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Exploring European food system vulnerabilities: Towards integrated food security governance

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Studies on vulnerabilities and drivers of change in the food system have largely failed to address holistic but also the competing interpretations of “food security”. In general, they tend to focus on specific sectors and dimensions of the food system as well as on outcomes, rather than unpacking root causes of vulnerability. To contribute to overcoming these limitations, a Delphi survey with 45 European experts on food security was conducted to identify the main drivers of change, threats and weaknesses of the EU food system and to uncover their root causes. Linking empirical data with theoretical discussions on vulnerability and governance, we identify five food system governance deficiencies that impinge upon food security in Europe: a failure to deal with cross-scale dynamics; the inability to address issues related to persistent inequalities in food rights and entitlements; increasing geopolitical and sectorial interdependencies; power imbalances and low institutional capacities; and conflicting values and interpretations of “food security”. These five dimensions, we conclude, need to be addressed in an integrated fashion to progress the current polarised academic and policy debates and begin to build a more democratic, sustainable and secure European food system.

Key words: food security, governance, vulnerability, food system, food policy.

1. Introduction

Rising levels of malnutrition, socio-economic inequality and environmental degradation continue to signal the failure of food systems to deliver good food for all. Food systems

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are complex multilevel networks of food actors (and related activities) embedded in intricate socio-economic, political and ecological relationships that shape their outcomes across different geographies and social groups. Food security - or the condition when all people, at all times, have access to sufficient, safe and nutritious food (FAO, 2002) - is one of the primary goals of a food system. Therefore, its pursuance should be the main aim of food system governance (Ericksen, 2008a). However, how well current food systems fulfil this objective remains a contested and highly politicized issue (Ericksen, 2008b; McMichael, 2009). As researchers have observed (Foran et al., 2014), food security is an evolving and multi-dimensional construct that includes widely acknowledged dimensions (such as ensuring global access to food) but also competing interpretations of key problems and solutions needed to deliver good food.

Recent attempts to manage and address these contestations have focused primarily on expert exercises around food futures, which largely aim to identify drivers of change and vulnerabilities in the food system that originate different scenarios (see Reilly and Willenbockel, 2010 for a review). Despite efforts to integrate different perspectives, these exercises still suffer from four main limitations that, we argue, illustrate key challenges for the current research agenda on food system vulnerabilities. First, there is a lack of *acknowledgement of the trade-offs* that take place at the global level between food system outcomes (Ericksen et al., 2009) -- such as, for example, those occurring between biofuel and food production, which have implications in environmental and food security terms (Harvey and Pilgrim, 2011). Working through these trade-offs at *multiple scales* and in different *geographies* is deemed to be crucial to reduce the overall vulnerability of the food system (Ericksen, 2008b).

A second limitation of existing scenarios is their *sectorial and narrow focus* on food production (van Dijk, 2012). Although some exercises have attempted to consider also market transactions that translate into indicators such as food prices and calorie availability (Reilly and Willenbockel, 2010), most scenarios over-emphasize the supply side of the food system; addressing some basic aspects of availability of, and access to, food but downplaying food utilisation (see, for example, Global Environment Outlook of UNEP scenarios in Zurek, 2006) and the intermediate activities that take place between production and consumption (Sonnino et al., 2014b).

The tendency to confine the analytic focus on production brings up the third limitation of existing exercises -- that is, their tendency to *pre-frame* the problems and possible solutions (see, for example, the food security scenarios provided in Maggio et al., 2015 for the European context). Resulting often from the nature and quantity of available data and time limitations, this pre-framing tendency can compromise what is meant to be a *participatory* exercise and affect the potential relevance (and ownership) of the results for audiences operating within different food security frames.

Fourth, scenario analysts often focus on outcomes, rather than on processes and meanings. In many instances, scenario exercises are guided by a search for consensus, rather than by efforts to tackle competing interpretations of food security and of the food system vulnerabilities that affect the capacity to deliver good food for all (see for example Maggio et al., 2015). Food security frames reflect different sets of interests, values and power geometries (Mooney and Hunt, 2009). By disregarding these competing interpretations, existing scenarios tend to *address the proximate, rather than structural, causes* of food insecurity – i.e. they conceal the normative assumptions at play in the governance of food systems. Furthermore, all vulnerability assessments have policy implications, since they inform decisions that entail trade-offs among socio-economic, health and environmental outcomes (Ericksen, 2008b) and, therefore, affect people's wellbeing. This raises the need for research that elaborates further on the role of governance – or, adapting Kjaer's (2004) definition to the food security context: all modes of governing encompassing activities carried out by different actors to guide, steer, control or manage the pursuance of food security - in addressing food system vulnerabilities, both conceptually and practically.

To progress debates on food security, this paper draws on socio-ecological conceptualizations of vulnerability as the product of multilevel interactions between human and environmental dynamics. Such conceptualizations have proven to be particularly relevant in conducting systemic analyses of food security, since environmental and social outcomes are critical to delivering good food for all (Ericksen 2008b). This approach is helpful to tackle the gaps identified in the literature since it fosters a multiscalar, holistic and flexible perspective that moves away from sectorial, narrow and pre-framed approaches to food security and focuses instead on the main structural vulnerabilities of the European food system and their causes.

Our methodology, which was based on a Delphi survey with 45 experts from across Europe (see Appendix A), differs from existing studies in two fundamental ways. First, to avoid a pre-framing of the answers, we designed an open-ended questionnaire that aimed to capture individual perceptions and interpretations of global drivers of change and vulnerabilities of the EU food system. While Delphi surveys and related exercises aim for consensus, our goal was to identify points of convergence, disconnections and new levers to unblock a very polarised food security agenda (see, for example, accounts of distinct EU food security frames in Candell (2014)). Second, to enhance understanding of the perceived structural (rather than proximate) causes of food insecurity, we included specific questions on the underlying causes behind the vulnerabilities of the EU food system. As we will discuss, the analysis of the responses has identified governance as a key generator of food system vulnerabilities. As we will explain, our analysis identifies five main governance dimensions that affect food security in Europe and that, we conclude, need to be addressed in an integrated fashion to begin to build a more democratic, sustainable and secure food system.

2. Conceptualising food system vulnerabilities: Towards a governance perspective

Scientists from different disciplinary traditions have utilized the term “vulnerability” as “a powerful analytical tool for describing states of susceptibility to harm, powerlessness, and marginality of both physical and social systems, and for guiding normative analyses of actions to enhance well-being through reduction of risk” (Adger, 2006: 268). Given the broad and contested nature of this field of investigation, it is probably not surprising that the term “vulnerability” has been subjected to a wide range of different, and sometimes contradictory, definitions.

Adger (2006) identifies four main traditions of vulnerability research, which are mostly characterised by different levels of integration of social and environmental elements. The first tradition revolves around the *vulnerability of livelihoods to poverty* and it is based on Sen’s entitlements approach (1983), which highlights the role of social differentiation in causing vulnerabilities. The second research tradition focuses on *natural hazards* and incorporates elements of engineering, physical and social sciences to assess the exposure,

probability and impact of hazards on different groups in society (Burton et al., 1993). The third, *human and political ecology*, tradition calls for a better understanding of the political and structural causes of vulnerability that are by-passed by more managerial approaches. In this framework, understanding the reasons why poor and marginalised people are mostly at risk from natural hazards is critical (Watts, 1983). Finally, Blaikie et al. (1994) propose a *pressure and release model* (PAR) of hazards that combines elements of all other approaches to stress the multiplicity and diversity of vulnerability pressures, which are dynamically linked to both physical and biological hazards and to local geographies and social differentiation.

Along these lines, Turner et al. (2003) have proposed an integrative and interdisciplinary vulnerability framework for the assessment of coupled human-environmental systems. Their goal is to identify who and what is vulnerable to the multiple environmental changes currently underway, under the assumption that vulnerability, as a feature of socio-ecological systems, requires a focus on the linkages within and outside such systems. For other scholars, in turn, the attention needs to focus on the interactions between social dynamics within a socio-ecological system, since the vulnerability of a system fundamentally depends on the multilevel interactions between its components (Eriksen et al., 2008a).

Apart from the extensive literature on household food security (see seminal work by Maxwell and Smith, 1992), there have been several analyses of *food system vulnerabilities* that integrate the ecological and social dimensions of food. This is the case, for example, of Fraser et al. (2005), who analyse food system vulnerabilities through a “panarchy” framework that highlights the importance of maintaining diversity within the food system to maximise the range of options available at times of crisis. Eriksen (2008a and b) has provided a substantial contribution to this scholarship through the development of a framework that builds on Eakin’s and Luers’ (2006) integration of social and ecological approaches to understand food system vulnerability to environmental change. She suggests that vulnerabilities are “rooted in the processes involved in food systems, which are a product of activities and responses to external and internal drivers and changes” (Eriksen, 2008a: p.14), and raises the need to include more effective governance conceptualisations in the study of food system vulnerabilities (see also Hopes and Brons, 2016). In general, efforts to understand the latter through a reflexive approach

that integrates a focus on dynamic pressures with the analysis of the root causes of food system vulnerabilities occupy a small niche in the literature. Recent accounts of the drivers of food insecurity in Europe focus largely on proximate causes -- such as demographic trends, the availability of fruit and vegetables, household budgets and the under-nutrition/overweight paradox (see Maggio et al., 2015 and Cockx et al., 2015). Furthermore, a prevailing focus on vulnerable groups often limits the scope for providing a more holistic account of food system vulnerabilities which might obscure the wider-reaching consequences of food system (un)sustainabilities and (in)securities (from food scares to food price hikes or the consequences of climate change) that ultimately put different actors at risk in different ways.

In this paper, we contribute to this body of work through an integrated focus on the root causes of vulnerability, its expressions and dynamic pressures (see table 1). In this respect, our paper intends to contribute also to recent debates on the role of governance as both a driver of, and a potential solution to, food insecurity (Pereira and Ruysenaar, 2012; Hospes and Brons, 2016). For example, in the European context, food security governance has received increased attention since the 2008 food price crisis, leading to a rising awareness of the 'wicked' nature of the policy problem of food (in)security, which, as Candel et al. (2016) explain, is characterised by uncertainty and complexity, high levels of disagreements between stakeholders and processes that cut across temporal, spatial, and jurisdictional scales. These food (in)security governance features resemble key conceptual and practical challenges for vulnerability assessments, mainly: the need to address multiple and interacting stressors, capture socioeconomic and biophysical uncertainty, account for cross-scalar influences and outcomes, and emphasize equity and social justice (Eakin and Luers, 2006). These similarities between the vulnerability agenda and current governance dynamics call for further exploration of the theoretical linkages between both concepts that inform the development of analytical tools and practical mechanisms to reduce food system vulnerabilities to deliver food security.

Biesbroek et al. (2013) warn that governance research is underpinned by different philosophies (optimist, realist or pessimist) and related analytical lenses which might help to reveal or obscure structural causes of food insecurity. Governance can be: i) problem solving, ii) characterized by competing interests and institutional interaction,

or iii) constrained by structural factors that limit the opportunities for policy intervention. Food governance analyses have been mostly aligned with an optimistic or problem-solving philosophy (Candel, 2014) that, in many instances, overlooks conflicts of interest, institutional deadlocks, and the existence of winners and losers in the governance arena. As Biesbroek et al. (2013) conclude, analytical pluralism is crucial to develop more diversified forms of intervention that foster creativity and reflexivity within the contested food governance field.

3. Methodology: A Delphi survey with European food security experts

Responding to these emerging calls for more inductive and pluralistic analyses of governance, between October 2014 and May 2015 we conducted a Delphi survey with experts on global and European food security from different backgrounds and sectors. To unpack competing food security frames, we selected (in consultation with nine European research groups working on food security in different countries) stakeholders from three broad groups (public, private and voluntary sectors) that reflect the internal diversity of food security interpretations in the EU. For example, representatives from the public sector included experts from the European Parliament, the European Commission, the Food and Agriculture Organisation of the UN (FAO), civil servants and academics. From the civil society, voluntary organisations focused on food poverty, food sovereignty, international development and environmental protection (such as Caritas, Oxfam, Via Campesina, IFOAM or WWF) were invited to participate. The private sector was represented by a diverse set of experts linked to retailing, the food industry, farmers' unions and crop protection businesses (see Appendix A for a full list of participants).

In an effort to integrate a focus on dynamic pressures into the analysis of the root causes of food system vulnerabilities, we developed an analytical approach underpinned by the key social-ecological conceptualisations of vulnerability described earlier, building in particular on Blaikie et al.,'s (1993) framework. Table 1 defines the specific components of our analytical approach and their relationships with the terms used in the Delphi survey.

Table 1 Key components of vulnerability

Key terms	Definition and rationale	Terms used in the Delphi survey
Root causes or structural causes of food insecurity	Root causes are an interrelated set of widespread and general processes within a society and the world economy. Amongst the most important root causes that give rise to vulnerability (and which reproduce vulnerability over time) are economic and political processes. These affect the allocation and distribution of resources (and power), among different groups of people (Blakie et al., 1993: 52-53). Root causes are commonly defined as structural causes of food insecurity (Young, 2013).	Origin of threats and weaknesses Reasons for neglected factors
Dynamic pressures or drivers of change	Dynamic pressures are contemporary or immediate, conjunctural manifestations of general underlying economic, social and political patterns (Blakie et al., 1993). Eriksen (2008a) proposes to call these dynamic pressures drivers of change, which include global environmental change drivers (e.g. changes in land cover, water availability, climate variability, etc.) and socio-economic drivers (e.g. changes in demographics, economics, etc.) that together influence food system activities as well as its outcomes, such as food security.	Drivers of change
Unsafe conditions or expressions of vulnerability	Unsafe conditions are the specific forms in which the vulnerability of a population is expressed in time and space (Blakie et al., 1993). These expressions of vulnerability can be interpreted as outcomes (weaknesses) or constitute contextual vulnerabilities (threats) that interact with root causes and internal and external drivers of change in the food system. As O'Brien et al., (2011) points out, outcome and contextual vulnerabilities can be complementary approaches to understand phenomena such as climate change.	Threats and weaknesses

The overall aim of this survey was to identify key vulnerabilities and drivers of change in the EU food system by avoiding the pitfalls of previous studies. To this end, we designed a three-stage research process. The first stage aimed to grasp the diversity of responses and approaches within a group of experts. We conducted an online survey consisting of open-ended questions structured around four sections. First, we asked participants to define 'food system' and 'food security' to verify their holistic understanding of these concepts. Secondly, we asked experts to identify dynamic pressures – i.e. drivers of change at present and by 2050 - that shape food security at the global and at the EU level to situate the European food system in the global context but also outline its specificities.

Thirdly we asked participants to identify the main threats and weaknesses that affect food security in Europe. Finally, we addressed the structural causes of food security by asking questions about the origins of these perceived threats and weaknesses and the neglected factors in food security debates.

The inductive analysis of this rich qualitative dataset consisted of: i) open-coding responses with the qualitative software NVIVO to identify key words (e.g., climate change, food waste); ii) measuring the level of repetition per key word; iii) clustering common topics around categories (environment, social, health and political aspects, economy); and iv) turning recurrent responses into statements that could be ranked in order of perceived importance in a second online questionnaire.

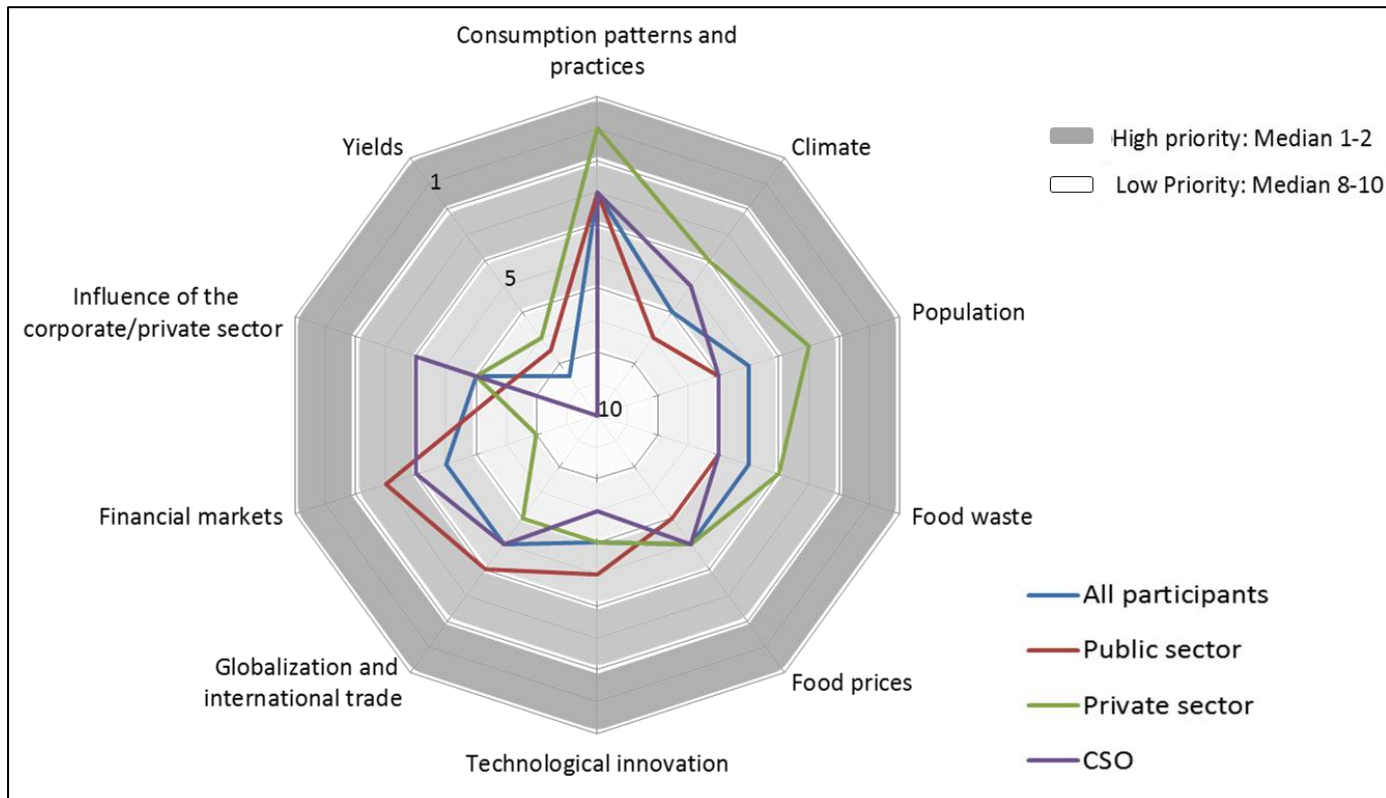
The second round of the Delphi survey focused on points of convergence and disconnections between interpretations and perceived policy priorities, which the survey tried to capture by creating space for comments. The results of the second questionnaire were analysed using statistical methods regularly deployed in Delphi exercises (see Hakim & Weinblatt, 1993). First, we calculated the median to identify the factors (drivers of change, vulnerabilities or policy priorities) that were ranked as more important and influential. Secondly, we calculated the standard deviation to measure the degree of dispersion (disagreement) within the responses for different groups (private sector, public sector and civil society organisations). Finally, the third Delphi round consisted of sharing the results from the second round to elicit reactions from participants.

In section 4 we present the results of the first and second Delphi round that illustrate the main drivers of change and vulnerabilities of the European food system. In section 5 we discuss the results of a second qualitative analysis. We used an inductive approach to develop categories into a framework that summarizes the raw data and conveys key themes and processes (Thomas, 2006). For that purpose, we open-coded (using the software NVIVO) governance-related statements around threats and weaknesses of the European food system and their origins. The coding process helped us to group experts' responses into different categories based on the different governance aspects highlighted by participants. These categories resulted in the identification of five food system governance deficiencies, as discussed below.

4. Identifying drivers of change and vulnerabilities.

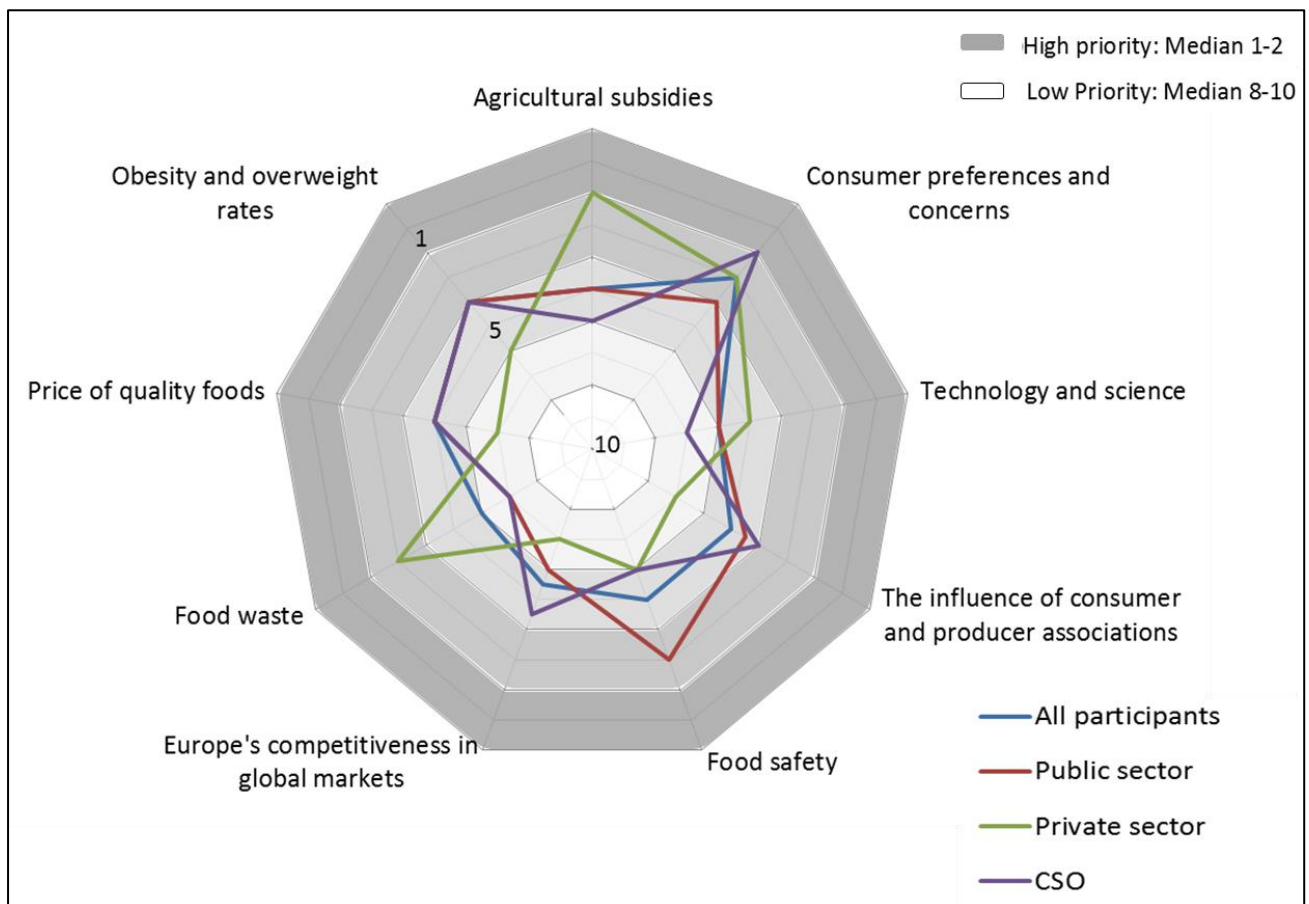
Based on the results of the first Delphi round, the **main global drivers of change at present (2015) and by 2050** are perceived to be very similar by stakeholders, and include climate change, consumption patterns, population growth and technological innovation. However, when respondents were asked to rank these factors in the second round, results changed considerably. At present, the most important driver of change identified across the board has to do with consumption patterns, followed by population growth (for representatives of the private sector), the financial crisis (for the public sector) and the influence of the corporate/private sector for civil society organisations (see detailed results in Appendix 2). By 2050, experts envision a very different scenario: access to resources and climate change will be the main driver of global change, with GM technology and technological innovation as the least important driver in our list of 10.

Figure 1 Ranking of global drivers of change for food security at present



There was less consensus amongst the experts around the **main drivers of change for food security in Europe by 2050**. Overall, consumer preferences and concerns ranked highly, but other factors (including obesity, prices of quality foods, food safety, the influence of consumer and producer associations and the effects of agricultural subsidies) were considered to be nearly as important.

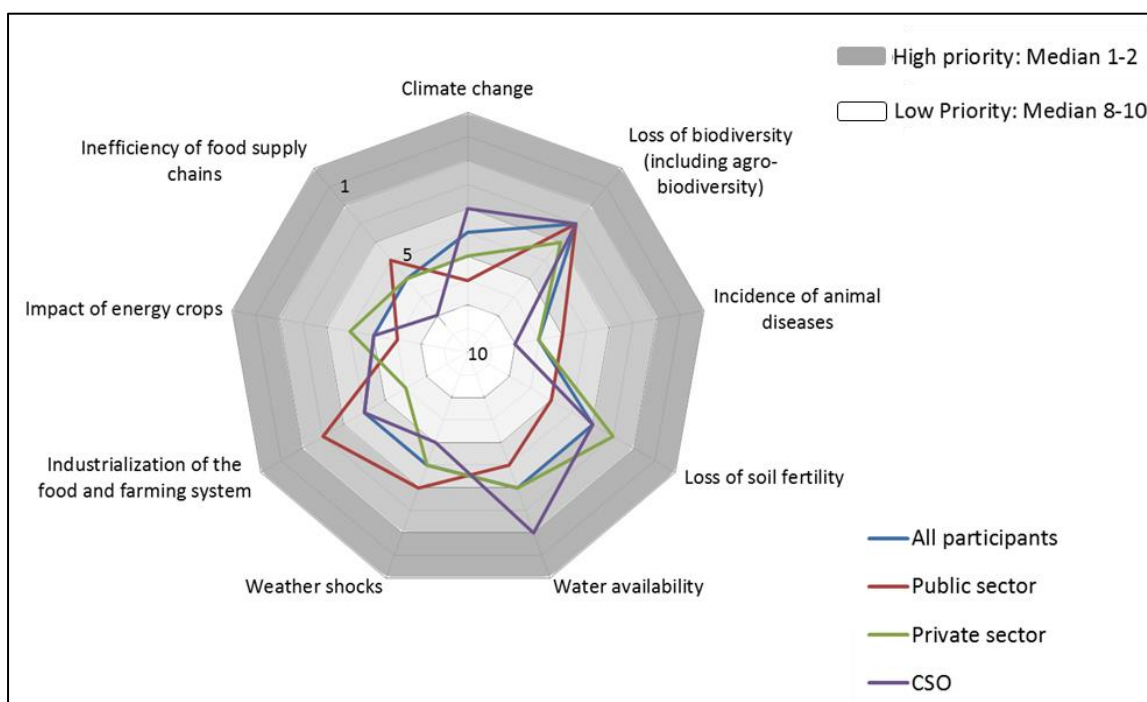
Figure 2 Ranking of drivers of change for food security in Europe by 2050



When we asked participants to identify **threats and weaknesses affecting food security in Europe** the most recurrent issues were climate change and loss of biodiversity, trade (especially increased liberalisation) and the EU political and regulatory system. Based on responses that experts provided in the first round, we utilized three main categories (environment and agriculture, policy and governance and socio-economic trends) to group different sets of policy priorities identified to address food security in Europe. Our analysis highlights the following:

- **Environment and agriculture:** The main perceived vulnerability was associated with loss of biodiversity. For CSOs and the private sector, loss of soil fertility and water availability were also important, while the public sector emphasized the role played by the industrialisation of the food and farming system. Overall, the main policy priorities identified include measures to support small food producers, a reduction of food waste and increased investment in sustainable agriculture. Most interventions were envisioned at the national and the European level, whereas the regional level was considered to be important for the development of instruments that support small food producers. The time frame of policy priorities to address these environmental vulnerabilities was mostly short-term (2015).

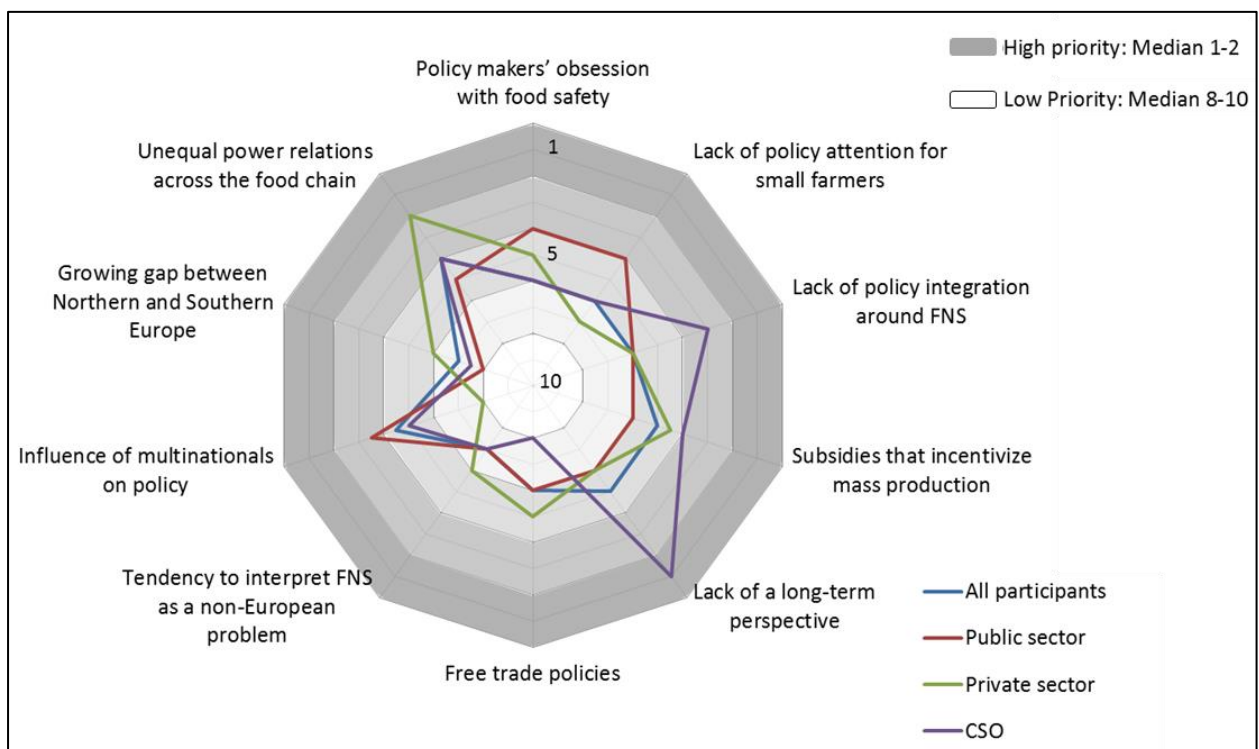
Figure 3 Ranking of environment and agriculture vulnerabilities



- **Policy and governance:** Respondents highlighted the importance of unequal power relations across the food chain. With reference to different actors and competing food security framings, for example, a respondent highlighted the influence of retailers, while another stressed the capacity of NGOs to block biotechnological developments. Other key perceived vulnerabilities included the

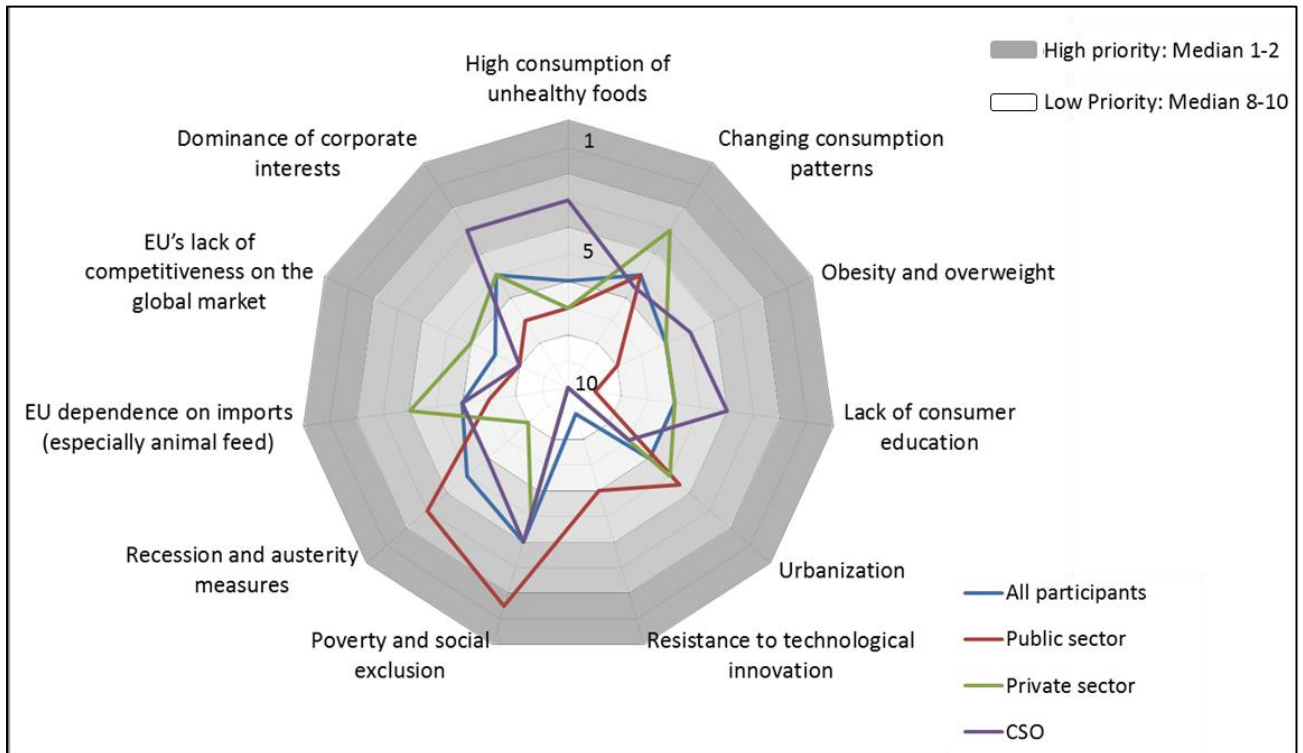
influence of multinationals on policy, the lack of a long-term perspective and subsidies that incentivize mass production. The standard deviation in these response was particularly high, showing a high level of disagreement. For the public sector, priority intervention areas include measures to support small producers, the adoption of a more comprehensive approach to food security at the EU level and an increased democratization of decision-making processes. For the private sector, in contrast, the regionalization of food policies is the main policy priority. Most interventions in this area were envisioned at the European level, although the national level was also perceived to be key for integrating food sovereignty/the right to food into policy, supporting green public procurement and increasing participation in the decision-making process. The time frame identified to address policy and governance vulnerabilities was mostly short and mid-term -- by 2015 and 2025 respectively.

Figure 4 Ranking of policy and governance vulnerabilities



- **Socio-economic trends:** Under this category, respondents highlighted poverty and social exclusion as the main vulnerability, followed by the dominance of corporate interests, recession and austerity measures and changing consumption patterns. The standard deviation in this category was, again, high, indicating more dispersion and disagreement between participants. For example, representatives from the private sector emphasized the relevance of consumption patterns but also the EU dependence on imports, a threat also highlighted by the Platform Agriculture, Innovation & Society (2011) in relation to soya imports; CSOs, on their part, stressed the high consumption of unhealthy foods, alongside the dominance of corporate interests, as the main vulnerability, while public sector respondents emphasized poverty and social exclusion. The main policy priorities identified include increasing transparency and ethics in the food chain, the implementation of green public procurement strategies and the adoption of market-based policy instruments that incentivize healthier diets. In this case, different groups of stakeholders also diverged in their opinions; for example, the private sector stressed the importance of education and consumer engagement, while CSOs emphasized the need to reduce meat consumption. Most interventions were advocated at the European level, particularly in terms of revising the regulation on food labelling, advertising campaigns and increasing transparency and ethics. Public procurement and stronger social safety nets were generally seen as responsibilities of national governments, alongside education and consumer engagement -- areas in which regional and municipal levels have also an important role to play. The time frame identified to address socio-economic vulnerabilities was mostly short-term; for more than 50% of the stakeholders, policy measures needed to be implemented by 2015.

Figure 5 Ranking of socio-economic vulnerabilities



When asked to identify **the origins of the threats and weaknesses** affecting food security in Europe, respondents pointed to governance issues —i.e., the current EU regulatory and political framework, political interests and geopolitics. Some governance features are perceived to be a key structural causes of the vulnerability of food systems to deliver food security(see below for an in-depth analysis). Environmental issues such the fragility of ecosystems and increased levels of pest and disease were also identified as root causes of weaknesses, alongside anthropogenic factors such as the lack of prevention measures, inadequate land management practices and the use of chemicals. Climate change was mentioned as both a threat in itself and as an origin of other vulnerabilities such as water scarcity. Respondents also referred to a range of economic factors that affect food security in the EU, including financial aspects, increasing inequality and poverty, and food prices that do not reflect real production costs.

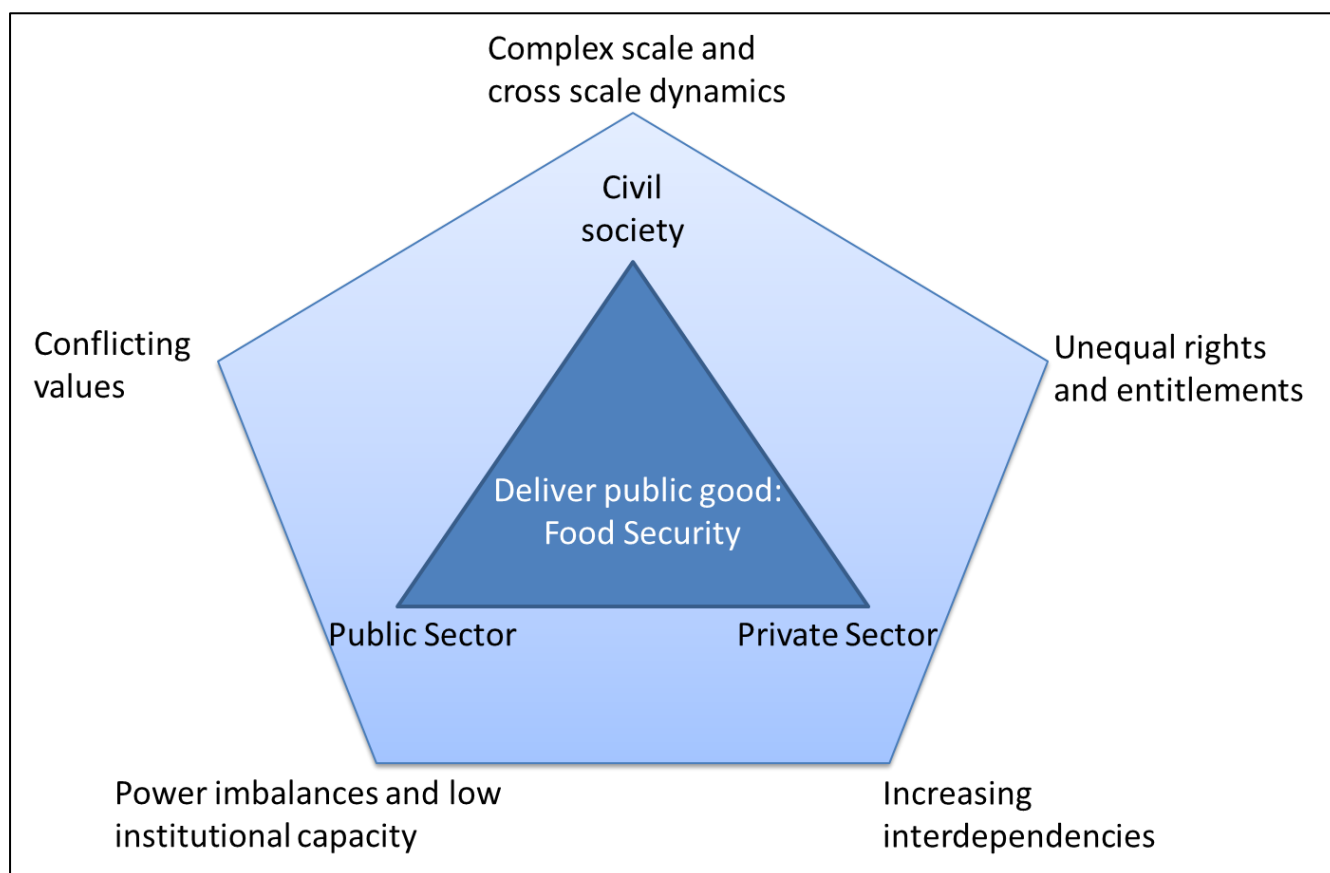
Finally, in the first Delphi round, we asked participants to identify **neglected factors in food security debates**. Respondents mostly acknowledged that integrated and long-term perspectives on the food system are neglected in European food security debates,

which also underestimate the linkages between sectors and between the environmental, socio-economic and political dimensions of the problem. Specifically, debates are not addressing the contradictions between the EU food security policy framework and its agricultural, trade and energy policies as well as the public-private tensions around technologies. On a more politicised note, factors that were considered to be neglected in the debate also include the public character of food, food sovereignty, the right to food, food as commons and the recognition of alternatives to the industrialised food system. According to the respondents, **the reasons that lead to neglect these factors** include unbalanced geometries of power inside the food chain (e.g., transnational corporations vs. small producers) and in the broader political spheres (including geopolitical relations), which impose a dominant discourse on consumerism, free trade and neoliberalism. Other key factors identified include the lack of shared holistic visions and political leadership, the inadequacy of data, the lack of solidarity between social classes and countries, the erosion of trust (including a lack of scientific and institutional independence), historical path-dependencies and lack of financial resources or incentives to promote sustainability.

5. Unpacking food governance as a generator of vulnerabilities

To better understand the relationships between governance, vulnerability and food security we conducted a second and deeper analysis of the qualitative results of the first Delphi round. Our analysis of experts' responses identifies five main perceived *food system governance deficiencies that constrain or hinder food security in the EU* (see Figure 6).

Figure 6 Food System Governance Deficiencies



Many respondents acknowledged the importance of *scale*, identifying a weak coordination and integration among different spatial, jurisdictional and institutional scales as a fundamental vulnerability of the EU food system that negatively affects decision-making processes. For example, some experts emphasized the lack of coordination among municipal, national and European food security goals and actions. Other participants criticized the process of homogenization of food security strategies and priorities triggered by current top-down food governance mechanisms. The temporal scale is also relevant for some experts, who highlighted the lack of integrated long-term perspectives on the food system.

These insights reflect widely acknowledged weaknesses of both food policy-making and vulnerability assessments, which have demonstrated limited capacity to effectively tackle *scale and cross-scale dynamics*. According to Cash et al. (2006), some of the main challenges in the governance of socio-ecological systems result from the failure to

recognise the importance of scale interactions, the mismatch between human action and ecological systems, and the tendency to neglect how different scales are defined and valued by different actors. For the purpose of our discussion, it is useful to point out that scales are not pre-given categories; they are social constructs and act as a way of framing conceptions of political spatiality (Kurtz, 2003). That is, framing problems at a specific scale influences the interdependencies between actors, including the distribution of responsibilities, resources, powers and rights, and can, therefore, be considered a political act.

Interactions among actors are linked not just to scale and cross-scale dynamics but also to geopolitical and sectorial *interdependencies*, as highlighted by our respondents. Several experts identified a lack of understanding of Europe's interdependencies with other regions and an "excessive dependency on the outside" as drivers of vulnerability for the EU food system, as exemplified by increasing imports of animal feed. Some respondents pointed to geopolitical relations (particularly the emergence of new regional powers in Asia and South America) as the originators of some vulnerabilities in the EU food system. Tensions around integration and competition among EU countries were also seen as a root cause of vulnerability; examples provided by the experts included increased competition to exploit neighbouring markets vis-à-vis growing inequalities between Northern and Southern European countries and increasingly divergent national priorities (see also Grant, 2012). In relation to sectorial interdependencies, respondents called for more holistic approaches to food security and more comprehensive assessments of food system vulnerabilities.

These views evoke theorizations about the rise of a network society (Castells, 1998) and associated forms of governance, broadly characterised by a shift from monocentric, hierarchical, and well-institutionalized forms of government towards less formalized governance frameworks in which state authority considers mutual interdependencies with other stakeholders (Rhodes, 2007). In a food system characterised by *asymmetrical power relations*, fluid governance frameworks constitute a potential source of vulnerability, given the capacity of particular interests to influence or even co-opt policy-making processes. As scholars point out (see, for example, McMichael, 2009), the food system is experiencing an increasing concentration of its activities, including food production, distribution and retailing but also research and development projects.

Several informants identified this process of concentration as an originator of the weaknesses in the EU food system and related it to the increasingly important role that agro-industrial lobbies are playing in the European food governance context. Other respondents pointed to broader political interests of different stakeholders, including what they called 'powerful actors in the system' -- business interests but also the European Commission itself and activists and NGOs whose agendas might be a potential threat for food security.

Partly related to these conflicting interests, a majority of experts referred to **low institutional capacity** as a major weakness of the EU food governance system. The current institutional framework was described as non-cooperative, outdated, segmented and incoherent, lacking vision and leadership and unable to address internal diversity. Some informants also pointed to a general inaction reinforced by current austerity measures and path dependency dynamics - a criticism that reflects recent descriptions of the European Commission as highly 'stove-piped' and unable to solve wicked problems (Kassim et al., 2013).

Our findings also build upon the conclusions of existing studies on socio-ecological systems and vulnerability, which often raise the need to improve governance by reinforcing communication and the institutional interplay among different levels (for example, between administrative levels and between knowledges produced at different scales); developing strong policy networks; implementing co-management strategies to address multiple and complex food system challenges; and establishing boundary or bridging organizations that play an intermediary role between different actors and interests (Cash et al., 2006; Folke et al., 2005; Sundkvist et al., 2005; Termeer et al., 2010).

According to many participants, a fourth governance deficiency that contributes to vulnerability revolves around **unequal rights and entitlements in the food system**, linked to poverty, inequality, social exclusion and unemployment, which, as many respondents emphasized, constrain access to resources such as land and water. The marginalization of certain actors and perspectives in governance and policy frameworks was also considered detrimental to food security goals.

The fifth food governance deficiency has to do with **conflicting values and interpretations of food security**. Specifically, some respondents raised the need for a

unified policy vision in the EU that ensures and delivers food as a human right for all citizens. Conflicting values were at times connected with individualistic/common good dichotomies or the capitalist neoliberal system, and some experts were also critical of what they called “ideological” approaches to trade or science.

Governance approaches that aspire to deliver food security need to engage more effectively with conflicting values and interests. Candel et al. (2016) recently highlighted how the European Commission stimulates engagement with a plurality of demands around food security, however the widespread belief in ‘objectivity’ within the institution might obscure value conflicts. Furthermore, many multilevel and participatory governance frameworks coalesce with existing norms of democratic legitimacy since they go beyond the control of elected politicians or established public administrative structures. These forms of governance beyond-the-state raise important questions about the values that underpin decision-making mechanisms and new institutional architectures (Moragues-Faus and Morgan, 2015). In fact, some respondents criticized the lack of a democratic political and regulatory framework to govern the EU food system, which they attributed to the existence of vested interests and power imbalances.

6. Conclusions: Towards a reflexive/democratic governance of food security

This research has identified key drivers of change and interconnected vulnerabilities of the European food system (as perceived by experts) through the adoption of an innovative, multiscale and holistic perspective that aimed to uncover the root causes of these vulnerabilities. Results highlight the difficulties of reaching consensus and the tendency by experts to propose individualistic, partial and short-term solutions when asked to identify and rank current challenges (such as the focus on consumption as the main driver of change or the implementation of policies by 2015). Our research approach created independent and discursive space for experts to reflect and to connect key drivers of change and weaknesses of the EU food system with structural aspects of food insecurity. It specifically delved into the root causes of vulnerability, which are largely bypassed in conventional expert exercises. In this respect, the study challenges what we might now regard as rather ‘classic’ approaches to vulnerability. These tend to deduce its components from relatively *neutralised notions of food systems* that see

interconnectivities between whole and diverse range of dimensions and drivers (see Erikson, 2008b; but also Christopher and Peck, 2004; Svensson, 2002; Adger, 2006).

By explicitly addressing the root causes of the European food system vulnerabilities, our analysis shows that a particular set of governance deficiencies constitute a key component of vulnerability and a significant point of convergence for different stakeholders. The five deficiencies identified through this research (failure to deal with cross-scale dynamics, unequal rights and entitlements, increasing interdependencies, power imbalances and low institutional capacities, and conflicting values) represent a platform to overcome more generalised 'optimist' or 'pessimist' approaches to food security governance; indeed, they can potentially foster new conversations on food security, revisiting and re-focusing ongoing policy-making processes and scenario exercises.

So far, existing literature on vulnerability and governance proposes measures that mostly relate to singular aspects of the five food system governance deficiencies identified in this paper – namely, *complex scale and cross-scale dynamics*. Other contributors have signalled specific governance measures that can address food insecurity outcomes, such as increasing the capacity of actors and institutions in the food system (Schutter and Lenoble, 2010), the importance of combining cross-scale and cross-sectoral governance mechanisms (Sonnino et al., 2014a), or the need to unpack the overall (normative) aim of food system governance mechanisms in order to further democracy (Moragues-Faus and Morgan, 2015). In these debates, adaptive or transformative, participatory or deliberative, and reflexive governance models have been suggested as approaches for opening spaces for learning and adapting social solutions to collectively resolve food insecurities (Marsden, 2013; Sonnino et al., 2016). The central argument here is that, through self- and social questioning (reflexivity), people are able to engage with contemporary uncertainties and social coordination problems (Edwards et al., 2002) that characterize a complex and fast changing food system. As our analysis begins to show, such reflexivity needs to be fostered not just across governance *scales* (vertically), but also between *different sectors and communities* of stakeholders engaged in the fight against food insecurity (horizontally). Building more enabling and reflexive *institutions* necessarily entails explicitly addressing *conflicting values* and *power imbalances* (within and outside current institutions), as well as their effects in the food system. This includes

examining dominant framings of food security challenges and solutions that reproduce *inequality* as well as addressing more explicitly all five interconnected elements that our analysis has uncovered in an integrated fashion (see figure 6). Given the recognised ‘dysfunctionality’ of the current EU food system, which is indeed reproducing, rather than reducing, overall vulnerability, it becomes all the more critical for policy actors to connect the linkages between our five key deficiencies in order to embody a more reflexive, democratic and integrated food security governance approach.

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