### What research do we need on improving the policy framework, enabling policies and political buy-in?

The panel suggested that we do **not have enough knowledge yet on how to activate change**.

Hans Herren argued that the way which seems to be the most likely to deliver substantial results is to **internalise the true cost of food production in food prices**. Food prices may rise as a result but other hidden costs may equally decrease. This raises equity issues as a lot of people, in developing countries but also in Europe, are too poor to pay for sufficient and nutritional food. So that problem would have to be compensated. But how to do that concretely, we do not know and economists should work hard on this. Hervé Guyomard agreed that working on prices is a relevant way forward but warned that it is not so simple. For him, a prerequisite is to **create markets for ecosystem services**: carbon market, biodiversity preservation market, soil preservation market and then see how these markets and prices change behaviour of the economic actors. Janny Vos added that **strengthening links with the stakeholders** is very important to activate change and the EIP-AGRI is a very good initiative in that respect which should be supported.

On a global scale, Hans Herren further commented that, **with the adoption of universal sustainable development goals on 15<sup>th</sup> September 2015, the right policy framework will be in place**. Researchers should be ready to help policy makers take the right measures to reach the goals based on everything we already know to meet society demands of sufficient, nutritious and affordable food while taking into account all costs involved.

## What are the trade-offs between productivity and sustainability. What vision of where European agriculture should be in the future?

For Claudia Sorlini, **the dilemma is captured in the expression "Sustainable intensification"**: for many it is not clear what this term means and therefore which route Europe should go. For Hans Herren, **Europe should clearly produce less, but better quality and above all safeguard its soils** to maintain its productive capacity instead of sealing soil or overexploiting it. Twice as much food as what is needed is produced at global level therefore the main issue is not around quantity but around quality (getting rid of empty calories) and equity of distribution. Anna Grosmanova supported this position.

*The moderator opened the floor to the audience for a last round of comments.*

Nuancing the views that all has been done and said before especially with the IAASTD, Philippe Petithuguenin of CIRAD highlighted that the background paper put on the table by DG AGRI represents in itself and evolution which would not have happened five years before. This process should be encouraged. Ann Tutwiler further commented that she believes the work of IAASTD changed the game but that it takes time to trickle down into the policy process. The second speaker, from the European Seeds Association, highlighted the need for **cooperation between disciplines when it comes to developing new varieties which will serve maybe only 15 years later**. Other researchers can help the breeders determine what the needs will be 15 years ahead. Donal Murphy-Bokern speaking as *ex-post* evaluator of FP6 and FP7 commented that **much of the recommendations from these ex-post evaluations are well-reflected in the paper**. He insisted on the need to invest in the development of **coherent research targets** which enable facing different scenarios and have to be achieved not in single projects but in the framework of **wider, longer-term sub-programmes**.

Aggrey Agumya of FARA (Forum for agricultural research in Africa) then commented on the **impact of European agricultural competitiveness** (and the research and innovation agenda that aims to improve it) **on other parts of the world**. He used the example of European dairy products sold in Ghana at prices with which production from South Africa cannot compete. Consumers of European agricultural products exceed EU borders and therefore it is relevant to consult also other parts of the world on this strategy. Finally, he highlighted the difficulty for African producers to export to the EU and suggested research could help them in this respect.

TP Organics communicated outcomes of a conference dedicated to research and innovation in the organic sector one month earlier, in particular recommendations on how to involve farmers: firstly they should be recognised by the researchers as full actors in the project, then they should be associated from the outset of the project in the development of the project plan and method, and finally not only research outcomes should be shared but also methods and approaches.

*After this last round of comments, Ann Tutwiler handed over to Aldo Longo for the closing.*



## Closure

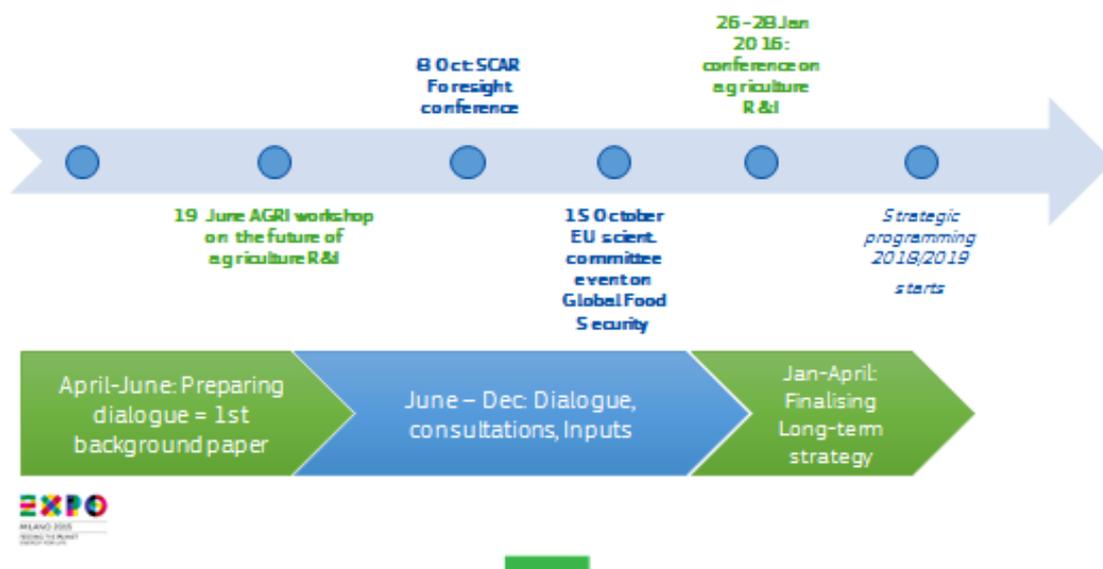
Aldo Longo thanked the moderator, the speakers and the participants for a fruitful day which provided a lot of interesting inputs to kick-start the reflection on the strategy.

He acknowledged the interest of participants in the background paper and noted that the proposed structure with five priorities seemed to be a good start although it would have to be refined. He explained that the strategy will be fine-tuned in the following months on the way to a **larger conference on 26-28 January 2015 at which Commissioner Phil Hogan is foreseen to present the strategy**. He invited all participants to attend the conference and, in the meantime, to send additional comments through the on-line survey opened on 9<sup>th</sup> June and closing on 3<sup>rd</sup> July.

He explained the different milestones and steps between this workshop and the January conference, including the development of a first draft in dialogue with European Commission services concerned, taking into account outcomes of important events scheduled in October (SCAR foresight conference, closing conference on an EU research agenda for food and nutrition security). He announced that a further targeted consultation of stakeholders was foreseen for the end of the year, around November.



## Roadmap for the preparation of the strategy



## Conclusions on the two core questions of the workshop

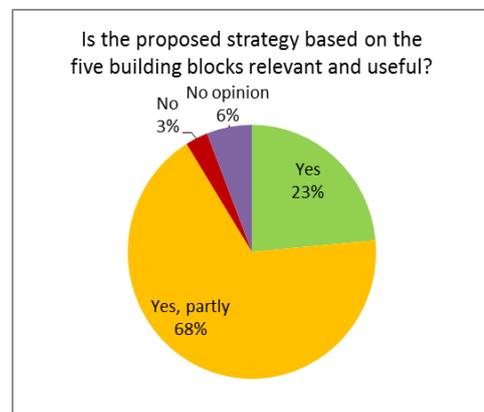
The core question of this kick-off workshop was to **test the structure around five priorities** proposed in the background paper. The second objective was to **tackle the 'what' questions**, thus the content of the research activities proposed. A set of additional questions on the **approaches and instruments** had been included in the background paper but with the idea to tackle them at a later stage.

*Is the proposed organisation based on five building blocks relevant and useful to structure our approach for a long-term strategy?*  
*Are the most important aspects properly highlighted and is the attention on the right issues?*

For various reasons, the discussion significantly shifted to the approaches, instruments and enabling policy framework. Discussions brought however at least partial answers to the two core questions, with important complement provided by the survey (see separate survey report).

### Is the proposed organisation based on five building blocks relevant and useful to structure our approach for a long-term strategy?

The background paper was received very positively by the audience and several participants commented that it represented a step forward integrating outcomes of past international foresight exercises as well as of *ex-post* evaluations. Participants welcomed the fact that the five priorities are presented as overlapping, showing that no clear boundaries can be drawn. Having said that, the structure was not very much discussed during the workshop itself, aside from one comment in favour of merging the two first priorities countered by another comment advising not to.



The survey however provided much more elements on the structure, with a **majority of the 34 respondents supporting partly the structure (68%), 23% fully supporting** it and one respondent opposing it (on grounds related to contents). Most of those who partly supported the structure commented on the content of each priority rather than on the division between priorities (following question). The main question raised in the survey is **whether priority A 'Resource-efficiency' and priority B 'Ecological approaches' should be merged**. One respondent added that priority C should also be merged with the first two. Reasons for merging them differ from one respondent to another. Alternative titles and splits were proposed. Some respondents also welcomed the identification of a core priority on ecological approaches. Several respondents asked for linkages and overlaps to be better articulated. Adding a priority on improving yields was proposed. Several respondents also questioned the relevance of the scope (claiming food chains, nutrition and forestry should be added).

### Are the most important aspects properly highlighted and is the attention on the right issues?

In general terms, speakers and participants considered that challenges were well described and articulated and that the paper offered interesting ideas regarding future research. There was a strong plea from the floor to adopt a food systems approach and to include elements related to food supply chains. Beyond this scope issue, speeches and discussions suggested that several aspects should be strengthened. These are summarized in the table on the following page, with challenges warranting strengthening and points that were raised on priorities (both overlapping of course).

Additional suggestions were made in the survey (see separate survey report).

Challenges needing strengthening:	Main points of attention regarding priorities:
<ul style="list-style-type: none"> <li>- <b>market and value chain dynamics</b>, impacts on farmers and territories, distribution of added value along the food chain; interdependency of the different production steps; integrate risk of divergence of regions in the thinking</li> <li>- <b>consumer behaviour</b> as a driver of primary production, link between farming practices, food and health, dietary changes</li> <li>- <b>societal acceptance</b> of technological changes and building dialogue on this;</li> <li>- influence of <b>industry</b> and <b>retail</b> on the primary sector, balance of powers</li> <li>- radically <b>new farm systems</b> – algae, insects, vertical farming, meatless meat, food printers</li> <li>- <b>non-food uses</b>; avoid considering food vs non-food as a zero-sum game</li> <li>- new <b>energy</b> landscape</li> <li>- <b>digital</b> revolution, use of ICT in production, extension, supply chains...</li> <li>- rapid <b>evolution of boundaries between different types of regions</b> and between urban and rural areas; keeping mutual interest of urban and rural areas;</li> <li>- <b>demography</b>: ageing, migration (external, internal, different age groups) and their consequences on rural policies and on agriculture;</li> <li>- difficulties and therefore crucial importance of <b>channelling research results research to policy makers</b>;</li> <li>- better acknowledge the <b>importance of political economy</b>, vested interests, institutions, <b>governance</b>; neighbourhood policy; global dimension;</li> <li>- link with <b>SDGs</b>, impacts of EU agriculture outside the EU</li> </ul>	<ul style="list-style-type: none"> <li>- multi-stakeholder assessments on agriculture and food systems at national level; involving citizens in policy-making; research conditions and process to activate the change</li> <li>- factor in questions regarding consumption and societal expectations at early stage. Involve consumers and citizens, as well as farmers etc. in the research and innovation agenda setting; social dialogue;</li> <li>- foster farmer involvement: outdoor research, research on how to involve farmers, methods to detect farm-level innovation</li> <li>- continue and strengthen EIP approach and increased exploitation of results (policy and sector)</li> <li>- ecosystem services use efficiency first, efficiency of use of non-renewable resources next – look into combined systems.</li> <li>- IPM, sensors, phenotyping, dynamic health concepts, biomarkers, new technologies, also for the organic sector.</li> <li>- digital and other new technologies, open data, big data</li> <li>- Genetics, genomics, meta-genomics: new technologies and collecting and using better what is already there;</li> <li>- favour mutual inspiration between conventional and organic (weeding, IPM, feed, antimicrobial use)</li> <li>- Soils fertility and functionality (more links with basic research)</li> <li>- Energy production</li> <li>- One health, preventing diseases rather than curing. Using risk assessment to prioritize. Identifying drivers influencing disease spread, modelling. Priority on emerging diseases.</li> <li>- <i>negative priority</i>: no more research on drawing boundaries/delineating</li> <li>- pool results of past projects and translate them in understandable language for politicians. For new projects, prioritize communication.</li> <li>- scenario type of research analysing big challenges and how they may effect rural areas policies (inc. using big data), socio-economic issues, governance; Foresight for the biosphere;</li> <li>- identify indicators to qualify what is a good or a bad practice in terms of rural development and identify best practices serving as inspiration</li> <li>- value chain organisation as a result of new demands, technologies, changing structures and cooperation modes</li> <li>- social innovation, regional branding, organisation of public services in rural areas and impact they have on attractiveness</li> <li>- improve mechanisms for remuneration of ecosystem services, assess potential spin-offs based on them</li> <li>- internalising true production costs and value of services provided in prices, creating markets for ecosystem services</li> <li>-creating European level research infrastructures and European level management and sharing of data (in particular agro-ecology)</li> <li>- organise exchange of experience between regional-level AKIS</li> <li>- explore large scale funding schemes allowing support to smaller scale operations or sub-projects, envisage sub-programmes</li> <li>- Changing career-reward systems</li> </ul>

# Appendices

**Who attended and list of participants**

**Workshop final programme**

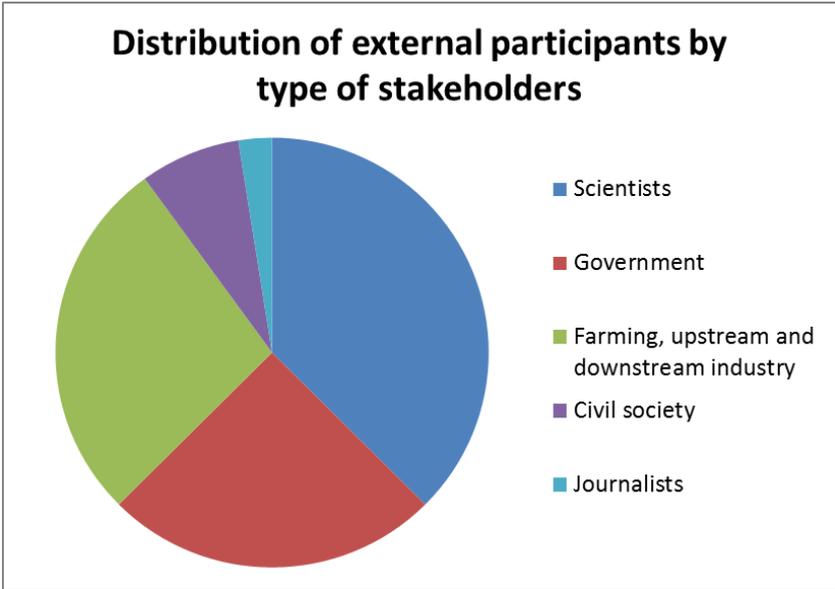
## Who attended?

The workshop assembled around 90 participants representing a **variety of actors involved in agriculture and forestry and related food and non-food supply chains, as well as organisations representing wider types of interest such as environmental NGOs or rural development NGOs** and staff from the European Union institutions and international organisations (FAO-GFAR, OECD, FARA, CIHEAM).

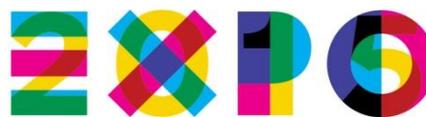
External representatives were selected from several official committees and experts group at European Commission level (SCAR, Horizon 2020 Societal challenge 2 advisory group, rural development civil dialogue group, innovation subgroup of the European assembly of rural networks) and completed for some sectors that were missing with adequate representative European organisations.

Participants from all 28 Member states were initially invited but not all could attend. 21 Member States were represented. Similarly, not all European networks which were invited could attend.

While building the list of participants, balance was thought between scientists, farm and industry representatives, other civil society groups including organisations involved in rural development and government representatives. Two journalists were also invited. Gender balance was also considered.



The full list of participants is available [here](#).



MILANO 2015

## AGRI Research workshop

### Towards a long-term strategy for European **agricultural research and innovation** by 2020 and beyond

19<sup>th</sup> June 2015

#### EXPO Milan site – EU Pavilion

10:30– Welcome coffee and registration

The event will be moderated by **Ann Tutwiler**, Director General of Bioversity international

**11:00 – Welcome and introduction – Ann Tutwiler, Moderator**

**11.15 - Opening speech: A long-term and strategic approach to research programming in agriculture – Jerzy Plewa**, Director-General of European Commission Directorate General for agriculture and rural development (20')

**11.35 – Keynote speech: Looking forward: challenges and trends to factor in a long-term strategy for agricultural R&I by 2020 and beyond? – Erik Mathijs** – Professor of Agricultural and Resource Economics at the Department of Earth and Environmental Sciences of the University of Leuven - SCAR Foresight (20')

**11.55 – Session 1: A research agenda to produce more sustainably**

*Discussants:*

- **A more resource-efficient agriculture: John R. Porter**, Professor of Climate and Food Security, Faculty of Sciences, University of Copenhagen and Professor of Agriculture and Climate Change, Natural Resources Institute, University of Greenwich (15')
- **Agro-ecology: how can this approach support research and development of agri-food systems? Niels Halberg**, Chair of the Horizon 2020 Advisory group for Societal challenge 2, Director of the International Centre for Research in Organic Food Systems (15')
- **Healthier plants and livestock: Marta Hugas**, Head of the Risk Assessment and Scientific Assistance department of the European Food Safety Authority, Parma (15')

Discussion with the audience (45')

13:30 –Light buffet

## 14:30 – Session 2: A research agenda for innovative rural areas

*Discussants:*

- **New openings for rural growth: Richard Wakeford**, Professor of Environment, Land Use and Rural Strategy, Birmingham City University; Director of Director of Kazan Centre for Land Use and Sustainable Rural Development, former chair of the OECD working Party on Rural development (15')
- **Developing the human and social capital: Krijn Poppe**, Senior Economist & Research Manager at the Agricultural Economics Research Institute LEI WUR; Chair of the SCAR working group on AKIS (15')

Discussion with the audience (30')

## 15:30 –Session 3: Round table discussion: How to build a long-term strategy for EU agricultural research and innovation by 2020 and beyond? (60')

*A panel of scientists, farmers and society representatives will discuss the main building blocks of a future strategy for EU agricultural research, expectations from farmers, scientists as well as society and put the EU discussion in perspective with previous exercises undertaken at international level.*

*Panellists:*

- **Claudia Sorlini**, Chair of the department of food, environmental and nutritional science at University of studies of Milan, Member of the Steering Committee of the [EU scientific programme for Expo Milano 2015](#)
- **Hans Herren**, President and CEO at Millenium Institute – Former co-chair of the International Assessment of Agricultural Science and Technology for Development (IAASTD)
- **Albert Jan Maat**, President of Committee of Professional Agricultural Organisations (COPA) – Former Member of the European Parliament – *Substituted due to late cancellation by Aurélien Esposito-Fava*, French Permanent Assembly of Agricultural chambers, Chair of COPA-COGECA working party on research and innovation
- **Anička Grosmanová**, Leader of the international Slow Food Youth Network in Prague, Head of the Food Hub, Master Student at the Prague University of Life sciences
- **Hervé Guyomard**, Scientific Director for agriculture at the French national Institute for Agronomic Research (INRA)
- **Janny Vos**, Director for Strategic Partnerships at CABI, manager of CABI office for Netherlands

**16:30-16:45 – Closing remarks: what are the next steps? – Aldo Longo**, Director at European Commission, Directorate General for Agriculture and rural development

17:00-18.00 - VIP cocktail on the EU Pavilion terrace

