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STAKEHOLDER INVOLVEMENT IN STRATEGIC DECISION MAKING FOR THE ORGANIC FOOD AND FARMING SECTOR IN EUROPE

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Abstract

The aim of this PhD study was to analyse and evaluate stakeholder involvement in strategic decision making for the organic food and farming sector. It presents three case studies.

The first case study investigates stakeholder perspectives on a desired future for the organic sector in Europe in order to develop a shared vision using the Stephenson's Q methodology.

The second case study focused on how to support the organic sector in designing possible futures using participatory scenario analysis based on qualified expert assessment.

The third case study analysed stakeholder involvement in the establishment and development of the European Technology Platform for Organic Food and Farming Research and Innovation – TP Organics – and its impact on European Research and Innovation policies.

The organisations involved in the case studies are the most representative organisations for the organic food and farming sector in Europe and involve a broad range of members:

- The first, IFOAM EU, has a membership of grass-roots organisations as well as representatives of the organic food and farming business sector (from producers to SMEs)
- The second, TP Organics, actively engages EU umbrella organisations (NGOs/Interest groups), businesses, civil society organisations, researchers and national and EU-level public actors in the field of organic agriculture and sustainable development.

In conclusion, the success of stakeholder involvement in decision making processes depends very much on the methodology applied to involve the participants and on how well the objectives are defined. The approaches to strategic decision making explored in this study have provided interesting models of stakeholder participation and have resulted in recommendations which can be applied to the development of the organic food and farming sector in the future.

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List of abbreviations

CAP	Common Agricultural Policy
CSA	Community Supported Agriculture
CSR	Corporate social responsibility
DG Agri	Directorate-General for Agriculture and Rural Development
DG RTD	Directorate-General for Research and Innovation
EC	European Commission
ETP	European Technology Platform
FP	Framework Programme (EU)
FiBL	Research Institute of Organic Agriculture
GMOs	Genetically modified organisms
IFOAM	International Federation of Organic Agriculture Movements
ISOFAR	International Society of Organic Agriculture Research
KBBE	Knowledge Based Bio-Economy
NGO	Non-Governmental Organisation
NTP	National Technology Platform
RDP	Rural Development Programme
SC	Societal Challenge
SMEs	Small and medium-sized enterprises
SRA	Strategic Research Agenda
SRIA	Strategic Research and Innovation Agenda
WP	Work Programme

Introduction

1. Aim and context of the research

1.1. Context

Over the last three decades organic food and farming has been growing year-on-year across Europe. In 2016, total land area under organic management in the EU was 11.9 million hectares (ha) and is continuing to grow (Eurostat, 2017[1]). Meredith and Willer (2016, p.12) observe that this growth has been accompanied by an equally "*buoyant market growth over the last ten years, with the total value of the EU organic retail market doubling from €11.1 billion in 2005 to €24 billion in 2014"*. In 2017, 51 million hectares were farmed under organic management worldwide, while 2.4 million farmers have chosen the organic way. The worldwide organic food market was valued at 65 billion euros (Willer and Lernoud, 2017).

A range of individuals and organisations, from producers and researchers to NGOs and public authorities, have played a part in this growth. Stakeholder involvement has been invaluable in bringing experience and practical knowledge to bear on the process of developing a definition of common principles and rules for the organic food and farming sector. The IFOAM EU group[2] (2006, p.2) describes *"a dynamic cooperation between farmers, processors, consumers, environmentalists and market actors long before there was a common EU legislation in force."*

Arbenz, Gould and Stopes (2016, pp.5-9) have clustered the development of the organic sector in three main phases:

1. 'Organic 1.0' is described as the period, when *"visionary pioneers saw the connections between the way we live, the food we eat, the way we produce that food, our health and the health of the planet";*
2. 'Organic 2.0', covers the period when a more global, coordinated movement emerged and became established, and organisations started to develop production and processing standards and accompanying certification schemes. This facilitated the creation of a market that raised its value year by year;
3. 'Organic 3.0' covers a set of future strategies *"to enable a widespread uptake of truly sustainable farming systems and markets based on organic principles and imbued with a culture of innovation, of progressive improvement towards best practice, of transparent integrity, of inclusive collaboration, of holistic systems, and of true value pricing"*.

1.2. Why focus on stakeholder involvement?

This study has been determined as a PhD research topic by considering the strong interest of policy makers, business, including small and medium-sized enterprises (SMEs), and civil society organisations in having an inclusive approach to strategic decision making processes. The organic food and farming sector has been selected due to a long standing history of stakeholder involvement for the

[1] http://ec.europa.eu/eurostat/statistics-explained/index.php/Organic_farming_statistics

[2] International Federation of Organic Agriculture Movements EU Group – the umbrella body for the organic sector in EU and EFTA countries.

development of the sector. This study focuses on the stakeholder involvement processes implemented by the two major organic representative organisations in Europe:

- IFOAM EU: This is the European umbrella organisation for organic food and farming. The organisation is one of the main advocates of the organic movement in the EU and EFTA with 190 members in 33 countries. Its membership includes organic farming associations, organic food processors, retailers and wholesalers, organic advisors and researchers and organic certification bodies. IFOAM EU, in the context of the Organic 3.0 strategy, led a participatory, Europe-wide 'Vision' process to inspire the organic sector to transform food and farming and to help it face future challenges proactively. It was followed by the development of a sector strategy which translated the vision it into concrete actions.

- European Technology Platform TP Organics: This is a growing bottom-up initiative of EU umbrella organisations (NGOs/interest groups), enterprises, civil society organisations, researchers and national and EU-level public actors in the field of organic agriculture. It has 87 members from EU Countries plus 7 national platforms. Its outreach involves 5.8 million of EU farmers, 5000 SMEs, 2500 researchers and farm advisers and 20 million EU Citizens. Since its inception, TP Organics has been implementing systematic approaches to involve stakeholders in the definition of research and innovation strategies and taking action to influence EU Research and Innovation policies.

1.3. Aim of the research

The aim of the PhD is to analyse and evaluate different methodologies used by the organic sector to involve stakeholders against the following specific objectives:

- To study human subjectivity to define a shared vision and collect stakeholder points of view on desired futures;
- To develop different hypothetical scenarios in order to describe possible futures and support the organic food and farming sector to transform Vision 2030 into reality;
- To ensure a transparent process and participatory process to collect research and innovation needs of stakeholders in organic food and farming;
- To assess the influence of organic food and farming stakeholders on European Research and Innovation policy.

This study seeks to provide recommendations about stakeholder involvement in the strategic decision making process for research and innovation policy. It concerns the organic food and farming sector and is focussed on Europe, in particular the European Union, although the recommendations could be adapted and applied to other countries. It discusses the following questions:

- How to support the organic sector in designing a desirable future in an appropriate way? What methodology can help handle expectations and manage conflicts among stakeholders?
- How to support the organic food and farming sector in designing possible futures? Can scenario setting be useful?
- How to ensure that research and innovation needs of organic food and farming stakeholders are collected in a participatory way and can be taken into account into the programming of EU research and innovation investments? Can systematic use of consultation tools involve stakeholders properly?

To this end, this study takes into account the following:

- The organic food and farming sector established its liaison office in Brussels (2003) in order to have an advocacy body to influence the development of relevant legislation (IFOAM EU). The

organisation' became involved in establishing an advocacy platform for organic research and innovation, TP Organics (2007).

- IFOAM EU, in the context of the Organic 3.0 discussion process, initiated by the International Federation of Organic Agricultural Movements, has been developing its Vision to 2030. The Vision and related implementation strategy will guide the work of the organisation in the next decade.
- Research and innovation in organic food and farming "*is very knowledge-intensive: knowledge that cannot always be covered by results from mainstream agricultural research."* In addition, organic agriculture serves *"the dual purpose of responding to consumers' demand in high-value markets and responding to national and EU agri-environmental and rural development policies"* (Halberg, 2012, p.12).
- The EU Directive 2003/35/EC (p.1) states that *"Effective public participation in the taking of decisions enables the public to express, and the decision-maker to take account of, opinions and concerns which may be relevant to those decisions, thereby increasing the accountability and transparency of the decision-making process and contributing to public awareness of environmental issues and support for the decisions taken."* Yet, according to Andersen and Jaeger (1999), the European Commission already in 1993 *"was looking for an appropriate method for establishing and improving communication between different sectors in society such as the scientific community, the political community, and the public at large. The purpose was to bring the EC R&D programme more in line with the future needs of society"*.

1.4. Stakeholder involvement theory

Stakeholder involvement is described in theory in different contexts and also with different purposes and has begun to receive serious attention in business ethics, management literature and policy making.

What is meant by stakeholder involvement?

Sen (2001) defines stakeholder involvement as the participation of stakeholders in policy-making, planning and management processes. While Noland and Philipps (2010) refer to the use of the term 'engagement' in stakeholder theory and corporate social responsibility (CSR) in order to emphasize that a mere interaction with stakeholders alone is no longer sufficient.

De Bakker et al. (2002) observe that the business sector is increasing its attention on stakeholder involvement when it comes to environmental management and issues of corporate social responsibility.

From the business perspective, Waddock (2001) argues that having effective stakeholder involvement means *"defining, and achieving, responsible operating practices fully integrated into the entire corporate strategy, planning, management, and decision-making processes."*

Several authors focus on the role of NGOs (Non-Governmental Organisations) and stakeholder involvement. In its definition of an NGO, the environmental action group, LEAT defines an NGO as a *"voluntary grouping of individuals or organisations, which pursue common purposes through lobbying or advocating on issues of public interest, or of interest to that group of individuals or organisations"* (cited in de Bakker, den Hond and van der Plas, 2002, p.4). De Bakker and Nijhof (2002) consider NGOs to be *"an interesting example to study stakeholder influence strategies on, as an opposite to firms' stakeholder management strategies on which much research is focused".*

Tieleman (1996) highlights the wider societal role that NGOS play "*in bringing together and translating unarticulated signals of unease or discontent from specific parts of society into articulated demands"*. Arenas, Lozano and Albareda (2009, p.175) explore the role of NGOs as stakeholders in influencing CSR. They come to the conclusion that *"mistrust among various stakeholder groups….. is a possible hurdle to the integration of social and environmental concerns in business activity and corporate governance"*. According to Bendell (2004), corporations changed some of their policies and strategies, in part due to social and political pressures linked to particular NGOs or NGO networks.

Stakeholder involvement in policy making

Sen and Nielsen (1996) have identified three types of stakeholder involvement:

- Instructive stakeholder involvement: Where government is the decision-maker, but mechanisms exist for limited exchange of information with other stakeholders.
- Consultative stakeholder involvement: Where government remains the decision-maker, but there are formal and informal mechanisms for consultation with stakeholders. Stakeholders have some degree of influence over outcomes.
- Cooperative stakeholder involvement: Where all primary stakeholders and government work together as partners in the decision-making process. Secondary stakeholders play a consultative role.

A study by Garnett (2014) on the involvement of stakeholders in waste-management decision making states that for *"analytical–deliberative processes to be successful, they need to be adequately balanced and integrated, and to offer fair and equal opportunities for stakeholders",* including local communities, to influence decision-making.

Thabrewa, Wiek and Ries (2009) conducted a study of a stakeholder-based approach to life cycle assessment that can be used to support sustainable decision making in multi-stakeholder contexts. Concluding remarks highlighted that *"cross-sectoral integrated project planning is the desirable approach for sustainable development".* The method must also allow for stakeholder interaction at all stages, promote consensus building, foster transparent access to information and clearly communicate implications of development to the stakeholders.

Another study points to the fact that quantifying stakeholder preferences in environmental management is a complex task: *"The most critical aspect of promoting equity through participation is the extent to which public preferences are incorporated in policy decisions which govern environmental quality"* (De Felice and Petrillo, 2013). Yet, Tappenden (2014, p.) examined the public involvement processes contained within the Landslide Management Strategy for the District of North Vancouver in British Columbia, demonstrating *"the value of meaningful public involvement for arriving at risk-tolerance criteria and fostering individual capacity and community resilience".*

Michelsen et al. (2009, p.31) observe that stakeholder involvement has become part of EU policy making as *"as a remedy against problems of obtaining policy legitimacy and efficiency"*. Whilst they understand that stakeholder involvement is a *"well defined instrument in evaluation theory"* they argue that it *"lacks theoretical specification in political science"*.

What is the role of stakeholder involvement for the particular case of organic food and farming, which will be explored in this research work?

According to Arbenz, Gould and Stopes (2016, p.9) the organic movement is facing an important development phase, Organic 3.0 (mentioned above), whereby it wants to *"to showcase its ability to have impact on issues of critical importance to billions of people"* and it has *"a revised understanding*

and positioning towards more ambitious and common-good goals, and therefore has a strong focus on the spirit, attitudes, values and strategic plans of stakeholders inside and outside the organic movement".

A recommendation paper developed in the context of the EU funded project ORGAP[3] concluded that both for the legitimacy of a European Organic Action Plan as well as its successful implementation, "*the views, advice and support of the different stakeholder groups are essential in all five relevant development stages of the plan: the design (agenda setting), policy formulation, decision, practical implementation and evaluation"* (Schmid et al., 2008b).

In the Organic Action Plan resource manual, Schmidt et al. (2008a, p.40) emphasise the importance of identifying relevant stakeholders in ascertaining development needs and policy objectives for the sector. They acknowledge, however, that not all relevant stakeholders will necessarily be very familiar or involved with organic food and farming, nor necessarily in favour of organic methods. There are stakeholders, however, who act as "*gatekeepers to policy or implementation*" and whose effective involvement is crucial. It is vital, therefore, that these stakeholders are identified. They go on to observe that effective identification of relevant stakeholders is informed by an understanding of the "*dual societal role*" of organic farming (as a response to consumer demand, and as a supplier of public goods) which implies a focus on policy measures characterised by three perspectives (an organic values perspective; a market perspective; and a public goods perspective). Each perspective involves separate groups of stakeholders.

However, effective stakeholder involvement in organic action plan development is not without its problems. Michelsen et al. (2009, p.32) conclude that in some situations *"involvement of a broad range of stakeholders in any part of the policy process does not appear to be an effective and pragmatic solution to the EU's problems of legitimacy and efficiency"*, and can introduce additional problems.

Schmidt et al (2008a, p.46) argue that effective stakeholder involvement needs "*good preparation, sufficient time and suitable methods*". They recommend using a "*diverse range*" of participatory methods which "*need to be flexibly adapted to particular situations and needs*".

Based on the experience of developing an organic research agenda in Sweden, Wivstad et al. (2014, p.1001) stated that an open and transparent process promotes the credibility of the agenda for policy makers, research funders as well as for agricultural stakeholders. *"The including approach, engaging stakeholders in the food chain as well as the research parties, gives potential to bridging gaps between science and practice".* The approach also increases the awareness of knowledge gaps and needs of different stakeholders, leading to a better understanding of the challenges in the broad area of knowledge building, knowledge transfer and the development of sustainable food systems.

1.5. Structure of the research

This research is based on three separate and independent studies of stakeholder involvement in decision making for the organic food and farming sector in Europe.

1) The first study, submitted to a special issue of *Organic Agriculture,* is an expanded version of a previous short paper presented at the ISOFAR 2017 conference and included in the proceedings.

[3] ORGAP: European Action Plan for organic food and farming - Development of criteria and evaluation procedures for the evaluation of the EU Action Plan for Organic Agriculture

It deals with defining a shared vision for the whole organic sector in Europe and was performed as part of the IFOAM EU Vision 2030 process. Stakeholder viewpoints on the ***desired* future** for the organic sector are the focus of the analysis which included a participatory interpretation of the results and was preparatory to the IFOAM EU shared Vision 2030 which was approved by the Board and then the General Assembly in 2016.

2) The second study emerged from a two day scenario workshop engaging multiple stakeholders and members of IFOAM EU. The study reports the results of a participatory envisioning process that lead to define 4 different ***possible* futures**, not necessarily desirable, impacting on the development of the organic sector in Europe from now to 2030.

3) The third study is an analysis of the history of the European Technology Platform TP organics and applies content analysis to assess the impact of the organisation on the EU research programmes. It also investigates the participatory process put in place to develop TP Organics' main documents such as the Strategic Research Agenda (Schmid et al., 2009) and Strategic Research and Innovation Agenda (Moeskops and Cuoco (eds.), 2014). The study reports on how these consultations have potentially impacted on the content and funding of the EU Research and Innovation programmes, FP7 and H2020 in particular.

In the following chapters these three studies are discussed. The final two chapters deal discuss the findings and provide some conclusions.

1.6. Research methodology

For each of the case studies detailed information about the methods and methodologies applied is provided. This section offers a summary of these research methodologies and some epistemology notes (see also Table 1).

In the first study, Q Methodology (Stephenson, 1935; Brown, 1980; McKeown and Thomas, 2013) was applied to define a shared vision and collect stakeholder points of view on the desired outcome for the future. Q methodology has been traditionally applied in psychology and medical research (McKeown and Thomas, 2013), however it is now also applied in several other disciplines including agriculture and rural studies (Pereira et al., 2016; Mandolesi et al. 2015; Nicholas et al., 2014; Hall, 2008; Eden et al., 2008; Davies and Hodge, 2012). It allows for the systematic study of human subjectivity (see Chapter 2.3 for more details).

The second study uses scenario analysis to explore different hypothetical scenarios in order to describe possible future impacts on the development of the organic sector to 2030. Scenarios can be considered as hypothetical images of the future that describe the functioning of a system under different conditions with a certain degree of uncertainty (Bunn and Salo, 1993; Zanoli et al., 2012; Amer et al., 2013). The literature on scenarios focuses on the use of scenarios as tools for learning (Kahn and Wiener 1968; Bradfield 2008); in other words, scenarios force individuals to examine their perceptions and to develop a shared view of uncertainty.

In the second study an analysis of a deductive-qualitative scenario (van der Heijden, 1996) through a participatory approach was used. Stakeholders were invited to a two-day workshop and their work formed the central themes of the developing scenarios (see Chapter 3.3 for more details).

The methods used for the third case study on stakeholder involvement were designed to "*ensure a transparent process and to broaden the legitimacy of the vision*" (Niggli et al, 2008). They consisted of different participatory approaches, such as the establishment of expert groups, online surveys,

open questionnaire for SMEs, workshops and meetings. These were organised systematically to provide active participation of stakeholders in the development of TP Organics' main documents (see Chapter 4.3 for more details).

The third study also provides an impact assessment of organic stakeholder influence on EU Research and Innovation Policies by assessing the "*effect of the service [or of an event or initiative] on an individual or group"* and by "*identifying and evaluating change*" (Fitz-Gibbon, 1996, cited in Streatfield and Markless 2009, p.134). In order to assess the influence of stakeholders from the organic food and farming sector on European Research and Innovation policy, two ex-post impact assessment indicators were identified: a) Content analysis of the call for projects in the 7th and 8th (Horizon 2020) Framework Programmes related to organic food and farming and b) Funding amount and number of projects and their budget for organic farming research under the EUs Framework Programmes by programming period (see Chapter 4.6 for more details).

Table 1 Research methodologies applied in the case studies.

	Research Methodology	Objective	Cross-Reference
Case Study #1	Q-methodology	Study human subjectivity to define a shared vision and collect stakeholders point of view on desired future	Chapter 2.3
Case Study #2	Scenario development	Development different hypothetical scenarios in order to describe possible futures and support the organic food and farming sector to transform Vision 2030 into reality;	Chapter 3.3
Case Study #3	Systematic use of stakeholders consultation tools (expert groups, online surveys, open questionnaire, workshops and meetings)	Ensure a transparent process and participatory process to collect research and innovation needs of stakeholders in organic food and farming.	Chapter 4.3
	Ex-post impact assessment	Assess the influence of organic food and farming stakeholders on European Research and Innovation policy	Chapter 4.6

According to Breuer and Roth (2003), "*rarely do researchers regard the subjective nature of research as a productive opportunity, an epistemic window and a possibility for methodological innovation. (…) To see in depth, we require different perspectives even if these are very small. Gaining "depth" is a general principle of knowledge production that arises from the juxtaposition of multiple, different perspectives*". Among these perspectives or viewpoints, one should not forget the role of the researcher. A constructivist approach to knowledge calls for a relevant role of subjectivity that needs to be tackled in a scientific way. Fundamentally, the researcher has a point of view that is inherently subjective.

In this study, the researcher and author is involved also professionally in development of IFOAM EU and TP Organics. This is something to be acknowledged not because it implies a conflict of interest or ethical challenge (Sanjari et al., 2014), but because it implies a totally different approach to scientific discovery, which is not only applicable to (constructivist) social research but also to 'hard' sciences. In

quantum physics, a well-known effect is the 'observer effect', the fact that simply observing a phenomenon necessarily changes that phenomenon. Originally this was seen as dependent from instrumental limits, as if measurements of some phenomena cannot be made without affecting the phenomena. Heisenberg, with his 'indeterminacy principle', showed that this is simply is not a statement about the observational success of measurement tools, but an inherent property of (quantum) systems that affect all observed phenomena (Sen, 2014).

In social science, having a constructivist approach means accepting that people construct their social world, structure it, and find it meaningful. As Breuer and Roth (2003), observe:

> "*the scientific view of this world is often taken as having a superior epistemological status, as being more objective. This view implies a self-deception in that it fails to understand the researcher as an equally subjective system, a member of a social world whose constructions are mediated by individual and social characteristics. There is therefore an uncoupling of epistemology (knowledge of the other as constructed) and methodology (scientific knowledge as untouched by the beliefs and actions of researchers and their culture). One may therefore have the impression that researchers are but skin-covered, interchangeable instruments. The researcher implied in textbook methodologies has no age, sex, smell, color, or socially conditioned habitus*."

On the contrary, the approach used in this PhD dissertation assumes that viewpoints – albeit subjective – can be a meaningful object of study if they are 'operant', that is, not dependent on constructed effects, and therefore neither right nor wrong but simply self-referent.

The 'operant' nature of subjectivity implies a different role for the researcher. As Brown (1980, p.237) has noted, the ordinary inductive or deductive approach to scientific discovery implicitly assumes a passive role of the investigator. An *abductive* approach begins with the effects and pursues potential plausible explanations. In this respect, the researcher's viewpoint and its aims are intrinsically embedded in any scientific discovery.

The use of a Q-methodological approach à la Stephenson (1935) in this research implies a social constructivist approach to reality, where the centrality of self is acknowledged. In study 1 the approach is directly applied by Q sorting Technique to stakeholders' viewpoints on the desirable future of IFOAM EU. In study 2 the use of scenario analysis allows socially constructed representations of possible futures to emerge from the elicitation of stakeholders' viewpoints on these possible futures, regardless of their desirability. In study 3, a larger "concourse" or population of statements on innovation needs was analysed by means of content analysis to infer the '*universe of communicability*' (Brown, 1980) of key stakeholders of TP Organics. The results of this systematic analysis were matched with the actual research and development policy call texts to produce an ex-post impact analysis in terms of socially constructed subjective goals of the sector.

Chapter 2

2. Using Q Methodology to facilitate the establishment of the 2030 vision for the EU organic sector

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The following study was originally published, in a shorter form in: G. Rahmann, C. Andres, A.K. Yadav, R. Ardakani, H.B. Babalad, N. Devakumar, S.L. Goel, V. Olowe, N. Ravisankar, J.P. Saini, G. Soto, H. Willer (eds.), 2017. *Innovative Research for Organic 3.0.* Proceedings of the Scientific Track at the Organic World Congress 2017, (November 9-11) Delhi, India. Thuenen Report 54 (2), Braunschweig: Thuenen Institut.

This chapter focuses on the application of the Q methodology as one of the steps of a stakeholder participatory process run by IFOAM EU. The process is fully illustrated in Text Box 1 and

Figure **1**, both reproduced faithfully from the IFOAM EU Vision document (Barabanova et al., 2015).

Text Box 1 What was the vision process like?

WHAT WAS THE VISION PROCESS LIKE?

Participatory, explorative and insightful – these were the central aspects that we considered at every stage of our vision process, which was launched in November 2013. Online and offline conversations in the form of surveys, workshops and meetings with over 300 contributors helped us tap into the vast collective knowledge and experience of the organic movement in Europe. Opening up parts of this process to a broader range of stakeholders ensured that we also captured ideas and perspectives of brilliant minds beyond the organic sector. To explore crucial issues and future challenges that the movement will face, we created spaces for deeper, small group discussions in multiple locations throughout Europe – Brussels, Bari, Rome, Villena and Nuremberg. With the help of an extensive review of current foresight studies and contributions from experts, it was possible to build scenarios of plausible futures and ground our visions in reality. In the final phase of distilling a shared vision, we worked through over 300 visionary elements collected from multiple sources at the various stages of the process. We then further reduced them into a set of 48 elements covering diverse aspects from value chain interactions to production methods and certification. A number of stakeholders of varied backgrounds sorted through and discussed the final set of visionary elements at the BioFach vision workshop. Statistical analysis revealed which of the elements the workshop participants agreed upon, forming two distinct – though not too diverging - viewpoints on how the future of the organic movement should be. These two vision statements were then opened up to a Europe-wide consultation in the final phase of the vision process. The public consultation helped sharpen the final vision and highlight our priority areas for the future. The resulting vision statement represents the ambition of the organic movement to lead the change in the European food and farming sector. The very essence of this statement is that, no matter how challenging the circumstances prove to be, the underlying values of the organic movement will play a pivotal role in shaping the future of Europe's most innovative food and farming sector.

Source: Barabanova et al., 2015, p.8

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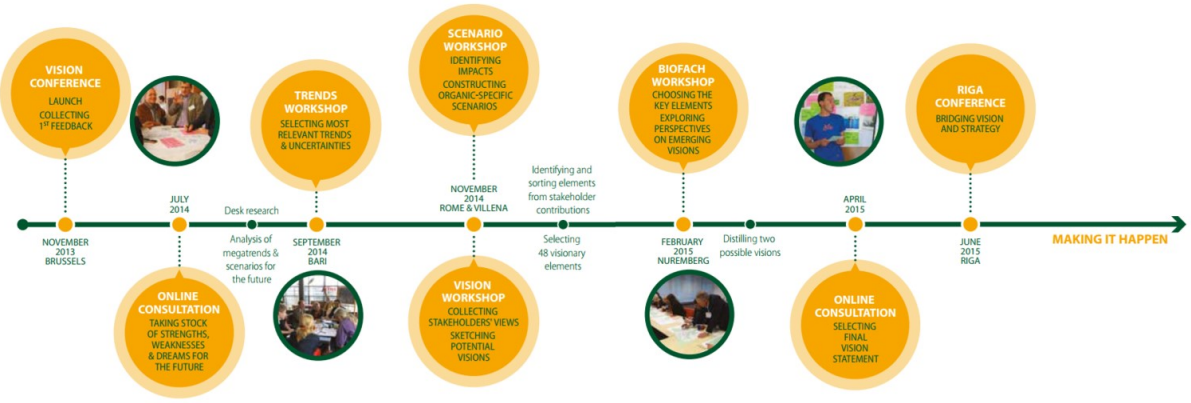
Figure 1 Developing a Vision for the European Organic Movement



Source: Barabanova et al., 2015

The current version of this study has been submitted to a Special Issue of *Organic Agriculture,* and is currently at its first revision stage.

2.1. Abstract

A participatory application of Stepenson's Q methodology known as InQuiry was used to investigate stakeholder perspectives on a desired future for the organic sector in Europe in order to develop a shared vision. A selected group of experts from different organisations and nationalities were asked to provide their viewpoints on what should be the vision for the organic sector in Europe in 2030, sorting 48 statements containing possible future visions about the organic sector. Results indicated two distinct and common positions about the future of EU organic sector, which helped in drafting the IFOAM EU 2030 vision for the organic sector in Europe.

2.2. Introduction

What is the future for organic sector in Europe? In the last decade, the greater interest in a healthier diet and a more ecological society increased the importance of the organic food and agricultural business (Zanoli et al., 2012; Zanoli, 2004; Jensen et al., 2011). In 2017, 51 million hectares were farmed under organic agricultural management worldwide, while 2.4 million farmers have chosen the organic way. The organic food market was valued at 65 billion euros (Willer and Lernoud, 2017). However, despite and partially because of the success on the market, the organic sector is facing increasing complexities and contradictions that may potentially hamper the future development of the sector (Arbenz et al., 2017).

The research reported in this paper stems from the conversations initiated by IFOAM EU to foster the further development of the organic movement. IFOAM EU wanted to achieve a common vision for the organic sector and provide an answer to the following questions: Where does the organic sector aim to be in 2030? What are the critical future framework conditions that could limit or speed up the development of the organic movement?

The aim of this study was to take a snapshot of relevant stakeholders' perspective on the desired future of the organic sector by capturing, through a participatory approach, multiple viewpoints from

individuals involved in the organic movement and sector in Europe. Opinions from a selected group of stakeholders were collected applying Q methodology (Brown, 1980) widely used to investigate, in a systematic way, human subjectivity. Q methodology typically involves small number of respondents, though using rigorous methods for eliciting and modelling participants' viewpoints on matters of subjective relevance (McKeown & Thomas, 2013). In the next paragraph we will illustrate how we employed Q-sorting and other Q-methodological tools to help building a shared vision of the organic sector.

2.3. Materials and Methods

Q methodology (Stephenson, 1935; Brown, 1980; McKeown and Thomas, 2013) is used for the systematic study of human subjectivity. In Q methodology, people with similar viewpoints are grouped into the same group by the application of factor analysis between individuals (not between variables). According to this methodology, each respondent produces a Q sort that is cross-correlated with the Q sorts collected from other respondents. Then, factor analysis is applied in order to define groups of people that have a shared or similar point of view. The emerging factors are then interpreted based on the factor arrays and usually a name is given to each factor extracted. Q methodology, traditionally applied in psychology and medical research (McKeown and Thomas, 2013), is now applied in several areas of interest including agriculture and rural studies (Pereira et al., 2016; Mandolesi et al. 2015; Nicholas et al., 2014; Hall, 2008; Eden et al., 2008; Davies and Hodge, 2012).

A Q study consists of five steps (McKeown and Thomas, 2013): construction of the "concourse", development of the Q sample, selection of the P set, Q sorting, and Q factor analysis.

In Q methodology, the "concourse" refers to, "the flow of communicability surrounding any topic" (Brown, 1993) and it can include any existing materials (e.g. statements, pictures etc.) about the topic under investigation (Brown, 1980).

For this study, the "concourse" included over 500 statements that were collected from workshops on the future of the organic sector that took place in Italy and Spain, as well as congresses, research projects and surveys discussing new visions and strategies for the organic sector (World Organic Congress in Istanbul 2014, SA- Soil Association Strategy to 2020, 3.0 – Organic 3.0, SOAAN, TIPI – research vision of TIPI). The 500 statements were then classified in 16 main categories: "Value Chain Interactions"; "Employment, Income and Access to Land", "Diets & Nutrition, Health"; "Mainstreaming VS Niche"; "Production Methods"; "Rural-Local"; "Organic & Conventional: food production in general"; "Certification"; "Procurement"; "Policy and Regulation"; "True-Cost Accounting"; "Research"; "Education"; "Organic Principles"; "Agro-ecology" and "Miscellaneous". These categories were chosen as they were mentioned as relevant elements of a future vision of the organic sector after interviews with IFOAM EU board members and office staff. An iterative process was followed to code the statements in these categories: first a researcher classified all the statements by herself. Based on this coding, a second researcher revised the classification, and disagreements were solved with discussion and simultaneous recoding. The interrater reliability (Perrault and Leigh, 1989) was 0.82, exceeding the recommended threshold of 0.70. By employing a factorial design (Stephenson, 1953, Brown, 1980; McKeown & Thomas, 2013) a structured sample of 48 statements (Q-sample) was selected from the classified "concourse". Then, all the researchers agreed on the 3 best representative statements for each category to be selected and included in the final Q sample. The statements included in the Q sample are reported Appendix B.

According to Brown (1980) a Q study requires only a limited number of respondents, called 'P(erson) sample' or P-set: "all that is required are enough subjects to establish the existence of a factor for purposes of comparing one factor with another". Representativeness across respondent's characteristics is not an issue in Q methodology, though the choice of participants is made "to ensure as much variability in the composition of the P-set as is practicable under the circumstances" (McKeown & Thomas, 2013; Brown, 1980). Q sorts were collected during BioFach (the World's leading Trade Fair for Organic Food) in February 2015. The extensive P-sample (McKeown & Thomas, 2013) included 23 experts purposefully selected among participants to BioFach, who were members of different organizations active in the organic sector in various countries. They were selected according to three criteria: a) represent broader as possible viewpoints on the desired future of the organic sector in Europe; b) be fluent enough in English to carry over the sorting task; c) be available to participate to the study. Among respondents were the three authors of the influential IFOAM Organic 3.0 concept paper (Arbenz et al., 2016), one of which was from USA. Each statement of the Q sample was printed and randomly numbered from 1 to 48. To generate the Q sort each respondent sorted the 48 statements into a quasi-normal distribution (Figure 2 Q sorting distribution) from 'Most like' (+5) to 'Most dislike' (-5).

Respondents sorted the statements provided according to their viewpoint following this condition of instruction: "What should be the vision for the organic sector in Europe in 2030?". Once completed, the participants were asked to review their Q sorts and make any final adjustments and comments by filling a post-sort questionnaire (Figure 3).

The day after the sorting took place, following Militello et al. (2016) InQuiry procedure, the 23 sorters were asked to come back to discuss results of the factor analysis and interpret the factor array in a participatory way. Only 16 showed up and were split according to factor loadings (9 for Factor 1; 7 for Factor 2). Among these, there was one participant who did not significantly load on any factor: he was assigned to the group/factor where he had the highest loading. The fact that some sorters did not show up has not impacted the participatory procedure: the two groups where not very different in size, while in each group there were enough participants to observe group dynamics without making communication difficult (Lawler et al., 2008; Soboroff, 2012).

Figure 2 Q sorting distribution

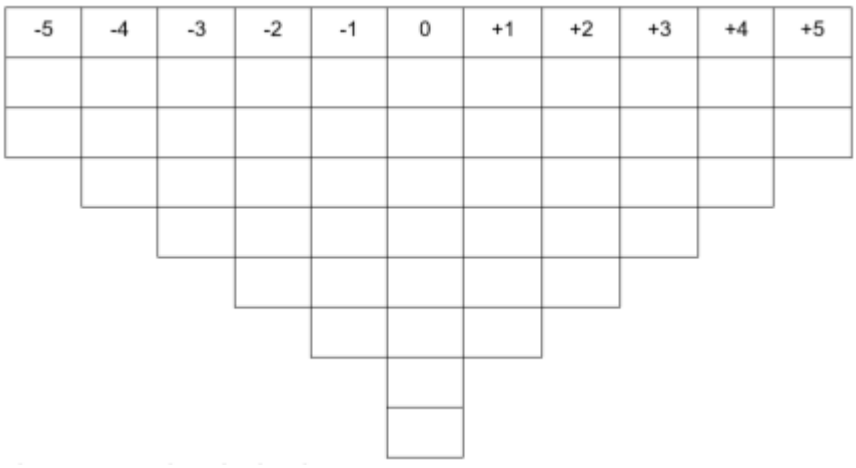
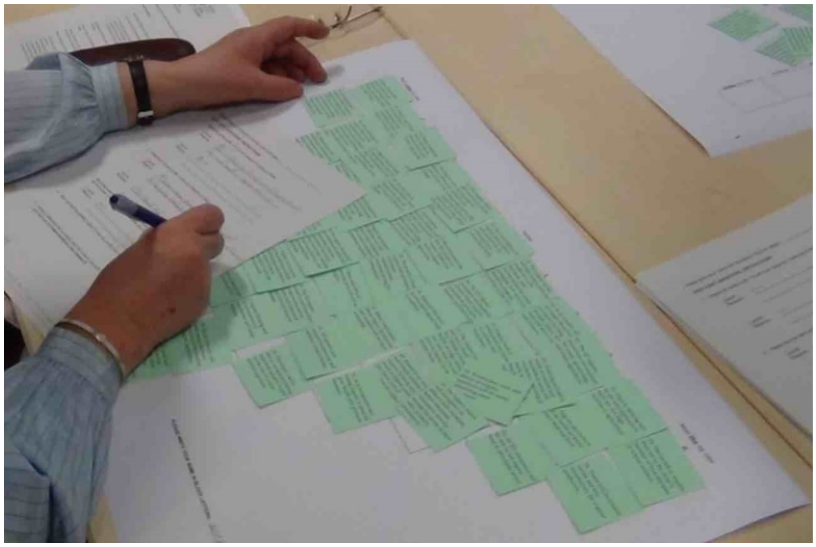


Figure 3 A participant filling in the post-sort questionnaire



2.4. Results

All 23 Q sorts were cross-correlated and factor analysed using the PQMethod software applying a centroid factor analysis with a varimax rotation (Watts and Stenner, 2012). To extract significant factors, the Brown's rule was applied (Brown, 1980, p.222-3). The number of factors was determined by selecting the factors with at least two factor loadings – correlations between Q sorts and the factor itself – that were statistically significant at the 0.01 level; i.e., those exceeding ±0.37 (±2.58 × standard error [SE]; with SE = 1/√ (number of statements)). Finally, two factors were extracted and rotated. Factor 1 explained 22% of the study variance and 12 participants were significantly associated with this factor. Factor 2 explained 12% of the study variance and 7 participants were significantly associated with this factor. The rotated factor loadings, which explain the degree of correlation of each respondent's Q sort with each factor, are shown in Table 2 Factor Loadings. Significant factor loadings are reported in bold. Given the presence of confounded loadings, represented by those respondents who significantly loaded in both factors (Q sort 2, 16 and 18 have loading higher than 0.37 on both factors), the attribution of a specific Q sort to a specific factor was based on highest factor loading evaluated in relation to the information contained in the post-sort questionnaire. Defining sorts – that is those sorts which contribute to the factor array in the rotated solution - are identified by an X. Four Q sorts (5, 7, 19, 21) were not associated significantly with either factor. Factors are described in more detail in the following paragraphs. The relevant distinguishing statements are indicated with bold figures, followed by factor scores (ranging from -5 to +5).

2.4.1. Factor 1. Pioneers

The use of words or terms such as "pioneering role", "pioneer", "drive", "forward", "radically-alternative", "go a step further" characterizes and enriches the content of those statements ranked in the right side of the sorting distribution (6, +4; 9, +4; 10, +5). The vision of the organic sector that emerges from these statements emphasizes the pioneering role of the organic sector, which is asked to promote new radical solutions for the whole agricultural sector. For this factor, the evolution of the organic sector or movement is strictly connected to social and environmental aspects. More specifically, concepts like "fair trade", "fairness", "ecology", "agro-ecology", "urban agriculture" emerged as important (47, +3; 11, +3).

Table 2 Factor Loadings

Q sort number	Country	Factor 1	Factor 2
1	Czech Rep.	**0.4515X**	-0,1015
2	USA	**0.4615X**	**0,3874**
3	France	0,2435	**0.5511X**
4	Germany	**0.7962X**	0,2399
5	Netherlands	0.3216	-0,2662
6	Hungary	0,2298	**0.4793X**
7	Poland	0.3624	0,2769
8	Belgium	**0.7285X**	0,1873
9	Belgium	**0.5456X**	0,0585
10	UK	**0.4802X**	0,2674
11	Belgium	**0.5063X**	0,2878
12	UK	**0.4352X**	0,1706
13	Poland	-0,1569	**0.5677X**
14	Poland	0,0625	**0.4429X**
15	UK	**0.6564X**	-0,0979
16	France	**0,3931**	**0.6225X**
17	Latvia	0,2797	**0.4242X**
18	Finland	**0.4756X**	**0,3843**
19	Italy	0.3660	0,2573
20	Italy	0,0964	**0.4941X**
21	Italy	0,0005	0,1563
22	Germany	**0.7805X**	0,3551
23	Netherlands	**0.7165**	0,1163

Significant loadings are reported in bold. Defining sorts are identified by an X.

The role of the organic farming for Factor 1 is fundamental for the success of the whole organic sector. Organic farming will be able to improve animal welfare (32, +3) and to reduce costs and increase the yields thanks to research in seeds and breeds suitable for the organic sector (40, +4). This factor does not think that organic farming will be associated only to home-grown farming (13, -4), while, at the same time, claiming that global trade is not the main driver for the development of this sector (17, -4). This factor believes that a lot of work is necessary to expand the organic sector (48, -5).

Respondents loading into Factor 1 included many organic 'pioneers', i.e. people which were members of IFOAM since decades. Mostly they come from countries where organic farming is well developed and established since the '70s (Germany, UK, Belgium, The Netherlands, USA), with the exception of two stakeholders from Finland and Czech Republic. Besides, all three authors of the Organic 3.0 concept paper loaded into this factor.

2.4.2. Factor 2. Pragmatics

The second factor – "Pragmatics" – focuses more on aspects related to market dynamics (e.g. prices, norms, bureaucracy). Less bureaucracy (24, +5) and lower prices (20, +5) will influence the growth of the organic sector. This factor believes that the growth of the organic sector is linked to the promotion of more and better information about the organic products (27, +3) associated with the introduction of the "conventional" label for non-organic products (25, +3) and reduced taxes for organic producers (23, +2). However, this group believes in a substantial growth of the organic sector from the demand side (35, +3), and desires a future where organic food will be available to all consumers at affordable prices (5, +5). It strongly rejects vegetarianism as a driver of organic food consumption (36, -4). In general, the view from Factor 2 is more secular and less ethical-based than that of Factor 1.

Factor 2 includes mainly stakeholders with higher market orientation (marketers, certifiers) and who entered the organic movement at a later stage (after 2000). They mostly originate from Eastern EU countries (Latvia, Poland, Hungary), but also from the Mediterranean (France and Italy). It is interesting to note that two Italians did not load into any factor, but the one who showed up at the participatory factor interpretation was happy to be assigned to this group (exhibiting a higher but not significant loading for Factor 2).

Table 3 Distinguishing statements for Factor 1 and Factor 2

N	Statement	F 1	F2
10	The organic sector will continue to pioneer the transition to economically, ecologically and socially sound food systems in order to drive the whole agricultural sector forward	5*	0
6	The organic sector will keep its pioneering role in the context of agro-ecology	4*	0
40	Research on seeds and breeds suitable for organic farming will result in higher yields and lower cost of production for organic farmers	4*	-1
9	The organic sector will go mainstream while still proposing radically-alternative options to those consumers wishing to go a step further, and promoting those politically	4*	-2
32	Organic farming will improve animal welfare	3*	-1
47	The EU organic movement encompasses fair trade, agroecology, and urban agriculture	3*	-1
48	The EU organic movement doesn't exist anymore because all agriculture in Europe is organic	-5*	-3
13	Organic agriculture will be based on home-grown feed and food.	-4*	0

17	The global trade of organic products will be the most relevant driver of the development of the organic sector in Europe	-4*	-1
22	Organic products will benefit of reduced VAT	-3*	1
20	All EU consumers will be able to eat organic food at affordable prices	3	5*
24	There will be simpler norms and less bureaucracy for organic producers	0	5*
36	Organic agriculture will contribute to introducing more vegetables in diets in relation to meat or fish.	0	-4*
35	The consumption of organic food products will outperform the consumption of conventional foods.	-1	3*
25	Conventional products will have to be labelled 'conventional' and the chemical products used during their production will be mentioned on the label	-1	3*
27	Better information about organic production and markets will be more accessible	0	3*
23	Organic farmers will be paying fewer taxes for their contribution to the wellbeing and sustainability of the society	-2	2*

* Indicates significance at $P < 0.01$

Regarding consensus statements, both factor 1 and 2 are positive towards the growth of the organic sector that will not be reduced to a niche (**3**, -4, -3) of small family farmers (**2**, -3, -3) but will become mainstream ("More than 50% of farming in the EU will be organic": **7**, +2, +4). Both Factor 1 and 2 believe that the organic products will be more accessible and available to every EU consumer in both public and private sector (**21**, +5, +4; **42**, +2, +3). In their desired future, education regarding the organic movement will be encouraged in schools, therefore increasing the knowledge of organic food and farming among new generations (**41**, +2, +4). More in general, for both factors the future developments of the organic sector should comply with IFOAM principles (**11**, +3, +2). Finally, both factors agree in rejecting eco-functional intensification and green-tech solution in organic farming (**4**, -5, -5), as well as the idea that in the future organic-plus and biodynamic products will increase their share in the market (**18**, -2, -3). With the exclusion of research on seeds and breeds aimed at increasing organic yields (relevant for Factor 1: **40**, +4), respondents exhibited little faith on the role of scientific research and its results in relation to the desired development of the sector (**38**, +1, 0; **39**, +1, -1).

2.5. Discussion

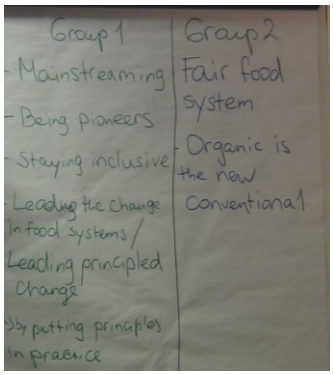
The participatory factor interpretation showed that the two groups (Group 1: "Pioneers"; Group 2: "Pragmatics") were quite different in their vision of themselves. In Figure 4 the words used by each factor members to describe the factor/group are reported. "Pioneers" see themselves as pioneers and change leaders and consider organic farming and food systems as inclusive and innovative, though strongly based on IFOAM organic principles. Pragmatics use less words in self-defining their own group (factor), and summarize organic food and farming as a "fair food system". Both groups/factors share the idea of "mainstreaming" i.e. becoming the "new conventional" agricultural system, as part of their vision. The IFOAM EU mission "Making Europe MORE organic", becomes, in the vision of participants, "Making Europe MAINLY organic". In the words of one of the participants: "All food will be organically

produced and any food that is not will carry a health warning". Both competing visions are, therefore, in line with Organic 3.0 vision, which, in the words of IFOAM international, is "about bringing organic out of its current niche into the mainstream and positioning organic systems as part of the multiple solutions needed to solve the tremendous challenges faced by our planet and our species." (Arbenz et al, 2016).

As already mentioned, while most participants associated to the first factor were coming from Northern and Western EU countries, and where long-standing members of IFOAM; the second factor was associated with new members mainly from Eastern and Mediterranean EU countries. This clustering by "age" and region was therefore another relevant issue to consider in finding a good compromise to define and launch the IFOAM EU 2030 vision.

Another aspect worth to mention is that, although according to Arbenz et al. (2017) "further strong research support is required to implement the Organic 3.0 strategies", respondents were quite neutral with respect to statements reflecting the relevance of research for the future of the organic sector. Although organic agriculture has been defined as "science based from the start" (Rahmann et al, 2017) and even if among the stakeholders involved in the Q-sorting exercise there were two academics, scientific research in organic food and farming did not appear to be strongly associated with the participants' vision. Indeed, in the final vision statement, while there is clear support for "a culture of innovation" (Barabanova et al.,, 2015), the words "research" and "science" are never mentioned.

Figure 4 Participatory factor interpretation: eliciting key meanings



2.6. Conclusions

Our study has helped uncover two competing stakeholder viewpoints (one more principle-based, the other more pragmatic and market-oriented) representing the core discourses reflecting the debate over the future vision of the organic sector in Europe at that time. The extracted factors are operant, in the sense they have no critical dependency on the way the Q-sample was constructed (Stephenson, 1977), but depend on how some organic actors subjectively value different future events, as operationalised by the Q sorts. They illustrate, in an operant manner, two competing stories representing different *weltanschauung* (vision of the world) of IFOAM EU members. Understanding the underlying distinguishing as well as consensus statements, actually allowed us to help the IFOAM EU council in shaping the IFOAM EU 2030 vision that was finally approved by the IFOAM EU Assembly in June 2015. Our participatory approach that was based on Q methodology allowed a scientific study of the subjectivity involved in such decision-making process, allowing to reach a good compromise of competing visions in the framework of Organic 3.0 (Arbenz et al., 2016 & 2017). This resulted indeed in a shared 2030 vision of the European organic sector, officially published in a document by IFOAM EU group (Barabanova et al., 2015). The main limitation of the study consists in the fact that the

"concourse" was drawn only from English-language documents, limiting the possibility of uncovering statements relevant to the vision from the various workshops and discussions happened in the various countries in their own language. However, being the IFOAM EU group decision process, including the approval of the 2030 vision, based on representatives of the organic organisations of all EU countries, we assume this bias to be acceptable to the relevant stakeholders.

Chapter 3

3. The EU organic sector in 2030: a scenario analysis

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This chapter focuses on the scenario analysis developed by the IFOAM EU in order to wind-tunnel possible strategies for reaching the vision goals. The scenario analysis was preceded by an analysis of megatrends which is fully illustrated in Text Box 2 and Table 4 both reproduced faithfully from the IFOAM EU Vision document.

Text Box 2 Trends & uncertainties, risks & opportunities

TRENDS & UNCERTAINTIES, RISKS & OPPORTUNITIES

We looked at a number of societal, economic, political, technological & environmental changes that are expected with a high degree of certainty to happen in the coming years and that have a potentially high impact on the organic sector (trends). We also identified a number of areas where there will certainly be developments which are as yet not possible to predict, and which will have a major impact on the organic food and farming sector (uncertainties). Some of the trends and uncertainties present a clear threat for the organic sector in the long term but they also offer unique opportunities. By being aware of the relevant trends and uncertainties and of how they might influence the sector, we will be better able to take advantage of these long-lasting changes and capitalise on them rather than react to them. Together, these trends and uncertainties are the underlying forces that might shape the future context in Europe and that are therefore important for our vision and strategy (…).

Source: Barabanova et al., 2015, p.12

The participants in the vision process helped the research team identify risks and opportunities associated with the emerging trends. These are reproduced from the vision document in Table 4. The list is not exhaustive, but provides a basis for developing strategies and action plans for the future of organic food and farming in Europe.

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Table 4 Future trends & uncertainties: implications for the organic sector

TRENDS/ UNCERTAINTIES	RISKS	OPPORTUNITIES
Climate change	• Harvest failures • Increased use of external inputs to ensure yield stability	• Proof of resilience and mitigation potential of organic farming practices
Ecosystem services	• Water scarcity • Loss pollinators • Soil degradation	• Better soil and ecosystem services through organic practices
Energy resources	• Contamination of soil, water & crops • Loss of agricultural land (fracking) • Climate change exacerbated • GMO contamination	• Alliances with civil society actors that oppose fossil fuel explorations • Greater use of renewable energy improves sustainability • Higher oil prices increase organic competitiveness
Land pressure	• Limited access to land for new farmers • Rural deprivation	
New technologies	• Loss of consumer interest in fresh, non-modified & natural products	• Consumers look for products & processes free from genetic and excessive technological manipulation
Robotics		• Improved weed, disease & pest management • Reduction in labour
ICT	• Restricted access due to corporate control of new platforms • High cost of new tools	• Transparency in the supply chain • Collaboration & direct contact between producers & consumers • Simplification of certification
Digitalization	• Lack of digital skills can affect senior farmers	• Satisfaction of consumers need for real-time communication • Offline communities and sensory experiences
Corporate consolidation	• Large number of small and medium sizes organic farms turned into large scale, multinational holdings • Dilution of organic principles & weakened standards • Loss of consumer trust	• Better links between rural & urban areas • Stronger farmer-consumer relations & short supply chains
Ageing & health	• Not enough young farmers • Practical knowledge not passed on	• Expanding market for new, health-conscious consumers • Organic seen as contributing to a healthy diet and disease prevention • New marketing concepts for elderly people
Growing global population	• Pressure from governments & industry to increase high input agriculture to cope with growing world population • Difficulty meeting the demand for organic food	• Food waste & eco-functional intensification on the political agenda
Urban agriculture & vertical farming	• Rapid spread of energy-intensive and/or high-input vertical farming	• Alliances with new movements • Urban agriculture follows organic principles • Rural tourism helps diversify income
Collaborative consumption & reputation economy	• Loss of relevance of certification for certain consumers	• Consumers redefined as contributors and more engaged with farmers

Source: Barabanova et al., 2015, p.20

3.1. Abstract

What might the future look like for the organic sector in 2030? Using participatory scenario analysis based on qualified expert assessments, we have investigated various future options. While predetermined trends are reflected in all scenarios in the same predictable way, uncertainties play

out differently and shape the scenarios. The main uncertainties has been used as the basis to develop scenarios for the future of organic food & farming, option planning and benchmarking the visions.

3.2. Introduction

Organic food and farming in Europe has achieved a great success. The clear success of Organic 2.0 has opened the way for Organic 3.0. Where does the organic sector aim to be in 2030? IFOAM EU launched the Vision 2030 process with the aim of providing direction and orientation to the organic sector. Relevant future trends and uncertainties have been selected. The same set of trends and uncertainties, ranked by their potential impact on the organic sector, and combined with the expert knowledge of a group of stakeholders, form the basis of four scenarios that represent plausible futures that set the context in which the organic sector can exist. In what follows, an overview of scenario analysis will be given, and the methodology followed in this study will be described. Results of the scenario analysis in terms of narratives will be presented, followed by the discussion which try to answer to the question: How does your research contribute to Organic 3.0?.

3.3. Materials and methods

A scenario describes (textually or graphically) a set of hypothetical sequences of events that might reasonably take place (Kahn and Wiener 1968). Scenarios can be considered as hypothetical images of the future that describe the functioning of a system under different conditions with a certain degree of uncertainty (for review, see Bunn and Salo 1993; Zanoli et al., 2012 and Amer et al., 2013).

The qualitative approach (intuitive logic) has been the most used in scenario analysis, while more formalised methods (trend impact analysis, cross impact analysis) have been less popular, in particular in the early years (Tapinos, 2013). This was mainly due to a lack of affordable computing tools (for a review of these methodological approach, see Zanoli et al., 2000).

As noted by Athey (1987), scenario models depend on intuitive judgment rather than on rigorous models, since ‘‘no hard data about the future exists’’. This derives from the use of qualitative information that is usually provided by expert assessments, which is used for envisioning rather than just extrapolating (Bunn and Salo 1993).

The literature on scenarios focuses on the use of scenarios as tools for learning (Kahn and Wiener 1968; Bradfield 2008); in other words, scenarios force individuals to examine their perceptions and to develop a shared view of uncertainty.

In the present analysis a deductive-qualitative scenario (van der Heijden, 1996) through a participatory approach has been used.

In an intensive two-day workshop in Rome in November 2014, participants with expert knowledge identified the two general areas, among the list of relevant megatrends circulated before the workshop[11], believed to have the highest impact on the organic food and farming sector in 2030 and the highest level of outcome uncertainty, that formed the central themes of the developing scenarios (rows and column in Table 5).

[11] MEGATRENDS ARE LARGE-SCALE AND LONG LASTING SOCIETAL, ECONOMIC, POLITICAL, TECHNOLOGICAL OR ENVIRONMENTAL CHANGES THAT OCCUR GRADUALLY OVER AN EXTENDED PERIOD OF TIME AND AFFECT TO VARIOUS DEGREES THE LIVES OF INDIVIDUALS, COMPANIES, SECTORS AND STATES. THEY ARE THE UNDERLYING FORCES THAT DEFINE THE FUTURE WORLD AND THEREFORE ARE IMPORTANT FACTORS FOR DEVELOPING VISION AND STRATEGY.

These two uncertainties play out differently in different scenarios, reflecting potential directions in which future might develop:

Table 5 Main scenarios for the organic food and farming sector

Uncertainties	**Political stability**	**Political instability**
Incompatible technologies	i-Food	Phoenix
Compatible technologies	When all goes well	Organic vs Eco-Tech

3.4. Results

Once the four scenarios had been identified, the workshop participants were asked to develop consistent narratives, by considering consumer behaviour and the state of ecosystems as important grouping of predetermined trends that could have a significant impact on the overall context. These were then revised in an interactive process to produce extensive narrative that are summarised in the following.

3.4.1. Scenario 1: i-food

This is almost a business as usual scenario, since it is not too different from what is already happening.

By 2030 technological breakthroughs and the creation of a single digital market helped the EU to rebalance economy and take the global lead in digital technologies. As a result, the EU also managed to overcome the political crisis and euro scepticism. More consumers are interested in health attributes of food and are able to afford products that meet these requirements. Several Free Trade Agreements are signed and new members enter the EU.

Thanks to the use of nanotechnology in food production and processing, production systems focus more on the quality of final product as opposed to the sustainability of the production process, making process-based approaches, which include organic, less relevant.

3.4.2. Scenario 2: Phoenix

This is the gloomiest scenario. Political instability culminate in some countries leaving the EU and also leads to a less well-functioning internal market. The EU single market is severely fragmented, enforcement of EU Regulations weakens, CAP payments are phased out.

As a result of intensive exploration and use of fossil fuels, climate change speeds up leading to dramatic and unpredictable changes and shocks in some regions, disrupting harvests and causing price spikes for some commodities.

A two-stream market emerges in which values-driven consumption (fair trade, organic, etc.) goes side by side with a cost-driven consumption offering low cost, low quality products. The organic sector survives going back to its grassroots while urban agriculture and CSA (Community Supported Agriculture) prosper.

3.4.3. Scenario 3: Organic vs Eco-tech

In this tricky scenario, political instability culminate in a weaker EU, which does not break up but leads to strengthened national sovereignty and a fragmented EU single market: tariffs, duties, border controls are partially restored.

A variety of eco-products with health benefit claims is available on the market. Consumers are confused because of proliferation of eco-labels and reputation economy influences consumer choices.

Green energy is widely available in the EU and many farmers start producing biogas, further decreasing their energy costs. As consequence, organic farming struggles to keep its separate identity in the face of more sustainable "conventional" agricultural practices.

3.4.4. Scenario 4: When all goes well

Apparently this scenario depicts an 'organic paradise' but….the devil is in the details! By 2030 technological breakthroughs and the creation of a single digital market helped the EU to rebalance economy and take the global lead in digital technologies.

Strong civil society resistance to GMOs, biofuels, and fracking helped introduce the bans on these types of energy and gave extra support measures to green renewable energy.

As a result, we observe the growth of organic and other value driven production systems, which are not that different from "more ecological" conventional products, which are obtained by means of precision farming, nanopesticides and similar innovations. The variety of organic and other similar "green" labels as a result of increased imports is confusing for some EU consumers. As a result, they favour long-established brands.

3.5. Discussion and Conclusions

These four sketched scenarios are part of the framework conditions for the organic sector in 2030 and will serve the purpose of a test-bed for future strategies and plans of the sector. Scenario analysis is therefore a fundamental element of any strategic process aiming at robust decision-making.

These scenarios can help the sector to be prepared to tackle the challenges of the future in Europe, even the gloomiest one, by focussing on the main drivers defined in our scenario: political and technological, with economic and market consideration somewhat depending from these two. In 2015 the main issue was: will the EU survive the enlargement and the changes implied by the Maastricht treaty and the stability pact? A collapse of the European Union was a very remote possibility and the increasing pressure over the European Commission of Free Trade agreements is putting any market regulation at risk. Specifically, it may help shaping the Organic 3.0 concept relying less on EU regulations and governmental support, and more on developing the core values of the organic sector in relation to what consumers and society are also willing to accept and give value to.

3.6. Acknowledgments

The authors wish to acknowledge IFOAM EU for developing the project "An organic Vision for Europe in 2030" and all and workshop participants for sharing their ideas for the future during the workshop.

Chapter 4.

4. Engaging stakeholders in organic research and innovation in the EU: the role of Technology Platform Organics[12]

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This chapter charts the development of the European Technology Platform, TP Organics. It describes how the platform sought to ensure that the needs of organic stakeholders are taken into account in the EU's decision making processes to determine research and innovation priorities and funding. It illustrates how TP Organics engaged relevant stakeholders in its policy development processes in order to feed into and help shape the EU's Framework Programmes for Research and Innovation (FPs). It also aims to provide a preliminary assessment of the organisation's impact. This chapter offers an analysis of the history of TP Organics and reports on how the involvement of organic stakeholders has potentially impacted on the content and funding of the EU's two most recent FPs (FP7 and Horizon 2020).

To fully understand the development and impact of TP Organics it is important to take into account the results of an analysis on the main future challenges for agriculture identified by the platform in 2008 (see an updated and amended version in Appendix C). This analysis has informed the activities of TP Organics and led to the development of its Vision for Organic Food and Farming research Agenda to 2025 (Niggli et al., 2008). The main elements of the TP Organics Vision are reproduced in Text Box 3 and Figure 5.

Text Box 3 Vision for sustainable organic food and farming systems

VISION FOR SUSTAINABLE ORGANIC FOOD AND FARMING SYSTEMS
Based on the strengths and challenges described in Appendix C, TP Organics has developed a vision for future research and innovation into organic food and farming, as well as agroecological systems in a broader sense. This vision is split into three themes: "empowerment of rural areas", "eco-functional intensification" and "food for health and wellbeing".

THEME 1: ORGANIC FARMING AND FOOD SYSTEMS SUPPORT CRUCIAL EMPOWERMENT IN RURAL AREAS
In future, organic agriculture, food processing and eco-tourism will become important drivers of empowerment in rural economies. In many regions of Europe, organic agriculture will be the preferred farming system. A diversified local economy will attract people and improve livelihoods, particularly for small farmers and businesses, and for young entrants. This will halt or even reverse migration from rural areas to urban centres. Organic farm practices, animal welfare and a wide range of related green products and services (such as eco-tourism, renewable energy, ecosystem services, and mail-order and home delivery of food) will intensify the exchange between urban and rural populations and lead to new forms of partnership between consumers and producers. Organic

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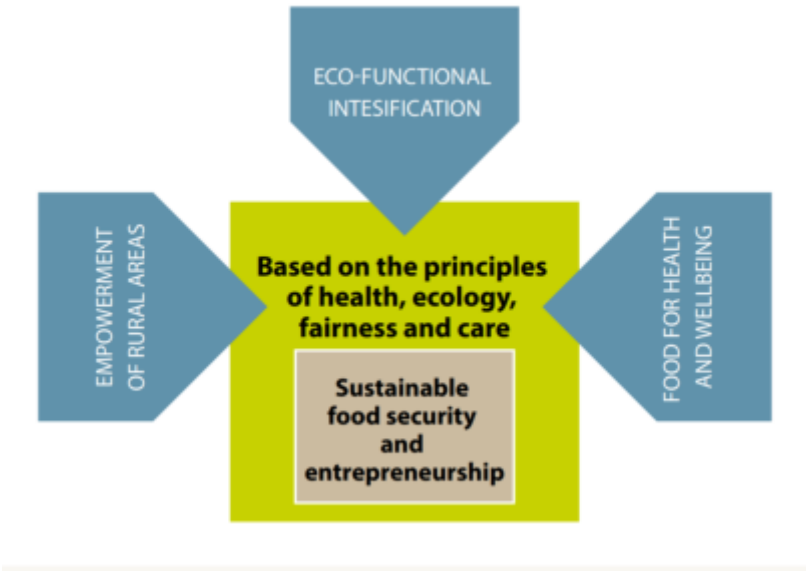
farming will motivate and reunite actors of sustainable food chains and will contribute to the attractiveness and unique quality of European landscapes.

THEME 2: ECO-FUNCTIONAL INTENSIFICATION ENHANCES THE PRODUCTIVITY, STABILITY AND RESILIENCE OF AGRO -ECOSYSTEMS
In future, the availability of food and the stability of food supply will be markedly increased through eco-functional intensification. Food productivity based on non-renewable resources and off-farm inputs will become marginal. Knowledge among farmers about how to manage ecosystem services in a sustainable way will be much greater, and animal welfare and environmentally sound farming will underpin state-of-the-art food production. Organic farms will demonstrate how trade-offs between productivity and sustainability can be minimised. They will be the benchmark for the responsible and precautionary use of scientific progress in agriculture.

THEME 3: HIGH QUALITY FOODS ARE THE BASIS FOR HEALTHY DIETS, WELLBEING AND QUALITY OF LIFE
In future, people will have more healthy and better balanced diets. Food and quality preferences will have changed: fresh and whole foods will be the ultimate trend. Food processing technology will meet the highest environmental standards and only minimally alter the intrinsic qualities of the food. Specific flavours and regional variations will be more appreciated than artificial flavours. Organic farmers, food processors and distributors will spearhead this trend towards higher food quality, better informed and less wasteful consumption of food, and the renaissance of authenticity and traditional foods.

Source: Moeskops and Cuoco (eds.), 2014, p.14

Figure 5 TP Organics Vision for research and innovation in organic food and farming and agroecological systems



Source: Moeskops and Cuoco (eds.), 2014, p.15

4.1. Introduction

Scientific research is one of the main driving forces behind the endeavour to find solutions to the key problems facing society, to develop innovations and to ensure growth, employment and the competitiveness of the EU economy. The EU has therefore set up a series of Research Framework Programmes (FPs) as the main financial tool through which support is provided for research, innovation and development activities covering almost all scientific disciplines.

European Technology Platforms (ETPs) were introduced in 2003 as part of the European Commission's Innovation Union initiative which focuses on the role played by research and innovation in increasing the EU's competitiveness and improving quality of life. In response to the 2002 European Council of Barcelona, the European Commission issued a communication to highlight the potential for technology platforms to stimulate efficient research and technological development by encouraging the private sector to address economic, technological and societal challenges. It states:

> *"European technology platforms will provide a means to foster effective public-private partnerships involving as appropriate public research, industry, financial institutions, users, regulatory authorities and policy-makers, and this will deliver the impetus to mobilise the research and innovation effort and facilitate the emergence of lead markets in Europe"* (European Commission, 2003, p.9).

ETPs play a key role in highlighting where the focus of research and innovation funding should be placed. They are stakeholder fora which mobilise relevant actors in a given sector to develop priorities for research and innovation and to highlight ways to implement and deliver them. They are primarily industry-led and self-financing.

The rationale behind ETPs is to facilitate a coherent and less fragmented approach to setting the research and innovation agenda by bringing together multidisciplinary research expertise and knowledge skills in a specific technological field. They provide a forum for stakeholders to come together to define a common approach for research and development in order to identify research and innovation needs as well as policy requirements (DG Research, 2004).

In 2010, a report by the Directorate General for Research and Innovation (DG RTD) argued that ETPs were a "*source of untapped potential*" in terms of their ability to address key societal concerns (DG Research, 2010, p.8). It recommended three steps to strengthen the role of ETPs in this regard:

1. "*focus efforts more directly on societal challenges and on developing products and services for a sustainable future;*
2. *help to unite all relevant forces across Europe in working towards solutions for societal challenges; and*
3. take all three elements of the knowledge triangle into account - education, research and innovation - and specifically tackle the complete innovation chain".

There are currently around 41 ETPs covering a diverse spectrum of activity from nanomedicine and robotics to biofuels and forestry (Table 6). By 2007, there were 34 ETPs recognised by the EU. However, the lack of an ETP dealing with agriculture and public goods in general, and organic food and farming in particular was apparent. In a speech in 2007 at a conference on agricultural research in Europe, Zoran Stančič, then Deputy Director General of DG Research, drew attention to this:

> *"Technology platforms and the SCAR Working Groups have shown their capacity to break down research challenges to specific fields covering the 4 Fs: Food, Feed, Fibre*

and Fuel. In some areas, however, we are lacking appropriate platforms, for example in public goods oriented research or organic agriculture."

This statement, along with an acknowledgement within the organic movement of a need to increase and improve research and innovation activities, resulted in a close cooperation between the IFOAM EU Group and ISOFAR (International Society of Organic Agriculture Research) to initiate a process aimed at developing a vision for innovative research activities for organic agriculture and food systems with a strong focus on providing public goods. Namely they initiated the process to develop a European Technology Platform for organic systems.

Table 6 European Technology Platforms

Bio-based economy	Environment	ICT	Energy	Production and processes	Transport
EATIP	WssTP	ARTEMIS	Biofuels	ECTP	ACARE
ETPGAH		ENIAC	EU PV TP	ESTEP	ALICE
FABRE TP		EPoSS	TP OCEAN	EuMaT	ERRAC
Food for Life		ETP4HPC	RHC	FTC	ERTRAC
Forest-based		euRobotics	SmartGrids	Manufuture	Waterborne
Plants for the future		NEM	SNETP	Nanomedicine	
TP Organics		NESSI	ETIPWind	SMR	
		Networld 2020	ZEP	SusChem	
		Photonics 21			
Nanofutures					
Industrial Safety					
ConXEPT					

Source: https://ec.europa.eu/research/innovation-union/index.cfm?pg=etp

Technology Platform entitled 'Organics' was established with a focus on sustainable food systems and public goods, it was officially launched in autumn 2008. In addition to the above-mentioned organizations, various key EU stakeholder organizations have joined the platform during the last years.

4.2. Technology Platform Organics

Established in 2008, TP Organics is the ETP for organic food and farming bringing together a broad cross-section of actors across the sector. These include both large and small and medium-sized enterprises as well as producers, consumers, the research community and civil society organisations. As with all ETPs, TP Organics is independent, self-financing and industry-led. Unlike some ETPs, TP Organics has paid particular attention to ensure widespread involvement of small and medium sized enterprises (SMEs) and SME associations (Schmid et al, 2009). Whilst strong support from the private sector is a key component of success, the diversity of stakeholders involved has ensured the "*dynamic development*" of a "*growing bottom-to-top initiative of EU umbrella organisations, enterprises, civil society organisations and national and EU-level public and private actors in the field of organic agriculture"* (Schmid et al., 2009, p.21).

As with all ETPs, TP Organics plays a key role in better aligning EU research priorities to industry's needs. It provides a forum for stakeholders to identify key areas for research and set research priorities to facilitate innovation in the sector and ultimately contribute to sustainable food and farming production. Beyond this it is also an influential advocate for the organic sector and for increased investment in research and innovation to develop the sector (Moeskops and Cuoco, 2014). According to its mission statement, TP Organics was established "t*o advocate for and obtain greater investment in research and innovation for organic, low-input and agroecological food production and so contribute to the transition to sustainable food and farming systems*"[17].

There have been several iterations of the TP Organics mission starting with the original 'Vision' in 2008 (Niggli et al.). The Strategic Research Agenda (Schmid et al.) was subsequently developed in 2009 along with an Implementation Action Plan (Padel et al.) in 2010 reflecting the research priorities of the organic sector for the EU's 7th Research and Development Framework Programme (FP7). The replacement of FP7 with the EU's new framework for research and innovation, Horizon 2020 (FP8), prompted further revision and strategic development by TP Organics of the research agenda in the document Strategic Research and Innovation Agenda (SRIA) published in 2014 (Moeskops and Cuoco, 2014). These documents constitute the basis of TP Organics' activities as a platform promoting research and innovation for sustainable food systems.

Although established in 2007, it was not until 2013 that TP Organics was formally recognised as a European Technology Platform by the European Commission. Official recognition of its status as an ETP has allowed the platform to become a key player in discussions at European level and to play its role *"as part of the external advice and societal engagement needed to implement Horizon 2020"* (European Commission, 2013, p.2). As the official ETP for the organic food and farming sector, TP Organics serves as the link between relevant stakeholders and EC policy makers. It provides a formal channel through which stakeholder groups can feed into the policy making process. The group acts as a focal point for communication dialogue with the European Commission (specifically the Directorate-

[17] HTTP://WWW.TPORGANICS.EU

General of Research and Innovation – DG RTD) to input into policy decisions and help determine research priorities and funding.

TP Organics has played a prominent part in directing and influencing the European Framework Programme agenda and its strategy documents (mentioned above) have directly informed the development of the eighth FP for research, Horizon 2020 (Niggli et al., 2008). The programme has adopted key concepts and recommendations relating to '*ecological or eco-functional intensification*' and '*empowerment of rural areas*' and makes reference specifically to organic agriculture within its legal texts. It acts to define issues relevant to the organic sector and for inclusion in FPs and the European Innovation Partnership "Agricultural Productivity and Sustainability" (EIP-AGRI), a policy instrument implemented under Horizon 2020 and the Common Agriculture Policy (CAP), Rural Development Programme (RDP) designed to encourage innovation in agriculture by better connecting producers and researchers.

The organisation's activities extend to schemes cooperating and coordinating research activities at the national or regional level in Member States. For example it is an active participant in some European Research Area Network (ERA-Net) actions such as the CORE Organic Co-Fund (funding organic research), SUS FOOD II (dealing with sustainability of the food chain beyond the farm gate) and ICT-AGRI. It is also a member of the Stakeholder Advisory Board of Joint Programming Initiative on Agriculture, Food Security and Climate Change (FACCE-JPI). It also plays a broader international role through cooperation and consultation with organisations such as the Platform for African European Partnership on Agricultural Research for Development (PAEPARD) and the Mediterranean Organic Agriculture Network (MOAN).

TP Organics represents a broad coalition of stakeholders in the field of organic, agro-ecological and low input agriculture, research, environmental and consumer protection. Its membership includes public and private and sector bodies. Its steadily increasing membership indicates that it is increasingly recognised by the organic community as a knowledge and communication hub for organic and agro-ecological food and farming research. It acts as a broker for stakeholders within the organic food and farming community to facilitate the sharing of information and discussion of innovative approaches to issues facing the sector. It has a central role in knowledge transfer and dissemination of research results, for example through its online "Organic Innovation Area" which features innovative solutions already implemented by the organic food and farming sector.

4.3. Stakeholder involvement, methodology chosen: from the vision to strategic research and innovation agenda(s)

The emergence of TP Organics in 2007 stemmed from a bottom-up convergence of like-minded, interested parties in the organic industry which coalesced around the need to exert greater influence over the European Commission's research agenda. In 2006, a proposal was submitted to the EC for a Technology Platform for Sustainable Organic and High Welfare Food and Farming Systems. The proposal was informed by concept of the Knowledge-Based Bio-Economy (KBBE) which featured in FP7. Broadly defined as *'the sustainable, eco-efficient transformation of renewable biological resources into health, food, energy and other industrial products'* (cited in Levidow et al, 2013, p.9), the proposal advocated '*agro-ecological approaches in ways that recast the KBBE concept*' (Levidow et al, 2013 p. 19). Although the European Commission did not accept the proposal for an official ETP, a stakeholder network had been established and Technology Platform Organics was formed in 2007 and launched in 2008 by the IFOAM EU Group in close cooperation with ISOFAR and FiBL (Research

Institute of Organic Agriculture) to ensure that research and innovation needs of organic stakeholders could be taken into account into the programming or EU research and innovation investments.

As a first step the 'Vision for an Organic Food and Farming Research Agenda to 2025' was developed to form the basis of all TP Organics activities. It emerged from an extensive discussion and consultation process that started in 2007 led by ISOFAR and IFOAM EU and supported by 13 European NGOs, 5 Foundations and the German Federal Ministry of Food, Agriculture and Consumer. As mentioned in the Introduction to this chapter, the Vision document was prompted by concerns that organic agriculture was not sufficiently represented by existing ETPs and therefore the need to develop a coherent vision for the direction of future research and development for European organic agriculture. The development of the 'vision' was informed by a participatory approach to research and knowledge transfer known as the Joint Production of Knowledge model. It emphasises the value of both scientific and non-scientific knowledge and recognises that all stakeholders have expertise to contribute to the generation and dissemination of knowledge and know-how. Padel et al. (2011) suggest that TP Organics chose a participatory approach in order to strengthen links between researchers and end-users with a view to making the research more relevant, thereby increasing the likelihood that research would result in more sustainable farming practices.

The process aimed for as comprehensive and representative a consultation as possible to "*ensure a transparent process and to broaden the legitimacy of the vision*" (Niggli et al., 2008). With this in mind, the consultation process was designed to access a broad spectrum of contributors including producers, organic market actors, the scientific community as well as civil society. This resulted in a dynamic, iterative process that evolved in stages over a period of 14 months. The process began with the 'Vision Camp' comprised of key players in the organic sector which met in June 2007. In this meeting, the participants discussed different scenarios for agriculture and food systems and debated where the organic agriculture sector is positioned within certain development paths and the future challenges and opportunities to be encountered. This resulted in a first draft document which was circulated for wider public consultation. In order to reach as wide an audience as possible, the document was also presented at several high profile events within the organic sector including the EU Commission advisory group on organic farming (November 2007), the IFOAM EU Organic Congress (December 2007), Biofach (February 2008) and the Organic World Congress (June 2008). A second draft was produced in March 2008 and was again circulated for public consultation. In June 2008, the newly a stakeholder forum, consisting of interested EU organizations and observers from the Commission, discussed the second draft in detail. Following a final revision, the process culminated with the publication of the Vision document in July 2008.

The 'Vision' highlights four key areas (Niggli et al., 2008, p.8). The paper

i. shows the strengths and weaknesses of organic food and farming,
ii. identifies five global and European challenges and trends on which food and farming research should focus
iii. groups the strategic priorities of future research and
iv. highlights a large number of specific research activities for the future.

4.3.1. Stakeholder involvement in the development of the Strategic Research Agenda (SRA)

Following publication of the Vision, a further consultation period was embarked upon to define a detailed programme of research emerging from the document. The consultation was comprehensive and far-reaching involving over 300 stakeholders and researchers (Schmid et al., 2009). The ensuing Strategic Research Agenda (SRA) was published in 2009 containing 61 research goals. The SRA proved

to be very successful as about a third (26 out of 61) of the research questions identified gained funding through projects of the EU's 7th Framework Programme for Research and Development (FP7), or through transnational research programmes (ERA-Nets) and national research projects (Cuoco, 2014).

A rigorous approach was taken to ensure that as broad a range of stakeholders were involved. Table 7 Strategic Research Agenda: the consultation process summarises the progression of the consultation process. It began with the drafting of clear guidelines about the development of the document and with the establishment of an expert group of stakeholders and researchers who identified three expert working groups based on the three research priorities of the Vision paper. These groups developed the first draft of the SRA.

Table 7 Strategic Research Agenda: the consultation process

2008, November	A call for experts was launched open to stakeholders and scientists.
2008, December	Establishment of three expert groups based on the three research areas of 'vision'. For each working group a senior scientist was appointed as coordinator and a stakeholder representative as assistant.
2008, December to 2009, February	The expert groups developed the first draft of the Strategic Research Agenda.
2009, February to 2009, December.	Extensive public consultation: • April to May: First online public consultation for collecting comments and feedback on the key challenges in order to complete, prioritise and improve them; • July to September: Second online public consultation for collecting comments and feedback on the research goals; • July to September: A targeted SME consultation was initiated to ensure in particular involvement of industry. It consisted of a short online questionnaire translated into seven languages; • A total of 18 workshops were held throughout Europe; • Expert consultations were used to fine-tune the findings and conclusions; • A public workshop was held at Biofach (international organic and natural trade fair in Germany) in February 2009; • A stakeholder forum took place in July 2009; • Last presentation in December 2009 involving EU umbrella organisation and EU institutions and EU Member States.
2009, December	Publication of the TP Organics Strategic Research Agenda

Source: Adapted from Schmid et al., 2009

A highly systematic approach was taken to the selection of experts: a detailed call for interest was sent to an extensive database of European (organic) research organisation provided by FiBL (more than 250 entries in November 2008). The document explained the overall development process of the SRA and included a questionnaire to collect information about the best way for each expert to be involved. The TP Organics secretariat sorted the questionnaires and divided the experts into working groups according to their field of expertise or vision research priority. Experts who communicated wider availability were placed in the 'Core Team' (20 per each expert group). As a result *'more than 110 experts have been working on the document either in formulating or reviewing the research goals/topics descriptions'* (Schmid et al, 2009, p.21).

Subsequently, several workshops (18) were held in 2009 to involve a broader coalition of industry and civil society stakeholders. Specific guidance documents were drawn up to ensure that a fair and consistent approach was adhered to in the workshops (Table 8).

Table 8 Workshop guidelines

Guidelines for "Workshop to develop the SRA" to guarantee consistency and outline the main elements: - Organisation and timing of the workshop sessions; - Key questions to be asked; - How to collect inputs; - How to prioritize the inputs harvested.
Standard Power Point Presentation to be used during the workshop.
Standard Minutes matrix.

Source: TP Organics internal document

The document was then circulated for a further two rounds of public consultation with an accompanying document outlining the aims and instructions. Both consultations consisted of an internet poll; in the first round stakeholders were asked to contribute to the definition and prioritization of the key challenges, in the second round to contribute and prioritize the research goal. Both had the option to add an open comment before the final submission.

Throughout the consultation process, TP Organics sought to ensure a balanced representation of participants. One example is its approach to the involvement of Small and Medium-sized Enterprises (SMEs)[18]. According to the European Commission (2017, p.5), SMEs play a particularly prominent role in the agri-food chain: *"They represent 99% of the total number of businesses, 50% of the total turnover, and 63% of the total workforce in the agri-food chain*". An evaluation of ETPs observed the low rates of SME involvement in ETPs and concluded that more should be done to draw them in, especially those ETPs representing sectors characterised by a high level of SME players (IDEA Consult, 2008).

In order to achieve greater engagement from SMEs, TP Organics engaged with the Enterprise Europe Network which helped the platform reach out to agri-food SMEs as well as in fine-tuning the tools for the consultation. Initially, the original intention was to ask SMEs to contribute to a SWOT analysis for

[18] THE EU COM DEFINED SME THE ONES WITH LESS THAN 250 EMPLOYEES AND AN ANNUAL TURNOVER NOT EXCEEDING 50 MILLION EUROS AND/OR AN ANNUAL BALANCE SHEET TOTAL NOT EXCEEDING 43 MILLION EUROS

each research areas identified in the first draft. However, this approach was tested and did not bring valuable results as it was found to be too laborious. The consultation was consequently reframed and (organic) SMEs were invited to consider four basic questions (see Table 9) through an electronic form translated into seven languages (English, German, Spanish, French, Italian, Dutch and Polish). The translation and dissemination at national level was supported by networks of stakeholders who were interested in establishing National Technology Platform Organics (NTP). NTPs will become mirror platforms of TP Organics at national level, aiming to increase the participation of farmers and SMEs in TP Organics, enabling TP Organics to reach practitioners and end-users of research and innovation more effectively and efficiently. Currently NTPs are established in Netherlands, Czech Republic, France, Italy, Belgium (Flanders), Spain and Sweden.

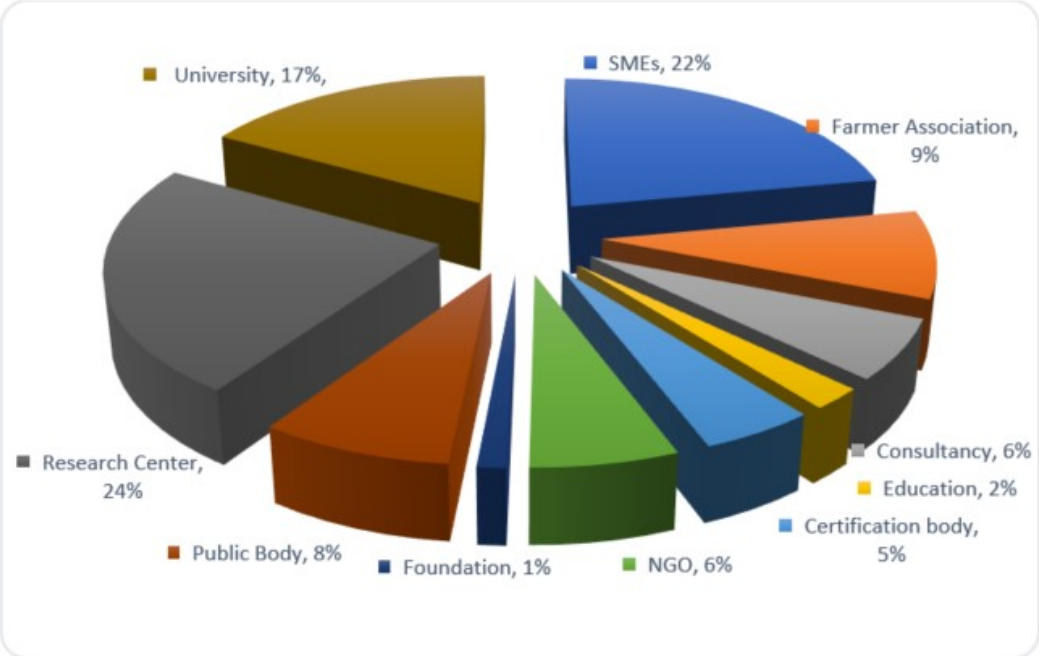
Table 9 SME consultation questionnaire

- What are your main problems and how can the research solve them?
- Do you have ideas of which approach the research should use in order to answer properly to your problems?
- What outcome (e.g.: manual, new products, training courses, etc.) would you need?
- Would you like to be involved in the research projects you mentioned? If yes, how?

Source: TP Organics internal document

The final document was produced with the input of over 300 stakeholders. Figure 6 provides a breakdown by stakeholder type. Schmid et al (2009, p.20) describe the extent of the process in the SRA: "*The consultative process involved the active participation of many different countries. Consultation involved researchers, advisors, members of inspection/certification bodies, as well as different users/beneficiaries of the research such as farmers, advisors, processors, market actors and members of civil society organisations throughout Europe and further afield in order to gather the research needs of the whole organic sector*".

Figure 6 Breakdown of stakeholder involvement for Strategic Research Agenda consultation



Source: Schmid et al., 2009

4.3.2. Stakeholder involvement in the development of the Strategic Research and Innovation Agenda (SRIA)

Horizon 2020 is the successor to the 7th Framework Programme for Research and Development (FP7) which came to an end in 2013. By coupling research with innovation, Horizon 2020 signalled a shift in emphasis towards producing concrete outcomes from research. The focus on innovation can also be seen in other policy measures such as the European Innovation Partnership 'Agricultural Productivity and Sustainability' European Innovation Partnership (EIP AGRI).

TP Organics responded by initiating further consultation to revise the SRA resulting in the publication of the Strategic Research and Innovation Agenda (SRIA) in 2014. As with previous consultations, TP Organics encouraged a wide-ranging, participatory process lasting a year and a half. Text Box 4 is taken directly from the SRIA. It is reproduced here to convey the detailed nature of the consultation and to illustrate how TP Organics sought to make it as relevant and representative as possible.

Text Box 4 The development of the Strategic Research and Innovation Agenda

THE DEVELOPMENT PROCESS OF THE STRATEGIC RESEARCH AND INNOVATION AGENDA

The first step was taken at the Stakeholder Forum of TP Organics in June 2013, where an exploratory discussion on emerging trends and research needs took place. In autumn 2013, TP Organics launched a call for experts willing to contribute to the drafting of the document. Initially, more than 30 experts volunteered, including researchers and people involved in practical work in all areas of the value chain. Ultimately, more than 40 experts contributed over the duration of the process.

Based on the outcomes of the discussions in June 2013, the expert team started drafting the first topic descriptions. These were then discussed at a workshop at BioFach in February 2014 and again at the TP Organics Stakeholder Forum of 1 July 2014. These events brought together policy-makers, experts and businesses. The same day as the Stakeholder Forum, TP Organics and its national platforms launched an online consultation in four languages (English, Spanish, Italian and Dutch). Members, stakeholders and organic SMEs were asked to prioritise the topics proposed by the expert team, and to add missing ones. More than 300 responses were received [*detailed in Figure 7*]. In September 2014, the outcomes of the Stakeholder Forum and the online consultation were processed. A final selection of topics to be covered by the Strategic Research and Innovation Agenda was made. Throughout September experts and the TP Organics Secretariat worked intensively to prepare the advanced drafts by the beginning of October. These were used for two other consultations, one to assess the relevance of the topics with regard to international cooperation, and one to seek cooperation with other ETPs.

First, international partners were asked to assess the relevance of the proposed topics for their region. Questionnaires were prepared for the (non-European) Mediterranean region, West Africa, Southern Africa, East Africa, Central Africa, South America and North America. To broaden the reach of the consultation, cooperation was established with the Platform for African-European Partnership on Agricultural Research for Development, the Mediterranean Organic Agriculture Network and the International Centre for Advanced Mediterranean Agronomic Studies. Members of the platform, such as AgriBioMediterraneo and APRODEV, disseminated the consultation too. The questionnaire revealed strong interest in the Strategic Research and Innovation Agenda, especially from African and non-European Mediterranean countries.

Secondly, an assessment was made of which topics could be of interest for cross-technological cooperation with other ETPs. These topics were sent to the respective ETPs, along with a request that they send feedback and join in efforts to promote the topics. This consultation resulted in one

common topic, namely "Solutions for resource-efficient primary production, based on the Internet-of-Things" which was developed in cooperation with the European Technology Platform on Smart Systems Integration (EPoSS). In addition, exploratory discussions took place with the Farm Animal Breeding and Reproduction Technology Platform (FABRE TP) and the European Robotics Technology Platform (euRobotics) [*Table 11*].

Finally, from October until December 2014, the expert team and the TP Organics Secretariat worked intensively to finalise the document, thereby taking into account all comments received during the consultations, as well as ad hoc feedback from experts on specific topics

Source: Moeskops and Cuoco (eds.), 2014, p.7

The consultation ran over a period of 18 months culminating in the publication of the SRIA in December 2014. As with the SRA, the process adopted several different participatory approaches to maximise opportunities for engagement of stakeholders (see Table 10).

Table 10 Strategic Research and Innovation Agenda: the consultation process

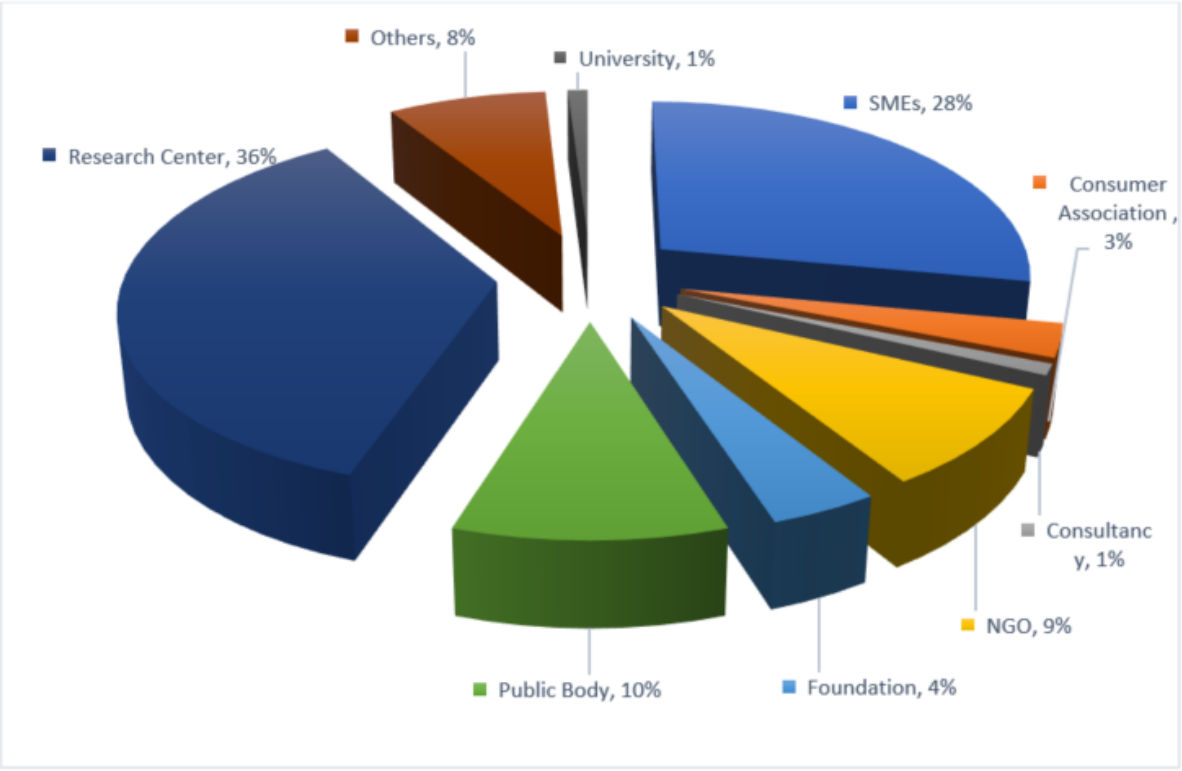
2013, June	An exploratory discussion on possible new topics to be covered by the revised Strategic Research and Innovation Agenda during TP Organics Stakeholder Forum Annual Event
2014, October	Call for expert was launched in order to refresh the three expert group appointed for the development of the Strategic Research Agenda (2009).
2013, December to February	Drafting first contributions by the expert groups.
2014, February	First draft discussed at workshop at Biofach.
2014, February to June	Second draft by the expert groups.
2014, July	Collecting members and stakeholder feedback on the proposed topics during TP Organics Stakeholder Forum Annual Event.
2014, July to September	Online public consultation in English, Spanish, Italian and Dutch inviting members, stakeholders and SMEs to prioritise the research & innovation topics proposed in the second draft or to suggest new ones.
2014, September to October	Third draft developed by the expert groups.
2014, October	Consultations with other European Technology Platforms in order to identify possible areas of cooperation.

↓	2014, October	A workshop (at the World Organic Congress) and consultation to get feedback from an international – extra EU- perspective (Mediterranean, Central, Eastern, Southern and Western Africa, Asia, North and South Americas).
→	2014, December	Publication of the Strategic Research and Innovation Agenda.

Source: Adapted from Moeskops and Cuoco (eds.), 2014

Figure 7 presents a breakdown of participation by stakeholder type. As with the SRA particular attention was paid to ensure good representation of SMEs.

Figure 7 Breakdown of stakeholder involvement for the Strategic Research and Innovation Agenda consultation



Source: Moeskops and Cuoco (eds.), 2014, p.7

Table 11 shows how TP Organics sought to establish common ground with other ETPs in a bid to find areas for cooperation across ETPs.

Table 11 Opportunities for cooperation between TP Organics and other ETPs

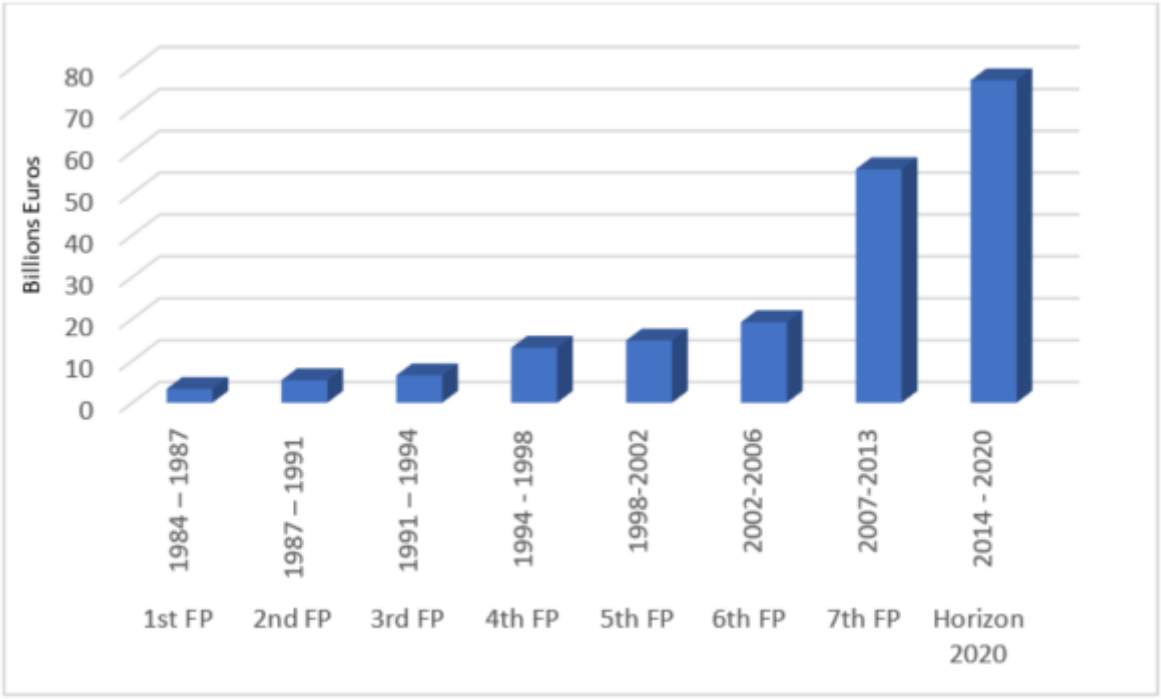
Topics of interest for cross-technological cooperation	European Technology Platform
Improving Organic Poultry	ETPGAH FABRE TP
Appropriate and robust livestock systems	ETPGAH FABRE TP
Innovative ICT tools for organic cropping systems	euRobotics Manufuture
Solution for resource-efficiency primary production, based on the "Internet of Things"	EPoSS
Ecological support in specialised and intensive plant production systems	WssTP
Breeding robust and animal breeds	FABRE TP
Ensuring Consumer confidence in organic food and farming	EPoSS Food for Life
Organic food processing concepts and technologies	Manufuture Food for Life
Public health effects of organic food systems in Europe	Food for Life
Development of innovative systems for organic aquaculture	EATIP FABRE TP

Source: Moeskops and Cuoco (eds.), 2014, p.7

4.4. Research and Innovation in Europe: the political context.

The Framework Programme (FP) has been the EU's main instrument for funding research and development since 1984. The first Framework Programme (FP1) ran for five years from 1984 with a budget of €3.8 billion. Successive FPs have increased in size, scope and budget culminating in the current 8th programme known as Horizon 2020 with an estimated budget of €80 billion (Figure 8). The aim of the programmes has "evolved from supporting cross-border collaboration in research and technology to now encouraging a truly European coordination of activities and policies" (O'Donnell and Deighton, 2015, p.1). The programmes have provided a framework which has facilitated collaboration across the EU including partnerships between actors in the public and private sectors and now includes research teams from non-EU countries.

Figure 8 Development of funding for EU Framework Programmes (billions €)



Source: https://ec.europa.eu/research/fp7/index_en.cfm?pg=budget

4.4.1. The 7th Framework Programme for Research and Technological Development

FP7 ran from 2007 until 2013 with a total budget of over €50 billion, an increase of 41% from FP6. The significantly increased budget reflects the goals of the Lisbon strategy to turn the EU into a competitive, knowledge-based society by investing in and promoting world class research. FP7 was adapted to reflect the experiences of FP6 and has also built on the successes of the previous programme. For example, the ERA-NET system, aimed at bringing together European, national and regional research programmes has been retained. FP7 has also seen the creation of new bodies such as the European Research Council, a funding body set up to support investigator-driven frontier research. FP7 was divided into key areas with 'Cooperation' being the largest (into terms of budget allocation) and covering the area of food and agriculture among others.

The thematic areas were implemented through annual Work Programmes (WPs) that determine the actions to be financed. The network of European Technology Platforms (ETPs) was consulted extensively in preparation in the draft stage of the Work Programmes. At that time, TP Organics was not a fully recognised ETP, but in 2009 started the first advocacy campaign with expected results in the 2011 WP.

4.4.2. Horizon 2020

Horizon 2020 (FP8) brings together the different types of funding provided by the previous programmes into one single coherent and flexible framework. It is an integrated programme for the period 2014-2020 covering all research and innovation funding previously provided through the Framework Programme for Research and Technological Development (FP), the Competitiveness and Innovation Framework Programme (CIP) and the European Institute of Innovation and Technology (EIT). In Horizon 2020 the focus in on innovation, unlike previous programmes where the focus was

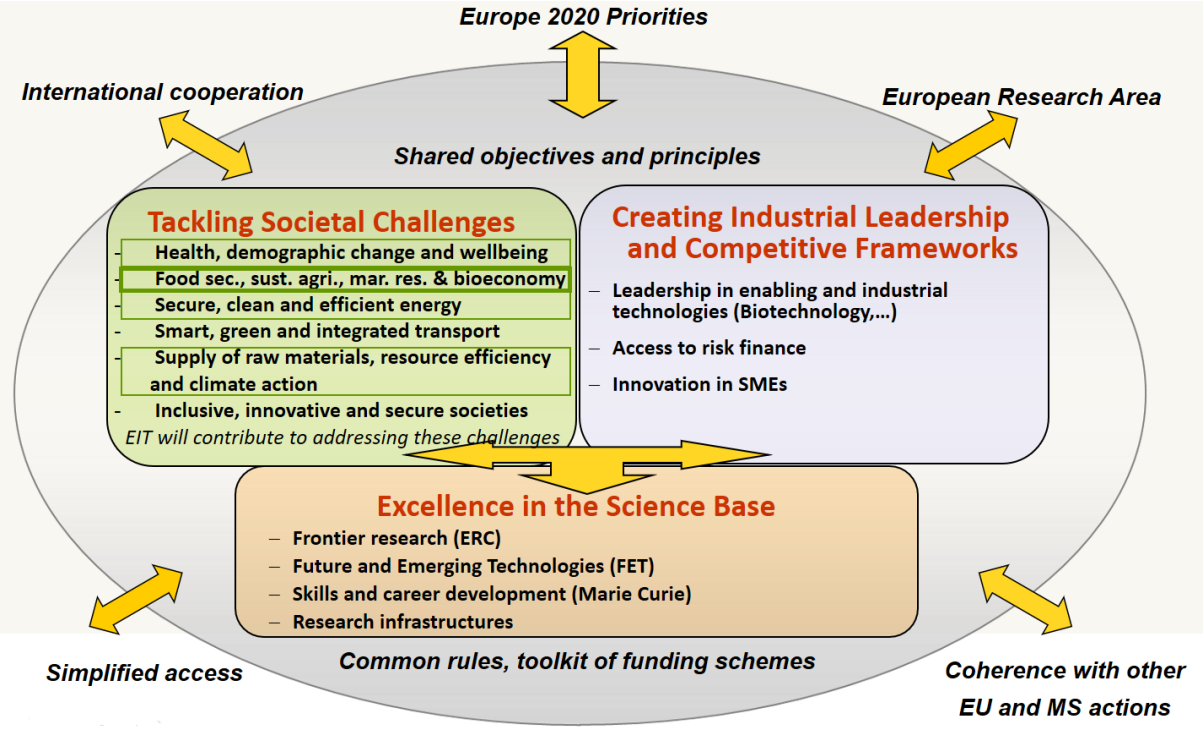
on technological research. As mentioned earlier, the total budget of Horizon 2020 is nearly €80 billion in current prices[19] a more than 40% increase compared to its predecessor, FP7.

Horizon 2020 is structured in three main pillars (Figure 9): "Excellent Science", "Industrial Leadership" and "Societal Challenges" (SC). Tackling Societal Challenges responds to priorities identified in the Europe 2020 strategy. The SC2 strand ("Food security, sustainable agriculture and forestry, marine and maritime research and inland water research, and the bio-economy") is most relevant to agricultural research. SC2 is further divided into five specific programmes, of which the following are the most relevant for agricultural research:

- 2.1 Sustainable agriculture and forestry;
- 2.2 Sustainable and competitive agri-food sector for a safe and healthy diet;
- 2.4 Sustainable and competitive bio-based industries and supporting the development of a European bio-economy.

Organic agriculture is mentioned explicitly in the proposals for Horizon 2020 (European Commission, 2011). Specific programme 2.1 is implemented under direct management of the Directorate-General for Agriculture and Rural Development (DG AGRI) while the specific programmes 2.2 and 2.4 are implemented under the management of the Directorate-General for Research and Innovation (DG RTD).

Figure 9 Structure of Horizon 2020



Source: http://www.blue-growth.org/events

Horizon 2020 is implemented through bi-annual Work Programmes that determine the actions to be financed. As an official ETP, TP Organics has been involved in the draft consultation process for the Work Programmes. DG AGRI and DG RTD prepare the call descriptions and Work Programmes through

[19] CURRENT PRICES REPRESENT THE REAL BUDGET THAT WILL BE DISTRIBUTED

more-than-one-year consultation process including advisory groups, a programme committee (with Member State representatives), feedback from relevant Commission services and final approval by Commissioners (see Figure 10). After launching the Work Programmes, they are also responsible for selecting the experts in charge of evaluating the project proposals. The monitoring of the projects selected is the responsibility of the Research Executive Agency (REA). This Agency has been created in 2014 in order to free-up resources in DG RTD/DG AGRI allowing them to focus more on policy-making.

The latest Work Programme, with calls for proposals for the period 2018-2020, was published in October 2017. However, it is likely that the Work Programme will be slightly revised in 2018 and 2019 as regards the projects to be funded in 2019 and 2020 respectively.

Figure 10 Policy Cycle of Horizon 2020 Working Programmes

Source: TP Organics internal documents

In addition to funding research projects, Horizon 2020 also provides funding for transnational research cooperation between member states through "ERA-Nets" and "Joint Programming Initiatives". Both instruments aim at better coordination of national/regional research programmes.

In comparison to FP7, Horizon 2020 attaches greater importance to the implementation of research results and rolling out innovations. One example is the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) which is designed to bridge the gap between research and practice in order to foster faster uptake of results and better targeting of research questions. EIP-AGRI delivers through multi-actor projects which involve consortia of relevant stakeholders offering complementary knowledge and expertise. EIP-AGRI aims to marry productivity and sustainability, contributing to a "*steady supply of food, feed and biomaterials, developing its work in harmony with the essential natural resources on which farming depends*"[20]. EIP-AGRI is also implemented through Rural Development Programmes at Member State (regional) level. Under the Rural Development Regulation, the main instruments for applying the EIP-AGRI are the Operational Groups, designed to build bridges between researchers, farmers, rural communities, businesses, NGOs and advisory services. The EIP-AGRI is managed by DG AGRI, which gets strategic advice from the SCAR-AKIS strategic working group.

4.4.3. The next Framework Programme for Research and Innovation (FP9?)

The European Commission is preparing for the next Framework Programme for Research and Innovation for the period 2021-2027. It is expected that the European Commission will make a legislative proposal by end of 2018 with formal adoption of a new regulation due in 2020. Preparations

[20] HTTP://WWW.EIP-AGRI.EU

for the first call are expected to begin in autumn 2019. As regards the food and farming sector, it will be influenced by the following documents produced by DG AGRI and DG RTD respectively: 1) "A strategic approach to EU agricultural research & innovation"[21] (DG AGRI, 2016); 2) background document of the FOOD 2030 High-Level Conference "European Research & Innovation for Food and Nutrition Security"[22] (DG RTD, 2016) and its High Level Expert Group.

4.5. Getting involved in EU decision making processes.

The European Commission defines lobbying as '*activities carried out with the objective of influencing the policy formulation and decision-making processes of the European institutions*' (EC 2006, p.4). In 2016, Transparency International estimated that there are over 30,000 lobbyists active in the EU representing a myriad of interest groups including corporate bodies, trade unions and NGOs (Freund, 2016).

Advocacy is a core part of TP Organics' role (see 4.2 above). In order to fulfil this, TP Organics has developed professional lobbying strategies. According to internal documents, lobbying in TP Organics is defined as actions in which the members are consulted, information is collected, alliances are established and proposals ('input papers') are developed with the final aim of having an impact on EU research and innovation policies.

Marziali (2006, p.23) describes the dual role that lobbying plays in the EU. On the one hand it serves as a means by which interest groups can influence the decision making process, whilst on the other hand it acts as "*an important and decisive remedy for the so-called 'information deficit suffered by EU institutions*'. Bouwen (cited in Marziali, 2006) likens the EU to a market where information is traded. His theory of demand and supply of access goods has shown that quality of the input delivered influences the impact of particular interest groups and can affects their reputation and reliability.

From the outset, TP Organics has aimed to offer good quality information, based on the real needs of the organic sector and offering solutions to European societal challenges (Schlüter, 2015). According to Schlüter[23], TP Organics' input papers are developed to be factual, concise, brief, scientifically sound and relevant to the EC's objectives, taking into account primarily the need of its members and considering them in the broader EU Research and Innovation landscape, for example by consulting and cooperating with other ETPs as described in Section 4.3.2. Schlüter added that, in order to maximise the effectiveness of its influence, TP Organics lobbying strategy was informed loosely by van Schendelen's so-called 'meta-game of triple P': persons, positions, procedures (van Schendelen, 2002, cited in Marziali (2006). This involves identifying the right people (in the EU Institution) working in the best positions on the most relevant procedure: e.g. information on people such chairman or *rapporteur* or experts working in crucial positions in the decision-making process were acquired; it was assessed by the secretariat of TP Organics, that experts and officials in the DGs write most of the legislation and can be considered as the main starting point and fundamental actors since they are drafting the original text and any modification to the original text will be difficult.

[21] HTTPS://EC.EUROPA.EU/PROGRAMMES/HORIZON2020/EN/NEWS/FINAL-PAPER-STRATEGIC-APPROACH-EU-AGRICULTURAL-RESEARCH-AND-INNOVATION

[22] HTTP://EC.EUROPA.EU/RESEARCH/CONFERENCES/2016/FOOD2030/INDEX.CFM

[23] MARCO SCHLUTER WAS HEAD OF THE TP ORGANICS SECRETARIAT FROM ITS ESTABLISHMENT UNTIL APRIL 2015 AND WAS INTERVIEWED FOR THIS STUDY.

Procedures for the development of the FPs its Work Programmes were analysed and up-to-date and information about the EU policy-making was consulted. TP Organics also paid attention to the presidencies of the Council and of the European Council which can modify the political agenda as well as to the different committees consisting of representative of members states (e.g. SCAR, Programme Committee) that have the power to influence the political agenda and the commission proposals.

In summary, the advocacy campaign of TP Organics can be split in three parts: i) the gathering of accurate information; ii) developing permanent and reliable relations with the authorities concerned; iii) identifying who is drafting each specific item and analysing the system and how to enter to the decision-making process.

This sections goes on to describe the lobbying strategy for three main advocacy campaigns: the 7th Framework Programme (Work Programme 2011 to 2013); the legislative proposal for Horizon 2020 (FP8); Horizon 2020 (Work Programme 2014-2020).

4.5.1. Influence of organic stakeholders on FP7 Work Programmes

The legislation for FP7 was already in place when TP Organics started in 2007. During its first two years, members of the platform focused resources on producing two key documents, *Vision for an Organic Food and Farming Research Agenda to 2025* (2008) and a *Strategic Research Agenda* (2009). As described previously, these documents were developed with extensive involvement of the stakeholders and represented the core of initial TP Organics advocacy activities.

The two documents are inextricably linked with the Vision forming the basis of the SRA. The Vision provided clear political direction and the foundation for the development of a coherent strategy, whereby stakeholders and experts could be involved in identifying, formulating and adapting research goals and research areas to be included in the FP7 Work Programmes.

The SRA took the three main themes that emerged from the Vision consultation and identified the main challenges around these themes (see Section 4.3.1). Based on these key challenges, 61 relevant research topics were identified and then formulated in detail in accordance with the required structure of FP7 calls for proposals, i.e. including information about goals, rationale, research questions, expected impact, priority (short, medium or long term) and possible funding schemes. TP Organics' members were asked to prioritize these topics and the 11 highest priority were collated in an 'input paper' for the Work Programme 2011 and similarly for the Work Programme 2012/13.

Responsibility for drafting the WP lies with the Director General for Research and Innovation (DG RTD). Successive draft WPs are sent to The Programme Committee (comprised of experts nominated by Member States) and relevant DGs for 'intra-service' consultation. The Cabinet of the competent Commissioner has the responsibility for final approval of a WP. DG RTD can also involve other actors in the consultation process, such as the Standing Committee on Agricultural Research- SCAR, its sub-groups or ad/hoc Advisory Group.

Work Programmes are typically drafted about a year and a half before they enter into force. In 2009, TP Organics was not yet a recognised platform and was not involved in the commission consultation round dedicated to the ETPs. In order to bring the expertise of TP Organics to bear on the process, it was necessary to adopt means outside of the official consultation to influence and raise awareness of relevant EU officials.

TP Organics sought initially to draw the attention of the DG RTD officials to the input paper in 2009. This communication addressed the importance of research to the sustainability and competitiveness of organic farming and also argued for the need to include specific topics relevant to the organic sector

to ensure that the best outcome from research in that area. It further highlighted the relevance of organic farming to overall policy goals by recalling the EC's European Action Plan 2004 for Organic Food and Farming and in particular the action, "*strengthening training and research at all levels, from the adoption of research programmes in universities and/or other research bodies, to on-farm training to ensure suitable technology transfer to farmers*" (European Commission, 2014a).

In summer 2010, DG Research started to finalise the last Work Programme of FP7. During that period, TP Organics organised a priority consultation with its members (based on the SRA) in order to prepare its input paper. 13 high priority topics were identified and submitted to European Commission to be taken into account during the finalisation period when the calls for proposals for the WP 2012/2013 were being formulated. The main arguments stressed the role organic agriculture played in tackling wider societal and environmental challenges (TP Organics internal documents):

- *Many of the "grand" challenges of our society can be met through agro-ecological innovations and strategies, building on the European diversity of farming systems, better knowledge and supported by appropriate research.*

- *A key goal of TP Organics remains that research in organic food and farming systems is relevant and useful to the users (in particular organic farmers and businesses) and concerned stakeholders and society. Research should also help to inform agricultural policy development.*

4.5.2. Influence of organic stakeholders on Horizon 2020 legal proposals

In 2011 after broad stakeholder consultations, including one on the future Knowledge Based Bio-Economy (KBBE), the EC published its proposal for the 8th Framework Programme for research (2014-2020), known as Common Strategic Framework Programme (CSF) Horizon 2020. It consisted of five main pieces of legislation[24] which passed through the ordinary legislative procedure with exchange of views, public hearings and collection of amendments and final votes in the European Parliament and European Council.

In light of TP Organics advocacy role, high priority was given within the organisation to formulating a response and devising a strategy able to influence the development of the legal proposals and ensure that organic, agro-ecological and low input approaches were considered in the final legal text.

In order to do this, TP Organics underwent a process which involved scrutinising the legal proposals in terms of the policy context, approval processes and procedures, as well as mapping the other interest groups involved in lobbying activities. The outcome of this process was the publication in 2012 of an internal document which outlined clear advocacy activities for each of the institutions involved in order to raise the profile of TP Organics members' concerns. It sought to reach a broad audience of relevant actors, for example, developing links to Members of the European Parliament (MEPs), building relationships with the EU Presidency (Denmark and Cyprus, 2012) and informing Members States through a combination of media activities, organisation of events and meetings. An paper was also sent to Commission officials.

Particular attention was given to the development of the discussion in the European Parliament and EU Council, TP Organics focused much of its energies on developing a comprehensive briefing for these institutions. The briefing outlined the positive elements in the FP8 proposal such as a single framework, full integration of innovation, a focus on the major societal challenges, a more inclusive

[24] COM (2011) 808; COM (2011) 809 ; COM (2011) 810; COM (2011) 811; COM (2011) 812

approach. It identified major gaps and suggested changes, including, for example, a need for greater emphasis on resource use conservation/sufficiency; the preservation of diversity of food production as well as bio-diversity. TP Organics invited feedback on the briefing from its membership and selected organisations, and subsequently developed a list of amendments for the proposal COM (2011) 809 (11 amendments) and COM (2011) 811 (15 amendments) for consideration by the European Parliament and EU Council.

At the same time, TP Organics participated in the online consultation process for FP8 launched by the European Commission in February 2011. The platform organised a conference on "Sustainable food chains for a European Strategy and Action Plan towards a sustainable knowledge-based bio-economy by 2020" which was hosted by the European Parliament on the 22nd June 2011. In July 2011, TP Organics was invited to take part in the CSF Stakeholders-Meeting and the KBBE-brokerage-event, where it was able to present and debate its position with key members of the European Commission and numerous other experts in the field.

According to the TP Organics Head of Secretariat, as a result of these advocacy activities, 70% of the TP Organics amendments were taken fully or partially into account and supported by the members of the European Parliament and European Council (Schlüter, 2015). One particularly successful outcome for TP Organics was the achievement of having the concepts of *participatory research* (subsequently called "Multi-Actor" approach) and *eco-functional intensification* clearly embedded in the proposal, as well as *organic food and farming approaches* clearly mentioned in the final legal text[25].

Levidow (2018, p.11) observes how TP Organics was able to capitalise on the emerging prominence of the KBBE concept in FP7 by offering a model for the joint production of knowledge. Through its advocacy for a multi stakeholder involvement in research, Levidow argues that TP Organics has influenced the EC's approach to the research agenda. The EC now requires research proposals to adopt a 'multi actor approach' to "demonstrate *how they will involve all relevant actors in the research process.*"

While advocating for the inclusion of organic food and farming approaches in Horizon 2020 legislative proposal, TP Organics continued to petition DG RTD for its official recognition as a European Technology Platform. In July 2013, after six year of lobbying, the EC recognised the role of TP Organics as part of the external advice and societal engagement needed to implement Horizon 2020. This recognition transformed the sphere of influence of the platform by positioning it on the same level as other platforms representing much larger and better known sectors such as biotechnology companies and the nuclear industry.

4.5.3. Influence of organic stakeholders on Horizon 2020 Work Programme

As with FP7, the Work Programme for Horizon 2020 followed a specific approval procedure (Figure 10). There were, however, some key differences. Firstly, the WP are on bi-annual basis and secondly, with regard to Societal Challenge 2, the specific programme 2.1 is implemented under direct management of DG Agri, whilst the specific programmes 2.2 and 2.4 are implemented under DG RTD.

The first WP of Horizon 2020 was developed against a backdrop of the recent publication of a proposal for revised legislation on organic farming as well as an accompanying Action Plan for organic production (European Commission, 2014a&b). The Action Plan (p.9), published in March 2014,

[25] COM (2011) 811, 2.1.1 INCREASING PRODUCTION EFFICIENCY AND COPING WITH CLIMATE CHANGE, WHILE ENSURING SUSTAINABILITY AND RESILIENCE – PAG. 54

validated and reinforced the lobbying position of TP Organics with its direct reference to the role of the organisation: *"the technology platform for organic food and farming research (TP Organics), would play its role by also providing input into a strategic research and innovation agenda".* The Action Plan also adopted some of the priorities for the development of the organic sector outlined in the SRA.

Along with official recognition as an ETP and the newly published "Strategic Research and Innovation Agenda" (Moeskops and Cuoco, 2014), the Action Plan greatly strengthened the impact of TP Organics' advocacy work. Some of TP Organics key contributions to the development of the WP are described below.

As with previous WPs, TP Organics produced an input paper for WP 2016/2017 based on the prioritisation by members on the topics mentioned in the SRIA. The topics were subsequently clustered in two parts:

- Part A focuses on the contribution of the organic food & farming sector to Sustainable Food Security and resilient and resource-efficient agricultural value chains.
- Part B focuses on fostering innovation, business opportunities and entrepreneurship in the organic sector and strengthening the contribution of the organic sector to a rural renaissance.

TP Organics argued for a number of topics to support the uptake of the ambitious legislative proposal for a new organic regulation, for example, the phasing out of certain derogations that would have been difficult for organic operators to implement in the absence of appropriate investment in Research and Innovation. Furthermore, TP Organics called for an ambitious implementation of the Organic Action Plan and called in particular for the more efficient use of resources, with greater knowledge input and to handle natural resources in synergies between intensified production, economic growth and preservation and renewal of natural capital in the context of a circular economy.

Another priority area identified by TP Organics members was ICT and precision farming. As an officially recognised ETP, TP Organics was able to cooperate with existing ETPs, specifically ETP Smart Systems Integration (EPoSS), to develop a joint input paper calling for research and innovation for use of Internet of Things (IoT) in organic farming. This cooperation resulted in the publication of a call for project (LEIT-ICT [2016]: Smart Agriculture and Food Security) to support the creation of a Large Scale Pilot project on IoT in Food and Farming.

For WP 2018/2020, a TP Organics' input paper was initially discussed at the Organic Innovation Days in December 2015 and subsequently revised following feedback from experts on the Advisory Board and National Technology Platforms of TP Organics. The paper put forward recommendations for two different types of project. Firstly, projects carried out as part of a wider flagship programme for the transition of Europe's food systems and secondly, projects that address specific challenges of organic food and farming. According to the paper, a wider flagship programme would "*foster the cross-fertilization between the organic and conventional food and farming sector in order to designing more sustainable production systems, but also for developing new and resilient business models and* cooperation among stakeholders across the value chain" (TP Organics, 2016, p.8).

TP Organics argued that given the fact there is a distinct market for organic food which has to comply with specific EU regulations, the organic sector has specific research and innovation needs which are not shared by other parts of the food and farming sector. For example, safeguarding consumer confidence in organic products and ensuring fair competition between operators in the different EU Member States. This line of argument reflects actions specific to the organic sector contained in the EC's Organic Action Plan.

The TP Organics input paper 2018/2020 presented 12 priority topics[26]. TP Organics wanted to capitalise on its cooperation with another ETP, Food for Life. The cooperation led to the development of two topics: Topic 4 - Strategies for minimal and mild food processing and Topic 5 - Increasing consumer understanding and engagement, with special focus on sustainable consumption. Both topics were included in the respective input papers of the two platforms.

In addition to the advocacy for the inclusion of TP Organics Research and Innovation needs into the WPs, for the overall development of Horizon 2020, TP Organics advocated strongly for mentioning organic *"in research that addresses food production in a general scope…. mention explicitly organic as one of the criteria in the call. This ensures that the organic sector can profit also from the results of this kind of research"* (Unpublished letter to the European Commission, 2009).

4.6. Impact assessment of TP Organics

Fitz-Gibbon (cited in Streatfield and Markless 2009, p.134) defined Impact Assessment (IA) as: *"... any effect of the service [or of an event or initiative] on an individual or group"*. They describe how the key to successfully assessing impact is "*identifying and evaluating change*". They refer also to the Global Libraries Impact Planning and Assessment Road Map which builds on this emphasis on change:

> *"The essential element of impact is change: the ways in which individuals, groups, communities or organizations are changed through your initiatives; the results of your initiatives. We may therefore define impact as: any effect of your initiatives on an individual, group or community"* (Global Libraries Initiative, 2008, cited in Streatfield and Markless 2009, p.135).

A paper produced by the Organisation for Economic Co-operation and Development describes the role of impact analysis in the policy making process (OECD, 2014). It distinguishes between *ex ante* analysis, whereby the potential impact is assessed prior to a given intervention, and *ex post* assessment, whereby impact is considered after the event. Within an *ex post* analysis, the OECD further distinguishes between impact *evaluation* which encompasses broader elements such as cost, efficiency and policy implications, and impact *assessment* which is more narrowly and precisely defined and seeks to measure the direct effects (positive and negative) of an intervention.

In order to assess the impact of TP Organics on European Research and Innovation policy, the author has identified two ex-post impact assessment indicators:

- Content analysis of the call for projects in the 7th and 8th (Horizon 2020) Framework Programmes with relevance for organic food and farming.
- Funding for organic farming research under the EUs Framework Programmes by programming period.

4.6.1. Content analysis of the call for projects in the 7th and 8th (Horizon 2020) Framework Programmes

Content analysis is a research method used by social scientists to quantify patterns in communication by a systematic reading of texts which are assigned codes to indicate the presence of interesting patterns (Hodder, 1994; Tipaldo, 2014). After labelling a large set of texts, a researcher is able to statistically estimate the proportions of patterns in the texts, as well as correlations between patterns.

[26] TPORGANICS.EU/WP-CONTENT/UPLOADS/2016/11/TPORGANICS_INPUT_WORK_PROGRAMME_2018_2020_V3.PDF

The simplest and most objective form of content analysis considers unambiguous characteristics of the text such as word frequencies. Analysis of simple word frequencies is limited because the meaning of a word depends on surrounding text. Keywords in content routines address this by placing words in their textual context. This helps resolve ambiguities such as those introduced by synonyms and homonyms (Krippendorff, 2004).

Computers are increasingly used in content analysis. Popular qualitative data analysis programmes provide efficient work-flow and data management tools for labelling. Simple computational techniques can provide descriptive data such as word frequencies and document lengths. Machine learning classifiers can greatly increase the number of texts which can be labelled.

Nvivo software programme allows text searches, linking of ideas, encoding and searching data whilst retaining the ability to instantly access the original data behind the concepts found. However, this does not mean that the computer is doing the analysis, since it is the user who needs to do the questions, interpret the data, decide what to encode, and use the computer programme to maximize efficiency in these processes.

In order to perform the analysis with NVivo, a number of combinations of words was identified (see Table 12). It is common to find the use of the word "organic" paired with others to refer to topics wholly unrelated to organic food and farming research. It is, therefore, as important to identify what must be excluded from, as well as included in the results. Different combinations were identified and clustered accordingly.

Table 12 Content Analysis, combination of words identified

Combinations to exclude: organic waste, organic pollutants, organic wastes, organic matter; organic fertilisers, organic content, organic fraction, organic carbon, organic by-products, organic resources, organic-based fertilisers, organic compounds, organic synthesis, organically based products, organic acids, organic solvents, organic chemicals.	**Combinations to include:** organic farming, organic system, organic systems, organic sectors, organic aquaculture, organic supply chains, organic food, organic products, organic breeding, organic inputs, organic agriculture, organic and conventional farming, organic seeds, organic producers, organic production, organic and low-input, organic crop production, organic regulation, organic principles, organic plant, organic animal, conventional and organic sectors, organic market, organic area, CORE Organic, organic and other low chemical input systems, both conventional and organic, organic and low-input, organic certification, organic/low-input, conventional/organic, organic, low external input, organic livestock, organic juveniles, organics, organic value chains, organic e-prints

Source: Own data

The results were clustered in two sets of data. The first set aggregated the data to compare the incidence of the word 'organic' related to food and farming during three periods of TP Organics' evolution. First, the period prior to the setting up of TP Organics (from 2008 to 2010), second the three year period during its start-up phase when it was not a recognised European Technology Platform (from 2011 to 2013), and third in its phase as a recognised ETP (from 2014 until now) (Table 13).

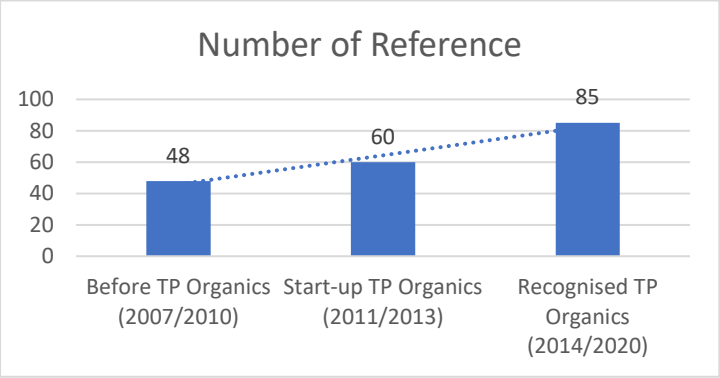
Table 13 Programming period of FP7 and Horizon 2020

Before TP Organics	Start-up phase of TP Organics (not recognised ETP)	TP Organics recognised as ETP
FP7 – 2007-08	FP7 – 2011	H2020 – 2014/2015
FP7 – 2009	FP7 – 2012	H2020 – 2016/2017
FP7 – 2010	FP7 – 2013	H2020 – 2018/2020

Source: Own data

The results show an increase of references to 'organic' during those three periods. Figure 11 shows an increase in absolute terms from 48 to 60 and finally to 85 references. This represents an increase of 125% between the first two periods and 141% between the second two periods.

Figure 11 References to organic food and farming in FP7 and Horizon 2020



Source: Own Data

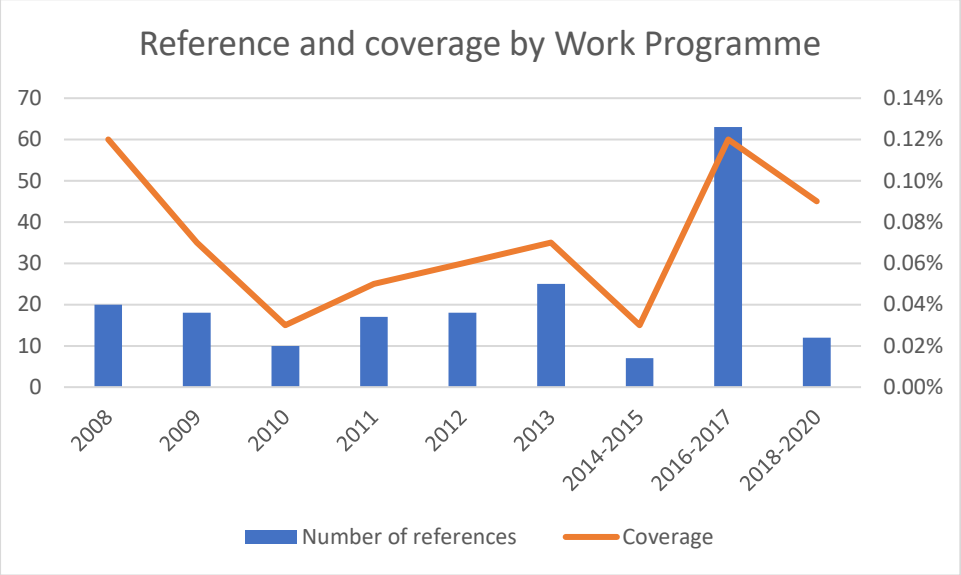
The second set of data was clustered by Work Programme, annual for FP7 and bi-annual for Horizon 2020. Both the number of references and the coverage of the word organic in the overall WP text was measured for each WP. The highest number of references found was 63 during 2016-2017 WP, representing 0.12% coverage for the full text in the same WP (2016-2017) (see Table 14 and Figure 12).

Table 14 References and coverage of organic food and farming in specific Work Programmes of FP7 and Horizon 2020

Work Programmes	Number of references	% coverage of organic food and farming in the overall WP.
2008	20	0.12
2009	18	0.07
2010	10	0.03
2011	17	0.05
2012	18	0.06
2013	25	0.07
2014-2015	7	0.03
2016-2017	63	0.12
2018-2020	12	0.09

Source: Own data

Figure 12 References and coverage of organic food and farming in specific Work Programmes of the FP7 and Horizon 2020



Source: Own data

4.6.2. Funding for organic farming research under the EUs Framework Programmes by programming period

Since 1990 (FP3), the total amount of money allocated to research has grown with each successive FP. However, although total FP budgets have increased, according to the final report of the EU Funded project CREPE (2011), the relative support of the FPs to research for organic agriculture did not grow significantly. This lack of funding was a major contributory factor behind the drive to establish a European Technology Platform that could improve the spending for organic food and farming research.

In order to assess the impact of the platform on EU expenditure, a detailed analysis of the framework budget was developed. The analysis took into consideration real expenditure from FP3 to FP7[27] (1990 to 2013) and projected expenditure for Horizon 2020 (2014-2020[28]) and put them in relation to the funded projects for organic food and farming during that period. The amounts refer to actual grant agreements signed for projects with the word 'organic' in in the full project title. The amounts refer only to EU funding, co-funding from other sources is not included. The amounts refer to the calls for projects included in the WP from 2014 to 2019 where 'organic' is clearly mentioned in the call text[29].

Analysis of the data reveals an increase in both the budget for organic food and farming research in absolute terms (+387.5 M€) and in terms of the percentage allocated (+0.48%) up to Horizon 2020 (Table 15 and Figure 13).

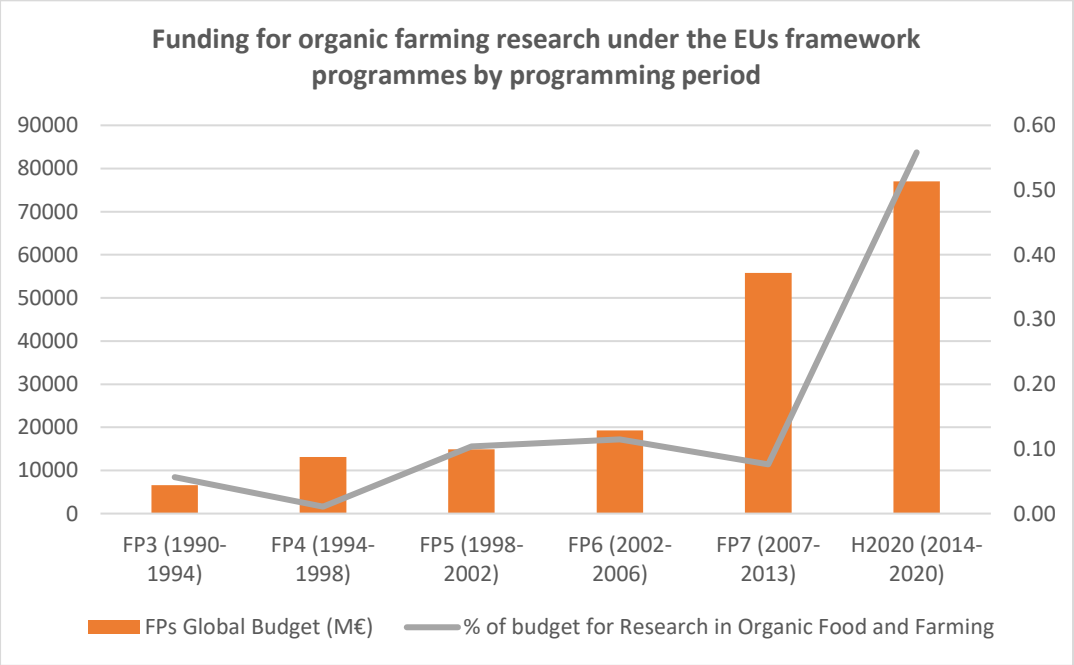
[27] HTTPS://EC.EUROPA.EU/RESEARCH/FP7/PDF/FP-1984-2013_FR.PDF#VIEW=FIT&PAGEMODE=NONE
[28] HTTPS://EC.EUROPA.EU/PROGRAMMES/HORIZON2020/EN/H2020-SECTION/FOOD-SECURITY-SUSTAINABLE-AGRICULTURE-AND-FORESTRY-MARINE-MARITIME-AND-INLAND-WATER
[29] THE TOTAL SUM EXCLUDES 2020 CALLS AS THE INFORMATION IS NOT AVAILABLE AT THE TIME OF WRITING.

Table 15 Budget for organic food and farming research under the EU Framework Programmes

Framework Programme	Budget for Organic Food and Farming Research (M€)	FPs Global Budget (M€)	% of budget for Research in Organic Food and Farming
FP3 (1990-1994)	3.7	6552	0.06
FP4 (1994-1998)	1.4	13121	0.01
FP5 (1998-2002)	15.4	14871	0.10
FP6 (2002-2006)	22.1	19256	0.11
FP7 (2007-2013)	42.5	55806	0.08
H2020 (2014-2020)	430[30]	77028	0.56

Source: Cordis; FiBL (Personal communication October 2017)

Figure 13 Funding for organic farming research under the EU Framework Programmes by programming period



Source: Cordis; FiBL, (Personal communication October 2017)

4.7. Conclusion

The analysis has shown development of TP Organics from an interest group of likeminded individuals and organisations to a formal contributor to the EU's research and innovation policies as an official European Technology Platform.

TP Organics has had a fundamental role in drawing together and engaging relevant stakeholders across the EU in the process of identifying and formulating research priorities for the European Union. Through its outreach and advocacy activities it has built a community of public and private sector stakeholders interested and active in organic food and farming research. It has sought to involve

[30] THE TOTAL SUM DOESN'T INCLUDE CALLS 2020 AS THE INFORMATION ARE NOT AVAILABLE AT MOMENT FOR WRITING.

stakeholders in a range of participatory processes aimed at identifying collective research needs and priorities and has translated them into concrete proposals for policy makers. In this way it has been a key contributor to the development of the EU's funding frameworks for research and innovation (FPs), in particular Horizon 2020.

A pivotal point in the evolution of TP Organics came with its formal recognition as a European Technology Platform in 2013. This allowed TP Organics greater and more direct access to the policy formulation process and resulted in feeding directly into the policy process. The impact of its recommendations was therefore transformed from that of a pressure group to a recognised contributor to the policy process.

The platform had an impact for both, increasing the support for organic food and farming research by increasing the expenditure and the budget in percentage with the overall FP expenditure (+387.5 M€ in absolute terms and +0.48% on the budget for Research in organic food and farming in Horizon 2020) and to increase the frequencies of the wording organic in the research innovation calls (+141%).

Whilst the overall budget for organic farming research and innovation has increased, in the opinion of the author, TP Organics would benefit from identifying strategies to guarantee the effectiveness of the increased budget through mechanisms to monitor and measure the access to this budget by its stakeholders. This could be, for example, by organising its members to be more engaged in bids competing for new project opportunities and developing mapping systems to analyse the final beneficiaries of those calls where the platform had an impact.

Cooperation with other ETPs proved to be an interesting approach for bringing together "offer and demand" (see cooperation with EPoSS) as well as to engage in talks with other actors of the European food and farming system (see cooperation with Food for Life) and so improve the chances of being heard by policy makers.

Finally, the bottom-up approach used by TP Organics to involve the relevant stakeholders in giving their strategic input in developing the SRA and the SRIA was very successful and consequently made them having an impact on the strategic decision making process of the European Framework programme(s) for Research and Innovation and its Work Programmes.

Chapter 5

5. Discussion

Noland and Phillips (2010) refer to two competing discourses in the literature on stakeholder engagement relating to the motivation of businesses and organisations to involve stakeholders in decision making processes and the effectiveness of so doing. They explore two schools of thought: the *Habermasian theory* (first described by the German Philosopher Haberman) and the *Ethical Strategic* approach. The former emphasises a moral, ethical motivation whereas the latter emphasises a more strategic, practical motivation.

According to Noland and Phillips (p.40), the Habermasian approach argues that "*engagement of stakeholders must be largely or entirely free of any strategic motivation in order to ensure its moral legitimacy"* and recall Greenwood (2007) who pointed out that stakeholder engagement is usually *"understood as practices the organization undertakes to involve stakeholders in a positive manner in organizational activities*", arguing it is neither necessarily positive nor negative. In this school of thought, stakeholder engagement should be conducted democratically with no use of proxy or by representation bodies regardless of the burdens it might create of putting it into practice.

Ethical Strategists, on the other hand, regard the purpose of any organisation to be the creation of value for all those groups and individuals who are involved in its development and - in order to function properly - engagement should be honest, open and fair, in one word ethical. Referring to Philips (2003) *"Stakeholder engagement is not the same as CSR or philanthropy"* and it should be a necessary part of strategy development; for an organisation "*to determine its strategy without having first engaged its stakeholders would be, literally, to disengage its mission and vision from its identity".*

As first assumption from the analysis of the case studies related to the European organic food and farming sector, it tends to follow *the latter* school of thought. The first case study in fact engaged in developing and supporting a long term Vision for the sector. The second and the third study – with given differences – involved the organic stakeholders in determining strategies and engage them in a long term vision.

According to the OECD, (2005, p. 94) "*It is useful to differentiate evaluation from assessment, the former referring to the structured process of establishing success…against pre-set criteria, the latter referring to the relatively unstructured analysis of an exercise without pre-set effectiveness criteria, as occurs in the conducting of descriptive case studies".*

According to Hendricks (2017, p.7) evaluating the methodology for stakeholder involvement presents a number of challenges, such as determining the best measurement criteria, *"do good processes necessarily produce good outcomes?"*.

This PhD study aimed to analyse and evaluate different methodologies used by the European organic sector to involve stakeholders in strategic decision making. While the case studies offered an analysis, this chapter will deal with the evaluation of these methodologies against specific objectives. While the evaluation of the first three methodologies consisted of an empirical observation of the results obtained (Chapter 5.1); the fourth methodology - ex-ante impact assessment - will be discussed in Chapter 5.2; an overview of the limitations of the research, recommendations and suggestions for future research is presented in Chapter 5.3.

5.1. Stakeholder involvement methodologies: results.

It is evident from the discussion of the literature in section 1.4 that stakeholder involvement theory has greatly informed the approach of businesses and organisations to wider participation in decision making and policy setting. According, to Arenas, Lozano and Albareda (2009), *"stakeholder theory has become one of the main pillars of business ethics and CSR literature. According to this theory, a principal function of managers is to handle stakeholders' needs, expectations and demands, and to manage conflicts among them"*.

The suitability and success of the applied methodologies in the three case study areas are evaluated below bearing in mind the study's first three objectives:

- To study human subjectivity to define a shared vision and collect stakeholder points of view on desired future;
- To develop different hypothetical scenarios in order to describe possible futures and support the organic food and farming sector to transform Vision 2030 into reality;
- To ensure a transparent process and participatory process to collect research and innovation needs of stakeholders in the organic food and farming sector.

An overview is provided in Table 16.

Did Q-methodology help handle expectations and manage conflicts among stakeholders?

Donaldson and Preston (1995) stated that *"stakeholders are persons or groups with legitimate interests in procedural and/or substantive aspects of corporate activity";* Clarkson (1995) defines stakeholders as: *"persons or groups that have, or claim, ownership, rights, or interests in a corporation and its activities, past, present, or future".*

Q-methodology is crucial in operationalizing the 'subjective' nature of stakeholders' viewpoints. According to Stephenson (1972), "*Subjective aspects of science have been seriously underestimated in the past (…) Objective measurements and observations can, in principle, be made by everyone (or by a piece of apparatus), whereas measurements and observations of a person's subjectivity can be made only by himself*".

Subjectivity can be made 'operant' – therefore not critically dependent on how it is measured and which theory is used to interpret it – by accepting that it exists naturally within a particular context (Brown, 1980; Skinner, 1953). An operant approach proceeds by the *abduction* of new explanations, allowing "*discoveries which are more than mere logical conclusions from known premises*" (Stepheneson, 1983). In this respect, Q-methodology abductory approach does not differ much from Glaser and Strauss's (1967) 'grounded theory' approach.

In the study presented here, the extracted viewpoints illustrate, in an operant manner, two competing stories representing the different *weltanschauung* (vision of the world) of IFOAM EU members. Therefore, Q-methodology helped IFOAM EU in outlining a Vision to 2030 that took into account two competing narratives and visions of organic development into a single Vision statement that satisfied two competing stakeholder groups. Thanks to application of Q-Methodology, the final Vision to 2030 statement was approved by the IFOAM EU General Assembly representing the entire membership of the organisation as it was clearly perceived as the Vision of the united European Organic Sector.

Was stakeholder involvement for scenario development for the organic food and farming sector useful?

The involvement of stakeholders in *Scenario development* represented a fundamental contribution for the process aiming at robust and participatory strategic decision-making within the IFOAM EU group. The four sketched scenarios ensured that the different stakeholders in the organic food and farming sector in Europe gained a better understanding of the framework condition in which they might operate in the coming years.

The scenarios were used in order to wind-tunnel a set of strategies proposed by IFOAM EU members and check their operability in four possible futures. As a result an organisational strategy (2016) and a Road Map for the European Organic Sector (2017) were developed and approved by IFOAM EU members in order "to make it happen" and transform the vision into reality.

The scenario technique is yet another tool to make subjectivity operant, in the sense that it allows viewpoints on *possible futures* to emerge as socially-constructed narratives, regardless of their desirability. In this sense, it is fully coherent with the Q-methodological pursuit of a rigorous study of human subjectivity, where the final scenarios – albeit anchored to self-reference of the stakeholders participating in the scenario workshop – transcend the individual opinions and embrace a level of generalisation of meanings that is strictly dependent from the social construction of these meanings. Scenarios – as factors in a Q-sorting study – may be generalised in the sense that they represent a valid *type* of future, no matter how the specific *specimen* of that future will deploy in reality (Brown, 1980).

Can a systematic use of consultation tools involve stakeholders in shaping research and innovation strategic agendas?

Miles et al. (2006) argued that facilitating an honest and unfiltered flow of information between stakeholders is crucial for develop effective strategies and for decision-making. Holmes (2007, p.414) developed a conceptual framework to identify corporate innovations through engagement with non-profit stakeholders stating that *"there has been little study of how (…) engagement with non-profit organizations can be a source of innovation for corporations, although it has been noted that developing non-profit relationships can create conditions that can foster firm innovation".*

TP Organics is a complex organisation where NGOs, businesses, scientists and other like-minded stakeholders active in organic food and farming meet to discuss research and innovation needs in the sector. Only by *systematising the use of stakeholder consultation tools* could TP Organics manage to facilitate the direct involvement of the different stakeholders in the consultation processes. Tools such as workshops, expert meetings and events also provided opportunities to create new relationships among different stakeholders.

The accuracy of the planning and the development of internal tools (such as workshop guidelines, minutes grid, detailed instructions), ensured transparency in the development of the two strategic documents. Although organised in a slightly different way, both consultations involved more than 300 stakeholders from different areas (309 for 2008 and 335 for 2014).

Two successful elements could be highlighted from the two consultation processes: 1) during development of the SRA, specific actions were undertaken to tailor the consultation to different organic stakeholders (for example, call for experts, SMEs consultation); 2) During the development of the SRIA an ad-hoc process was organised to involve stakeholders not part of the organic food and farming sector.

Although the two processes were successful in delivering the result expected, both were heavily dependent on a very intensive use of management resources: the coordination of the consultation and the processing of the input collected took 13 months, in the case of SRA (November 2008 to December 2009) and 18 months in the case of SRIA (June 2013 to December 2014). In 2009, the TP Organics secretariat consisted of one head of the Secretariat and one coordinator, and it had to rely heavily (over a period of six months) on the contributions of leading external organisations in the field of organic research in order to manage the full process. In 2012, the secretariat was reinforced by the employment of a Scientific Coordinator which lead the SRIA process, nevertheless the contribution of external organisations was still needed.

Table 16 Evaluation of the methodology against the first three pre-set objectives

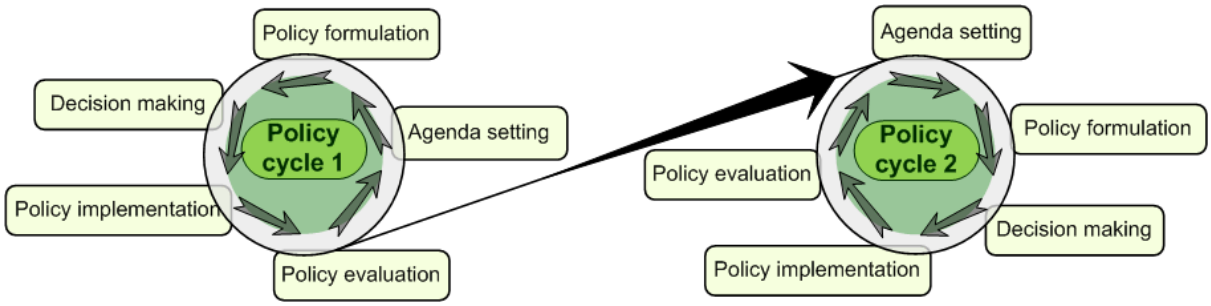
Research Methodology	Objective	Results from empirical evaluation
Q-methodology	To study human subjectivity to define a shared vision and collect stakeholder points of view on desired future.	• Helped uncover two competing stakeholders' viewpoints; • Competing narratives were brought into a single Vision statement that satisfied both competing stakeholder groups; • Vision to 2030 is perceived as the united Vision to 2030 of the European Organic Sector.
Scenario development	To develop different hypothetical scenarios in order to describe possible futures and support the organic food and farming sector to transform Vision 2030 into reality.	• Helped the organic sector in understanding the framework condition in which it might operate in the next years. • Fundamental element for the strategic process aiming at robust decision-making of IFOAM EU. • Used in order to wind-tunnel a set of strategies proposed by IFOAM EU members and check their operability in four possible futures. • Organisational strategy (2016) and a Road Map for the European Organic Sector (2017) were developed and supported by IFOAM EU membership.
Systematic use of stakeholder consultation tools (expert groups, online surveys, open questionnaire, workshops and meetings)	To ensure a transparent process and participatory process to collect research and innovation needs of stakeholders in the organic food and farming sector.	• Accurate organisation of consultations ensured the transparency of the process of both, the SRA and the SRIA. • More than 300 stakeholders contribute to the development of each document. . • SRA process paid special attention to tailor specific consultation for specific groups (e.g. Experts, SMEs). • SRIA process paid special attention to include specific consultation for non-organic stakeholders.

5.2. Stakeholder involvement: influencing EU Research and Innovation Policies

The third case study provided the opportunity to assess the extent to which the systematic involvement of stakeholders in TP Organics had influenced EU Research and Innovation Policy (see Table 17). This considers the study's fourth objective: to assess the influence of organic food and farming stakeholders on European Research and Innovation policy.

Vedung (1997) argues that the starting point for an evaluation of stakeholder involvement in policy making is the analysis of the context of the policy programme in question. Yet, the ORGATEP Manual (Michelsen et al., 2008) discussed *"methods for evaluating the level and the nature of stakeholder involvement in policy making, implementation and evaluation of an organic action plan"* where the three stages can be seen as separate steps in a joint policy cycle or in successive policy cycles (Figure 14).

Figure 14 Stages in the policy making process



Source: Michelsen et al., 2008

The case study presented a detailed analysis of the policy background (section 4.4).: the Framework Programme (FP) policy cycle is far more complex than the one illustrated in ORGETEP as, in the case of Horizon 2020, it consists of a seven year long policy cycle where the drafting bi-annual working programmes can be considered as three policy sub-cycles (see Figure 15).

Figure 15 Policy cycle of Horizon 2020.

Source: TP Organics internal documents

Section 4.5 identifies the different steps in which stakeholders had the possibility to influence the policy and detailed the actions undertaken by TP Organics to achieve an impact.

To evaluate the influence of TP Organics on EU Research and Innovation policies an *Ex-post impact assessment* was carried out. It took into consideration the impact of TP Organics activities on both the expenditure and the budget in percentage with the overall FP expenditure and the increased frequencies of the wording organic in the research innovation calls.

As a result of the assessment it could be measured that the budget for organic research increased by 387.5 M€ in absolute terms and +0.48% on the budget for Research in Organic Food and Farming in Horizon 2020. Furthermore, the frequency of the wording relating to organic in the research innovation calls increased by +141%.

The *Ex-post impact assessment* failed to deliver a systematic assessment of the impact of TP Organics for each step of the policy development process, but provided interesting results on the overall influence that the organic stakeholders, through the platform, had on the current EU Research and Innovation policy.

Table 17 Evaluation of the methodology against the fourth pre-set objective

Research Methodology	Objective	Results from ex-post impact assessment
Ex-post impact assessment	To assess the influence of organic food and farming stakeholders on European Research and Innovation policy	• 387.5 M€ in absolute terms and +0.48% on the budget for Research in Organic Food and Farming in Horizon 2020 • increased frequency of the wording organic in the research innovation calls (+141%)

5.3. Limitations of the research, recommendations and suggestion for future research

The research that has been undertaken for this thesis has revealed limitations as well as a number of topics on which further research would be beneficial. The study was limited to the stakeholder involvement in strategic decision making for the organic food and farming sector in Europe by taking into account the work developed by the two major organic representative organisations in Europe.

This section presents the limitations, recommendations and suggestions for future research that have emerged from the study. An overview of these is provided in Table 18.

Participatory vision and scenario development as tool for strategic decision making

Although the exercise to develop a European shared Vision for the sector was positive, the main limiting factor in the application of Q-methodology was language. The use of English language only significantly restricted opportunities to draw on a greater number of “concourses”, thereby reducing the pool of stakeholders that could be involved.

One recommendation to overcome this barrier to participation is for the impetus for the stakeholder involvement process to involve a bottom-up approach at national/regional level. In the opinion of the author, organising preliminary “q-sort” in the different Member State languages would have increased the “concourses” and helped collect a broader, more representative perspective. In this respect, future studies might, for example, look for similarities or dissimilarities in the approach of organic representative organisations to the organisation of stakeholder involvement at national/local level.

This study also investigated the implications of the use of stakeholder involvement in setting the framework conditions for the organic sector in 2030. This served as basis for the development of organisational strategies aimed at turning the shared vision into reality and contribute to the overall Organic 3.0 strategy. The case study was limited to scenario development while the results of the use of the set scenarios was not taken into consideration. Further research could focus on how the organisational strategy was developed and how it was translated into concrete actions.

The author would recommend to IFOAM EU that indicators be developed in order to assess the impact of the activities of the organisational strategy and to identify the strategy areas that need adjustment according to the development of the identified scenarios (for example changing political context).

In the opinion or the author, IFOAM EU should now inspire and lead the stakeholders of the organic sector in using the developed scenarios to outline their own strategies so that they can contribute to transforming the vision into reality within their organisations and environments.

The knowledge and the lessons learned in both, vision and scenario development should be made available for the whole organic sector. It is recommended to develop a toolkit for organic stakeholder involvement to support vision and strategy development processes within their own organizations. The toolkit should summarize the different steps and offer practical tips and insights for successful stakeholder involvement.

There are a number of additional areas for further research that could be take into consideration. These might include further investigation of how the organic sector could benefit from stakeholder involvement and how this involvement contributes to the overall development of the sector.

A number of questions remain open: What is the role of organic stakeholders in developing the organic market? How is Organic 3.0 being operationalised outside the EU? Are stakeholders being involved?

These suggested areas for research could help to confirm the importance of stakeholders in the development of this transformative food system.

Stakeholder involvement in development of research agendas for European research programmes

Regarding the third case study, the analysis of the methodologies implemented by TP Organics to engage the stakeholders of the organic food and farming sector revealed some a number of limitations. Firstly, the outreach of the consultation processes needs to be considered, particularly with respect to the direct involvement of SMEs. TP Organics aimed to draw a wide range of stakeholders into its consultation processes for the first and second strategic research agenda. It paid particular attention to ensuring that SMEs became involved. However, in the first only 22% and in the second only 28% were involved. Other SMEs preferred to use a proxy (e.g. experts, consultancies) or being represented through other organisations such as producer associations, business and trade associations and certification bodies.

A second limitation, already mentioned in the results section, are the resources (time and human resources) needed to run such a systematic use of consultations tools.

The author recommends that TP Organics invests more in building up a stronger capacity of the organic sector to participate in EU or transnational research & innovation projects. This could be done through the organisation of events to facilitate networking between farmers, researchers, civil society and SMEs to form consortia and apply for funding. Alternatively, this could be achieved by developing

a concept for the creation of a database to facilitate the search for partners to be part of project consortia.

Furthermore, the study did not elaborate on the role of National Technology Platform (NTPs) affiliated to TP Organics. Could NTPs, for example, play a key role in better engaging SMEs directly in the consultation process in the future? In the opinion of the author, major attention should be paid to the involvement of NTPs for the development of the next TP Organics strategic agenda. In general, the platform should aim to increase the number of NTPs and find ways to connect them effectively with SMEs and national networks of SMEs.

A number of questions still remain open: Was the TP Organics consultation process effective? Could TP Organics have similar or broader stakeholder involvement by applying different methodologies? For example, what role could social media play in a systematic consultation process? Further research might expand on these aspects.

There are also several areas for further development of the work undertaken in this thesis. As the data were not yet available, the ex-post impact assessment carried out in the third case study was unable to take into consideration data regarding the last year of implementation of Horizon 2020. It did not provide a qualitative data analysis about projects granted and project beneficiaries as these data will only become available at the end of the policy cycle of Horizon 2020. A more in depth analysis would enable a better evaluation of the performance of the platform's impact and would also offer a better understanding of how, and if, TP Organics influence has a concrete outcome on delivering research and innovation outcomes for the organic food and farming sector.

Furthermore, the analysis of the funding for organic food and farming research refers to the calls for projects in the WPs (2014 to 2019) where the term 'organic' is clearly mentioned in the call text. In the long-term it would be interesting to evaluate how many of the projects that are approved actually cover organic food and farming and to what extent. Similarly, what proportion of the budget of those projects actually goes to organic food and farming.

One question that is fundamental to answer when considering the impact of TP Organics and its efforts to allow stakeholders to have a voice on research and innovation is: Did TP Organics contribute to delivering innovation for the organic food and farming sector? TP Organics "Organic Innovation Area" and its publication provided several examples of innovation that had taken place. However, in order to assess the success and efficacy of TP Organics' (and its stakeholders) interventions/input/advocacy in the long term, a system of systematic evaluation of the projects from start to finish needs to be in place. For example, there needs to be some way of monitoring the whole process from the starting point (advocating a particular research need in a call for project proposals) to the end point (was the research need met). This should be done with a long term perspective in order to measure long term impact of the projects/calls.

On the counter-factual side, consider a scenario without TP Organics. Most likely organic food and farming research would still be marginalised in EU Research and Innovation Policy. The organic food and farming sector could end up in being a subgroup in one the established mainstream ETPs, such as Food for Life or maybe, most likely, IFOAM EU might have established its own subgroup on research and innovation but with much less back up from research institutions, businesses and wider civil society.

Despite its limitations, the TP Organics ex-post impact assessment pictured a clear impact of the stakeholders of the organic food and farming sectors on Horizon 2020. Nevertheless there are a number of other funding schemes where stakeholder involvement might have an impact on policy decision making. The author recommends the development of a concept study on how stakeholders involved in TP Organics might influence policy schemes such as "Research for Development funds",

"Social funds" and "Structural funds". The study should take into account the European dimensions, but could also be used to assess national, regional or local opportunities (for example, by involving NTPs).

In the end, this study has investigated the implications of stakeholder involvement uniquely for the organic food and farming sector. It would beneficial to compare this with stakeholder involvement in other sectors (business and civil society). It would also be interesting to compare how stakeholders are being involved in policy decision making in contexts outside Europe, for example in Canada or the United States of America.

Finally, as a general recommendation, the author would suggest that in future the organic food and farming sector should aim at involving a broader group of stakeholders in its processes. Both IFOAM EU and TP Organics would benefit from increased engagement with (new) actors who might directly or indirectly benefit the development of the sector. These could include local administrations such as cities, municipality and regions; the ICT industry, such as Internet of Things, blockchain technologies and virtual/augmented reality; environmental NGOs, animal welfare groups and citizen movements.

Table 18 Overview of limitations, recommendations and future research possibilities

Research Methodology	Limitations	Recommendations	Suggestion for future Research
Q-methodology	• Language restricted number of "concourses" and variety of stakeholders involved	• Starting stakeholder involvement processes with a national bottom-up approach by organising consultations (q-sort) in the different EU languages • Develop a toolkit for organic stakeholders to support vision and strategy development process within their own organizations	• Investigate similarities or dissimilarity on how the organic representative organisations organise their stakeholder involvement at national/local level. • Comparison study on stakeholder involvement in other (agri-food) sector.
Scenario development	• Study did not take into account the use of scenario setting in developing organisational strategies.	• Develop indicators in to assess the impact of the activities of the organisational strategy • identify the strategy areas that need adjustment according to the development of the scenarios	• Investigate how the organic sector benefit from an organisational strategy based on scenario settings.

Systematic use of stakeholders consultation tools (expert groups, online surveys, open questionnaire, workshops and meetings)	• Only 22% (SRA 2009) and 28% (SRA 2014) of the stakeholders was an SME directly involved in the consultation • Resource intensive processes • No follow up activities to capitalise on influence gained.	• Assessing the effectiveness of the processes developed and explored new communication means (e.g. social media) to improve performance and reduce resource • increasing the number of national technology platforms and pushing them to connect to better connect with SMEs and national networks of SMEs	• Analyse the effectiveness of the methodologies used in a modern context (e.g. by use of social media) • Comparing how stakeholder involvement happen in policy decision making in context different from the European.
Ex-post impact assessment	• Data setting did not provide qualitative data on project granted and project beneficiaries	• invest in building the capacity of the organic sector to participate in EU or transnational research & innovation projects and capitalise on the influence gained.	• Assessing the impact of TP Organics on influencing innovation in the organic sector • Evaluating the possibility to gain influence on other policy linked to the EU Budget.

6. Summary and main conclusion

The aim of this PhD study was to analyse and evaluate different methodologies that the organic food and farming sector has employed to engage their stakeholders to allow them to directly or indirectly have an impact on organisational strategies and/or policy decision making.

The organisations involved in the case studies are the most representative organisations for the organic food and farming sector in Europe and involve a broad range of members:

- The first, IFOAM EU, can count a membership which involves grass-root organisations as well as representatives of the organic food and farming business sector (from farmers to SMEs). It is committed *"Transforming Food and Farming"* and contributing to the overall implementation of Organic 3.0
- The second, TP Organics, actively engages EU umbrella organisations (NGOs/interest groups), enterprises, civil society organisations, researchers and national and EU-level public actors in the field of organic agriculture and sustainable development with the aim of providing leverage for the organic sector's contribution to sustainable farming and food production by influencing EU Research and Innovation Policy.

The case studies presented here revealed a bottom–up approach to stakeholder involvement in strategic decision making. A range of questions (introduced in 1.3 and discussed in 5.1 and 5.2) for the long-term development of organic farming were considered in the case studies: How to support the organic sector in designing the desirable future? What methodology can help handle expectations and manage conflicts among stakeholders? How can the organic sector be supported in designing possible futures? Can scenario setting be useful? How can it be ensured that research and innovation needs of stakeholders are collected in a participatory way and can be taken into account into the programming of EU research and innovation investments? Can systematic use of consultations tools involve stakeholders properly?

In order to respond to the question #1, a study on the application of the Stepenson's Q methodology (Brown, 1980) was developed. The study investigated stakeholder perspectives on a desired future for the organic sector in Europe in order to develop a shared vision.
The study observed two competing stakeholder viewpoints. The results of the Q sort illustrated two competing stories representing different visions of the world of IFOAM EU members. The first emphasized the pioneering role of the organic sector, which is asked to promote new radical solutions for the whole agricultural sector, the second focused more on aspects related to market dynamics (e.g. prices, norms, bureaucracy). The participatory approach - based on Q methodology - helped the IFOAM EU group shape its 2030 Vision with large support from its membership during the IFOAM EU General Assembly in 2015 and officially published in a document by IFOAM EU group (Barabanova et al., 2015).

The second case study focused on how to support the organic sector in designing possible futures (question #2) by using participatory scenario analysis based on qualified expert assessment. A set of relevant future trends and uncertainties were selected; predetermined trends are reflected in all scenarios in the same predictable way, uncertainties play out differently and shape the scenarios. The same set of trends and uncertainties, ranked by their potential impact on the organic sector, and combined with the expert knowledge of a group of stakeholders formed the basis of four scenarios. Stakeholders were asked to develop consistent narratives, these were then revised in an interactive process to produce extensive narrative on possible futures that set the context in which the organic sector can exist and Organic 3.0 can be exploited.

How to ensure that the research and innovation needs of organic food and farming stakeholders can be taken into account into the programming of EU research and innovation investments. This question formed the basis of the third case study, which analysed stakeholder involvement in the establishment and work of the European Technology Platform for Organic Food and Farming Research and Innovation – TP Organics.

Over the last 10 years, TP Organics was involved in managing and building strong communities of stakeholders interested in organic food and farming research and involved them in participatory processes aimed at collecting their research and innovation needs. It grew from an initial group consisting of ISOFAR, IFOAM EU and supported by 13 European NGOs, 5 Foundations and the German Federal Ministry of Food, Agriculture and Consumer and expanded to 87 members across the EU plus 7 National Technology Platforms with an outreach that involves 5.8 millions of EU farmers, 5000 SME's, 2500 researchers and farm advisers and 20 million EU Citizens.

In the opinion of the author, the three case studies represented a unique opportunity to observe methodologies applied in involving different stakeholder in taking decision regarding the development of their sector.

The Vision 2030 process helped IFOAM EU not only develop a common idea on the organisation's future direction, but it also helped unite the different stakeholders around a common objective. The scenario exercise provided a solid base to develop strategies that can be solid and robust. Those scenarios also provided common ground from which to engage in discussions with policy makers and other actors in European agriculture and food systems.

The approaches adopted by IFOAM EU will become even more important for the implementation of the worldwide Organic 3.0 strategy. If Organic 2.0 clearly focused on defining the standards, regulations and requirements for organic production, Organic 3.0 emphasises the impact of the organic movements on current societal challenges which are critical for billions of people. To achieve such an objective, organic movements worldwide need to build on experience and develop capacity to involve stakeholders – within and outside the organic movements – to discussing common actions and common goals with a strong bottom-up approach.

TP Organics' experience showed that a strong involvement of business and NGOs – in the context of ETPs contribution - can bring results concerning influence on European Research and Innovation policies. The stakeholder consultations for the development of the two strategic research agenda and the special attention given to tailor-made, specific consultative approaches for the different typology of stakeholders made the two strategic documents robust and largely supported by the enlarged organic research and innovation community. The wide diversity of stakeholders involved in TP Organics, in particular the major involvement of organisations representing civil society, arguably lends it a legitimacy to advocate for the sector which other ETPs might lack. Thus, TP Organics presents a model to the European Commission for a new type of platform that looks not only on the need of the industry but into a broader context of civil society-driven research and innovation.

In conclusion, the success of stakeholder involvement in decision making processes depends very much on the methodology applied to involve the participants and on how well the objectives are defined. The approaches to strategic decision making that are presented and explored in this study have provided interesting models of stakeholder participation and have resulted in insights and recommendations which can be applied to the development of the organic food and farming sector in the future.

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Appendix A - The IFOAM EU 2030 Vision

Our vision for food and farming is of a fair, environmentally conscious, healthy and caring system widely adopted in Europe. The European organic movement continues to lead change, believes in holistic approaches and thrives on interactions with other like-minded initiatives, including fair trade, agro-ecology and urban agriculture.

Driven by the support of citizens and by building bridges with other stakeholders in the food and farming system, we are committed to achieving more than half of Europe's agricultural land managed according to organic principles of health, fairness, ecology and care, providing fresh, seasonal, fairly priced as well as minimally and carefully processed organic food to every European home, workplace and institution.

The European organic movement stimulates and rewards the further development of organic systems, improving the resilience and environmental performance of organic production systems, while innovative tools for upholding the integrity of the supply chain promote trust. Policy makers and citizens widely recognise and value the contribution of organic farming to the delivery and support of vital ecosystem services to society.

As we move forward towards our goal of being a model for sustainable farming and food systems, we support a culture of innovation based on holistic principles leading to more resilient and productive farming systems, greater biodiversity, better food quality, more appropriate processing and fairer supply chains. New and indigenous, locally adapted varieties and breeds suited to organic farming practices and local conditions are encouraged and preserved. Farm animals are healthy, live in stress-free conditions and contribute to the sustainability of organic farms.

European farmers and all workers in the organic supply chain are fairly remunerated for their contribution to the health of the environment, communities, local and rural economies, and for providing flavourful and abundant food to contribute to the welfare of our planet and the quality of life of all people.

The organic movement works towards a paradigm shift in education and learning to strengthen the connection between environmentally and socially responsible food choices. People reconnect to food production by actively engaging with short supply chains.

Appendix B - The Q sample

N	Statement
1	Small producers that will sell directly on Internet, farmers market and other short chain systems will produce over 80 % of organic foods.
2	Organic farming will be synonymous of smallholder and family farming.
3	Organic agriculture will develop as a (bit larger) niche alongside with a more sustainable conventional agriculture.
--- 4	The eco-functional intensification and green-tech solutions will reduce the organic sector to a small niche.
5	Organic farming will go beyond the niche by developing value chains of staple foods to respond to local and regional needs.
6	The organic sector will keep its pioneering role in the context of agro-ecology.
7	More than 50% of farming in the EU will be organic.
8	We will witness the first EU country to convert 100% of its farms to organic agriculture.
9	The organic sector will go mainstream while still proposing radically-alternative options to those consumers wishing to go a step further, and promoting those politically
10	The organic sector will continue to pioneer the transition to economically, ecologically and socially sound food systems in order to drive the whole agricultural sector forward.
11	The organic sector will fully comply with the four IFOAM principles of health, ecology, fairness and care, even if it will have an impact on its market share.
12	Organic farming will be the only approach to have fair and high revenue in agriculture.
13	Organic agriculture will be based on home-grown feed and food.
14	Reduction of oil supply and increases in energy prices will make local, labour-intensive organic farming the only way to produce food in Europe.
15	Fossil fuels and inputs will be banned in organic farming, which will only be allowed to use renewable energy resources such as fuel cells, microwave propulsion, etc.
16	The organic sector will fully comply with the cradle-to-cradle approach: only biodegradable/re-usable packaging, new products should be designed according to Life-Cycle Analysis (LCA), etc.
17	The global trade of organic products will be the most relevant driver of the development of the organic sector in Europe.
18	Organic-plus and biodynamic products will increase their market share, while the organic mainstream sector will be increasingly under scrutiny for its sustainability.
19	Production costs and prices of organic products will be lower, attracting more consumers.
20	All EU consumers will be able to eat organic food at affordable prices.
21	Good organic food is easily accessible and available to every EU consumer, including at work, in schools, hospitals and public institutions.
22	Organic products will benefit of reduced VAT.
23	Organic farmers will be paying fewer taxes for their contribution to the wellbeing and sustainability of the society.
24	There will be simpler norms and less bureaucracy for organic producers.

25	Conventional products will have to be labelled 'conventional' and the chemical products used during their production will be mentioned on the label.
26	The organic sector will strengthen its alliance with excellent, better-informed consumers who are buying top-grade or best-value products (prosumers).
27	Better information about organic production and markets will be more accessible.
28	The growth of local organic food production will reduce unemployment especially among the young people.
29	Social networks will make people be more conscious of the benefits of organic agriculture.
30	The organic sector will be recognised having improved people's health by the use of a more natural approach.
31	It is recognized that eating organic is good for your health and prevents diseases.
32	Organic farming will improve animal welfare.
33	The switch to organic diets led to the drop in number of food allergies in school children.
34	The production of organic alternative vegetable protein sources such as beans will increase allowing a reduction in the consumption of meat and fish.
35	The consumption of organic food products will outperform the consumption of conventional foods.
36	Organic agriculture will contribute to introducing more vegetables in diets in relation to meat or fish.
37	Organic fresh and whole foods are the ultimate trend, while careful processing technologies will produce foods with only minimal alterations to their intrinsic qualities.
38	The EU organic research and innovation program amounts to more than 50% of all agricultural research budget.
39	Research will have proven that organic food is healthier.
40	Research on seeds and breeds suitable for organic farming will result in higher yields and lower cost of production for organic farmers.
41	In all schools children are taught the principles of organic farming through classes, farm visits and direct contact with farmers.
42	Organic food is widespread and popular in canteens and restaurants.
43	All farmers will support biodiversity and address climate change.
44	IT and developments in robotics will increase yields by controlling pests, weeds and diseases without the need for chemicals.
45	Organic standards have progressively become stricter and stricter, step by step
46	The EU organic movement encompasses all who follow organic practices & principles whether certified or not.
47	The EU organic movement encompasses fair trade, agro-ecology, and urban agriculture.
48	The EU organic movement doesn't exist anymore because all agriculture in Europe is organic.

Appendix C - Future Challenges For Agriculture[31]

Since the World Summit on Food Security, hosted by the FAO in 2009 (FAO, 2009a) the political and scientific debate on the future of agriculture has focused on how to increase agricultural production and productivity without adversely affecting natural resources. This question is often addressed through the concept of "sustainable intensification" (The Royal Society, 2009; Buckwell et al., 2014) or sometimes "ecological intensification" (FAO, 2009b; Bommarco et al., 2013)". In its first Strategic Research Agenda (Schmid et al., 2009), TP Organics developed the concept of "eco-functional intensification", which means improving yields and productivity through the more efficient use of natural resources and processes, improved nutrient recycling techniques, and innovative agro-ecological methods for enhancing the diversity and health of soils, crops and livestock. More recently, the European Commission has coined the phrase "Sustainable Food Security" in the Horizon 2020 Work Programme 2014-2015 (European Commission, 2013) as an overarching concept for research investment in agriculture. Sustainable Food Security means ensuring the availability of, and access to sufficient safe and nutritious food, while sustainably managing natural resources.

These differing concepts show that the future course for agriculture – whether to focus rather on sustainability or intensification – is still open to debate. The discussion is also reflected in the 3rd foresight exercise of the Standing Committee on Agricultural Research (EU-SCAR, 2011), which identified two competing narratives: "productivity" and "sufficiency". The productivity narrative stresses the need to boost agricultural production in order to meet the rising demand of the growing world population. The sufficiency narrative emphasises the carrying capacity of the earth, which is unable to support further increases in consumption and production. Adherents of this view rather support the design of agro-ecosystems that require low levels of external inputs and the reduction of per capita demand through structural changes in food systems. Both perspectives have been recognised in the Strategic Implementation Plan of the European Innovation Partnership for Agricultural Productivity and Sustainability (High-Level Steering Board of EIP-AGRI, 2014).

Recently, the Rural Investment Support for Europe (RISE) Foundation published a report on sustainable intensification (Buckwell et al., 2014). While the report still assumes that some increase in production is needed, it stresses that sustainable intensification can also mean an increase in environmental services provided by the farm. It claims that, for Europe, "sustainable" is the more important word in the phrase, and suggests that sustainable intensification is not primarily about using more fertilisers, pesticides and machinery per hectare, but about the development of much more knowledge-intensive management systems. It also states that a stepped reduction is now needed in the negative environmental impacts of agriculture. Such impacts have already been reported by many studies. The Millennium Ecosystem Assessment (2005) formed a scientific and political consensus that the intensification of food, feed, fuel and fibre production has drastically endangered the functioning of ecosystems. Agriculture has contributed much to crossing several of our planet's limits (Rockström et al., 2009). For example, the growth in fertiliser use in modern agriculture has caused us to exceed sustainable limits for the rate of human interference with the global nitrogen cycle. Agriculture has also contributed to exceeding the limits for climate change, the phosphorous cycle, global freshwater use and land use change.

Related to the discussion of "productivity" versus "sufficiency", is the question of "resilience". Europe faces major systemic risks to the supply and quality of food, in the light of climate change, natural

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hazards, energy scarcity, limited availability of natural resources (fertile soils, water...), population growth, and unsustainable dietary patterns. Therefore, there is an urgent need to develop more resilient food systems and value chains. Resilient systems are able to absorb larger disturbances (e.g. due to climate change, loss of biodiversity, market volatility) without fundamentally changing the way in which they work. Resilient systems are able to adapt, to renew, to self-organise and learn.

Research has revealed that resilience to climate disasters is closely linked to the level of on-farm biodiversity (Lin, 2011). Research suggests that agroecosystem performance and stability are largely dependent on the level of plant and animal biodiversity present in the system and its surrounding environment (Altieri & Nicholls, 2004). This prompts the conclusion that ecologically based management strategies which break the dominance of monocultures in favour of landscape heterogeneity might provide a robust path to increased productivity, sustainability and resilience of agricultural production (Altieri, 2002; De Schutter, 2010; Altieri et al., 2014). These insights have recently been promoted successfully at the international level by the agroecological movement, e.g. through the International Symposium on Agroecology for Food Security and Nutrition (FAO, 2014). There are strong overlaps between organic agriculture and agroecology. Both promote a "closed system" approach which minimises external inputs; they use multiple and diverse crops and/or animals, and they rely on biological processes to build soil fertility and control pests and diseases (Bellon et al., 2011). Both tend to favour more direct links with their customers and to engage with social movements.

Finally, Europe faces the challenge of the deteriorating economic viability of its rural areas. Increasingly, farmers are experiencing economic difficulties that will endanger food security in the long run. Demographic factors are further accentuating this trend. Farmers are aging and inhabitants of rural areas are moving away to urban areas. Entry into the agricultural business is associated with high financial risks, not least because land prices have increased tremendously in many regions of Europe. In this regard, the multifunctional and multidisciplinary nature of organic farming is a great strength. A large proportion of organic farmers diversify their income sources and spread their risks through activities such as on-farm processing, direct sales or tourism and recreation facilities. As such they become important drivers for rural development. Strong agricultural knowledge and innovation systems are also important to support the competitiveness of farms and other businesses in rural areas. There is a great need for entrepreneurial support, new business models for alternative value-chain organisation, and increased connections between actors (producers and consumers, researchers and policy-makers). In this respect, the increasing interest of citizens in local/ regional products and environmentally friendly food products offers new opportunities for the development of new rural-urban partnerships. To summarise, the challenges agriculture is facing call for completely new concepts of food production and consumption. According to the Millennium Ecosystems Assessment (2005), the challenge of reversing the degradation of ecosystems while meeting the increasing demand for their services, will require significant changes in policies, institutions and practices. This also means that new approaches are needed in research, knowledge creation and learning (IAASTD, 2008).