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The future of small farms and small food businesses as actors in regional food security: A participatory scenario analysis from Europe and Africa

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1. Introduction

Recent literature has increasingly recognized the need to confront future food challenges to achieve sustainable food and nutrition security (FAO, 2017). In this context, special attention has also been paid to both the role of small farmers in contributing to food security, and the factors that are impeding the realisation of greater productive capacity (HLPE, 2013; Davidova and Bailey, 2014; Woodhill et al., 2020). Small-scale farming is the livelihood of the majority of the rural poor, so their

future dynamics are intrinsically bound-up with food insecurity. Therefore, as Woodhill et al. (2020: 7) claim, “more nuanced and up-to-date understanding of small-scale agriculture and family farming is urgently needed” to drive the necessary transformation of small-scale agriculture in order to “realise the SDGs, and to achieve healthier, more equitable and environmentally sustainable food systems”. In other words: Which role can small farms play in the future of the food systems if food security is not necessarily guaranteed? What could their future be within a sector experiencing major internal restructuring and external

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challenges?

In addressing these questions, we focus also on small food businesses (SFB) which are closely related to small farms (SF) (Hernández et al., 2021). In many cases the farm becomes a food business when it carries out on-farm processing or direct selling to consumers, i.e. when the business is developed by the farm itself (or is a farm spin-off). In other cases SFB are strongly connected with small farms, so very often they are interdependent.

Small-scale farmers and food businesses are more likely to be closely embedded in the regional food systems (Grando et al., 2020), while making varied contributions to regional food systems (Rivera et al., 2020). This is why addressing the questions above requires the adoption of a territorial approach to food and nutrition security, as “an appropriate framework to address the structural and emerging issues of FSN [food security and nutrition], including widening within-country inequalities and disparities in so far as they allow the exploration of the multidimensional, multi-actor and multi-level nature of food security and nutrition” OECD/FAO/UNCDF (2016).

This paper presents the cross-regional comparative analysis of a participatory scenario planning exercise conducted in 13 regions of 13 countries in both Europe and Africa as part of the H2020 research project SALSA “Small farms, small food business and sustainable food security”. The objective of the analysis is threefold: (i) to better understand how small farms and small food businesses would perform, in terms of their contribution to regional food and nutrition security, in a set of common scenarios for the year 2050; (ii) to assess how the evolution of certain drivers of change could impact on their future situation, and (iii) to derive some policy implications aimed to preserve and strengthen their capacity to contribute to food and nutrition security.

The necessity to confront future food challenges both globally and regionally has fuelled a number of foresight studies related to food and nutrition security, and agriculture, as illustrated by some compilations: Bourgeois and Sette (2017), McEldowney (2017) or Bisoffi (2019). The majority of these foresight studies refer to the global, continental or sub-continental scales, being regional and local studies less frequent. This prevents assessing how drivers of change impact differently according to distinct geographical settings. Apart from this, this study differs from other foresight analyses revolving around food systems’ future in its focus on the most vulnerable actors of the food chain. As Zurek et al. (2021) claim, there is a “persistent blind spot when it comes around power and equity considerations. [...] underlying structures and associated power dynamics or concentration within the supply chain” (p. 18). In these regards, our work makes an innovative contribution, as it precisely puts the center of the analysis on the relative position of the most vulnerable actors of the food chain and how they can become the losers (or not) under alternative futures.

The structure of the paper is as follows. Next section introduces the rationale and methodology for the comparative scenario analysis. The results present four composite, overarching narratives of the scenario exercises conducted in the 13 study regions. Later, we discuss the main outcomes from this comparative analysis to distil policy implications. We conclude with some remarks regarding our analytical approach.

2. Comparative scenario analysis: conceptual framework and methodology

The European Commission defines the concept of foresight as: “a process which combines three fundamental elements: prospective (long-term or forward-looking) approaches, planning (including policy-making and priority-setting) approaches, and participative approaches (engaging

stakeholders and knowledge sources)”.¹ As stated in McEldowney (2017: 2) “foresight studies involve identifying alternative images of the future and choices of action based on those images. It is not about predicting the future, rather it is about exploring a range of possible futures supported with analysis of scientific and technological trends” (see also Godet, 2000). A central element of foresight is scenario building. Scenarios can be defined as a description of how the future may unfold according to an explicit, coherent and internally consistent set of assumptions about key relationships and driving forces (Forward Thinking Platform, 2014). According to Mair et al. (2019: 29), “creating scenarios using foresight techniques can help policymakers reason, anticipate and develop a better understanding of complex policy issues as well as the paths that lead to different plausible scenarios by embedding them into a social context”.

Oteros-Rozas et al. (2015: 3) describe participatory scenario planning as “a process in which stakeholders, frequently guided by researchers, are engaged in a highly collaborative process and develop a leadership role within some or all stages of a scenario development process to investigate alternative futures”. According to Soste et al. (2015) scenario planning comprises scenario formulation –i.e. development of a small number of contextual scenarios of how the future might be - and scenario analysis –exploration of likely systemic consequences produced within the area of interest by the unfolding of the contextual scenarios themselves and by the transactional responses of stakeholders. This paper focuses on the second of these stages, i.e. scenario analysis. This exploration can be organised around narratives, as key means through which people organize and make sense of reality and engage in reasoned argument (Davidson, 2017). Narratives are “the best way to understand meaning-making within the policy process” (Mair et al., 2019: 48) and their development, through participatory scenario planning, “potentially intersects with a wider set of democratic values” (Duckett et al., 2017) by giving stakeholders a voice at the science policy interface.

This study was designed as a multiscale scenario planning operating as a hierarchical system (Zurek and Henrichs, 2007), in which broader geographical scales (global, continental) are seen as a set of boundary conditions for smaller scales (e.g. regional, local). According to the typology elaborated by Zurek and Henrichs (2007), the foresight work carried out in the SALSA project was designed as a consecutive process in order to be consistent across scales, so that the proposed common scenarios provided these boundary conditions but, at the same time, they gave room to different outcomes at regional level. Moreover, the replication of the participatory scenario analysis in 13 different regions allowed effects of drivers of change to arise that are both context-specific (i.e., variations in the outcomes that the drivers have on the ground) and non-trivial (i.e., the implications that context-specificity and complex interactions have on experts’ capacity to predict the combined impact of these drivers) (Béné et al., 2019). This is a similar approach to that of Karner et al. (2019) in their analysis of stakeholder-driven scenarios on land sharing/land sparing in 5 European regions. There are, though, some trade-offs between, on the one hand, a standardised methodology and approach across scales to allow for comparative analysis and, on the other hand, giving room to regional/local stakeholders to develop scenarios independently (Kok et al., 2007) and free from constraints (Duckett et al., 2017).

Fig. 1 illustrates the whole methodological process followed in the elaboration of the foresight work. Nevertheless, it is important to note that this paper exclusively addresses a part of this work: the comparative analysis of the regional scenario narratives (i.e. boxes in capital letters).

The first stage of this analysis was the elaboration of a set of scenarios (Step 2 in Fig. 1) as a common point for discussions about the regional implications of such “futures”. The drivers that shape these scenarios

¹ Popper, R. (2009), **Mapping Foresight: Revealing how Europe and other world regions navigate into the future**, EFMN, Luxembourg. http://ec.europa.eu/research/social-sciences/pdf/efmn-mapping-foresight_en.pdf. Quoted in Bourgeois (2012).

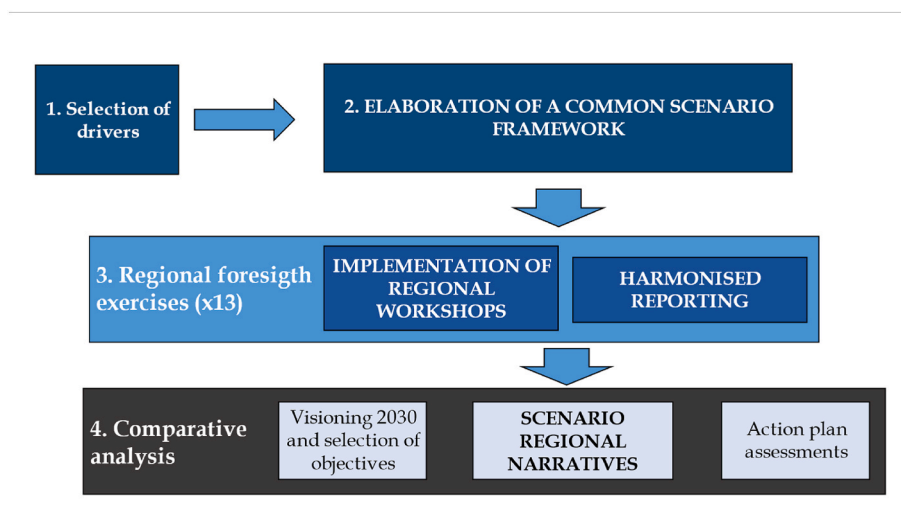


Fig. 1. Methodological steps of the foresight analysis.

Table 1
Drivers of change for scenario design in European and African selected regions.

Driver	Explanation
1. Degree of access to managerial and technical innovations	Answers related to the introduction of productive, technological or managerial changes in SF or SFB, conditioning actors' innovation capacity, access to knowledge to undertake changes, accessibility of technical and managerial solutions. This also includes the existence of knowledge transfer mechanisms and training.
2. Concentration in the food chain	Concentration (number and market share) of companies within the food chain. Power concentration.
3. Social values and cohesion	Capacity and willingness to cooperate (among SF, SF with SFB), society's solidarity and awareness about SF and SFB
4. Public budget and expenditure	Public transfers, economic incentives, support measures for economic actors (e.g. SF and SFB, other food actors, consumers)
5. Consumers' values and habits	Consumers' awareness about the impact of food on nutritional status or over the environment (not necessarily all simultaneously), new food habits and diets. It includes the effects of food fraud and scandals
6. Public regulations	Legal requirements conditioning SF's and SFB's activities and access to markets (hygiene, safety, environmental, marketing regulations)
7. Access to environmental/natural assets	Access to land, quality of natural resources (water, soil, agrobiodiversity), problems associated to natural hazards (pests, diseases)
8. Demography (rural/urban)	This would include demographic dynamics, rural and urban trends, farming population (including farm succession likelihood).
9. International trade openness	Access to foreign markets, competition with imported food
10. Poverty	Income levels and poverty rates

Source: Authors' elaboration

derive from a previous work (Step 1, see Arnalte-Mur et al. (2020) for further details), in which 107 experts² from 19 regions in both Europe and Africa (among them the regions included in this research) were consulted about the factors that, according to them, would condition the

² With a diversity of profiles similar to that of the participants in the foresight workshops (see Table 3). Actually, some of these experts were also invited to these workshops.

contribution of SF and SFB to the regional food and nutrition security (FNS onwards) in the next 25–30 years. They provided 518 answers that were grouped into categories. The construction of the categories took into consideration existing foresight studies (e.g. denomination), but it prioritized an inductive approach to group the answers and create original categories not to lose the small-farm specificities and the richness and diversity of experts' views. Some of the consulted experts were also later invited to the foresight workshops. Eventually, ten main categories of drivers were identified (see Table 1). One could miss other drivers that are used in other food-related foresight studies, but these are the ones stemming from this previous step, explicitly designed and implemented for this foresight analysis. This point will be tackled at the end of the paper.

Climate change was not considered as a variable driver, but as a 'predetermined element' across scenarios, so it was included in the foresight analysis by providing, together with the scenario's point of departure, a brief description of the foreseen impacts of climate change in each region according to existing studies.³ Béné et al. (2019) argue that climate change is too amorphous to be considered a useful food system driver. Instead, the "recurrence or the increase in the frequency and the intensity of those extreme events will eventually become a driver –as people, individually or collectively, will start to adapt (change their behaviour/technology), which will eventually alter the system durably" (p. 151). It is precisely, this adaptive capacity what was stressed by regional experts (Arnalte-Mur et al., 2020), and which is addressed by some of the selected drivers. In any case, these selected drivers cover the critical uncertainties that will plausibly shape the future of small-scale agriculture (Woodhill et al., 2020).

Common scenarios were shaped combining different states that these drivers could adopt. For the sake of simplicity, we opted to set up two possible states for each driver. This 'dualisation' of states is very common in the foresight literature. Drivers states were combined: (i) to give rise to scenarios different enough to cover a wide range of possible futures, (ii) to include all the states in at least one scenario, and (iii) to be meaningful for workshop participants. Finally, four common scenario

³ Information for European regions was extracted from the European Environmental Agency report: *Climate change, impacts and vulnerability in Europe 2016* (<https://www.eea.europa.eu/publications/climate-change-impacts-and-vulnerability-2016>). For African regions, the information was extracted from the IPCC's *Climate Change 2014: Impacts, Adaptation, and Vulnerability*. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (<http://www.ipcc.ch/report/ar5/wg2/>) (both reports last accessed in May 2018).

skeletons were designed.

1. Scenario 1 – business-as-usual (BAU) is based on a combination of states that assumes no significant changes in the trends and dynamics at the moment the workshops were held. A BAU scenario was probably in many stakeholders' mind (Brabandere and Iny, 2010), so it was interesting to include it within our scenario framework. For some drivers, the selection of the BAU-state was based on literature review (in particular FAO, 2017). There were other drivers that were more uncertain; for them the selected state was the most coherent according to the combination of the others.
2. Scenario 2 – mirror is an opposite one to BAU –i.e. all the states are opposite to the BAU's states. This scenario was shaped in order to have combinations that covered a wide range of futures and stimulate creative responses.
3. Scenarios 3 and 4 respectively derived from those combinations in which drivers adopt the most enabling (Scenario 3) and the most disrupting (Scenario 4) states for SF and SFB. This previous assessment on the enabling or disrupting effect was based on the information provided by the preliminary interviews with regional experts.

This design of scenarios ranging from a desirable future to a disrupting one, and using others in between, has been adopted in other scenario analyses (e.g. Oteros-Rozas et al., 2015 and Woodhill et al., 2020, the latter precisely about small farms). Therefore, these scenarios adopt a hybrid character between normative and explorative -see also Cho (2013) about the way scenarios merge normative and explorative features. On the one hand, a normative approach guided the way researchers shaped the scenarios, as they are in principle more or less enabling for SF and SFB. However, on the other hand, participants were not given normative pre-assumptions about the 'goodness' of the scenarios; in other words, they were not presented as 'what should happen', but as 'what could happen'.

Table 2 shows the scenarios that were finally used in all the regional foresight workshops. These scenarios were aimed at providing a common set of global contexts, in which regional stakeholders discussed what such a combination of drivers/states in 2050 would mean for SF and SFB and their contribution to FNS in their specific context. In order

Table 2
Scenario framework for SALSA's foresight analysis.

Driver	Scenario 1 (BAU)	Scenario 2 (Mirror)	Scenario 3 (Enabling)	Scenario 4 (Disrupting)
1. Degree of access to managerial and technical innovations	High	Low	High	Low
2. Concentration in the food chain	High	Low	Low	High
3. Social values and cohesion	Low	High	High	Low
4. Public budget and expenditure	Low	High	High	Low
5. Consumers' values and habits	High	Low	High	Low
6. Public regulations	High	Low	Low	High
7. Demography (rural/urban)	Rural depletion/urban growth	Increase in rural areas	Increase in rural areas	Rural depletion/urban growth
8. International trade openness	High	Low	Low	High
9. Access to environmental/natural assets	Low	High	High	Low
10. Poverty	Low	High	Low	High

Source: Authors' elaboration

to facilitate the presentation of the scenarios to participants, short narratives were developed for each combination of drivers and states, giving coherence to the storyline (see Supplementary Material Annex 1).

One of the key elements of participatory scenario analysis are the names that scenarios are given by stakeholders in each region, as these names help with differentiation, communication and memorability (Forward Thinking Platform, 2014), create a sense of ownership for participants, and enhance the effectiveness of the scenario exercise (Kok et al., 2007). The names of the common scenarios (that appear at the top of Table 2) were withheld at the outset to avoid biasing the discussions among the stakeholders. Once the scenario narrative had been developed, participants were asked to agree on a name for their scenario.

The foresight workshops were implemented between September 2018 and March 2019⁴ in 13 regions from 13 different countries (nine in Europe and four in Africa, see Table 4), and followed a detailed common protocol (see Annex 2).⁵ They were held onsite. The selection of European regions tried to cover the diversity of regional contexts, both two perspectives: geographical (Mediterranean, Eastern and Northern), and based on the importance of agriculture and small farms in each region (Guiomar et al., 2018). The four African regions are located in different countries and are all characterised by a strong presence of small farms and traditional rural sectors.

Participants were drawn from different categories (see Table 3). In total numbers, 226 participants were involved in these workshops. They were recruited from the information about the stakeholders obtained in previous activities conducted in the frame of the project, and aimed to cover the key stakeholder groups that should be represented in scenario workshops (Andersen and Jæger, 1999) and the main actor categories in regional food systems (Brunori et al., 2014), taking also into consideration gender balance (women represented 41%). The number of participants per workshop was highly variable (from 5 to 34, see Table 4), which meant that some scenarios were not tackled in some regions. The workshops were facilitated by a total of 65 researchers⁶ linked to the

Table 3
Workshop participants.

Type	Number	Description
Public administration	57	Staff and representatives of public bodies (local, regional, national)
Small farmer	46	Individual small farmers
Advisory services	25	Experts from public and private advisory services, including those belonging to farmers' organizations
Agrifood chain	16	Input suppliers, down-stream companies, retailing and consumer associations
Small food business	16	Small food business manager
Research/Academy	14	Experts from universities and research centers
NGO	14	Development, environmental NGOs,
Agricultural association	13	Farmers' unions, chambers of agriculture
Producer cooperative	13	Representatives and technical staff from agri-food cooperatives uniting many small farmers
Other	12	Other profiles

⁴ Before the ending of the Brexit process and the multisystemic crisis provoked by the Covid-19 pandemic.

⁵ Both the protocol (Annex 2) and the common reporting template (Annex 3) cover the whole foresight activity which was carried out. However, this paper exclusively focuses on Step 3 of the protocol and Section 3 of the reporting template.

⁶ Workshop coordinators, group facilitators and notetakers. Both coordinators and facilitators had previous knowledge about the regional settings and characteristics of SF, SFB and regional food systems, gained along previous research activities carried out during the SALSA project.

Table 4
Regional names for scenarios^a.

Country (num. of participants)	Region	Regional names for scenario BAU	Regional names for scenario MIRROR	Regional names for scenario ENABLING	Regional names for scenario DISRPUTING
Cape Verde (CV, 19)	Santiago Island	“Dizaraska” (find your own way)	Pessimistic	Rural prosperity	Generalised crisis
Ghana (GH, 34)	Gushiegu District	Duniya Be NyaYsa (The world is not “sweet”)	“Disomi”- Indifferent (a state where one is indifferent because one is not happy and not sad at the same time)	Middle developed world	“Ayayoo World” (unbearable, difficult world)
Greece (GR, 13)	Larisa	Between euphoria and dystopia	An ambivalent introversion	Diversify or die	Disappearance amidst duality
Italy (IT, 7)	Pisa	Between wishing and fishing	Deeply re-generative	(not used)	The Bermuda agri-food triangle: overexploitation, abandonment and neo-self sufficiency
Kenya (KN, 25)	Ugunja Sub County	Structural Adjustment Era	Green Revolution Era	(not used)	Sustainable Development Era
Latvia (LV, 21)	Latgale	(Changing) with the times	Encapsulation	Fairyland	Phoenix
Malawi (MW, 21)	Balaka District	Structural Adjustment Era	Wellcome to Millennium	Post millennium	Sustainable Development Era
Norway (NO, 5)	Hedmark	The Liberalistic Scenario	(not used)	Thriving Local Communities	Back to Basics
Poland (PL, 24)	Rzeszowski	New consumer	(not used)	Unreachable dreams	Hope for better future
Romania (RO, 14)	Giurgiu	Back to the Future	Story times	(not used)	The Green Pharmacy – with Chicken Flavour or Globalized Communism
Portugal (PT, 12)	Oeste	Agri-future: Innovation and differentiation	(not used)	On the way to Utopia	Hyper-bio capitalism
Spain (ES, 16)	Castellón	Lost in liberalization	Bye globalisation	Resurging of <i>agro-ruralisation</i>	Zombie apocalypse
United Kingdom (UK, 15)	Perth and Kinross, and Stirling	Surviving not thriving	Hands off my chicken!	Hollow victory	Crofting gets real

^a Due to the number of participants in some workshops, some common scenarios were NOT USED in all of them.

research entities involved in the SALSA project (35 × female/30 × male).

The outcomes of the regional workshops were reported using a common template (see Annex 3). The cross-regional comparative analysis of the contents of the reports was based on the drawing of a mind map for each scenario following the principles of inductive thematic analysis (Braun et al., 2019), defined as a method for identifying, analysing and reporting patterns (themes) within data, so that it will be useful for conducting many other forms of qualitative analysis. The maps were constructed with three levels: FNS related themes arising along the analysis, regions where those themes were addressed, and concrete contents on those themes in those regions. The emerging themes are highlighted in bold in the narrative texts.

3. Results

The departing point of the results is the way the participants decided to name the four scenarios they down-scaled and adapted to their respective regions (see Table 4).

Next, we unfold the comparative analysis of the narratives developed by the participants in each region.⁷ The narratives are written in the present tense (the one stakeholders were asked to adopt during the discussions), as if they described the ‘current’ situation in 2050. For the sake of clarity, we indicate the region from which the contributions came using the initials of the country (see the first column in Table 4). We have also selected a name for each scenario -inspired by the regional ones-to title the next subsections.

⁷ The individual regional reports containing the outcomes of the participatory foresight workshops can be retrieved at <http://www.salsa.uevora.pt/wp-content/uploads/2019/08/D-4.1-regional-reports-on-the-future-potential160819.pdf>.

3.1. BAU scenario. Find your own way

This is a scenario comprised of the main trends (at the moment the workshops were held) in the agri-food sector and the overall economy. Although this was not indicated to the participants in the workshops, many rapidly associated this scenario with the continuation of the same processes that, from the perspective of stakeholders, are negatively affecting both SF and SFB. This is quite evident in some regions, where this scenario was related with a decline of the number of SF and SFB (LV, PL), the marginalization of SF (GR) as they have become economically unsustainable (NO), and difficulties in responding to market demands (PT). The **lack of societal awareness** of regional SF and SFB, which would also explain the low public support, is an important driver of this crisis. Interestingly, although this is a scenario in which collective action and willingness to cooperate are low, participants in the workshops tended to insist in introducing them as crucial components of almost any mechanism for SF and SFB to adapt to this complicated setting (CV, PL, PT, ES, IT). The low amount of **public expenditure** targeted at SF/SFB is considered a major constraint, as financial support is considered crucial to boost small-scale adapted Research and Development (GR) and investments in SF/SFB to undertake the necessary changes (ES), adopt technologies (UK), and compensate unbalanced competitiveness (PL).

Participants payed also attention to the **openness of international trade**, as it is expected to have differential impacts. Indeed, while the difficulties for SF/SFB to compete with cheap imported food was highlighted (NO, ES, UK), new opportunities for quality food exports from more dynamic SFB were also acknowledged in other cases (UK, RO), such as Feta cheese (GR) and wine (PL and IT).

Moreover, in a scenario where a majority of consumers are almost exclusively concerned about the nutritional and environmental implications of their **food habits**, the only way for SF and SFB to maintain their activity is to differentiate their produce through quality and the search for urban niche markets (RO, NO, LV, PT). Some SF/SFB specialize in agro-tourism, an activity that is less subject to foreign competition (ES, LV, PL, UK, PT). Though, the opposite could happen in

NO, where the countryside and nature become less accessible due to overgrowth with bush and trees. The deterioration of the **rural landscape** can take on other forms, as in the UK, where the expansion of large farms leads to the removal of hedges and trees, as well as to the reduction of environmental protection areas. In general terms, the changes of environmental conditions due to climate change have a negative impact on agricultural production (GR, RO, NO, UK, ES, LV, CV), whilst also providing opportunities to produce new crops (like wine in PL or fruits in mountain areas of ES).

The deterioration of the rural environment is happening in parallel to that of its **socio-economic fabric**. Rural areas depopulate, pushed by unemployment (GR, RO) in part explained by the growing automatization of agriculture (RO), and schools and health care facilities close (NO). The lack of farm succession is aggravated by costly environmental obligations to be undertaken by SF (LV).

In summary, this is a scenario where the relative weight of SF and SFB has kept declining, both in the regional food systems and in their role in contributing to **regional FNS**, as the shrinking number of small holdings tend to specialize in small niche food and leisure activities for urban population. The most prominent exceptions to this irrelevance seem to be NO and CV, where the availability of food in most remote rural areas (beyond the interest of big retailers and more vulnerable to food shortages) keeps depending on the few remaining local SF and SFB. Apart from these cases, there were no mentions of food or nutrition insecurity problems despite the SF/SFB decline. According to the regional reports, most of the discussions about the implications of this scenario revolved around the overall negative impact of the drivers on SF and SFB, and how this would affect the rural environment and rural communities. In short, this seems to be more a scenario of rural crisis that runs in parallel to a SF and SFB crisis rather than a food and nutrition insecurity scenario.

3.2. MIRROR scenario. Deeply re-generative

In several workshops participants rapidly framed this scenario in a specific and consistent **political setting** resulting from deep economic and socio-political changes in the previous decades: a rise of anti-globalisation populist nationalisms (ES, RO), democratic deterioration (ES) and militarisation (ES, UK), leading to dictatorships (LV), as well as breaking international agreements. This scenario could have seemed ‘dystopic’ some years ago, but it is more plausible after the recent changes in the international arena (Brexit, rise of nationalist movements, emerging protectionist policies, Covid-19 pandemic, poverty, high levels of public expenditure).

It is also a scenario where the governments implement active budgetary policies in favour of agriculture, expending public resources to boost farms’ productivity. In some regions (RO) this also means small farms are much more recognized and involved in the political arena; but in others (KN) SF/SFB are insufficiently considered and targeted by these policies.

Nevertheless, this high public expenditure can also lead to corruption and clientelism (MW, LV, GR). In Latvia, the State concentrates this support in a subset of selected farms that produce almost exclusively for public meals that the State provides to poor consumers. This creates an ‘elite’ of farms that are selected to participate in this system (though highly dependent on the State) and provokes tensions and conflict with the rest of the farms that do not receive this priority support.

The two main drivers on which an important part of the stakeholders’ debates centred were trade openness and access to technology and knowledge. The debate revolving around the implications of **trade openness** for SF/SFB reflects its differential impact across farming systems and regions. On the one hand, the restrictions to international trade impact importantly on those farming systems that are dependent on imported inputs (grain-based livestock) or have been traditionally export-oriented, either mass production (citrus, ES) or quality niches (FETA cheese GR, wine IT). Under this scenario, these sectors undergo a

deep crisis, leading to some productive reorientation (e.g. grazing-based small ruminants), and to other commodities in export-oriented sectors (fresh fruits ES, GR) where the production surplus suppresses prices. On the other hand, trade restrictions limit food imports, affecting food availability –in particular in island regions (UK and CV)- and increase food prices –which compromises access for poorer consumers (LV).

The other critical driver under this scenario relates to the difficulties for SF and SFB to **access technology and knowledge** to adopt managerial and technical innovations. Indeed, lack of access to innovations prevents the ‘reboot’ of the regional food system to adapt to this closer economy (LV), leads to a decline of farm productivity (CV, KN, MW), reduce the diversity of food supplies as SF maximise efficient specialisation (UK), leads to the use of less environmentally friendly farming practices and inputs (UK, KN, MW) and complicates the management of new pest and diseases (UK).

This scenario also gave way to many questions regarding its rural and environmental implications. Regarding the **rural impact**, this scenario gives rise to growing rural poverty (CV, UK, GH, MW, IT) and food insecurity (LV). In some cases rural population inflows are motivated by the impact of climate change on urban areas (MW, UK) or higher urban unemployment due to the dismantling of export-oriented industry (ES). In this latter case, this inflow increases labour availability and reduces salaries in rural areas what, together with the lack of technological progress, shapes labour-intensive SF.

Regarding the **environmental implications**, all the contributions point to how growing rural population, the increase of the number of SF, the weak regulatory role of the State (in particular regarding the use of agro-chemicals and the preservation of natural areas) and low consumer environmental awareness, increase pressure over natural resources and provoke environmental degradation (UK, CV, MW, GH, KN).

This scenario clearly increases -in comparison to the BAU- the role of both SF and SFB in **regional FNS**, as they become key food suppliers in settings of external trade restrictions. Nevertheless, this more prominent role does not prevent a deterioration of regional FNS, as the lack of availability and supply diversity due to trade restrictions is not compensated by SF/SFB production having constraints introducing managerial and technical changes in the face of climate change. Even the possibilities for collective action and cooperation that this scenario allows seem insufficient, from the stakeholders’ view, to compensate these constraints.

3.3. ENABLING Scenario. Hollow victory

This scenario was designed to shape what was, in principle, expected to be the most favourable situation for SF and SFB. Although the participants in the workshops were not prompted by the name (“enabling”), they rapidly understood this, which is reflected in the names given in several regional workshops (see Table 4). Yet, as it will be shown below, this combination of positive states gives rise, according to the stakeholders, to certain threats and risks. Contrary to the previous scenario, this one is not so politically framed, but in a majority of workshops it was associated with a context of economic wellbeing.

An interesting aspect of this scenario is the way it gives rise to a **differentiation of SF** within regions, more evident than in other scenarios. Indeed, the combination of public subsidies, **access to technological and managerial innovations**, more responsible consumer food demands and the different objectives of small farmers lead to a diversity of pathways. This is quite evident in PL, where public subsidies are devoted to supporting the retirement of small farmers. This has facilitated the enlargement of some neighbouring SF and has also encouraged (together with additional financial support) the setting-up of new farmers, particularly newcomers from urban areas, well-educated and with entrepreneurial skills. In other settings, this enabling scenario supports the market integration of subsistence farms (CV). However, the strong financial support and social assistance are also maintaining a large group of farms that are dependent on public support, do not

develop a market-oriented activity and produce exclusively for subsistence (PL). In other regions (GR, ES), self-provisioning SF and those with less innovation capacity tend to disappear. There are more hobby farms (UK). In other cases, the high number of SF pushes some of them to specialize in non-food agricultural activities (LV). As a consequence of this differentiation, some conflicts between farmers arise, as between natural farming innovators and high-tech innovators (LV), industrial and neo-pastoral farmers (NO), expanding newcomers and ‘inefficient’ subsistence farmers (PL).

Again, **trade restrictions** are considered a source of vulnerability in several ways: for export-oriented farming systems (GH, GR, UK), or not allowing regional food availability in times of low regional production (ES, UK). Participants in the UK workshop particularly emphasised the way climate change complicates food production both inside the region and abroad which, together with the closing of trade relations, would bring on a situation of food shortages.

The **weaker regulatory** activity of public authorities does not result in a deterioration of **food safety**. This is safeguarded because the strong collective action (eased by the proximity between actors) and the high awareness of consumers fuels the creation of networks and traceability systems that guarantee food safety (ES, LV, GR, NO). There is a kind of revival of short food supply chains and local trade (PL, LV, ES, GR) where conscientious **consumers** play a driving role in their creation and development. In this scenario, diets change. They become more adapted to regional products and seasonality (LV), more quality demanding (PL, GR, NO) and less meat-based –which means less sheep production in the UK and less grain-fed livestock in NO. The insularity of UK introduced, yet, some dissonance in this positive view, as the trade constraints reduce the diversity and quality of food available, consumers become totally dependent on regional food and farmers, which also damages farmers’ image.

In contrast, **weak regulation** of agricultural production is in some cases understood as a risk for the **environment**: increased use of agrochemicals leading to biodiversity loss (UK), lack of zoning regulations (NO) that will provoke the conversion of farmland to other uses (urban, industrial) reducing the land available for food production and making it “harder to find a quiet piece of untouched nature”. However, this scenario contains other positive implications for the environment, due to the increase of agriculture in those regions where farmland abandonment increases the risk of forest fires (PT, ES, GH).

The **rural implications** of this scenario received attention in the workshops. In general terms, this is associated with growth of the rural population (one of the elements of the scenario) and a dynamic rural economy (ES, CV, LV, GH, GR, NO), in some cases it is linked to the spread of non-food processing of agricultural products and by-products (ES, CV, LV). Jobs and housing are given effective prioritisation (UK), and rural communities are thriving (NO). However, this is also increasing pressure over land (CV) and stronger land use competition (GR, UK).

In general terms, this is a scenario that, similarly to scenario MIRROR, increases the **role of SF and SFB in regional food systems**. But unlike MIRROR, this one does it in a way that improves **regional FNS** in most of the cases, as dynamic SF/SFB can increase and diversify food supply (though in some regions imported exotic food will not be available anymore: ES, UK) to compensate for the reduction of food coming from abroad. There are, yet, some black spots in this overall positive setting, which become potential sources of vulnerability. The necessity of increasing productivity is linked to intensification (ES, UK, GR) that leads to the spread of new pests and diseases (ES) and pollution (UK). The impact on food prices is uncertain, from price increase and lower affordability due to imports restrictions (ES, UK), to oversupply of food and price decline due to surpluses that cannot be exported (GH, CV) – which could lead to farmers’ poverty and smuggling activities.

3.4. DISRUPTING scenario. “Ayayoo world” (unbearable)

This fourth scenario is exactly the opposite to the previous one, so that it shapes what could be considered, in principle, the most disrupting context for SF and SFB. This is precisely the way it was assessed by the participants in the workshops. However, along the discussions some interesting reflections arose. The report from the UK region clearly illustrates what happened in several workshops.

“The parameters of scenario 4 provoked an immediate, negative reaction with participants equating this future with more negative characteristics of the present in the ascendancy. ... Living in scenario 4, with neither financial support nor collective action helping matters, made any positive contribution of small farming difficult to envisage but as the discussion progressed more of a nuanced view began to emerge.”

This nuanced view is also reflected in some of the names given to this disrupting scenario in other regions: “Phoenix” (LV), “Back to basics” (NO) or “Hope for better future” (PL). In other cases the very title opens the door to the survival of some kinds of SF and SFB, like “Disappearance amidst duality” (GR) or “... neo self-sufficiency” (IT).

Contrariwise to the previous scenario, this one was framed in a **context of crisis**: economic (“The continuation of economic crisis”; GR), social (“societal crisis that have happened and replaced prosperous times in Norway”), and political (“lack of real democracy in this society”, ES; “the strong militarisation of the State”, PT).

Many of the narratives start focusing on the **high concentration of the food sector** that characterised this scenario. Large operators – in particular retailers - dominate and develop vertical integration strategies (PT, RO). Economies of scale (UK, PL) and fierce price competition drive out most of SF and SFB from the market, whose holders become unemployed (GR) or salaried labour in large farms (RO) or migrate to urban centers (LT, ES, PT).

Other factors coalesce to aggravate the SF/SFB’s situation. The **strong legal** (health, fiscal, environmental) **requirements** set up by regulators to food actors become a barrier for small businesses to operate in formal markets (PT, NO, GR, UK, PL, KN), as they mean – in relative terms - higher costs for them in comparison to big companies. This is similar to the impact of international trade liberalization, which weakens SF and SFB due to their difficulties to compete with low price food imports, but also opens new opportunities in few cases, for example, cereal producers in MW due to the removal of export bans, or for SFB that can retail imported food although this erodes their relationship with local SF (GH).

Nevertheless, despite this generalised crisis for SF and SFB, in some contexts these small entities could continue occupying a space for survival at the ‘fringes’ of the dominant food system, where they play a crucial role in securing access to food for some **groups of consumers**. This is the case for instance in remote rural areas in NO, where SF and SFB supply food within informal/illegal markets. Furthermore, new forms of small-scale urban and periurban agriculture appear –also informally-in some regions (UK, NO). In other cases, although the demand is massively oriented towards cheap low-quality food, minority niches remain, so that few SF and SFB can supply a small segment of demanding consumers (IT, ES, GR, LT, UK). In any case, there is a generalised **polarisation of holdings** as middle farms and businesses disappear and only a subset of self-provisioning farms survives in this scenario (CV, IT, NO, UK, ES). There are also some mentions of a return to farming in more remote areas –“return to the hills” (UK)- where climate change is allowing novel production (NO), showing that these SF have some mechanisms of resilience due to their flexibility and adaptive capacity (UK) and their creativity in *mangesyleri* (puzzling with many different activities such some farming, some forestry, some hunting and fishing, some tourism activity, etc.; NO).

It is also striking how some ‘absent’ conditions are given great relevance. This is the case of **collective action**, which receives attention in the majority of regional reports. Some reports emphasise how this scenario is characterised by the predominance of individualism and self-

preservation (ES, PT, NO). Cooperation and collective action is very much missed by stakeholders as it is perceived as an essential ingredient for the resilience of SF/SFB (LV, ES, UK, PL, RO, NO, CV, KN, MW, GH).

As a consequence of the accumulation of negative factors, the **impacts of climate change** on SF/SFB receive more attention than in previous scenarios, as small holdings are expected to suffer more deeply (PL) the implications of water shortages and desertification (GR, RO, ES, KN, CV). Nevertheless, some Northern regions do consider that the new climate conditions could allow new areas to become agriculturally productive (UK, NO).

In short, this is a scenario of a generalised **food crisis** that goes beyond the difficulties for SF and SFB. Diets have changed towards processed cheap low-quality food (GH, PT, UK, NO, GR, RO), giving rise to obesity and food-related illnesses (GH, PT) and food poverty (PT). Moreover, food stability is also hampered by livestock diseases (UK).

4. Discussion

The 13 regions considered in this analysis, in 13 different countries and two continents, have marked differences in relation to their SF and SFB, as well as their geographical, agroecological and socioeconomic traits. Moreover, differences can be also found within regions, where several farming systems and value chains (from local to foreign markets) coexist. Most of these regional nuances have been shown in the narratives above and will also be discussed below. Nevertheless, the major result of the comparative analysis carried out is precisely the cross-regional consistency of regional narratives with regard to the different roles of SF and SFB in regional food and nutrition security under alternative future scenarios. This allows for the identification of a pattern that addresses two interwoven questions: (i) what is the overall status/situation of FNS in the region and (ii) what role SF and SFB play –if so– in such situations. [Table 5](#) synthesizes the position of each scenario regarding these two questions.

Stakeholders foresaw a relevant role of SF/SFB on regional FNS in three out of four scenarios used in this exercise. However, only in one of them (the “enabling” scenario) did this contribution lead to a good level of regional FNS. In the two other scenarios, the role of SF/SFB remained limited to supplying a minority of consumers (those in remote rural areas outside the coverage of big retailers or a minority of vulnerable groups unable to afford food from conventional value chains). Interestingly, the discussions around BAU scenario did not give rise to a generalised concern on its impact for regional food security, but to the perception that the primary ongoing trends of the food system would keep weakening SF and SFB, and the role they play in rural areas. This could be also related –particularly in European countries– to the stakeholders’ perception that FNS was not a big issue when the workshops were organised, which could have outweighed the centrality of FNS in the BAU scenario.

From the several drivers used in the scenarios, two of them deserve particular attention. First, the drivers’ relevance stems not only from how they intervene when they are present, but also from the extent to which participants missed them when these components are absent or low in a given scenario. From the several ‘negative’ conditions for SF and SFB of the BAU and Disrupting scenarios, participants missed in particular ‘collective action and capacity/willingness to cooperate’,

because they considered this an essential one to overcome the rest of negative drivers of these scenarios, i.e. as a mechanism of resilience. This is quite evident when comparing the attention paid to collective action in the scenario narratives, since it seems to receive more attention when it is absent/weak than when it is a component of the scenario. Second, the lack of access to new technological and managerial tools is perceived as suppressing the adaptive capacity of SF and SFB to overcome the negative impacts of some drivers, making this driver prominent in the frame of the scenarios where access was constrained. This is very much in line with the claims made throughout the SALSA project by a majority of stakeholders, and connects with the concerns about the impacts of climate change. According to our results, these stakeholders are less concerned about the impacts of climate change on SF and SFB –as it would be a given (predetermined) element– than about the capacity of SF/SFB to adapt to it, including both the capacity to shift production practices and the ability to respond to climate-driven changes of consumer demand (see [Arnalte-Mur et al., 2020](#)).

Besides these, another point of cross-regional convergence arose in a somehow unexpected way –as it was not the objective of the analysis. Although the scenario exercises were focused on the implications on regional FNS, the stakeholders who participated made frequent mentions to the impact of SF/SFB challenges on the broader rural setting they are located. Indeed, several topics appeared regarding this ‘rural’ linkage: SF’s role in maintaining agricultural employment and preventing outmigration, the impact of SF dynamics in land occupation and the preservation of traditional landscapes and environmental quality, or the synergies between SF, SFB and other economic activities. These ramifications of the discussions reveal that the concern about the future of SF and SFB goes beyond their role as food producers, processors or retailers, and also revolve around their role in supporting rural communities and the rural environment. This is in line with the view of some European studies that tend to emphasise precisely the role of SF “in supporting rural employment and maintaining the social fabric of rural areas and thus contribute to the objective of balanced territorial development” ([European Commission, 2011](#): 1), so that support for these farms is necessary in order to maintain ‘lights in the windows’, particularly in the remoter rural ([Shucksmith and Rønningen, 2011](#)).

As mentioned above, apart from these two major communalities, the analysis has allowed to identify some context-specific patterns in the response to some of the scenario drivers. First, according to the stakeholders, climate change is a source of threats in a majority of regions and farming systems (lower yields due to worst climatic conditions), but it has been also pointed out as an opportunity, in particular in those areas where the increase in average temperatures could allow for the cultivation of new crops (mountain areas, colder regions). In any case, there is consensus on emphasizing that the capacity to overcome the CC risks or seize CC opportunities is strongly linked to the access to small-scale tailored technological and managerial solutions. Second, international trade openness/protectionism impacts differently in two senses: (i) from a geographical point of view, trade restrictions are perceived as a source of threats for food availability in insular regions (UK and CV), (ii) from the point of view of value chains, many SF/SFB are closely connected to and dependent on foreign markets (either as export-oriented or depending on imported inputs/technology), which also overcomes a conventional view of small-scale exclusively locally embedded. Third, there are some African specificities that deserve attention: (i) International trade is in general seen more as an opportunity than a threat to SF/SFB. Trade restrictions would constrain export opportunities for SF/SFB or even hinder food imports –and therefore food availability– in some cases; and (ii) there is a common concern about the way weaker environmental regulations could negatively impact natural resources, in particular in the case of growing rural population pressure.

One of the challenges in conducting participatory scenario planning is the tension between explorative and normative analysis ([Oteros-Rozas et al., 2015](#)). Although the focus of the scenario discussions was explorative –i.e. aimed to discuss what would happen under different

Table 5
The role of SF and SFB in FNS in different scenarios.

		How is the situation of FNS in the region?	
		At risk	Guaranteed
How SF/SFB do contribute to FNS?	Importantly	Mirror Disrupting	Enabling
	Weakly		BAU

Source: Authors’ elaboration.

future circumstances, the participants' normative views regarding the desire of SF and SFB to survive and reinforce their contribution to FNS was underlying the debates. This is quite evident in the names given to the scenario, which reflect stakeholders' preferences. This also affected the stakeholders' engagement and participation. There was an underlying normative aim in the research project, as it was explicit in the project objectives,⁸ which pursued the identification of "the mechanisms which, at different scales, can strengthen the role of small farms in food systems". The process to engage participants was as inclusive as possible, paying attention to profiles supposedly less connected to SF and SFB (e.g. big retailers, agribusiness associations). However, the topic was more appealing for some invited stakeholders than for others, so that a majority of participants shared –despite their diverse profiles (actors from all along the value chain, public administration, researchers, civil organizations)- that overall aim. Could this normative bias have conditioned the outcomes of the regional scenario 'exploratory' narratives? In our view, not in a way it could have distorted the key elements of the narratives. The workshops were designed and facilitated with the aim to concentrate the 'normative' component of the foresight in the identification of objectives and the development of action plans (which are not part of this paper, see Fig. 1).

5. Conclusion

The future of food systems will be affected by processes of global change and unexpected shocks (Tendall et al., 2015). In the face of the complexity, instability and unpredictability of contemporary life (Störmer et al., 2020), foresight allows for a better understanding of what could happen and how to deal with it. For instance, the COVID-19 pandemic has been argued to reinforce the necessity of tackling food-related foresight studies (Mora et al., 2020; Poppe, 2020).

The use of participatory methods has been argued to be a promising next step for foresight studies on European agriculture (Debonne et al., 2022), but it is also very dependent on the participants' anticipatory systems. As Miller (2015: 513) claims, "today's dominant anticipatory systems and processes impede the identification and invention of discontinuity", i.e. to anticipate what does not yet exist. If the workshops were conducted now, they would be conditioned by the new international setting – not only the pandemic and but also relevant geopolitical changes like Brexit, the conflict in Ukraine or the disruptions in global value chains. Nevertheless, this study still helps capturing the new global circumstances. Thus, income levels, international trade constraints and availability of new technologies and knowledge – e.g. to overcome the difficulties of food logistics and retailing - were all drivers included in the shaping of the scenarios considered in our analysis. Interestingly, the Mirror scenario, originally defined as the opposite of the BAU, include components - such as international trade restrictions, growing poverty, high levels of public expenditure, pressures and perspectives of weaker environmental restrictions to avoid availability constraints - that would be considered in a the definition of a BAU scenario today. The strength of foresight is precisely to face the stakeholders with scenarios that some years ago may have been considered very unlikely, and to capture their discussions about those futures.

The cross-regional comparative scenario analysis conducted in this research has proved to be a consistent foresight exercise. In spite of the aforementioned tension between adopting a common point of departure for all the regional workshops and embracing the specificities of each regional setting, the approach has revealed the way these specificities intermediate the impacts of the same drivers in diverse settings and farming systems. Thus, although common patterns have been identified on the repercussions that each scenario entails for SF and SFB, FNS and rural areas in different countries, some impacts were found to be context specific –climate conditions, remoteness, insularity or connection with

foreign markets being some of the factors that explain the regional differences.

An unexpected outcome from the workshops was the participants' need to first frame them in a broader socio-political context, in order to unfold the impacts of the scenarios on SF/SFB and FNS. This framing would have allowed participants to better understand and make coherent and meaningful those scenarios presenting more challenging and radical assumptions about the future (in particular the scenarios Mirror and Disrupting). The review made by Zurek et al. (2021) finds that foresight studies that provide a set of scenarios to describe plausible future conditions address in more detail the systemic context where they take place. While we did not provide this backdrop, participants needed to create it.

Our analysis has pointed out that depending on the scenario, the role of small farms and small food business in securing regional FNS could range from very relevant -which would require the setting up of an enabling combination of drivers, among them, a purposive governance framework-to minor. Nevertheless, even in the latter situation where these farms and businesses would be marginalised, they seem to be relevant to guarantee FNS to minority and vulnerable groups. Therefore, the actions aimed to confront the several food challenges must pay attention to the role of small farms and businesses and the way they contribute to food and nutrition security of certain groups of consumers or in certain regions. This stresses the necessity for foresight on food and nutrition security to deepen into the exploration of the relative situation of different types of actors, i.e. who are the potential winners and losers in the alternative scenarios.

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Data availability

Individual regional reports are available at the web link mentioned in the manuscript

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Appendix A. Supplementary data

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