Full Workshop Report

Diversifying Food Systems in the Pursuit of Sustainable Food Production and Healthy Diets

Second workshop

Brussels, 18th February 2019

09.30 – 17.00

European Commission, DG RTD, SDM1,

Rue du Champ de Mars 21/ Marsveldstraat 21, 1050 Brussels

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Table of contents

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I. Opening of the workshop - *Monique Axelos (chair of SCAR FOOD SYSTEMS SWG)*

This workshop is the second of three workshops on Diversifying Food Systems in the Pursuit of Sustainable Food systems and healthy diets. We are facing a decrease in crops and animal breeds diversity which undermines the ability of agriculture to adapt to climate change, and to cope with pests and diseases. In parallel to the threat to agrobiodiversity, we notice a trend towards the homogenisation of diets (greater intake of calories, animal proteins, and ultra-formulated foods that are high in sugar, salt and fat). There are diet-related health problems in every part of the world and non-communicable diseases are now the leading cause of death worldwide. In the future, we expect that our food system will look different from now. Technology and social practices will have changed the way we produce and process our food, how we shop and what we eat. Transitions are already in progress in particular via a profusion of local and national, private or public, initiatives to meet consumer demands for e.g. natural production and consumption, an increase in the territorial development, reduction of waste and energy consumption, added value for the farmer, increased competitiveness through innovation, etc. These initiatives lead to more diverse food systems but raise the question of their impact in terms of sustainability and diet quality.

In this second workshop, we will continue to explore the diversity of food systems and processes that make this diversity evolve with different experts.

1. Presentation of FOOD2030 and its 4 priorities- *Barend Verachtert, Head of Unit F.3, GD R&I*

The Food 2030 Strategy started 3 years ago, followed by the Milan expo. We are confronted with great challenges regarding feeding 9 billion people and the need for agri-food production on restricted land available and expanding oceans. This leads to pressures on agriculture and fishery. There is an increasing demand for food, yet 30% of our food is wasted in some stage of the agri-food chain. Over 850 million people are underweight, hungry and malnourished. They do not have sufficient access to required nutrients. On the other hand, 2 billion people are overweight or obese, causing health problems. Furthermore, agri-food production has to deal with climate change. The pollution is not only in sectors such as transport. The agri-food sector also contributes substantially to CO2 emission.

The Food 2030 has 4 aims related to nutrition, climate, circularity and innovation. It is about linking food, health, agriculture and socio-economic developments. It is not only about food itself, it is e.g. also about **sustainable packaging**. An important question is how to avoid **food waste** and **empowerment of communities** is absolutely essential to strengthen our food system. **Cities** are becoming more and more important with a rising share of the population living in them. The way we produce and consume food requires solutions based on responsible research and innovation (RRI). We come out of an era where we looked at things from a sectoral perspective but if we want to be effective, we need to start **thinking from a food systems perspective**. That is key to our thinking and we are not alone in this. Many different and smart actors are involved.

Publications are e.g.:

- **the EAT-Lancet Commission Paper***:* Food in the Anthropocene - Healthy Diets for Sustainable Food Systems;
- **EAT-Lancet Commission Paper**: Global Syndemic of Obesity, Undernutrition, and Climate Change

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- **the European Commission Reflection Paper**: Towards a Sustainable Europe by 2030
- **the European Commission Communication**: A Clean Planet for all - A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy;
- **the Austrian Presidency Policy Brief:** Connecting food systems for co-benefits: How can food systems combine diet-related health with environmental and economic policy goals?
- **the European Investment Bank Final report** : Access-to-finance conditions for innovative companies along the agri-food value chain.

2019 will be the year of nutrition (not formally). There are many examples in food systems R&I working on practical solutions. Challenges are a.o. in alternative proteins, CO2 reduction by less meet production and personalised nutrition but there are many more. We emphasise on multi-stakeholder engagement to which this workshop also contributes.

The Food 2030 Expert Group has worked on:

a) improving dietary patterns,
b) creating a resource smart food system with 50% lower CO2 reduction and
c) realising trust and inclusive governance.

There is also the issue that new technologies towards a resilient and safe food system, are not readily accepted such as GMO and new breeding technologies. Will we accept this? All this has to do with trust and inclusiveness. How does society feel about these solutions R&I comes up with?

Furthermore, the SCAR FOOD SYSTEMS strategic working group (SWG) published an interesting mapping report, covering a part of the EU. It would be good to continue this work to enlarge the scope. We need to understand what is happening already.

At EU level we support the Fit4Food project with a number of work packages supporting the enrolment of Food 2030 with initiatives such as think tanks, city and policy labs. In the Commission we developed the Food 2030 framework. Now we're trying to put our money where our mouth is. One important topic will be on innovation and empowerment of communities.

The new Framework programme will be called Horizon Europe. The discussions on this programme are currently ongoing. Food and natural resources will be one of the clusters addressing Global Challenges in which 10 B€ is earmarked for food, agriculture and bioeconomy.

II. Presentations: Plenary Session

Seven experts provided presentations which they concluded with 3 main challenges and 3 R&I issues.

1. Diversifying primary production - *Jean Marc Touzard, INRA*

Diversity in and between food systems can contribute to food security & sustainability, calling for new research questions to:

1. define/describe what is diversity in and between food systems;
2. understand the processes that determine the evolution of diversity in/between food systems ;

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3. assess the impacts of diversity on food security & sustainability ;
4. analyse and support strategies, policies and debates that promote/orient diversity in/between food systems.

Ad 1. We move from a generic definition of Food System: *'how people organize themselves in space and time to obtain and to consume their food. The Food System covers all the processes involved in feeding a population, including the input required and output generated at each step… A food system operates within, and is influenced by, the social, political, economic and environmental context." (Malassis, 1979; Goodman,1997; Dualine, 2014),* towards an increasing number of specifications, uses, approaches, publications of this concept. An analytical approach of Food Systems is:

- built from the consumption activity, a set of eaters;
- described by elements, relations, subsystems;
- contextualized in the whole society and ecosystem;
- analysed as a stabilized and evolving system;
- in objective form (concrete FS) vs subjective form (project, utopia, FS model).

The following FS models were presented:

1) domestic model,
2) proximity model,
3) traditional commodity,
4) agro-industrial,
5) traditional and original,
6) naturalist and
7) ethical/religious.

FS' criteria of differentiation include:

a) technology, functions and economic structure,
b) flows and relations,
c) institutional and political and
d) cognitive criteria (representations and conventions).

Furthermore, there is diversity within each food system and there is diversity between food systems.

Ad 2. We have to take into account a historical analysis of concrete Food Systems regarding reduction or/and increase of diversity. Each food model is linked to a specific trend of innovation (path dependency, links to internal diversity/competition…). However, innovation also relies on interactions between different food models/systems. Different positions and arguments on diversity call for impact assessment of diversity.

Ad 3. To assess the impacts of diversity on food security & sustainability Jean-Marc Touzard (2014) analysed the impacts of different food systems/models on four food security pillars:

1) availability,
2) access,
3) utilisation and
4) stability.

There is an increasing number of comparative assessments between food systems. Questions and perspectives to assess impacts of diversity are the following:

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- The combination of different food system models has positive impact on food security and sustainability but what can be said about the combination?
- The diversity in and between food systems and food models are connected: how to assess the impacts of this co-evolution?
- Is there a need of meta-analysis focusing on diversity and their impacts?
- Is there a need of new indicators, tools and methods to assess impact of diversity?

Ad 4. The coexistence of food systems lead to new political challenge in France.

- The development of local agriculture and food policies aims at managing diversity of food systems agro-ecology and food.
- The evolution of sectorial policy: support to organic System Opening AOP code of practices to diversity and innovation.
- Evolution of Research policy (INRA). Opening lines of research to alternative food systems and coexistence.

Are we heading from food policy to the governance of food systems?

- There is a need of evidences to build new food policies that take into account diversity of food systems at different scales.
- Towards new public-private management of food system diversity?
- How to deal with diversity of stakeholders: food councils, food democracy and social innovations in food systems?
- There is a need of tools for food governance, participatory and collaborative research programs.

Three **main questions** arise for further analysis:

- How can innovation processes combined with changes in eating habits, policies and ecosystems, influence the diversity in and between food systems?
- How to assess and compare the impacts of different "levels and modalities of diversity" in and between food systems, according to food security & sustainability goals?
- How to co-design governances of food systems that promote, guide and value their diversity at different territorial scales (local, national, European, global)?

Q&A:

- **Q:** *As researchers, we have to deal with conflicts of interest. How can we tackle this?*
  A: currently we are working more and more in participatory research methods in which researchers are not only observing but they are also actually involved in the policy/action (as actors). We are both playing the roles as experts and interact with different actors. We could guide and organise these participatory approaches. We are also learning ourselves by these kind of methods by working on the goals. Therefore, we are working at different levels: how people are interacting, what can be proposed, identifying indicators and developing tools in order to favour collaboration between actors to provide new ideas. It is a new way to develop research.
- **Q:** *from a research policy perspective, if I were to write a proposal, how to define a food system which includes diversity? If you want to work on a particular approach, who do you include? The supermarket does not describe the system the same way as the consumer does. How do you deal with this diversity*?
  A: when we started working from the Food Systems perspective, we defined each aspect from the consumer as starting point (different consumers). The analysist has a

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key role with regard to his/her domain but FS includes the whole system. Hence it is also important to take into account the role of start-ups, NGOs, etc. It is about the discussion. How to build the system. When you are working on concrete food systems it takes a long way to describe it but at a larger scale, we have to be more normative. You have to decide which criteria count for all food systems; we have to be pragmatic for the purpose of your research. It is a long process but you can define it more simpler/practical with a normative research approach.

- **C:** In the future, there can either be more general criteria and more diverse criteria (so both).
- **Q:** *do we have enough indicators on the path of diversity?*
  A: no, we have to identify new indicators. We have to rethink on how to come to new indicators related to the goals. We need to rethink about diversity so that we know what we are thinking of when we talk about diversity in food systems. What modalities, what kind of dynamics, etc.

2. Novel protein sources - *Anne Pihlanto, Natural Ressources Institute Finland-Luke (FI)*

Diversification is needed in all steps of the food system.
First, in primary production for the replacement of fossil raw materials and energy sources and for managing climate change risks regarding a shift in production focus.
Second, versatile cultivation strengthens biodiversity and provides opportunities for primary producers. Legumes provide a balance between nitrogen and phosphorus economy and deep root plants will bind carbon.
Third, it is needed with respect to the internationalization of the food system and the fulfilment of sustainability requirements and risk management.
Fifth, it is needed with respect to changes in consumption and service structures.
Sixth, the circular economy matches local / regional natural resources which improve production resilience.

The ScenoProt project studied how to get a more sustainable protein system. Its advantages are: a better protein self-sufficiency, environment, climate and socio-economic sustainability, healthier food and new consumer products. The project belongs to the research program of the strategic study, climate neutral and resources efficient Finland. ScenoProt is funded by the Strategic Research Council (SRC) at the Academy of Finland.

So *where do the Finns get their protein intake from?* Currently, most of the proteins are derived from animal sources such as meat products and dairy products. The addition of plant-based products can reduce both chronic illness and repress climate change. Animal products alongside plant-based protein sources ensure essential amino acids, zinc, efficiently absorbed iron and vitamin B12.

Product development is forefront to introduce new protein sources on consumer plates. The project produces knowledge-based know-how for further processing of vegetable raw materials for the food industry, so that they can choose and produce healthy and attractive vegetable protein-based products such as lupin, faba bean, buckwheat, quinoa, oil hemp seed, flaxseed, and rapeseed press cake.

Consumers are interested in health and environment. More than half of the interviewees will try new products rather willingly, if they exist easily available from an own grocery store. The most important basis for choosing plant-based protein products is taste. Health is also important. Price was the greatest barrier and the perception is that the products are expensive. Inexperience and unfamiliarity were also barriers.

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The take home messages are:

- Regarding primary production: plant breeding strategies, reform of agricultural subsidy polices and encourage the utilization of crop rotation and experimenting with new crops and increase farmers' knowledge and develop farming techniques;
- To develop justice in the entire food system by ensuring that the economic needs and interests are balanced;
- Offer low-threshold support to cover the research, product development and marketing needs of small- and medium-sized food companies;
- support the formation and diversification of food production and consumer communities both in urban and rural areas.
- To strengthen food system research and innovation by ensuring adequate funding.

Q&A:

- ***Q:*** *Do you also consider side streams for e.g. cellulose and animal feed?*
  A: this is quite difficult for the present producers. We also use the side streams for mushrooms produced in forests. This could also be a protein rich new product in Finland.

3. Novel protein sources - *Valérie Michel, ACTIA*

Are Novel Protein Sources indeed novel? Humanity evolution has led to breeding and exploitation of animal proteins (milk and meat proteins) but vegetable proteins were formerly the basis of our alimentation. In some countries, vegetarian proteins still form the basis of human nutrition. In many parts of the world, insect proteins are already part of the nutritional bowl; 2.5 billion people eat edible insects (FAO, 2013).

Challenging aspects of new processes are:

- Increased NPS production in a context of global climate change (global warming, water availability);
- Food safety issues: hazards linked to these new protein sources (parasites, mycotoxins, nutritional value, etc.);
- Low impact processes: have to keep the high quality of raw matter, have low impact on the environment, have to be in phase with current ways of consumption (extended shelf-life, ready to eat, adapted to different stages of population/age, etc.).

According to Valérie Michel, novel protein sources are innovative, at least in their use and extent. However, challenges are to gain better knowledge of their health impact, better knowledge of their nutritional value, adaptation of industrial processes with their production, transformation and use as by-products and its social acceptance of novel protein sources consumption. This suggests the following research topics:

- evaluation of the positive and negative impacts of novel protein sources (human health, production systems, environment);
- how to adapt current protein processes to novel protein sources while reinforcing sustainability;
- how to facilitate social transition towards novel proteins sources uses in developed countries.

Q&A:

- **Q:** *subsisting milk and meat products is complex which also involves redirecting diets*;

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A: when people took in less animal protein (30% instead of 70%), this involved a lower vitamin content but it also had beneficial impact for example on cancer cells. There has to be more discussion about the effects of eating more vegetables on people's health.

4. Interaction between stakeholders all along the food chain- *Yuna Chiffoleau, INRA*

Yuna Chiffoleau used the food system models and main criteria presented by Jean Marc Touzard, in her work on interactions between stakeholders. Different archetypes were distinguished. Since 2000, the proximity model is not new but renewed because it is pushed by citizens, consumers and policies.

A second approach in the work by Chiffoleau focused on the proximity model addressing different ways how food systems are conceived with particular focus on the interaction between stakeholders, e.g. related to direct selling (work), security of wages (sustainability).

A third approach focused on city food provisioning, to have food closer to the city. A study was performed in the area of Montpellier which participates in the Milan food pact, because of the lack of available data. Flows of food were reconstituted. They looked at the relations from two different visions. Flows of food are materialistic, imbedded in spatial areas but also between actors.

A network of food provisioning was presented indicating the interdependency between people, including an underlying social network. Regarding the 3 strategies:
1) the proximity strategy,
2) the centralised strategy and
3) the mixed strategy can work for their own interest but they can also work as facilitators.

Policy makers can take in different roles. It is a way to identify different strategies. The study provided another way to look at food networks, including analysing strong versus weak ties. From this contribution of Economic and network sociology (H.C. White, M. S. Granovetter) it was concluded that interactions can be approached through nodes, relations, contents, morphologies, relational profiles, alliances, non-relations. This was a relevant approach to capture the diversity of interactions between stakeholders all along food chains. It was tested and led to the improvement of hypothesises confronting interactions' variables and performances, innovation and resilience. It is important to note that the approach led to the identification of new levers and brakes to sustainable food systems and to the transition of food systems.

Challenges are to:

- better know the diversity of food chains, their innovation potentials, their contribution to sustainability, and the contribution of their coexistence to resilience and/or sustainability
- preserve the coexistence of diverse food chains in macro regulatory frames which are usually not adapted to this diversity;
- value diverse food chains and the diversity within food chains without social exclusion (how to prevent a two-tier food system)

Research questions for further analysis include the following:

- which are the new indicators and approaches that are needed to assess the diversity of and within food chains, the impacts of diverse food chains, and of their coexistence?

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- which new regulatory frames and governance devices can be more adapted to the coexistence of diverse food chains ? At which scales ?
- which new business models, standards and logistics (including ICT) could value diverse food chains and especially food chains promoting diversity from upstream (agrobiodiversity, animal biodiversity) but without excluding low-budget consumers?

Q&A:

- **Q:** *Are there going to be more (types of) food systems like in America? For example cheap versus quality issues?*
- **A:** of course we have to think about it. The proximity model includes some organisations which can support local production and facilitate access to fresh food. We are not obliged to think in one model and at territorial level, we can build in different models for different people.

5. Diversity of the diets – *Eric Verger, IRD*

Eric Verger presented:
1) the concept of dietary diversity – effects on nutrition and health,
2) diet diversity versus eating locally and seasonal products and
3) consequences of the diversity and quality of the food supply.

Dietary diversity has long been recognized as a key element of high quality diets based on the principle that no single food can supply all the essentials nutrients in amounts, needed for maintaining good health. While there is this striking concept of "variety of foods", there is also the idea of not just any variety, any idea that were kind of forgotten. A broad concept of diversity (and variety) has led to a variety of indicators.

	No or minimal *a priori* in nutrition	**Moderate to strong *a priori* in nutrition**	**Based on dietary recommendations**
Nutrition	Good proxy of nutrient adequacy but not of nutrient moderation	Better proxy of nutrient adequacy but not of nutrient moderation	Better proxy of nutrient adequacy and good proxy of nutrient moderation
Health	Avoid risk of undernutrition but not risk of obesity and NCDs	Avoid risk of undernutrition and mixed results for risk of obesity and NCDs	Avoid risk of undernutrition, obesity and NCDs
Risk of difficulty in comprehension	No risk	Little risk	Moderate risk

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Dietary diversity (variety) cannot be a stand-alone recommendation and has to be considered in connection to other aspects of the diet (balance, moderation). Current gaps exist in knowledge about optimal levels of diversity, in the diet and food groups for better nutrition and health.

Recommendations to eat locally and seasonal products:

- Some general guidance: enjoy eating: look for variety and take time to eat and savor. Good eating is also taking into account the environment by choosing foods from local producers, seasonal products and, if you can, organic foods;
- Seasonal products and proximity: are key to sustainability. It is a characteristic feature of the traditional diet and possibly in harmony with chronobiological factors.

Regarding dietary choices, appetites and energy intake, evidence from short-term feeding studies indicates that serving a wider variety of foods, leads to an increase in food intake compared with serving a single food. This gives the suggestion that a greater diet diversity increases food consumption through amplifying sensory stimulation, associated with multiple foods and delaying satiation.

Challenges and research questions presented:

- To develop a definition of healthy dietary diversity that can be easily understood and applied by the consumers (or drop it).
    - What are the levels of diversity in the diet (between and inside food groups) that matter for adequate nutrient intakes and for health outcomes?
- Ensure compatibility between healthy dietary diversity and recommendations to eat locally and seasonal products
    - To what extend a healthy dietary diversity could be met by locally and seasonal food productions? What is local? What about interregional exchange?
- Explore the concept of healthy food supply diversity to help consumers to make healthy and sustainable dietary choices
    - What are the consequences of the diversity of current food supply on dietary choices, appetite and energy intake?

In H2020, there is a challenge regarding *Personalized Nutrition* (DT-SFS-14-2018) with an expected impact "Empowered consumers able to make healthy and sustainable dietary choices". Only relying on individual behaviour and responsibility is a dead end in Public Health (see obesity) and action on food environment (and thus food supply). The concept of healthy food supply diversity could be the next step of the concept of Nutrient Profiling (not just inform consumer but help to regulate the market with subsidies and taxes).

Q&A:

- **Q:** *what can be said about the individualisation of food? H2020 focuses on personalised nutrition. Do you foresee a theme for non- or less processed food?*
  A: for some cases it might be interesting to know more about the concept of non- or less processed food. But it might not be good idea to switch to solely personalised nutrition. Eating similar food in groups also has beneficial advantages.
- **C**: diets can be a driver for diversity in the food system. It can also be a driver to become more diverse and other benefits that come along with it. It is an important point. Consumption can also be a driver for diversity;
  A: we do not know a lot about the variety level yet. More cultivars might be better but we are not looking at detail level. Maybe growing diverse crops is interesting for the

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production aspect but it might not be connected with the indicators of what makes a good consumption diet/pattern. They might not be well correlated.
- **C:** diversity in crops is good for food security e.g. because of diseases, even if the nutrition aspect is not that relevant.

6. Diversity in food systems & food consumption practices - *Maria Plessz, INRA*

In her presentation, Marie Plessz referred to food practices from a sociological point of view.

Food practices: take a lot of time, bring together many different activities and things, connect with how we view and enact family ties, wellbeing, care, housekeeping, career, identity, etc. They have mostly unintended/ ignored health & environmental consequences, seldom look like choosing between a predefined, limited set of options and are very context-dependent.

Diversity from a consumption perspective can be considered as: generated upstream in the FS, variety, a difference, in products and provisioning channels and in definitions of appropriate ways of eating. Variety can be analysed in meal content as a social norm and eating contexts. Diversity helps accommodate citizens' tastes and living conditions (social cohesion) but policies focusing on helping citizens make the right choices often lead to stigma and blame on the most vulnerable citizens.

Three challenges concerning food consumption practices are:

- What can be said about resource-efficient diversity concerning environmental resources and consumers' time and skills?
- Gender equity: can we have diversity without generating even more food work and responsibilities for women?
- Social cohesion: can we reduce the market and social value of 'bad variety' without generating social exclusion and stigma?

Three R&I issues concerning food consumption practices are:

- To make collective meal arrangements socially inclusive AND healthy AND sustainable
- Share responsibilities and work generated by diversity with upstream actors
- Design policies that focus on the contexts of consumption rather than on consumers.

Q&A:

- **Q:** *dietary patterns are not only about the consumer, it is about the whole system.*
  A: we look at the household level where people become obese. We want to address it where it happens. It is not easy to change. Changing our food practices in a significant way, is often unforeseen and reflective. People have many things to do when thinking about food. Taking care of your beloved ones, thinking of food safety, health, not too many calories, parties, etc. Variety as a social norm is absolute, so maybe we can work on the consumer. We also have to work together with marketers. They have to stop emphasising on variety in diets, we are beyond that.
- **Q**: *did you also look at the importance of gender?*
  A: the higher you are up on the socio-economic ladder, the more coherent it is. Women have more coherence with taste in general. The upper-class is more coherent to readymade meals. After people retire, they have more time and they can produce more meals from raw ingredients. Older people also buy less readymade food because they were not used to it.

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- **C:** children and husbands will ask the woman to buy the food they want. There might be discussion on healthy food but still, women will buy what the men want. It is in particular difficult for women with a low income to buy healthy because the cheapest food is often not the healthiest. This is deeply rooted and it will be difficult to change.

7. Dynamics in food consumption Influencing diversity – *Guyla Kasza, National Food Chain Safety Office*

When we talk about diversity of food chains, we mean:

- joy of consumption (consumer perceived quality)
- health concerns
- comfort and simplicity
- sustainability
- safety and efficiency

Who buys food in the EU?
Certainly, the population will be changing. More people will live over 80 year and this will be doubled in the future. Therefore, the population will change. People get older. The observation says for example, that the health of women over 65 years of age, increased. A similar value was found for males. Hence, people get older and live in better health conditions. On the other hand, health concerns increase, for example because of more energy intake. The prediction is that this will not decrease (soon).
Regarding the obesity ratio: more than 15% of the EU population is already overweight. Similar trends could be observed for food allergies, coeliac disease and lactose intolerance. More than 65% of the people are lactose intolerant worldwide but only 5% in Northern Europe. However, people tend to overestimate their lactose intolerance.

What kind of food do people buy?
- Clean labelling (free from...)
- functional food (with health and nutritional claims)
- personalised diets (based on individual genetic profiling).

There is an increased revenue in the convenience food segment. Furthermore, if we look at local for local **food markets** compared to global food markets, it seems more sustainable from certain perspectives. However, we cannot not draw a hard conclusion which is only limited, because if we leave out the transport aspect, other food from elsewhere tends to be more sustainably produced (for example). Hence, we have to look at multiple intertwined factors.

So what can be said about local farming?
Most of the **farmers** in the EU are aged under 35 years, less farmers started in the last years. Furthermore, if we look at urbanisation, the distance between production and consumption is likely to increase. Eating out has become more popular in the EU. We eat more meet products but we anticipate the industry for alternative meet products.

There are many concerns about **meat**. We want the sector to care about animal health and welfare, antimicrobial resistance, etc. All of these are huge challenges. There is an increase in vegetarian and vegan people but sufficient statistical data is lacking. We have to deal with challenges regarding climate change, food and water scarcity, migration and the spreading of exotic diseases for both humans and animals. Opportunities are e.g. novel foods, water preservation and food waste prevention, which is a huge problem.
Households are responsible for over 50% of all **food waste**. It is estimated that the EU wastes 92 kg. of food per capita per year.

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Food safety challenges are e.g. dealing with trade liberations, problems/threats caused by the globalised food chain, international criminal activities, food adulteration, and traceability and terror threats.
People want to make **better food choices** but people buy out of routines. Shops plan to change isles, make people curious about healthy food and make use of internet.
Social networking sites have a huge impact on our food choice. Regarding online distribution channels, online food sales doubled but it is still just a small percentage of all total food sales. Even in the US online food sales is only at 3% but the growth rate is considerably high. A very interesting trend are the 'grow at home initiatives'. Experts started to profile food as a public good in relation to the industry 4.0.

Conclusions and challenges:

- High level of dynamics and extreme complexity in the evolution of EU food chain – Forecasting trends, food safety risks. Monitoring? Traceability? Multinationals have capacities for forecasting, but policy makers and SMEs need help.
- Selling sustainability: harmonizing consumer and cost driven food innovation with sustainability.
- Diversity of information that reach the consumer. Role of information sources? Influencing influencers with science. Credibility? Impacts on attitudes?
- Diversity needs should be predicted by research based on factual data collection and consumer research.
- Resource efficiency/circularity, food waste reduction, food risk management in the changing environment. Ambitioning technology driven innovation created with public participation.
- Connection between health and food choice (nutrition and safety). Risk perception of consumers and behavioural insight integrated in policy and innovation. Innovation in field of the economically challenging gap areas (eg. smaller patient groups with uncovered needs and people in need) should be fostered.

Guyla Kasza would like to enhance **more public-private participation in food systems**. A very interesting field of research is the **connection between health and food choice**. Behavioural studies should be further integrated. We have to deal with the gaps regarding access to food and inclusiveness.

Q&A:

- **Q:** *Internet purchase is becoming more and more important. Does the consumer have more time to buy food? Does that influence variety?*
  A: internet can reach consumers at longer distances, also people in other countries. It is in one way a reason for diversity/variety. On the other hand, it might decrease diversity. It also increases the chances of black markets.

III. The next steps towards a common program addressing / JPIs and SUSFOOD2 update

1. JPI healthy diet for a healthy life- aligning research programmes in food, nutrition and health: Diversity – *Jolien Wenink (Coordinator JPI HDHL)*

More than 2 billion of us are overweight and the associated costs are 1.2 trillion dollar per year. The battle against unhealthy lifestyles is interconnected with other societal challenges.

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From the JPI HDHL perspective, the effect of food production and consumption on biodiversity and climate change, and vice versa, is a particular concern. Healthy and environmentally-sustainable food are not the same concept. A mind-shift wherein the focus is on dietary patterns and lifestyles that are both healthy and sustainable. The strategic goal is to improve dietary quality in an environmentally-sustainable way, based on insights and developments in food, nutrition and the social and health sciences, and to develop evidence-based recommendations and innovative formats for food products. Together with changes in physical activity/sedentary behaviour this should have a major impact on public health, increasing quality of life and prolonging productive life, simultaneously reducing the environmental burden of diet.

JPI HDHL is a country (26) driven initiative with no legal entity. Membership is on level of governmental organisations, preferably from both agricultural and health ministries. The countries meet 2 to 3 times per year. Strategic documents are both meant for joint JPI HDHL activities, as well as to feed into national (funding) strategies. The Knowledge Questions in the area of JPI HDHL are various and complex. The new structure of the updated Strategic Research Agenda became available in February 2019. There is a lot we do not know yet about the relation between diet and health, as well as how to influence dietary behaviour.

The research area that deals with the links between nutrition and health, as well nutrition related public health interventions often falls in between the agricultural and health domain, with a risk of underinvestment. Whereas knowledge is needed to underpin policy & interventions to work towards a healthy sustainable society. This requires bringing together many different scientific disciplines as well as stakeholders within the food system.

Topics for **knowledge hubs** are:

- DEDIPAC – determinants on Dietary and Physical Activity
- ENPADASI – European Nutrition Datasharing Initiative
- Malnutrition in the Elderly
- Policy Evaluation Network
- Working group onset diet related diseases
- Platform Intestinal Microbiome and human health – call phase
- Food and Nutrition Security (jointly with FACCE JPI & JPI OCEANS).

Topics for **targeted calls** are:

- Intestinal Microbiomics;
- Intestinal Microbime cofunded;
- Biomarkers – food intake;
- Biomarkers for Nutrition and Health – cofunded;
- Food Processing for Health;
- Nutrition and Cognitive Function;
- Nutrition & the Epigenome;
- Diet, Food Components and Food Processing on Body Weight Regulation and Overweight Related Metabolic Diseases.

Q&A:

- **Comment:** In some cases, there is a clear correlation between health and the environment the food is being produced in. For example, the nutritious value of whole grain might be lower than spelt because of the quantity it is being produced in.

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2. Towards Sustainable Agriculture in a Changing Climate - *Heather McKhann (Coordinator FACCE-JPI secretariat)*

FACCE-JPI was launched by the Council of the EU in 2010. It addresses the challenges of sustainable agricultural development & enhanced food security in the face of climate change, and promotes climate action in the agri-food sector. It is a strategic intergovernmental partnership. JPIs are designed to address global challenges, which countries cannot effectively tackle alone.

In JPI-FACCE, 24 Member Countries are involved (of which New Zealand as Associate Member) and 2 observers (EC and the EU Standing Committee on Agricultural Research).

It is managed by

- 1 Governing Board
- 2 Advisory Boards (independent scientists and stakeholder organizations)
- an Executive Secretariat, coordinated by France (INRA).

There are 13 Joint research actions so far mobilizing €177.5M (variable geometry/various instruments). There is a link with and relevance to H2020 Societal Challenge 2 (Food Security, Sustainable Agriculture, Water, Bioeconomy) and Societal Challenge 5 (Climate Action).

On Biodiversity, FACCE-JPI set out a BiodivERsA joint call (2013-2014), promoting synergies and reducing trade-offs between food supply, biodiversity and ecosystem services. 10 projects were funded and the call addressed the following themes:

- (T1): to what extent can biodiversity better support agro-ecosystems / agricultural production systems in terms of multi-functionality and outcomes in a global change context;
- (T2): which policies and governance systems can promote the emergence and support of agro-ecosystems / agricultural production systems benefiting from and beneficial to biodiversity and ecosystem services?

Diversity in FACCE-JPI actions on genetic diversity are: BarPlus, VitiSmart, Grasslandscape, and Cinderell. Actions on diversification of practices/management are: Climate-Cafe and PREAR.

3. SUSFOOD 2 – *Hendrik De Ruyck (ILVO)*

SUSFOOD is an ERA-Net Cofund on SUStainable FOOD production and consumption (2017-2021). The scope of SUSFOOD includes the entire food supply chain with main focus on food chain sustainability beyond the farm gate. It covers processing, packaging, transport, retailing, food services, storage and consumer activities. SUSFOOD includes 26 partners from 15 European countries, plus associated partners.

SUSFOOD's definition of a sustainable food system is: *'A food system that supports food security, makes optimal use of natural and human resources and respects biodiversity and ecosystems for present and future generations and which is culturally acceptable and accessible, environmentally sound and economically fair and viable and provides the consumer with nutritionally adequate, safe, healthy and affordable Food.'*

Diversity is an important value for SUSFOOD. It is named in their definition of a sustainable food system but it has not yet been a specific focus research area.

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A joint activity together with ERA-NET CORE Organic, a joint call, will be launched mid 2019. Both networks are working on a call topic on diversity at the moment.

- *Research areas* of interest are: Diversity in….agricultural production – crop varieties - processing – new raw materials – supply chain/ retailing – consumption – diet.
- *Expected impact*: providing research evidence, methodological frameworks for comparison of different solutions and policy recommendations for diversity of food that promote sustainable and organic food systems (from field to plate), by increasing biodiversity and genetic diversity, food functionality, quality and nutritional values, and decreasing the environmental impact of food.
- *Four call topics* are planned (under discussion at the moment):
  1) towards sustainable food systems: shifts to resource-efficient, circular and zero-waste production and consumption from land and sea,
  2) diversity in Food Systems,
  3) mild food processing
  4) smart & sustainable packaging.

Cross-cutting themes to be included are: stakeholder involvement (both communication and participation), understanding interconnections and linkages and sustainability assessment and evaluation.

General call features (preliminary) are:

- applied basic research
- transnational collaboration
- interdisciplinary research consortia involving universities
- research institutions
- industry and stakeholder partners
- two-step selection procedure
- a project duration of 36 months.
-

IV. Break-out sessions

The objective: to assess whether the current food policy and regulatory framework is sufficiently resilient to deal with the challenges identified. What could be done by:

- actions and actors at MS level;
- actions and actors at European level.

Actions are e.g: R&I programmes, Horizon Europe topics, policies, regulations, new investments, communications, etc.

1. *Breakout session – Group 1*: Interaction between stakeholders all along the food chain

There are no silver bullets to solve the challenges of food and agriculture and the "perfect storm" rising (combining health, environment, biodiversity, climate, AMR, etc.). Therefore, societies need to support diversity in food systems including in primary production/farming systems and need to monitor and support innovations across food systems, aiming at solving

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these challenges. This should build on diverse contexts in terms of geography, demography culture, etc.). Society should accommodate different consumer groups, both culturally and health related. There are different needs for diverse foods and different consumer segments.

How will you define and delimitate FS in order to describe diversity? There are two approaches related to either environmental externalities of food systems versus health aspects of diets, from a food systems angle:

1. start from (defined) problematic issues such as how to reduce environmental impact from food systems, what can alternative systems achieve, etc.;
2. look at diets as the core concept and interpret how different diets link with different food systems, and to what degree this may explain differences in externalities;

Across these two starting point approaches, use sociological segmentation of consumer types to stratify how to understand diversity of diet- related food systems. Studying FS diversity from a diets perspective raises the following questions:

- to what degree will diets link with/influence production on regional, national and EC level?
- how can we determine if a specific "diet" is sustainable from different viewpoints and vis-à-vis the combination of local, regional and global sustainability issues/challenges?
- how can a farming system or food product be assessed in the light of a diet perspective? E.g. organic livestock requires more land and feed per kg. But people who eat a large proportion of organic food, generally eat significantly less meat than the average population. So what does this then mean for evaluation from a food systems perspective?

Other aspects relating to how a **diet approach** may link with different aspects of food systems:

- production forms: adjusting/improving single issues in existing farming systems versus supporting radical innovations on farming and food systems or completely new (potentially disruptive) production systems (such as insects);
- procurement systems (processing and retail, short supply chains, catering/eating out);
- circular economy/reducing waste – returning food waste from cities to farming.

From such analyses, **leverage points** for supporting innovation resulting in new diversification may be identified. Actions for different authorities are:

- to link dietary recommendations based on health and safety with other aspects (climate food pyramids, see e.g. the international report on food pyramids);
- diets as a pivot for breaking with policy silos and uniting policies for food, health, agriculture, climate, AMR one-health, etc.

In general, **public authorities** may support and maintain diversity in Food Systems by:

- R&D programs supporting new ideas in agriculture, food and marketing etc., focusing on issues related to several of the above mentioned "sustainability" issues. Secure integration of end-users, industry and – as a new actor – retail (supermarkets, WEB

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companies, catering). Integrate FS or Value chain approaches within a circular economy view and support and demand multi-criteria assessments of innovations and different FSs;

- supporting generic marketing of innovative products/productions/food systems which build capacity in niche productions/small food systems and supporting markets with labelling etc.

Regarding **legislation:** be agile in supporting new items (innovative products/productions/food systems) with proper legislation and remove unintended obstacles in regulation.

Regarding **public procurement**: consider supporting innovative products/productions/food systems in need of market developments by purchasing policies in institutions, etc. Assist by demanding research based policy support, in terms of reviews and synthesis giving "official" assessments of the impacts of different food systems in the issues at stake (the above mentioned "sustainability" issues).

2. *Break-out group 2A*: **Novel protein sources**

Insect consumption for the EU population should be an innovation. It is about including food that was not in our dietary pattern before. There are many alternatives for substituting animal based proteins. Maybe we can learn from Japan who tend to have the healthiest diets. We should not only look at the proteins but also at other nutritional values. There is a need to map the potential for protein production and different crop types in the different EU member states.

The challenges new protein sources face are:
1) quality hindrance
2) the need of industrial processes in the production transformation for the sustainability of protein resources
3) cultural or social acceptance.

The health impact is more or less linked.

*What are **regulatory aspects**?* There are differences in regulation on insect consumption. In some countries it is only allowed as feed (e.g. for fish), in other member states it is allowed for human consumption. If there will be EU regulation, many members states will follow this. There needs to be a distinction between feed and food. Mushrooms are also rich in protein and could form a good opportunity to substitute more animal based products.

*Does **insect consumption** has to be harmonised at EU level?* The procedure should be rather open. Regulation hast to take into account that cities are growing. If we are discussing insects, we should also look at the possibilities mainstream crops such as mushrooms offer for replacing animal based consumption, to enhance their production and consumption. Or aquaculture.

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Focus should be on **local production for local consumption** but also look at the gaps sole local for local provides, such as the (im)possibility to grow nuts in Norway. Another stimulus is to steer at making novel protein resources fashionable/trendy. If we speak about regulation, we also have to interconnect policies. The new CAP is moving towards encouraging farmers to grow new crops. This provides new opportunities for research in the coming 7/8 years for future choices of regulatory frameworks and guiding the direction towards more healthy and sustainable food. Hence, we should also look at connecting research with the CAP. EIP-AGRI already does that but we need to further integrate policy frameworks.

It is also important to analyse the possibilities of new value chains and business models.

Will governments stimulate a novel protein transformation plan or can we leave it up to the industry? If we are to create (better) protein sources that cannot be derived from traditional plants, a production chain should be created. Depending on the costs/expenses, this could be realised in a cooperative manner. The level of by-products should also be taken into consideration if we want to move forward to a more circular food system.

What can be said about social acceptance? There is likely to be a difference between traditional food consumption versus novel foods and a rural eating culture versus cities. We need more insight form social research on this aspect.

Can regulation support the transition from animal based protein consumption to alternatives? Perhaps, but most pressure is likely to come from society and the industry. **Education** also plays an important role. Regulation could follow up this transition but will likely not be the most influential factor. Education is very important to start better awareness and attitudes for healthier food choices. Children have to know where food comes from, all along the value chain, especially in cities. Hence, more promotion and activities first. Then regulation.

3. Break-out group 2B: **Diversity of diets**

The first challenge is to develop a **definition of healthy dietary diversity**. A lot of people think that a varied diet makes you healthier but we need a better evidence base for this claim. Healthy is also a tricky word. What is healthy for you, could not be healthy for me. Yet we need general guidelines, a basic concept on healthy food. Another aspect is to avoid that people get bored of monotonous food. Talking about diversity is tricky; the concept might not be well understood.

Regarding regulation, there is a need to define guidelines. Each country should have its own flexibility but there is a common international ground. It's an interesting challenge because there is a lot of fake news about health and diets in the same concept. There is also much contradictory information. Therefore, we need more quantitative information and communication about 'true' messages. Dietary concepts can support this. We talk about diversity for diets which is not the same as diversity in food production. Healthy diets should

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be promoted in the frame of the UN's SDGs. There are good examples of alliances between the public and private sectors, to promote healthy food. This is quite optimistic.

Experts on agricultural production on the one hand and experts on nutrition on the other hand, should reinforce each other.

Regarding **variety**, we also have to take into consideration the nutritional synergetic value of combining different food elements. The concept of macrobiotic diversity could be interesting, perhaps depending on ethnical backgrounds. To have healthy diets at local level, might not be possible though. It is good to keep on board the seasonal concept but the idea that you find everything for a healthy diet at local level, is not true.

In addition, *what is the definition of local?* Barcelona is for example more local for Montpellier than Bretagne, yet they fall under different country regulation. That makes local for local concepts complex. And regulation should not push local food in terms of healthier diets. There is no evidence that local production is healthier.

If we talk about healthy diets, we do not talk about **sustainability** per se. When exploring the concept of healthy food, we talk about the quality of the diet. It is also about how people can get access to food and how people can survive. The better educated you are, the better your chances at survival are. It might be more difficult for poorer people to make healthy choices because of their lack of money but the education level also plays an important role. E.g. where you have to drive 10/20 miles to get food. There are also a lot of (small) grocery/food stores which do not sell fresh vegetables. This may sound more of an American problem but it is also a European issue. Perhaps we should take the concept of accessibility into better account, to improve access to diversity. It is about price but it is also the opportunity to get to food (factors such as being handicapped, older people, having no transport). **Access to healthy food** is a really important aspect.

Furthermore, most **junk food** costs less than healthy food. However, junk food cannot be forbidden. Food should not be treated like other types of merchandise. It is a different (public) good. It is important to motivate the actors in the system to promote healthy food together. Take for instance the campaign against palm oil. Societal influence was so strong that all the big companies started to label their products as: no palm oil. We have to believe in **societal pressure** on the industry and sit together with multiple actors to support the promotion of healthy food. Mechanisms such as taxes on sugar products also fit within a new framework.

How far is it possible to reframe the food environment? We shake it by different economic interventions such as taxes but we often do not reinject this money to improve the system (further). Finally, we should also be careful with interventions such as **taxes** because they can threaten the industry.

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4. *Breakout session – Group 3:* Consumer behaviour / Food practices

Questions identified:

- How can we help consumers make the right choices? And how can we solve the problems more upstream/create healthy environments?
- Do we need new business models to help provide incentives for healthier and more affordable products?
- What role does nudging have to help create healthier environments?
- What can we do to ensure that marketing supports healthier products?
- How to combine health and sustainability in terms of the synergies between eating habits?
- What is the biggest driver here, your own health or environmental sustainability?
- What will help people to make more changes?
- What are the reasons that people make unhealthy choices?

1. **Potential ideas**:

- **Street/farmers markets** make food access easier. By ensuring (and expanding?) the time and locations of organised markets more people in society can be reached;
- We need the **food industry** to be involved more to help increase responsibility for business models and the production of healthier and more environmentally friendly production methods;
- **Policies**: food is across different departments, which means it is operating in silos and can fall between the gaps. We need solutions that bring ministers together around mutual topics. This could be done by creating something such as a 'Ministry of Food Systems' (and bio economy?);
- **The consumer** creates the demands from the **food industry**; otherwise, the food industry is not inclined to make changes, as people won't buy their products. What the food industry produces is what sells and makes money and therefore it doesn't have the incentive to change currently.
- How to balance cultural heritage with *what's healthier and knowledge regarding health aspects, including ensuring that we can identify what role food has within our society?*
- **Nutrition labelling**: *is this a barrier or an opportunity?* We should harmonise approaches and policies so that this can limit labelling, use resources etc., across different countries.
- *Could we have a similar approach across Europe?* This has been achieved in food safety – safest in the world (the diet quality version of EFSA). Would this be challenging, to obtain consensus across Europe?
- Gradual **reduction of sugar/salt** in products over time is an example which provides a level playing field for all players in the industry;
- Use incentives to help encourage better foods; milestones and targets are needed;
- We need to think about **SMEs** as they take up the majority of European businesses and transition will be harder for them than the larger players;
- Regarding **public procurement**, *what are the opportunities to increase healthy and sustainable options?* DG SANTE works at this level but member states have more power to initiate novel sourcing systems and a holistic system approach for maintaining shorter supply chains, in house systems for children, hospitals, etc. We need a good

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balance in what people will actually choose to eat since this could cause food waste and to ensure that people will not just buy other things which are less healthy;
- As **practical education**, consider compulsory cooking lessons rather than just nutrition lessons. This could be valuable. Focus at family level: children are educated by their parents.
- We need to consider the **unintentional consequences** of putting a policy into effect and think in an integrated/cohesive way. It really needs a buy-in and development considerations from citizens, so that it is likely to be more successful;
- We need to consider **taste and price**. These are the two main considerations for consumers. There is a need to ensure that any changes align with this. Can we create a movement where citizens are all in agreement that this is something we need to do? This is currently limited within the food and nutrition sector.
- *How to create new social norms*? We do not always need to focus on complex nutritional ideas. Dietary diversity isn't necessarily the main aim here. Just generally increasing fruit and vegetable consumption is a good start already.

What are the research topics we need to know more about?

- **Personalised nutrition** – what are the options that could help people make better choices if they are personalised for them?
- **Consumer choices** – why do consumers want to make non-healthy choices despite healthy alternatives?
- What do we want food to be, within our society? It isn't just about the nutrients that we eat.
- Do we need more data collection to show what works in each context*?*
- What are the impacts of other policies on food? And what can be said about policy coherence?

V. Closing discussion

Diversity is not the only way to reach sustainable and healthy food consumption. All stakeholders need to be involved, all along the chain (participatory), at each level. The EU R&I programmes (will) provide opportunities for multi-actor projects. The running Fit4Food project is an example of a multi-actor approach which includes policy and city labs. There is hesitance in the discussion if a separate EIP on food could be an idea. A presentation on the results of Fit4Food could be interesting for the next workshop on Diversity.

Regarding the FIT4FOOD2030 policy labs, there is still place for 4 or 5 labs. If you are interested, there is a possibility to join. At least 2 ministries should be involved. There will also be another call for city labs in a couple of weeks' time, on the more local level.

The last and third workshop on "*Diversifying Food Systems in the Pursuit of Sustainable Food Production and Healthy Diets"* will be held on **May 14th, 2019 in Paris**, from **10:00** to **16:30 hrs.** Please send in your ideas for the next workshop.

Final announcement: On behalf of the Romanian presidency, there will be a conference on circularity, organised in Bucharest.

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VI. ANNEX

1. Agenda

Diversifying Food Systems in the Pursuit of Sustainable Food Production and Healthy Diets

Second Workshop

Brussels, 18th February 2019
09.00 – 17.00
European Commission, DG RTD, SDM1,
Rue du Champ de Mars 21/ Marsveldstraat 21, 1050 Brussels

Chair: Monique Axelos, FR
Co-chair: Minna Huttunen, FI
Rapporteur: Floor Geerling-Eiff, NL
Task leaders: Minna Huttunen (FI), Monique Axelos (FR), Christophe Cotillon (FR), Ruairi Colbert (IE)

09.00 – 09.30	***Registration and welcoming the participants***	
09.30 -09.50	**Welcome Speech and Presentation of FOOD2030 and 4 priorities**	*Barend Verachtert, Head of Unit F.3, DG R&I*
09.50 -10.00	**Opening** – Introduction and purpose of the workshop	*Monique Axelos - Chair of SCAR FS SWG.*
10.00 -12.40	**Diversity in and between food systems: new challenges for research ?**	*Jean Marc Touzard, INRA Scientific experts.*
	Novel protein sources	*Anne Pihlanto, Natural Ressources Institute Finland- Luke (FI)* and *Valérie Michel, ACTIA*
	Interaction between stakeholders all along the food chain	*Yuna Chiffoleau, INRA*
	Diversity of the diets	*Eric Verger, IRD*
	Consumer behaviour/ Food practices-	*Marie Plessz, INRA*
	Consumer Behaviour	*Dr. Gyula Kasza, National Food Chain Safety Office (HU*
	The experts will give 3 main challenges and 3 R&I issues at the end of their presentations	

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12.40 - 13.00	The next steps towards a common program addressing / JPIs and SUSFOOD2 update	*Jolien Wenink –JPI HDHL* *Heather McKhann –FACCE JPI* *Hendrik De Ruyck –SUSFOOD2*
13.00 - 14.00	***Lunch break***	
14.00-14.30	**Clustering of the challenges**/ Wrap up	*Monique Axelos*
14.30-15.45	**Breakout sessions, Discussion***:* ➢ How to foster food diversity from farm to plate? ➢ Actions and actors at MS level ➢ Actions and actors at European level Actions: R&I, policies, regulations, new investments, communications ….)	
15.45-16.00	***Coffee break***	
16.00-16.45	**Findings from the sessions – Closing the workshop**	*Monique Axelos - Chair of SCAR FS SWG.*
16.45-17.00	**Wrap up, AOB and close up of the meeting**	*Monique Axelos*

2. List of Participants

SCAR FOOD SYSTEMS SWG WORKSHOP
Diversifying Food Systems in the Pursuit of Sustainable Food Production and Healthy Diets
BRUSSELS, 18th February 2019

LIST OF PARTICIPANTS

	MS	Name	Organisation
1	**EC**	Isabelle De Froidmont-Goertz	DG R&I, Unit F.3 -Agri-Food Chain
2	**EC**	Barend Verachtert	DG R&I, Unit F.3 -Agri-Food Chain
3	**EC**	Natalia Brzezina	DG Agriculture and Rural Development Unit B2 – R & I
SCAR FOOD SYSTEMS SWG Members			
4	**BE**	Hendrik De Ruyck	Instituut voor Landbouw-, Visserij- en Voedingsonderzoek (ILVO) // SUSFOOD2
5	**DE**	Johannes Bender	Federal Office for Agriculture and Food (BLE)
6	**DK**	Niels HALBERG	Danish Centre for Food and Agriculture - Ministry of Environment, Food and Agriculture

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7	**DK**	Annette Toft	Danish Funding Agency Danish Agricultural & Food Council, Brussels
8	**ES**	María de los Angeles Alonso de Blas	INIA
9	**FI**	Minna Huttunen	Ministry of Agriculture and Forestry
10	**FR**	Monique Axelos	INRA
11	**FR**	Christophe Cotillon	ACTIA
12	**FR**	Anastasiya Terzieva	INRA
13	**HU**	Viktória Szűcs	Hungarian Chamber of Agriculture
14	**IT**	Annamaria Stella MARZETTI	Ministry of agricultural, food and forestry policies – MIPAAF
15	**IT**	Silvia Baralla	Ministry of agricultural, food and forestry policies - MIPAAF
16	**LT**	Alvija Salaseviciene	Kaunas University of Technology
17	**NO**	Mona Gravningen Rygh	JPI HDHL / The Research Council of Norway
18	**PL**	Barbara Wieliczko	Institute of Agricultural and Food Economics NRI
19	**RO**	Nastasia Belc	National Institute of Reseach & Development for Food Bioresources
20	**UK**	Heather Alford	DEFRA
Other Stakeholders:			
21		Heather Mckhann	FACCE-JPI
22		Jolien Wenink	JPI HDHL
23		Kathrine Angell-Hansen	JPI OCEANS
24		Dirk Dobbelaere	CLITRAVI
25		Elisa Kollenda	Institute for European Environmental Policy (IEEP)
26		Elena Rodríguez-Valín	International Unit of INIA as SUSFOOD2 member
27		Jonas Lazaro Mojica	FoodDrinkEurope and FIT4FOOD2030
28		Catherine Laurent	Climate- KIC
29		Judit Fehér	ProOrg Partner// Hungarian Research Institute of Organic Agriculture
30		Camilla Røsjø	NOFIMA
31.		Daniele Rossi	Confagricoltura, IT

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Experts and Rapporteur		
32. **Expert**	Anne Pihlanto	Natural Resources Institute Finland- Luke
33. **Expert**	Marie Plessz	INRA
34. **Expert**	Jean-Marc Touzard	INRA
35. **Expert**	Yuna Chiffoleau	INRA
36. **Expert**	Eric Verger	IRD
37. **Expert**	Valérie Michel	ACTALIA
38. **Expert**	Gyula KASZA	National Food Chain Safety Office, (HU)
39. **Rapporteur**	Floor Geerling-Eiff	Wageningen Economic Research (WUR)

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