SUFISA

Grant agreement 635577

Call: H2020-SFS-2014-2

Topic: SFS-19-2014

Deliverable Number/Name: **D4.3 Delphi Report**

Dissemination level: Public

Delivery date: 30th April 2019

Status: Final

Authors: Pierre-Marie AUBERT, William LOVELUCK, Sébastien TREYER. Institut du Développement Durable et des Relations Internationales – Iddri

CONTENT

1. Introduction: Delphi survey design for assessing key conclusions of SUFISA scenarios

The task 4.3 of the SUFISA project aims at testing the relevance and plausibility of the main results of the scenario development (established in the task 4.1) through a Delphi survey. The Delphi approach we took is not the usual one1, as the two steps of our approach did not involve the same participants: a first step consisted in determining the main drivers and building the potential evolutions of the European agri-food system through workshops led with stakeholders at the local level (case study level) while a second step consisted of testing some dimensions of our scenarios with some European experts through an online consultation (see details on methodology in section 1.4.2).

The aim of this process, combining workshops and a survey, was to get input from experts to consolidate two dimensions of our scenarios:

- what were the main drivers of the food system and how they could evolve, and
- what were the potential impacts of these
- scenarios concerning the strategies of farmers and what policy measures could help addressing these potential impacts.

The year 2030, which is the horizon that we are considering to evaluate these potential evolutions and impacts, was chosen both to align with the period that will follow the next CAP and with the international agenda of the sustainability development goals (SDGs), which were framed within this timescale.

This two-step approach, bringing together distinct participants, either specialised in a specific commodity/territory or with a more general point of view, was based on the following logic:

- on the one hand, to build the pathways that the European agri-food system could follow by integrating inputs that were specific to sectors/territories within the broader picture (as allowed by locally organized workshops);
- on the other hand, to be able to discuss the results of the with the more general analyses of European experts, for the most part generalist (see the elements on the representativeness of the participants in section 2.2.1).

2. Method and Data

2.1 The Delphi technique and the specificities of the present Delphi

The Delphi technique is a method dedicated to structure group communication processes so that they are effective in dealing with complex problems (Hugé *et al*, 2010), combining different levels of interactions. The process is usually iterative with the same group of people, often having initially divergent points of view, involved in order to reach a consensus on the specific system you are analysing and its potential evolutions.

[1] Usually, Delphi surveys are organised in several rounds, with the same participants and the same questions asked at each round, asking participants if they want to revise their judgement in light of the previous mean answers resulting from the previous rounds. In this case, we rather chose the elements to discuss through the analyses of the discussions that were led during the focus groups (concerning impacts and solutions) and asked experts there opinion on these elements. Some experts were also part of some focus groups while some others were not previously implied in the SUFISA project.

There are a variety of approaches to conduct a Delphi survey. The common building blocks are (1) an iterative process of rounds of discussion, allowing participants the option to amend or change their answers, (2) a systematic and transparent management of group dynamics and feedback process, and (3) the guarantee of maintaining the anonymity of the participants, in order to avoid bias problems typical of group dynamics and allowing experts to freely express their opinions (de França Doria *et al*, 2009).

The present Delphi exercise presents a certain number of peculiarities that make it not fully consistent with the recommendations above:

- the scenarios were built upstream the online consultation, through the inputs of local workshops;
- the opportunity to have the participants of the online consultation changing their opinion was not an option, as the online consultation was rather a discussion on the drivers/impacts/solutions of the scenarios that were built;
- anonymity was preserved only for the online consultation but was not possible in the local workshops organised in the frame of commodity case studies.

The discussion on results of this overall process will therefore take into account the specificities of the present approach developed: both the limitations related to the fact that this Delphi was not conducted in the usual way and the additional information that such a two-level approach can provide.

Regarding the construction of the narratives: these narratives were built on the basis of a retrospective analysis of the evolution of the main drivers influencing the evolution of the European food system (trade policies, global demand, evolution of diets, evolution of food chains organisation and evolution of the agricultural and fisheries knowledge and innovation systems). Trade policies and the evolution of demand have been assessed as determinants concerning the evolution of the European agri-food system as a whole.

The elements that were particularly discussed during workshops at the local level were the potential impacts that the evolution of agriculture (and fisheries) could have on farms and on the environment in general, as well as the set of solutions (understood as an arrangement between public policies and the evolution of collective organisation). The narratives, their potential impacts and the potential solutions to address them form together the scenarios. All these scenarios have then been the subject of online consultation with European experts. The potential impacts as well as the solutions to be provided were amended both through workshops and through a review of the literature concerning the major debates related to the regulation of the agricultural and fisheries sector.

Concerning the survey which was filled out online by experts, it used a Likert-type scale to get the feedbacks from European experts on the main results of the scenario development. 39 statements gathered under 13 questions regarding the four scenarios developed were presented to experts (see annex 2). These 13 questions related to two main topics that broadly refer to the two steps we took to develop our scenarios

1. Main evolutions to expect on a given dimension of the European food system (scenario components / drivers).
2. Main impacts of different scenarios on producers' strategies and on the overall sustainability of the food system + Policy instruments / institutional arrangements to deal with those impacts.

In parallel, these narratives and scenarios were discussed within specific workshops at the local level, the results of which are gathered within deliverable 4.3. The combination of the results from deliverables 4.1, 4.2 and 4.3 will result in a synthesis in deliverable 4.4, summarising all the findings and results that the various forms of confrontation of these scenarios with experts and stakeholders have generated. The result of this process was both quantitative and qualitative: quantitative elements emerge from the responses to the assertions while more qualitative elements emerge from the comments that the participants could leave for each of the assertions (see section 2.2.1 for more details on the profile of participants).

2.2 The background conceptual framework

The conceptual framework of this work proposes to consider the level of sustainability of the producers as the result of the strategic choices they make, themselves resulting from the broader conditions (economic, environmental, technological, market, etc.) in which they evolve. The producer is here considered as an economic agent producing raw materials - food, fiber, fuel - and in some cases processing them, from three main factors of production: land (or marine areas for fishermen), work and capital, which are likely to lead to major changes in the coming years.

Several external conditions have been identified as key factors likely to modify the environment in which the producer evolves:

- Demand: local demand, the knowledge and information of consumers, the level of income and the willingness to pay of consumers, distance from consumers
- Access to the market: distance to the market, visibility, proximity, exports, imports, competitiveness, tariffs, differentiation (or not) of production, etc.
- Price: level, volatility, predictability, etc.
- Ecological / environmental constraints related to access to resources and the conditions for their regeneration, regulations, etc.
- Financing: level of indebtedness, access to capital, liquidity constraints, equity, etc.;
- Regulations and political framework: legislation, rules, subsidies, quality of institutions, proximity, administrative issues, national institutions, supranational bodies, political stability, quality and access to infrastructure, etc.
- Socio-demographic aspects: farmer population, networks, organisation, sector trust, informal relations, etc.
- Technological aspects: new technologies, education, training, human resources, evolution of practices, etc.

The potential evolutions of these conditions have been depicted within each narrative.

Depending on the evolution of these conditions, different strategies (sometimes combined) can be adopted by producers or by groups/categories of producers among strategies focusing on agro-industrial competitiveness, on rural development, on partnerships and cooperation, on risk management or a strategy consisting in leaving the agricultural or fisheries sector (see in D4.1 for more details).

Six structural dimensions have been chosen to apprehend the European food systems and their dynamics, the evolution of which determines to a large extent the evolution of the eight aspects mentioned above at the farm level, and therefore the strategies of the producers:

- Trade policies between Europe and the rest of the world;
- The level of world demand for agricultural products / agri-food products, which determines / influences world market prices;

- Agricultural and fisheries policies and environmental policies affecting the agricultural and fisheries sectors;
- The evolution of European diets;
- The structure and organisation of food chains;
- The evolution of technologies (digital revolution, machines, biotechnologies, etc.).

2.3 Potential scenarios of the Food System

The **narrative and scenario construction exercise is based on two main dimensions**:

1. the exploration, leading to narratives, of the evolution of external conditions that could affect the activities of primary producers by 2030 by analyzing the potential evolution of the organization of food chains, European diets, innovations in agriculture and fisheries, trade policies and the level of demand on international food markets;
2. the identification of the different solutions2 that could be implemented to cope with the potential changes affecting the situation of producers within the different narratives.

The principle of the first point (1) is to discuss the potential evolutions of the food system, based on the potential evolution of the main drivers affecting its evolution.

The principle of the second point (2) is a qualitative assessment of how each of them could impact sustainability of producers across Europe, aiming at discussing the scope of validity of the different options commonly discussed for the agricultural and fisheries sector (risk management instruments, vertical coordination by the inter-professional organisation, payment for ecosystem services, increased market power of producer organisations, territorialisation of food systems, etc.) and the type of sustainable transition to which they can contribute in the different narratives that could emerge.

The process of validation, through stakeholders' workshops and an online consultation, therefore consisted in assessing the robustness and credibility of the narratives (1) and the probability of their potential impacts and the relevance of the preferable solutions to address them (2).

Building narratives of the European food system

In order to build four potential pathways (or "narratives") of food systems by 2030, we have previously identified the most important trends and factors (identified in a retrospective analysis), setting aside aspects related to the strategies and policies in the agricultural and fisheries sectors (which are precisely the aspects we would like to test in the context of the four different narratives proposed).

Three types of determinants that can influence the shape of the four narratives can be highlighted (see D4.1 for more details):

- Four components, remaining unchanged for the 4 narratives, namely climate change, the level of European integration, the cost of energy, demography and human development;
- Two **structural** variables (which structure the potential evolutions of the trajectory of the European food system) are the evolution of trade policies and the evolution of the global

[2] These solutions or policy and organisational options actually reflect a certain vision of what is at stake when it comes to the notion of sustainability and the issues / obstacles to achieving it. These aspects / perceptions vary among the actors, despite the many efforts made to define common sustainability indicators / matrices.

demand, which we have considered to be particularly influential to envisage the evolution of the four different potential pathways;

- Three descriptive components: the organisation of food chains, the characteristics of European diets, the characteristics of research and technology.

Two options have been envisaged for the 2030 horizon for trade policies:

- "complete" liberalisation, consisting in the reduction or abolition of tariff barriers, not accompanied by rules imposing non-tariff barriers;
- "controlled" liberalisation, consisting in the reduction of tariff barriers, accompanied by the imposition of non-tariff barriers such as the conformity of imported products with food safety measures, public health measures, precautionary principles and, to a lesser extent, environmental and social production standards.

Regarding global market dynamics, the hypotheses made are that the dynamics of the global market by 2030 will follow one of the two following routes:

- the global demand will continue to follow past trends (strong demand from developing countries, high demand for biofuels) leading to high prices;
- the global demand will slow down with the evolution of diets, leading to a potential price decrease.

Using these two variables (trade policies and global demand) as horizontal and vertical axes, we have established four different general contexts (see Figure 1) in which four narratives of food systems by 2030 were developed. Starting from these four contexts, we then described in more detail what the future might look like in each case by detailing the form that the three descriptive components would take in each case (the organisation of food chains, the characteristics of European diets, and the innovation and technology system).

The different narratives, as they were exposed to online participants, are detailed in annex 1 of the present document. The methodology and the details of this scenarios are more fully developed in deliverable 4.1.

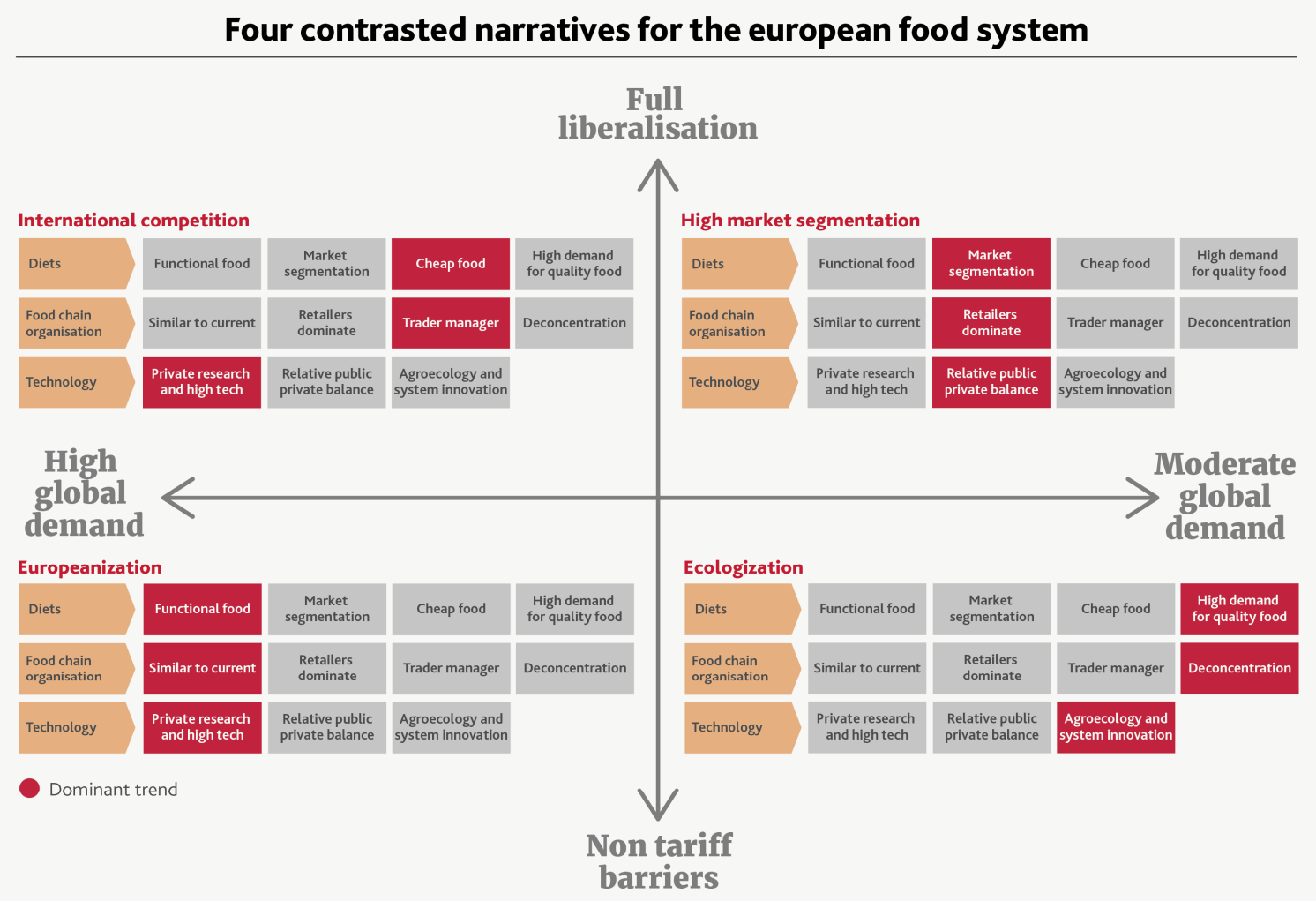

Figure 1 - Representation of the four narratives

From narratives to scenarios

Concerning online consultation: the idea was not to give too many details concerning potential impacts these scenarios could have on food systems (contrary to what is detailed in deliverable 4.1), but rather to make people react on what was previously identified as the main potential impacts of these scenarios on producers and the solutions that could potentially address these impacts.

Concerning deliverable 4.1 scenarios, they have been developed following the four following steps:

1. a description of the main variation of the conditions affecting producers for each potential food system trajectory;
2. a description of producer strategies most likely to be favored in view of these developments (without distinguishing the strategies of producers with respect to sector, geography or type of farm at this stage);
3. an identification of the main sustainability issues associated with these strategies based on the established sustainability indicators, followed by a discussion of possible solutions to these problems (including a reflection on social and political processes through which each identified solution could come into effect and be efficient);
4. finally, a very short ex ante and qualitative evaluation of the impact that each scenario could have on the sustainability of producers (allowing to evaluate the type of transition that producers would be the most likely to experiment for each scenario).

The impacts of these scenarios and the potential solutions were therefore the dimensions tested in the online consultation. The content of the questionnaire is included in annex 2. The first block of questions concerns the drivers of the food system and their potential evolution. The second block concerns the potential impacts and plausible solutions for each of the four narratives.

2.4 The Delphi survey process

The overall consultation process

The global process leading to both the construction of scenarios and the validation of drivers, narratives, impacts and solutions can be represented as follows:

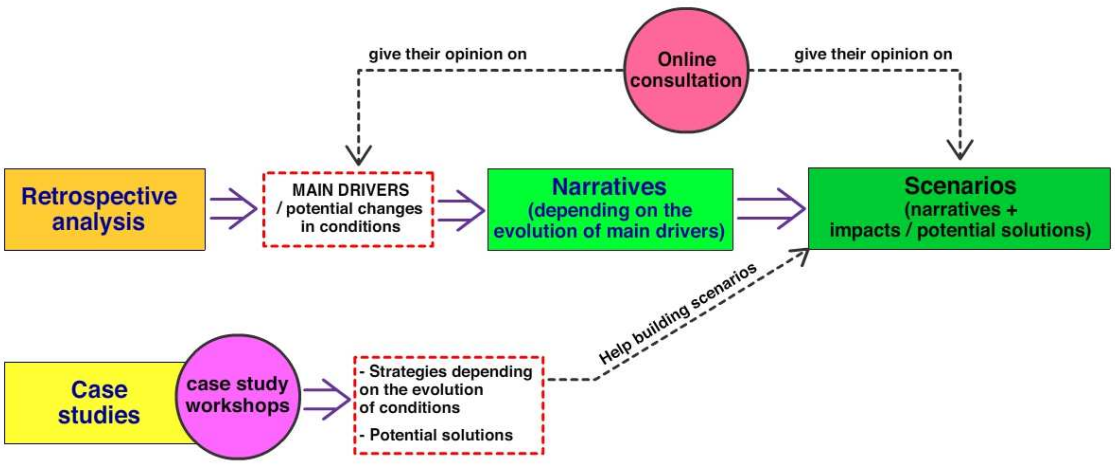

Figure 2 - Consultation process

Retrospective analyses allowed to define the major variables affecting the evolution of the food system and the potential trends of several dimensions of the food system. These drivers where validated through the first set of questions of the online survey. The case studies consultations,

through workshops, allowed to characterise the different strategies farmers could favour depending on present conditions and their evolution and to discuss all the solutions that were debated to ensure the sustainability of the farm systems. These elements allowed to build the four potential scenarios of the European food system, the impacts of which were brought up for assessment and discussion through the second section of the online survey. Potential solutions addressing these impacts were also discussed as part of the second section of the online survey.

26 experts contributed to the online survey, originating from a variety of backgrounds and geographies (see table 3, 4 & figure 3 of section 2.2.1) while the impacts and solutions concerning the agricultural and fisheries sector were discussed among hundreds of participants implied in the production of seven commodities in 11 countries.

The online consultation

Recipients of the online survey

The choice of the recipients of the survey was made on a triple logic: on the one hand to ensure the representation of all the geographical areas covered by the SUFISA project, on the other hand to benefit from the opinion of experts of sectors particular and more general expert and finally to benefit from multiple points of view between practitioners, researchers, NGOs, supply chains actors, farmers and decision makers. 95 contacts following this criteria received the online survey (see section 2.2.1 concerning effective participation).

Online survey

The invitation to fill in the Delphi survey was preceded by two pieces of information:

- An online description of the four narratives as reported in annex 1
- The figure 1 reporting the four different narratives in a two-axis table

As explained previously, the Delphi online survey itself was divided into 2 sections: a first section focusing on the different drivers of the European food system and their potential evolution. A second section focusing on the assessment of the potential impacts of the different scenarios built, and evaluation of the relevance of potential solutions (policy measures and institutional arrangements) to tackle these potential impacts.

3. Results from the Delphi survey

3.1 Focus group discussions

Participation

22 study cases in 22 different regions among the 11 countries were studied. The commodities selected belonged to one of the following seven commodity groups: arable crops, dairy, fruits, meat, fisheries, aquaculture and wine/olives/other. Up to 2-3 focus group discussions with producers and farm management advisors, regulators and finance experts, as well as food chain actors, were conducted per region. Each focus group discussion gathered around 10 to 15 actors.

Focus group results

The focus group discussions lead to the identification of different potential medium-term strategies of producers and the identification of the solutions that can be summed up as follows (extract from the D4.1 report), and which can be more or less relevant depending on the potential trajectory of the European food system:

Issues	Solutions
Income (and lively country-side)	Increase the role of local governments in food systems development and management
Income	Green public procurement
Income	Develop / strengthen producer organisations
Income	Develop interbranch organisation and vertical coordination through contractualization
Income	Social & fiscal norms harmonization in the agricultural sector to limit competition distortion between MS
Entrepreneurship	Increased land regulation
Entrepreneurship	Opening the agricultural sector to financial actors (both public and private) to facilitate investments / modernisation + regulate those investments
Entrepreneurship	Public subsidies to support eco-friendly investments
Entrepreneurship	Early retirement systems / asset-transmission tools
Entrepreneurship	Strengthening / reinforcing extension services
Resilience	Insurance schemes
Resilience	Income stabilisation tools
Environment	Maintain / develop subsidies in support of multi-functional agriculture
Environment	Increased environmental conditionality to strengthen environmental performances of farms

Table 1 - Issues and potential solutions
(extracted from D 4.1, and based on WP2 case studies)

Issues related to conditions were not mentioned equally depending the commodity/region considered. The references to different issues are summarised in the following table (extract from the 2.3 comparative report among case studies).

	Belgium		Italy					UK		France		Latvia		Portugal		Denmark		Greece		Germany		Poland		Serbia		Total
	Apple	Sugarbeet	Wine	Pear	Aquaculture	Fisheries	Mussels	Fisheries	Dairy	Cereals	Dairy	Dairy	Wheat	Beef	Olive	Dairy	Poultry	Fisheries	Dairy	Aquaculture	Rapeseed	Wheat	Apple	Wheat	Raspberries	
Market issues																										
Demand			X	X				X				X	X	X	X		X	X		X	X		X	X		13
Market access		X	X	X		X	X	X		X		X	X	X	X				X	X	X		X			15
Price levels/volatility	X	X				X		X	X	X	X	X	X			X	X		X	X	X			X	X	16
Financial issues	X		X			X		X	X	X		X	X	X	X	X	X	X		X	X	X	X	X		18
Quality standards and certification		X	X		X	X		X	X			X	X	X		X	X	X	X	X	X			X	X	17
Market differentiation	X	X					X	X				X			X	X	X		X	X	X				X	12
Supply chain/Production contracts		X	X	X		X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	21
Producers Organizations/Cooperatives	X	X	X	X			X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	22
Land price and land availability		X	X		X					X		X	X			X			X		X	X	X		X	12
Labour issues		X	X			X	X		X			X	X				X	X		X			X		X	12
Storage		X											X								X			X		4
Production and marketing costs		X	X			X		X			X					X		X	X	X	X	X	X			12
Diversification	X	X	X	X		X		X		X		X								X	X			X		11
Market risks	X	X	X	X	X	X		X	X	X		X	X	X				X		X	X	X	X			17
Regulatory and policy issues																										
Institutional competence/quality					X							X		X	X			X	X	X		X	X	X	X	11
CAP		X	X						X	X	X	X		X	X	X			X		X	X	X			13
Production regulation		X	X			X		X				X								X			X	X		8
Environmental regulations		X	X	X	X			X	X			X	X			X		X		X	X					12
Animal health									X											X						2
Trade barriers				X				X				X									X	X		X		6
CFP								X												X						2
Other socio-economic issues																										
Recruitment and succession			X			X		X	X	X	X	X		X	X	X			X	X						12
Climate change/Environmental		X	X			X		X		X	X	X	X	X	X		X	X		X	X	X		X		16
Technology/innovation		X				X		X		X		X	X		X		X		X	X	X	X	X		X	14
Education						X	X		X			X	X						X	X		X	X	X	X	11

Table 2 - Key conditions identified in D 2.1 (extract from comparative report D 2.3)

3.2 Online consultation

Participation

Following the logic described in section 1.4.2 (with contacts covering different territories, sectors and types of expertise), the individuals who received the survey and the concrete answers collected (with a participation rate of 27%) can be classified as follows (see table 3 and 4 and figure 3):

Geographical expertise	Received the survey	Answered
Denmark	1	0
Poland	3	1
Serbia	4	4
UK	7	2
Belgium	12	4
Latvia	4	0
Italy	6	1
Portugal	14	5
France	19	6
Germany	1	0
Greece	0	0
EU	24	3
TOTAL	95	26

Table 3 - Geographical area of expertise of contacts

Type of contact	Received the survey	Answered
Academics	30	5
Decision makers	20	4
Farmers representative	20	6
Finance sector	2	2
NGOs	10	2
Supply cain actors	10	5
Experts/ Advisory	3	2
TOTAL	95	26

Table 4 - Types of contacts

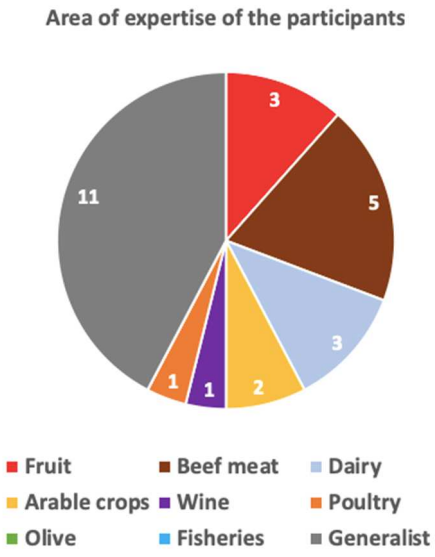

Figure 3 - Area of expertise of the participants to the online survey (no experts in Olive or Fisheries)

Results on drivers

The results of the online consultation on drivers (1st section of the survey) can be summarised as follows :

DRIVERS	Potential evolution	Answers *Very unlikely (1) - Very plausible (7)*	Synthesis of comments
Trade policies	Highly liberalised	**3-6 Contrasted views**	Even populist politicians, despite statements in favour of isolationism, will maintain smooth trade relations, but a certain level of uncertainty remains despite the fact that most interviewees think liberalisation will keep on.
	Stronger non-tariff barriers (based on SDGs and Paris agreement)	3-**6** **Contrasted views**	Evolution towards SDGs slow and ambiguous, slow level of agreement on this topic. Criteria difficult to control in some countries.
	Important tariff barriers	**2**-6 **Very contrasted views**	Very contrasted opinions : some interviewees arguing barriers could not be removed considering the EU level of exports and imports / some other interviewees arguing that the question is more open, considering present trends worldwide (decrease in multilateralism...) and in relation to uncertainties concerning the evolution of global demand
Global demand	Following increasing past trends (strong demand from developing countries & for biofuels)	**4-6**	Energy from agriculture expected to raise and population growth will carry on with shift towards richer diets in some developing countries (not compensated by the increasing demand in developing countries). The energy question is more political, and therefore less easy to predict.
	Decreasing trend compared to past few years	**4-5**	Demand will keep on, but potentially at a slower pace.
Evolution of diets	Domination of functional food and nutraceuticals	**5-6**	Comments temper the results, as many interviewees, in their comments, consider that functional food will be part of the segmentation in the overall food landscape
	Niche markets growing	**6**	
	Growing demand for cheap food	2-**6** **contrasted views**	Increasing wealth inequalities cited, leading to potential coexistence of cheap food and niche markets and some contrasting views presuming that consumers will pay for better quality food.
	Strong expansion of high quality food (organic / labeled)	**5-6**	Most of the interviewees agreeing on the expansion of these markets/production systems, some of the interviewees arguing that it could rely on other types of production than organic / labeled.
Evolution of food chains	Food chain organisation is "stationary" (concentration slows down but remanin high)	3-**6** **Contrasted views**	Contrasted views on this dimension, with most interviewees thinking that the concentraton trendwill keep on while others think food chains could experiment relative deconcentration.
	Extreme concentration and strong influence from retailers	**3-6** **Contrasted views**	Some unvcertainties expressed on how online retail & the increase in the segmentation trend will transform the food chains landscape.

	Commodification and globalization intensified	**4-6**	Contrasted views: some interviewees thinking that the globalization trend will increase while some others think the tendancy might go towards more regionalisation.
	Relative deconcentration / decrease in power unbalances	**3**	2 levels of comments : some people thinking that trade regulations and producers organisations will allow to achieve better power balance / other interviewees thinking that relative deconcentration will arise from a reinforced segmentation
Evolution of AKIS (Agicultural Knowledge and Innovation Systems)	Continuation of the privatization process of R&D and extension services	**6**	Different levels of comments : privatization resulting from the decrease of public budget / strict regulations hindering innovation.
	Rebalancing of public and private research / development of systems approach and agroecology	**3-6 Very contrasted views**	Contrasted views: some interviewees thinking that food public policy is not considered a priority or that public money will decrease and others who think new types of cooperations will ermerge
	Strong redeployment of public research with public-private parterships	**3-6 Contrasted views**	
Other Drivers ?	*Not many answers.* Environmental production as a main driver (1) ; new information and communication technologies (1) ; potential environmental crisis (1).		

Table 5 - Answers of participants to the online survey on the main drivers of the European food system

Different conclusions can emerge from the table with drivers. The two dimensions perceived as the most unlikely are: the establishment of important tariff barriers, and a relative deconcentration of actors in the agri-food sectors. Otherwise, the other proposals are perceived as globally likely to happen. Some answers may, however, seem antagonistic: for example, the fact that trade policies could become potentially very liberalised and the fact that they could also be the object of a reinforcement of non-tariff barriers. While some participants responded that the first conditions were likely while the others were not, or vice versa, some said that both were likely. In any case, the answers illustrate the fact that the potential futures of trade policies are imagined in a contrasted way, which makes it relevant to make it one of the central drivers of our scenario building. Similarly, having answers that argue in favour of a potential maintained increase of the global demand while some imagine a decline of the global demand may seem antagonistic. Again, some participants answered that it would increase while stating that it was unlikely to decrease and others responded the opposite, illustrating the uncertain nature of demand trends and the relevance of the choice of this driver as a structuring one in the construction of scenarios. It would seem, however, that opinions meet more generally in the direction of a potential increase in global demand in the coming years, thus arguing in favour of the potential emergence of scenarios which are on the left of our two-axis table (see figure 1).

Regarding the elements that constitute the most important dissensus: we can highlight the issue of trade policies that we have just discussed, but also the evolution of food chain organisation and the evolution of innovation systems in agriculture. Concerning the evolution of food chains: the points of view are contrasted, with both uncertainties expressed concerning the effects of the integration of internet commerce in the value chains (will it favour the concentration or will it favor the emergence of short marketing circuits?) or concerning the fact that the reinforcement of the segmentation will not necessarily be only led by major players but may even favour the emergence or the consolidation of intermediate actors. Similarly, regarding the evolution of innovation systems in agriculture: some believe that this sector will not be a budgetary priority for the public sphere in the coming years while some imagine the emergence of new forms of cooperation between the private sector and the public sector (around agro-ecology or new communication technologies for example), maybe considering that innovation will be the only way that the agri-food sector manages to both ensure competiveness and tackle present environmental issues (even though we cannot completely deduce these conclusions from the elements collected through the online survey).

Results on the potential impacts and potential solutions needed in the different narratives

The answers of the participants to section 2 of the online survey (on the potential impacts of the narratives and the different solutions to implement) are summarised in Table 6.

SCENARIO	Potential impacts	Answers Fully disagree (1) - Fully agree (7)	Synthesis of comments	Potential Solutions	Answers Completely irrelevant (1) - Very relevant (7)	Synthesis of comments
International competition	Favour enlargement, intensification and specialisation	**6**	/	Reinforcement of vertical cooperation along food chains	**6**	/
	Reinforce price volatility / create barriers to entrepreneurship through the needs in capital / weaken the position of producers in the food value chain	**3-6 Contrasted views**	Contrasted views on price volatility : some interviewees think that free trade might decrease price volatility while others think it might be the contrary.	Reinforcement of insurance scheme and public-private income stabilisation tools	**2-6 Very contrasted views**	/
	High impacts on environmental sustainability (N leakages, decrease in biodiversity, soil degradation)	**5-7**	/	Reinforcement of environmental cross compliance and green payments	**5-7**	Few interviewees thinking this measures should not be reinforced, but for different reasons: either because they did not work that well so far or because they will hinder competiveness.
				Other solutions	reinforcement of producers organisations (1) ; keep on protecting strategic sectors through tariffs (1)	
Europeanisation	Favour enlargement, intensification and specialisation	**4-7**	/	Reinforcement of vertical cooperation along food chains	**3-6 Contrasted views**	/
	Increase the level of competition between producers within Europe	**5**	Level of subventions should be fair among member states. Water repartition is structurally unfair. Regional specialisation throughout Europe has not already taken full effect. Level of competition among producers also rely on other factors (e.g.: social norms).	Harmonisation of social an fiscal norms across Europe	**7**	/
	Push producers to modernise their equipment and production processes to meet the regulatory requirements (sanitary and environmental)	**6**	/	Development of financial tools with strong leverage effects and green finance to adapt to norms	**5**	One interviewee expressed the idea of shortening investment cycles (to adapt to changing demands/norms).
				Other solutions	reinforcement of producers organisations (1) ; keep on protecting strategic sectors through tariffs (1)	

Table 6 - Answers of participants to the online survey on the potential impacts of different narratives and potential solutions to address them ("International Competition" and "Europeanisation" scenarios)

SCENARIO	Potential impacts	Answers Fully disagree (1) - Fully agree (7)	Synthesis of comments	Potential Solutions	Answers Completely irrelevant (1) - Very relevant (7)	Synthesis of comments
High market segmentation	Difficulties for small-scale farming to access infrastructures	5	/	Reinforce land regulation on environmentally sensitive areas and support land acquisitions for small scale farming around major consumption areas	6	One interviewee underlined the difficulties to implement these kind of regulations/measures at the European scale
	Reinforced competition on the access to some production factors, especially land and credit	3-6 Contrasted views	Different views, some interviewees expressing the fact that access to production factors is guided by return potential and efficiency and not by the size of farms / others thinking land competition could become an important driver	Designing regonal tools (slaugherhouses, medium scale processing industries, etc.) adapted to different types of agriculture through a growing involvement of local governments	5-7	/
				Favouring the investment by local governments in specific infrastrucures dedicated to local supply chains along with the generalisation of public procurement	5-6	One interviewee underlined that it was difficult to get a political consensus on this point
Ecologisation	Producers might experiment difficulties to commercialise higher quality products	3-6 Contrasted views	Different views, as the answer can depend on: the level of protection of the EU market ; the level of EU standards.	Developing further existing local food chains with the support of local governments combined with green public procurement systems	5-7	One interviewee underlined that local governments had limited involvement
	Producers might experiment barriers to entrepreneurship due to investment and labour needs for transitioning towards agroecological practices	3-6 Contrasted views	One interviewee underlined the importance of the pace of the transition (the need to adjust investment cycles, etc.)	Orientation of subsidies towards new production systems (rather than having subsidies compensating for the extra production cost associated with eco-friendly practices)	6	One interviewee underlining that it was not fully acceptable from a competition point of view.
	Environmental impacts are likely to decrease at both farm and landscape level	6	/	Strenghtening and reorganising extension services to accompany the shift in production systems	5-7	One participant underlined the fact that private cooperative somehow compete with extension services
				Other solutions	All policy options of the dualisation scenario (1)	

Table 7 - Answers of participants to the online survey on the potential impacts of different narratives and potential solutions to address them ("High Market Segmentation" and "Ecologisation" scenarios)

Concerning the "International competition" narrative, there is a consensus that this scenario will favour the enlargement of structures and that it will certainly result in strong negative environmental impacts. The questions of volatility, of barrier to entrepreneurship and of a potential weakening of the position of producers in the food value chains are, however, perceived differently by the participants. However, with the qualitative comments left along the survey, it remains difficult to determine what concretely leads to these divergent views (and on which element(s) - among volatility, barrier to entrepreneurship and/or position in the value chains - this dissensus is particularly relevant). Regarding the solutions to be favoured in such a scenario, the question of strengthening vertical cooperation within the value chains as well as the strengthening of cross compliance and green payments are consensual. However, the question of the development of insurance schemes, as it was already the case during the focus groups of the case studies, is the subject of significant dissension.

Regarding the "Europeanisation" narrative, there is a consensus on the high probability of the potential impacts on which we questioned the participants. The need for reflections on the harmonisation of social and fiscal standards in Europe in the event of an increased competition between member states as well as the development of a finance system focusing on the adaptation of forms to the strengthening of standards were confirmed. One participant mentioned the need to think about forms of investment aiming at reducing investment cycles in order to facilitate these forms of structural adaptations. The question of strengthening cooperation along the value chains is little less consensual on its ability to respond to the potential challenges implied by this narrative.

Regarding the "High market segmentation" scenario, the survey participants agree that this scenario will potentially create difficulties for small structures to access downstream infrastructures or simply to have appropriate infrastructures. There are, however, more contrasting views regarding the fact that this type of highly dualised environment might strengthen the competition over access to production factors (land and credit in particular). Indeed, some participants think that these resources might be in tension between very different models while others think that access to production factors will ensue the efficiency of all the forms of agriculture developed. Regarding the potential solutions to be developed in this environment, there is a consensus on the relevance of the 3 proposals under discussion: to strengthen the regulation on land in environmentally sensitive areas and in favour of small structures, to adapt the processing infrastructures in an inclusive way for all forms of agriculture and to strengthen public procurement to increase demand for local and quality production. However, the participants stress the political difficulties stemming from these different solutions: turning the land issue into a political issue at the European level and developing political consensus at the local level to strengthen territorial approaches appear as critical challenges.

Regarding the "Ecologisation" narrative, opinions on potential impacts are more controversial than for other narratives. There is a consensus that its environmental impacts will be lower, both at the farm and at the landscape level, but both the issues of the potential difficulties to commercialize quality products as well as the potential difficulties to re-allocate investments/labour towards transition raise more contrasted views. Regarding commercializing, opinions are uneven because some believe that if standards regulate production, then commercializing difficulties decrease. Others, however, stress the strong links with trade policies with potential substitutions through imports if regulatory constraints are not as strong and efficient at the customs level. Concerning the potential solutions discussed, they all lead to a rather strong consensus, with an emphasis on the fact that the necessary solutions in such a narrative were, in many respects, also the solutions recommended in the "high market segmentation" narrative.

4. Discussion

Several points emerge from the online consultation on scenarios. We first need to indicate that all these feedbacks collected online need to be analysed taking into account the limits of the representativeness of the answers collected: namely, the fact that points of view from France, Belgium, Portugal and from Serbia are more represented, and that individuals working in certain sectors that were part of the SUFISA case studies (fisheries and olives for example) did not provide us with answers. Concerning the more qualitative assessments, we should also take into account the fact that the data collection on more qualitative aspects presents a great variability: from one participant to another, and from one topic to another as well. Analyses of the explanations/causes of each result are therefore not always clear to formulate.

The potential evolution of some drivers have led to a greater heterogeneity of reactions than others: in particular the evolution of tariff barriers (e.g.: will these barriers follow their former liberalisation trend or will they rather stabilise?), the evolution and the future role of agricultural knowledge and innovation systems (will they be more financed? will they gain in importance? will they rather move towards farming systems redesigning or follow the trend of productivism? etc.) as well as the evolution of food chains (will concentration keep on increasing? what will be the effect of online purchase? etc.). The answers collected concerning the evolution of the demand and the evolution of the tariff barriers can seem contradictory: the evolution of the global demand is perceived equally potentially stable or subject to a potential accelerating trend; while the evolution of tariff barriers is perceived similarly more liberalised in the future or subject to forms of constrictions towards more drastic non-tariff protection. Several hypotheses can be formulated to interpret these responses which might appear contradictory: the current uncertainty concerning the shape of future demand and tariff policies (subject to strong controversies) and/or the potentially double nature of the current tariff dynamics (the possibilities of liberalising certain imported commodities - especially inputs - and of tightening the barriers for exported commodities) or the contradictory signals (decreasing in Europe and rising in some emerging countries) of the evolution of demand. The fact that the answers are positive for all sets of questions concerning the evolution of diets certainly reflects the current tendency towards a reinforcement of segmentation within most sectors. On the whole, there is a general consensus that there will be a strong segmentation of production, and that this segmentation will be more or less pushed towards ecological forms of production and consumption according to the development of the general conditions affecting the producers.

One of the important results of the survey on the potential impacts of the scenarios is the likely probability of all four scenarios shaped. This result gives, a posteriori, encouraging signals on the robustness of these four scenarios that were previously built. The "ecologization" scenario, however, remains the one that leads to the most heterogeneous responses, in particular concerning the issues of potential marketing difficulties of producers or potential barriers to entrepreneurship or investment that this scenario could lead to. The contrasting responses might be connected to the contrasting interpretations the participants may have concerning what a scenario corresponds to: some will argue that the way agricultural production is produced is a kind of "input" for each scenario (meaning that the question of marketing or barriers to entrepreneurship are not part of the questions to address), while others believe that more ecological production which could be strongly stimulated (here for its sustainability) could encounter many difficulties of implementation when facing the initial organisation of production (in other words, people are questioning the ability of farming systems to ensure transition from the current situation to a more sustainable one).

There is also a very strong consensus on the discussed solutions for each scenario. Only the proposal to reinforce the insurance logics in the competition scenario and the proposal on the reinforcement of vertical cooperation in the Europeanization scenario are subject to controversy. The issue of insurance was already the subject of significantly contrasted opinions at the level of the producers' strategies workshops. On the other hand, the online survey led to only few proposals concerning other potential impacts or other solutions to explore.

References

Aubert, P.-M., Hege, E., Kinniburgh F., Schwoob M.-H., Loveluck, W., Treyer, S. (2018)., SUFISA H2020 project, Deliverable D4.1: First identification of solutions and first set of draft scenarios.

de França Doria, M., Boyd, E., Tompkins, E. L., & Adger, W. N. (2009). Using expert elicitation to define successful adaptation to climate change. Environmental Science & Policy, 12(7), 810–819.

Hugé, J., Le Trinh, H., Hai, P. H., Kuilman, J., & Hens, L. (2010). Sustainability indicators for clean development mechanism projects in Vietnam. Environment, Development and Sustainability, 12(4), 561–571.

Maye, D., Kirwan, J., Chiswell, H., Bonjean, I., Mathijs, E. (2018). SUFISA H2020 project, Deliverable D2.3: Comparative Report.

ANNEX 1: The four narratives of the European agri-food system by 2030

The development of four narratives of the European food system by 2030 was built on the identification of five key variables. Based on a retrospective analysis, two variables were deemed more structuring than the three others: trade policies and global demand for food. They form the two main axis that organize the four quadrants in which each narrative has been developed. The three other variables are European diets, Food chain organization, Technology available to farmers. Finally, four aspects were considered as "constant" in the four narratives developed and had not been investigated as central in the making of contrasted food system narratives: climate change, the level of political integration at the European level, the cost of energy, demography and human development.

Narrative 1: International Competition

This narrative focuses on an increased liberalization of world agricultural markets and strong internationalization of value chains. There is an increasing competition with new global players from emerging countries (often more competitive), while agricultural prices become more and more volatile. World demand for food products is rising, leading to relatively high prices. At the same time, the majority of EU consumers favour low prices foodstuff, taking health and environmental issues as second order issues (the market share of organic products in the EU remains marginal under this narrative). Technological development in the agricultural sector is mainly driven by the private sector and geared towards productivity gains through yield increases (resilience or mitigation with respect to climate change impacts remain secondary). Alternative strategies for rural development or production differentiation are only partially maintained, except in very specific circumstances (for example in mountainous or "high natural value" areas).

Narrative 2: Europeanization

This narrative focuses on the assumption of a demand that is highly focusing on safety regulation and taking into consideration (to a lesser extent) environmental issues. The level of stringency of public standards on health aspects and on certain environmental aspects (mainly related to climate change) are therefore strongly reinforced and most public standards initially introduced in Europe are introduced as non-tariff barriers in free trade agreements (mainly under the pressure of the civil society). Production costs thus become relatively higher in Europe, leading to a loss of competitiveness that can only be compensated by public subsidies and leading to an orientation of the European agri-food system primarily aiming at the domestic market. European products now have a good reputation in terms of sanitary quality within this scenario, they continue to be exported to niche markets. Food chains are dominated by downstream players, retailers and food processors, acting on an even more global scale. The research and innovation system is dominated by the three biggest players in agrotechnology, but they tend to invest less in the European market (producers have access to less efficient genetic material and fewer molecules) as the new regulatory constraints is making it less attractive than in the past. Research and innovation are focusing on precision farming and big data-based solutions (satellite data, private data, etc.).

Narrative 3: Ecologization

This narrative is based on the assumption of a very high level of requirement by the consumers in terms of food security and sustainability, while the level of world food demand is slightly lower compared to the present level. Imports into Europe are governed by non-tariff rules based on clearly defined sustainability criteria, in line with civil society protests over trade liberalization. At the same time, global demand for raw agricultural products is stabilized at a moderate level, following a decline in demand for animal products and stronger regulation of biofuels. The market share of organic products and other high quality certified products reaches 20% and the demand for animal protein is decreasing in favour of an increase in the demand for vegetable proteins. Supply chains are smaller, partly reducing competition between European countries as well as price volatility and facilitating the bargaining power of producers within value chains. The public sector plays an active role in guiding the European agri-food system towards greater sustainability, by heavily funding agri-ecologically oriented research and regulating imports on the basis of sustainability criteria.

Narrative 4: High market segmentation

In line with current trends, the European market for agricultural products is highly segmented in this narrative, with higher private standards within a fully liberalized market where public standards tend to weaken. Retailers offer a wide variety of products ranging from cheap food to high quality certified products that they sell at a higher price, sometimes in the same store, sometimes through specialized subsidiaries. Consumption patterns are highly individualized but the overall demand for quality food is high and continues to grow. With large farms in Eastern European countries producing with low labour costs, producers in the old Member States are more strongly focusing on producing quality food, with consequences in terms of unequal distribution of environmental degradation within the European area. Research & development focuses mainly on product improvement rather than innovation in production systems, although there is a large niche of the research which is oriented towards agroecology. In this segmented agricultural system, producers' strategies will consist in seeking added value either by quantity or quality; or in developing a hybrid model at the farm level, integrated into a specific territorial configuration.

ANNEX 2: Questionnaire

First section - Concerning the main drivers influencing the European food system

Five drivers will be discussed in this section: trade policies, global demand, European diets, food chain organisation and the agricultural technology and knowledge system. Note that climate change has not been considered as a discriminant driver to build contrasted scenarios but rather as a forcing variable for all scenarios, using IPCC's near-term projections (0.2 °C per decade) (IPCC, 2014) for the four narratives.

Of course, drivers relate to each-others in many ways and do not have an influence in isolation from other processes on the evolution of the European food system. We nevertheless see a value in questioning them individually, trying to shed light on how they may evolve over time.

1. Trade policies

The retrospective analysis we conducted in the SUFISA project demonstrated that trade policies in the EU had had tremendous effects on agricultural policies in the past – from the Kennedy Round to the Doha Round and their effect on the decoupling of agricultural subsidies. Although multilateral trade negotiations seem to have become deadlocked in the aftermath of the failure of WTO Doha talks, bilateral agreements have taken up the role of commercial exchange facilitation. In spite of some recent political discourses emphasizing isolationism, the importance of bilateral agreements is expected to further increase in the future (see Copenhagen Economics, 2016).

What option do you consider the most plausible by 2030?

1. By 2030, agricultural and food trade between the EU and its partners will remain highly liberalized with strong impact on the evolution of the food system and the decrease or abolition of tariff barriers is not accompanied by rules imposing non-tariff barrier **(Very plausible / Very unlikely)**
2. By 2030, stronger non-tariff barriers will be put in place based on social (e.g. living wage for all workers of food chains) and environmental criterias, in line with both the SDGs and the Paris Agreement. **(Very plausible / Very unlikely)**
3. By 2030, Europe will put in place important tariff barriers to protect its market **(Very plausible / Very unlikely)**

2. Concerning the evolution of the level of global demand

The retrospective analysis we led in SUFISA showed that the global demand for food, feed and first-generation biofuels had increased sharply in the past decade, following: (i) a rise in the demand for food and feed in developing countries, currently undergoing a dietary transition; and (ii) a rise in the demand for first generation biofuels. The estimates of the global consumption by 2050 vary, from almost a doubling of the needs (e.g. Tilman *et al.*, 2011) to a 60% increase (FAO, 2016). Very divergent trends from one production to another or from one geographic area to another are nevertheless observed. For instance, the rise in the demand of plant-based proteins, milk and meat has been slowing down, even decreasing in developed countries such as European countries.

What situation do you consider the most plausible by 2030?

a. By 2030, the global demand keeps on following increasing past trends (strong demand from developing countries; strong demand for biofuels) **(Very plausible / Very unlikely)**
b. By 2030, the global demand follows the slowing down / decreasing trend of the past few years **(Very plausible / Very unlikely)**

3. Concerning the evolution of European diets

Recent trends have shown an increase in the share of animal-based proteins in European food diets, with a decrease in the consumption of red meat and an increase in the consumption of white meat (4th nutritional transition in Popkin's words see Popkin, 1993). In parallel of these evolutions in the content of their plate, European consumers also increasingly shift their attention towards higher quality, safer and healthier products (5th nutritional transition). They also increasingly focus on practical aspects of food products consumed at home (less time available to cook) and increasingly consume away from home.

What trend do you consider the most plausible concerning European food diets by 2030?

a. By 2030, there is a progressive domination of functional food and nutraceuticals, with practical aspects and health as the two main selection criteria **(Very plausible / Very unlikely to happen)**
b. By 2030, the level of segmentation on the food markets and demand continue to increase with a strong variety of products on shelves and an even larger diversity of distribution channels. The number of "niche market" grows and each niche makes up a small but growing share of the global market **(Very plausible / Very unlikely to happen)**
c. By 2030, there is a domination of the demand for cheap food **(Very plausible / Very unlikely to happen)**
d. By 2030, there is a rapid expansion of the demand for higher quality products (organic / labeled) that reaches nearly 30 % of the global market **(Very plausible / Very unlikely to happen)**

4. Evolutions regarding organisation of food chains

Recent trends show that food chains have undergone a massive concentration process, from sectors located upstream of the food chain such as the fertilizer industry to sectors located downstream such as food processors and retailers. In addition, contemporary food chains are increasingly complex and globalized – this globalization of the food chains not preventing though the development in parallel of short supply chains. A final noticeable evolution is the important segmentation of the market of final products, with quality-certification booming and increasingly controlled by private stakeholders such as food industries and retailers.

What trend do you consider the most plausible concerning the organisation of food chains by 2030?

a. By 2030, the food chain organisation is "stationary": the concentration and globalization processes slow down but remain high **(Very plausible / Very unlikely to happen)**
b. By 2030, the food chain organisation tends towards "extreme concentration": the downstream segments of the food chain are even more concentrated, and increasingly dominant players downstream (such as retailers) massively influence the norms of the whole production system upstream through segmentation **(Very plausible / Very improbable)**

c. By 2030, commodification and globalization is intensified, with an increasingly dominant role played by traders to face logistical constraints **(Very plausible / Very improbable)**
d. By 2030, food chains tend towards relative deconcentration and decrease in power unbalances **(Very plausible / Very improbable)**

5. Evolutions regarding technology available and the innovation system

The analyses of long-term trends have shown that innovation was increasingly focusing on products rather than on systems. In addition, innovation has increasingly been dominated by private stakeholders, who tend to focus on innovations that can generate sufficient returns with respect to the level of investment, thus limiting the scope of innovation to a small number of "key" agricultural products. In parallel to the rising dominance of private firms on the agricultural innovation system, research and development is sometimes and in some places increasingly undertaken by collective action and farmers at the local level, backed by research institutions (European Innovation Partnership EIP-AGRI, Groupements d'intérêt économique et environnemental in France...), who tend to focus on systems instead of products and tend to attach particular importance to ecological cycles.

What trend do you consider the most plausible concerning the evolution of technology available and innovation system by 2030?

a. By 2030, there is a continuation of the privatization process of R&D and of extension services, resulting in innovation processes essentially oriented towards key products and high tech **(Very plausible / Very improbable)**
b. By 2030, there is a rebalancing of public and private research, with the continuous development of systems approach and agroecology **(Very plausible / Very improbable)**
c. By 2030, there is a strong redeployment of public research with public-private partnerships, both top-down and bottom-up innovations, the development of systems approach and agroecology **(Very plausible / Very improbable)**

Comments: other drivers you would like to mention and why (if you think of any that were not mentioned and which seemed structuring for you)

Second section - On the potential impacts of different scenarios on producers' strategies and on the potential solutions to address those impacts

You will be asked to discuss successively on the impact of each narrative on producers' strategies (individually and collectively) and on the type of policy options that could be deployed to address those impacts. Policy options that are proposed here were retrieved from participatory workshops that have been organized throughout Europe over the last 6 months; they mostly refer to measures that are either already existing not fully / widely implemented, or that have been discussed in policy / expert circles over the last few years.

6. **Under the *International Competition* scenario, and based on your expertise, the impact of this scenario would be:**

a. to favour enlargement, intensification and specialization as the main strategic option for producers **(Fully Agree / Fully Disagree)**
b. to reinforce price volatility producers are facing, create barriers to entrepreneurship through the needs in capital and potentially weaken the position of producers in the food value chains **(Fully Agree / Fully Disagree)**
c. to result in high impacts on the environmental sustainability at the farm / territorial level, probably leading to the reinforcement of a variety of environmental impacts (N leakages, decrease in biodiversity, soil degradation) **(Fully Agree / Fully Disagree)**

7. **Policy option / solutions to counter those impacts could be based on:**

a. The reinforcement of vertical cooperation along food chains through e.g. a support to the development of interbranch organisations **(Relevant / Irrelevant)**
b. A reinforcement of insurance scheme and public-private income stabilisation tools to face price volatility **(Relevant / Irrelevant)**
c. The reinforcement of environmental cross compliance and green payment to limit the environmental impact of agricultural production **(Relevant / Irrelevant)**
d. Other: please specify

8. **Under the *Europeanization* scenario, and based on your expertise, the impact of this scenario would be:**

a. to favour enlargement, intensification and specialization as the main strategic option for producers **(Fully Agree / Fully Disagree)**
b. to increase the level of competition between producers *within* Europe **(Fully Agree / Fully Disagree)**
c. to push producers to modernize their equipment and production processes to meet the regulatory requirements pertaining to sanitary and, to a lesser extent, environmental issues **(Fully Agree / Fully Disagree)**

9. **Policy option / solutions to counter those impacts could be based on:**

a. The reinforcement of vertical cooperation along food chains through e.g. a support to the development of interbranch organisations **(Relevant / Irrelevant)**
b. The harmonization of social and fiscal norms across Europe in the agricultural sector to avoid unfair competition among European producers **(Relevant / Irrelevant)**
c. The development of financial tools with strong leverage effects and the implementation of specific regulations pertaining to investments and “green” finance to make it possible for farmers to face strong sanitary norms **(Relevant / Irrelevant)**
d. Other: please specify

10. **Under the *High market segmentation* scenario, and based on your expertise, the impact of this scenario would be:**

a. to lead to difficulties for small-scale farming to access to infrastructures if they are not re-designed in a more integrative way (leading either to dual infrastructures or to the establishment of infrastructures taking into account small-scale farming constraints) **(Fully Agree / Fully Disagree)**

b. to lead to a reinforced competition on the access to some production factors among the different types of farming, especially land and credit. **(Fully Agree / Fully Disagree)**

11. **Policy options / solutions to face those impacts could be based on:**

a. Reinforcing land regulation on environmentally sensitive areas, and support land acquisitions for small-scale farming around major consumption areas **(Relevant / Irrelevant)**

b. Designing regional tools (regional slaughterhouses, medium scale processing manufactures and industries, shared equipment adapted to different levels of motorization...) adapted to different types of agriculture (small-scale and large-scale) through a growing involvement of local governments, in partnership with private sector actors (both in terms of financing and implementation) **(Relevant / Irrelevant)**

c. favouring the investment by local governments in specific infrastructures dedicated to local supply chains combined with the generalization of public procurement in order to avoid competition among small-scale farmers and ensure market opportunities **(Relevant / Irrelevant)**

12. **Under the *Ecologization* scenario, and based on your expertise, the impact of this scenario would be:**

a. that producers might experiment difficulties to commercialize higher quality products **(Fully Agree / Fully Disagree)**

b. that producers might experiment barriers to entrepreneurship due to investment and labour needs for transitioning towards agroecological practices, highly technical aspects of agroecological systems and the impossibility for some farmers locked into conventional farming practices to ensure transition **(Fully Agree / Fully Disagree)**

c. that environmental impacts are likely to decrease at both farm and landscape level **(Fully Agree / Fully Disagree)**

13. **Policy options / solutions to address those impacts are likely to be based on:**

a. developing further existing local food chains with the support of local governments, combined with green public procurement systems **(Relevant / Irrelevant)**

b. orientating subsidies towards new production systems and the investments needed rather than having subsidies compensating for the extra production cost associated to eco-friendly practices **(Relevant / Irrelevant)**

c. strenghtening and reorganising extension services in order to be able to accompany a shift in production systems **(Relevant / Irrelevant)**