Cerrada-Serra, P.; Moragues-Faus, A.; Zwart, TA.; Adlerova, B.; Ortiz-Miranda, D.; Avermaete, T. (2018). Exploring the contribution of alternative food networks to food security. A comparative analysis. Food Security. 10(6):1371-1388. https://doi.org/10.1007/s12571-018-0860-x

TRANSMANGO Rebuilding Food Systems Special Section.

Exploring the contribution of alternative food networks to food security. A comparative analysis[1]

Pedro Cerrada-Serra[2] (pedcerse@esp.upv.es)
Department of Economics and Social Sciences
Universitat Politècnica de València
Camino de Vera, s/n,
46022 Valencia (Spain)
Tlf. (+34) 963877000 Ext. 74722
https://orcid.org/0000-0002-5469-4808

Ana Moragues-Faus (MoraguesFausA1@cardiff.ac.uk)
Cardiff School of Geography and Planning
Sustainable Places Institute, Cardiff University
33 Park Place Cardiff
CF10 3BA Wales (UK)
https://orcid.org/0000-0001-7926-6394

Tjitske Anna Zwart
SFERE, Department of Earth and Environmental Sciences
KU Leuven
Celestijnenlaan 200E
3001 Leuven (Belgium)

Barbora Adlerova
Cardiff School of Geography and Planning
Sustainable Places Institute, Cardiff University
33 Park Place Cardiff
CF10 3BA Wales (UK)

Dionisio Ortiz-Miranda (dortiz@esp.upv.es)
Department of Economics and Social Sciences
Universitat Politècnica de València
Camino de Vera, s/n,
46022 Valencia (Spain)
http://orcid.org/0000-0002-6884-8927

Tessa Avermaete

[1] Cite as: Cerrada-Serra, P., Moragues-Faus, A., Zwart, T.A., Adlerova, B., Ortiz-Miranda, D., Avermaete, T. Food Security. (2018). https://doi.org/10.1007/s12571-018-0860-x
[2] Corresponding author

SFERE, Department of Earth and Environmental Sciences
KU Leuven
Celestijnenlaan 200E
3001 Leuven (Belgium)

1. Introduction

Food security has featured prominently in the political and academic agenda since the 2007-08 food and financial crisis. Food (in)security has become a challenge not only for developing economies but also for High Income Countries as a consequence of rising levels of food poverty, inequalities and state retrenchment from social security and welfare services provision (Arcuri et al. 2016; Moragues-Faus and Marsden, 2017). In the case of Europe, Loopstra et al (2016) found economic hardship - i.e., rising unemployment and falling wages - strongly associated with greater food insecurity. Morgan and Sonnino (2010, 209) summarise these new and highly complex trends under the concept of the *New Food Equation*, a "response to burgeoning prices for basic foodstuffs and growing concerns about the security and sustainability of the agri-food system".

In parallel, food scholars have actively investigated drivers, initiatives and policies supporting the development of alternatives to the dominant industrialised food system and its detrimental environmental and socio-economic impacts (see compilations Goodman et al., 2012; Tregear, 2011). An important part of this work has been developed under the term Alternative Food Networks (AFNs)**.** Although AFNs resist a consensual definition, they are generally characterised by: (1) short distances between producers and consumers; (2) small farm size and scale and organic or holistic farming methods; (3) the existence of food purchasing avenues such as food cooperatives, farmers markets and community supported agriculture; and (4) a commitment to the social, economic and environmental dimensions of sustainable food production, distribution and consumption (Jarosz, 2007). However, critical scholars have warned about an idealization of AFNs, since in many cases they can mask potential environmental impacts and reproduce social inequalities (Moragues-Faus & Marsden 2017), for example by creating exclusive landscapes for highly educated and well-off consumers, or concealing exploitative labour conditions (Goodman, 2004; Guthman, 2004; Moragues-Faus, 2017a). Since the 2008-2009 financial and food crisis, scholars have progressively moved from a celebratory analysis of AFNs - in terms of their environmental, social and economic contribution to sustainable development goals – to develop more critical accounts of these initiatives (Moragues-Faus and Marsden, 2017). However, to date, few studies have directly addressed the contribution of AFNs to food security in the Global North, that is, how these alternatives contribute to delivering healthy, culturally appropriate food for all in discursive, political and material terms (Goodman et al., 2013).

This paper aims to establish new linkages between food security debates and critical AFNs literature. For this we rely on new food security conceptualizations by mobilising a place-based approach to food security (Sonnino et al., 2016), which provides a useful starting point to assess AFNs' links with food security outcomes. The place-based approach to food security strives to overcome the limitations of former conceptual frameworks which "tend to be locked into fixed levels of scale and generalised as well as oppositional assumptions" (p. 477) by proposing a more integrated and multidimensional approach. However, this novel approach remains in the realm of the theoretical and therefore it is paramount to contrast its theoretical premises with empirical data. For that purpose, we conduct a comparative place-based analysis of initiatives of three different European contexts –Cardiff city-region (UK), the Flemish Region (Belgium) and the peri-urban area of the city of Valencia (Spain) - to identify and characterise the ways in which AFNs contribute to delivering food security.

The remainder of the paper is organised as follows. Section two describes the conceptual framework, which establishes links between recent food security debates and the AFN

scholarship. Section three describes the methodological design. Section four introduces three case studies. We then conduct a cross-country analysis of the three cases in order to identify how different AFNs contribute or hinder food security outcomes. For that purpose, section four is organised into the four major components of food security: availability, access, utilization and stability. Section five links the main results of the analysis with novel food security frameworks, highlighting three key aspects that emerge from the analysis of the cases: i) how AFNs weave a more localised socio-economic fabric that creates new relationships between food security outcomes and specific territories, ii) hybridization processes within alternative but also conventional systems and iii) the role of advocacy and collective action at different levels. The final section of the paper contains the concluding remarks.

2. Understanding the capacity of AFNs to deliver food security outcomes

The concept of food security has "evolved, developed, multiplied and diversified" (Maxwell, 1996, 155) since the first World Food Conference in 1974, where it was originally defined solely in terms of food supply. Although for a long time food security was equated to the availability of enough calories to feed an increasing population, today it is generally recognised as a multidimensional phenomenon (Clay, 2002). The Food and Agricultural Organization of the United Nations coined in 1996 the most widely used definition of the concept today, stating that *"food security [is] a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life"* (FAO, 2001). This definition was operationalised by identifying four major components that need to be fulfilled simultaneously in order to deliver food security:

- Availability: the physical existence of sufficient quality food, determined by domestic food production, domestic stocks, food imports, and/or food aid.
- Access: resulting from the combination of economic endowments, physical access and socio-cultural resources that allow the purchase or acquisition of appropriate food products for a nutritious diet.
- Food utilization: refers to how the body utilizes various nutrients in foodstuffs as well as food preparation and hygiene practices, sound eating habits, a diverse diet and proper intra-household distribution of food.
- Stability of the other three dimensions over time, stressing the temporal element of food security.

More recently, experts warned that food security necessarily requires nutrition security, that is, "access to an appropriately nutritious diet, coupled with a sanitary environment, adequate health services and care to ensure a healthy and active life for all household members" (Radhika & Hemantha, 2017, p.35). The fundamental connections between the two terms has resulted in the use of food and nutrition security (FNS), as a concept that emphasizes both the food and health requirements for populations (Weingärtner, 2005).

In academic spheres, the concept of food security has been further explored and also challenged. Recent contributions have pointed out the use of food security as a consensus frame (Mooney and Hunt, 2009). Indeed, within the food system, actors deploy the term food security to highlight different challenges in the food system and, accordingly, propose divergent solutions. For example, some stakeholders stress low food production as a main concern and therefore the need to intensify agricultural practices while others point out power imbalances as the

generators of food insecurity, thus seeking food governance changes (see for example Brunori et al., 2013; Kirwan and Maye, 2013; MacMillan and Dowler, 2012). In order to progress this fractured food security debate, academics have suggested exploring potential bridging concepts such as justice or governance (Moragues-Faus, 2017b). Of particular interest is the Sonnino et al. (2016) proposal to develop a relational approach that brings together these different narratives by focusing on place-based food dynamics. This place-based approach calls for greater attention to three key parameters (Sonnino et al., 2016): (i) an understanding of the diversity of food security conditions as constituted by the *flows* of knowledge, materials, capitals and people that take place in and between food systems; (ii) a focus on *re-localization* processes that contributes to unveiling how different food initiatives can create (by active horizontal and vertical network and governance building) a transformative basis for wider changes in food system, and (iii) a progressive sense of place that integrates *discourses, scales and interdependencies* between geographies as key elements configuring specific food security dynamics.

While this new place-based conceptualization remains overly theoretical, key food security practitioners are also proposing shifts on current food security definitions. A key example is the joint initiative launched by OECD, FAO and UNCDF (2016), to adopt a Territorial Approach to Food Security and Nutrition Policy. The drive for this shift from a national to a territorial perspective within these organizations emerges from the recognition that disparities in food security are increasing, both among countries and within countries, and particularly concentrated in low income inner-city neighbourhoods, large metropolitan regions, and remote rural regions. FAO officers Cistulli et al., (2014) state that a territorial approach – defined as public intervention "which builds on local capabilities and promotes innovative ideas through the interaction of local and general knowledge and of endogenous and exogenous actors" (Barca et al., 2012:149) – leads to a better understanding of the diversity, cross-sectoral and context-dependent nature of food security challenges and therefore provides the grounds for more efficient policies and interventions. Similarly, the Civil Society Mechanism of the Committee on World Food Security is championing the concept of territorial food markets as a means to recognise the spaces where small-scale producers trade and their potential to address food insecurity (CSM, 2016).

Territorial and place-based approaches to food security build partially on the contribution of alternative food networks (AFNs) studies to the development of more sustainable and just food systems. Indeed, according to Marsden et al. (2000), Whatmore et al. (2003) and Moragues-Faus (2017a), alternative food networks are an attempt to re-socialise or re-spatialize food by establishing new and shorter relationships between producers and consumers based on trust, the redistribution of value in the food chain, as well as the establishment of new forms of political association. These AFN have been considered as a place of resistance to the placeless, unsustainable, and unjust industrialised food system (Murdoch et al., 2000; Murdoch and Miele, 1999). AFNs have also been considered instrumental to provide fairer returns for producers, develop high quality products, minimise environmental impact of food production through organics and low chemical input agricultural practices, and embed territorially food production and consumption by reconnecting actors with specific territories (Ilbery and Maye, 2005; Moragues-Faus and Sonnino, 2012; Renting et al., 2003; Sage, 2003).

AFNs research has enjoyed a privileged position at the forefront of food studies in the last decades, with an ever increasing number of case studies conducted across geographies (see Tregear (2011) and Goodman et al., (2012) for recent reviews). However, much of the research on AFNs has concentrated on the Global North and in many cases has provided a celebratory

analysis of these initiatives in terms of their environmental, social and economic contribution to sustainable development goals (Moragues-Faus and Marsden, 2017). For example, some AFNs studies have uncritically associated 'local' food to sustainable development outcomes (Brown and Purcell, 2005). Similarly, an excessive focus on relocalization processes has obscured key interdependencies at play in agri-food systems (Lamine, 2015). Critical scholars have argued that together with the 'local', other attributes of AFNs such as fair trade schemes or environmentally friendly certifications could in fact contribute to capitalist development, exclusion of vulnerable farmers and low-income consumers, and labour exploitation (Goodman, 2004; Guthman, 2004; Ortiz-Miranda and Moragues-Faus, 2014). Furthermore, "in many cases these 'ethical' and 'sustainable' initiatives not only conceal potential environmental impacts and reproduce social inequalities, but may also be fostering an infertile consumer politics by deepening individualist practices and reproducing neoliberal configurations that hinder social change" (Moragues-Faus, 2017a, p. 456).

Despite the breadth of the AFN analyses, few studies have actually assessed their contribution to food security in discursive, political and material terms (Goodman et al., 2013). A notable exception is the work done by Dixon and Richards (2016), who conducted a macro analysis of the Australian AFNs' contribution to food security based on previous studies on these alternatives. They conclude that, in a governance context oriented to deliver cheap food, domestic food security (FS) will not be addressed through the spread of AFN due to their relatively small scale and their socio-cultural dynamics (that include attracting the more wealthy groups). While this meta-analysis focuses on the price affordability and production of foodstuffs, we argue that a holistic analysis of the AFNs' contribution to food security needs to address simultaneously all four dimensions (availability, access, utilization and stability). Furthermore, given the multiplicity and hybridity of these initiatives (Sonnino and Marsden, 2006; Venn et al., 2006), it is important to populate the debate on AFNs and food security with new empirical case studies that can provide evidence to reshape exiting initiatives as well as informed food security policies, from the local to the international level. In this paper, we explore how three AFNs support or hinder the delivery of food security outcomes by analysing their contribution to these four dimensions. This analysis allows to identify key elements in which food security debates hinge and provide new insights to ground conceptual discussions on territorial and place-based food security approaches.

3. Methodology

Research design was driven by the need to go deeper into a topic (the contribution of these AFN to food security) that has not been tackled in previous studies. The methodology was therefore based on a two-step data collection process. Firstly, we collected and analysed secondary data from the three initiatives. These data were instrumental in understanding the nature of the AFNs, their contexts and backgrounds. Secondly, fieldwork was carried out –between April 2015 and May 2016- combining three complementary approaches: semi-structured in-depth interviews, participatory observation and participatory workshops. The methodological steps in each case study are described below.

In the Cardiff case study, secondary sources comprised the available data on food cooperatives operating in the area. Documents examined included: The Rural Regeneration Unit's website, RRU Programme Overview 2012 – 2015, and Interim Reports: Cox 2015, Jones 2012, Elliot, Parry & Ashdown-Lambert 2004. The Flemish case study reviewed the existing literature on *Voedselteams* (Bauler et al., 2011; Crivits & Paredis, 2013; van Gameren et al., 2015).

Additionally, Voedselteams provided secondary data related to the growth of the organization since its foundation in 1996. Secondary data for the Valencia case study included Regional Government policy (GV 2016); the Valencia City Council action plan for agriculture; internal documents: *Plataforma per la Sobiranía Alimentària del País Valencià*; Fem L'horta Possible inventory of initiatives (in the last 5 years); a participatory action research on food buying groups (Utópika & ISF 2013); and publications that contribute to understanding the socio-economic dynamics of the study area, such as Romero & Francés (2012).

The research was grounded on primary data collected through several common techniques of qualitative social research. Semi-structured in-depth interviews were conducted in all three case studies. To select the interviewees, a mix of snowball sampling and expert sampling was used. In Cardiff, interviews were conducted in eight cooperatives with the lead volunteer, other volunteers and customers. Two area coordinators, the general project manager and one local wholesaler supplying over 70 co-ops were also interviewed. In Flanders, 34 structured interviews were conducted with team coordinators. An additional set of semi-structured interviews were later conducted with eight key actors (coordinators, logistical planner, farmer and external experts). In Valencia, 22 interviews were conducted with key actors including: local producers, local and regional policy makers, consumers (such as local buying groups and promoters of local food in school canteens), civil society organizations and local experts. A focus group was also organised in Valencia with members of a buying group.

Participant observation was also used for data collection, including attendance at the Voedselteams' general assembly to present and discuss the preliminary research results; participation in Cardiff's Food Policy Council and associated activities; attendance at two local farmers' markets and several local food products promotional street markets in Valencia and participation in the working group promoted by the Valencia Council to set up a local Food Council. Researchers have also been engaged as users in some of the analysed initiatives.

Finally, a two-session participatory scenario workshop (following Vervoort's guidelines, 2014) was organised in the three case studies. The methodology combined backcasting and the construction of scenario narratives. Between 15 and 25 people with different profiles (e.g. members of the AFNs, researchers, policy makers, other stakeholders) attended the workshops.

The selected initiatives share their ambition to improve food security at the local or regional level and they are all shaped by regional conditions. A comparison of the initiatives will help to identifying the key indicators for the success of such small-scaled initiatives in contributing to FS. Furthermore, the role of the various stakeholders - including consumers, bridging organizations, policy makers, and producers – differs across the initiatives. A comparison shows the added value of the involvement of these actors in the success of the initiative, identifies common bottlenecks in the initiatives and formulates policy recommendations which could enhance the contribution of the initiatives in terms of delivering food security.

4. Alternative food provision initiatives in three European cities

In this section we analyse different AFNs in three case studies: Cardiff in the United Kingdom, the Flemish region of Belgium, and the peri-urban area of the city of Valencia in Spain. These AFNs present differences in terms of their origin and the objectives pursued, the role of the public sector, their degree of organization and the scope of their territorial action, as outlined below.

Cardiff food cooperatives

The Cardiff case study revolves around community food cooperatives (co-ops from now on). Despite the name, co-ops are not co-operatives per se, in a sense that they are not autonomous enterprises democratically governed and owned by its members. Food co-ops actually operate as buying groups, created at the initiative of the Welsh government with the goal of offering healthy and affordable fresh produce to all –in particular more vulnerable groups-, while fostering local businesses and increasing the resilience of local supply chains. The project was established as a pilot programme in North and South-East Wales in 2004. Funded by the Welsh Government, it has been run by the Rural Regeneration Unit (RRU), a social enterprise with previous experience in running food co-ops in Cumbria, England. In the beginning, the project targeted socially deprived areas included in the Community First programme,[3] in order to fulfil in part the governmental commitment to tackling inequalities in health (Elliot et al 2004) as a report published earlier in 2004 revealed that only 41% of the Welsh population eat the recommended 5 portions of fruit and veg a day (Bourne 2012). Focusing on enabling access to, and encouraging consumption of, fresh produce, it also aimed at supporting local producers and wholesalers both in rural and urban areas of Wales. During the years, the focus has widened beyond socially deprived areas and until now, the RRU has helped to establish and support over 300 co-ops across Wales. At present the RRU does not establish new co-ops and instead works with a main group of 140 co-ops with the aim of improving their sustainability (Moragues-Faus, 2016).

Currently, we can distinguish between two types of food co-ops, community food co-ops and school food co-ops. They both run on the same basis, with two main differences: the food co-ops in schools are innovatively run by the pupils themselves, with an adult as a lead volunteer. They are also usually closed during school holidays, which affects the availability of fresh food and related temporal sustainability of the initiative. The community food co-ops work by linking volunteers in running the co-op, in most cases affiliated with an already existing community initiative such as churches, community programmes or housing associations, to local suppliers who may be either producers or wholesalers. Customers select their veg and fruit bag from among several options and pay in advance for the order made, which is collected from a stall open for a couple of hours on a designated day the following week. In 2012 food co-ops also started to offer 'Additional Welsh Produce", linking consumers to local producers of milk, eggs, meat or bread.

Food co-ops represent an alternative food network dedicated to deliver affordable healthy food for low income families. Despite being promoted by a public programme, food co-ops have progressively evolved and differ significantly from one another, with community groups taking the lead in organising the meetings and procuring the food. Funding from Welsh government for core support stopped in 2016 and therefore, just the more resilient co-ops - with dedicated volunteers and embedded in community services and activities such as churches or social services programmes – will continue their activities. Nevertheless, austerity measures have resulted in cuts in social services programmes, weakening these supporting organizations and therefore the social infrastructure that allows the co-ops to function. Overall, the provision of affordable fresh fruit and vegetables constitutes an ongoing key challenge in the UK, where there are increasing pockets of food poverty and health inequality (Oxfam and Church Action, 2013). However, the expansion of discounters such as Lidl puts additional pressure on

[3] Communities First is a regeneration programme funded by the Welsh Government operated in the most deprived communities in Wales, according to the Welsh Multiple Deprivation Index.

community initiatives by offering convenient cheap food, as reported by co-ops losing members in Cardiff.

Food teams in Flanders

Voedselteams (in English, food teams) were set up in 1996 in Leuven, by a group of individuals working for three non-profit organizations (Zwart et al., 2016): an educational organization (Elcker-Ick), an NGO focusing on food security (Wervel) and an NGO that was concerned with sustainable agriculture in the Global South (Vredeseilanden). Voedselteams were inspired by Japanese Seikatsu, which consist of consumer teams that organize food purchase and storage. Voedselteams was thus started based on a perceived ideological need to change unsustainable mainstream agro-food practices and the effects of globalization on agriculture (Hubeau et al. 2015). The initiative was not meant to oppose the mainstream system through lobbying or protesting, but rather by making 'sustainable' alternatives available.

The first Voedselteams pilot plan ran for a year, during which consumers made contact with local farmers and spaces to set up depots to deliver the produce to each team. The pilot turned out to be a success. In the process of expansion, the Belgian food safety crises in 1999 and 2003 resulted in an increased participation. In 2015, the organization consisted of around 175 teams and 2.900 members over five regions. A team is generally made up of between 12 and 30 households. Food purchase and delivery is jointly organized by the food teams. Although Voedselteams share common values, each group has a specific way of functioning and tasks are usually performed by volunteers. There is a general coordinator, a depot coordinator and a financial coordinator in each food team. Members order food according to their particular needs (Crivits & Paredis, 2013; Voedselteams, 2015).

The organization formalized in 2001 as a Not for Profit Organization (NPO). The NPO employs five full-time staff. There is at least one regional coordinator in each of the five Flemish provinces. Funding comes from public funds. Employees are mainly paid by subsidies received, thanks to Voedselteams' official status as a socio-cultural movement since 2005. This implies that Voedselteams is now also deemed to reach a larger diversity of people and to increase awareness of agricultural and short food supply chain (SFSC) issues. Over time, Voedselteams has grown, matured and attracted an increasing amount of consumers. Besides the first pioneers, the initiative now also includes consumers with more 'conventional' expectations. Some of the more recent consumers are not willing to give up as much convenience and dedicate as much time and energy to the practices as the first AFN pioneers. Instead, these newer consumers also value efficiency, professionalism and convenience. Hence, there have been incremental changes towards a re-incorporation of professionalization, specialization, efficiency and convenience. The Flemish foodscape has recently strongly started to change, with many similar initiatives emerging such as online platforms selling food baskets. Similarly, mainstream actors are also responding to the increasing demand for SFSC offering more local, fresh and seasonal produce.

AFN and peri-urban agriculture in Valencia

The Valencia case study was made up of a diversity of AFNs that connect peri-urban farmers producing mainly fruit and vegetables to urban consumers. They can be grouped as: (i) direct selling of seasonal fruits and vegetable boxes by farmer to consumer –this is the main option of newly initiated projects; (ii) Responsible Consumption Groups or buying groups, where long-term arrangements are established between consumers and farmers providing fruit and veg (sometimes also in the form of boxes); (iii) local online food platforms to fulfil a growing demand for organic food – both certified or not, and not necessarily from local producers; (iv) direct selling through municipal markets (17) in the city and seasonal farmers' markets, both

organic and non-organic farmers participate in these events which often aim to raise public awareness, and (v) specialised food shops and restaurants that have direct arrangements with local producers.

Despite the diversity of initiatives and actors, there are three main aspects that link these AFNs as a single case study. Firstly, most of these initiatives originate from new and old producers who aim to maintain both traditional and agro-ecological farming practices in the Huerta of Valencia[4], including an active struggle to protect this high-value farmland (Dobris Assessment) from threats and pressures such as urbanization. Secondly, most of these AFNs are closely connected to each other, with producers and other actors simultaneously involved in several initiatives. Thirdly, these AFNs participate in a broader socio-political movement to protect the outstanding values (productive, environmental, scenic, and cultural) of the Huerta and its transition towards an economically viable agro-ecological space. In this regard, they advocate the promotion of institutional and political frameworks that enable the multiplication and expansion of these AFNs (e.g. the development of a Participatory Guarantee System[5], or the incorporation of la Huerta produce in public procurement schemes).

Since there is no official census or inventory, a good indicator of the AFNs' evolution in the city of Valencia and its metropolitan area is the calendar promoted by *Fem L'Horta Possible*, an assembly of civil society organizations which annually lists and updates existing initiatives, businesses and projects which support farming activities in the Huerta. The number of initiatives listed in the calendar has increased from less than 10 in 2010 to more than 50 in 2017.

The peri-urban character of the Huerta shapes the development of these AFNs in multiple ways. For example, in many cases access to land is difficult and results in most of these initiatives relying on small and usually scattered rented plots. Furthermore, with a growing population of over 1.5 million surrounding this agricultural space, the Huerta suffers constant pressure of urbanization processes and development of transport infrastructures. Nevertheless, the high population pressure also present opportunities to increase their consumer base. At the moment, these local producer-consumer linkages are still rather weak, with most city dwellers accessing their daily food without regard to this valuable and highly productive landscape despite its vicinity. The precariousness and lack of support of most new initiatives makes them very vulnerable and subject to the local and regional political setting. AFNs are experiencing a more favourable moment since the political change after the 2015 elections that has placed the food issue in the local and regional agenda for the first time, facilitating rebuilding links between local producers in the Huerta and its surrounding area and urban consumers. For example, the Municipality of Valencia is implementing a plan to protect and revitalise la Huerta by addressing key challenges such as the generational turnover and the development of new forms of proximity and direct selling pathways. Other related actions include the promotion of organic

[4] In the 8th century the Moors created a complex network of irrigation ditches (Guinot 2008). Although the Huerta is an agricultural space with high cultural, landscape and environmental values, this landscape is now shrinking fast, and has been reduced to about 12,200 hectares, of which only 5,200 ha would correspond to horticulture surface (Soriano, 2015).

[5] Participatory Guarantee Systems (PGS) represent an alternative to third party certification, especially adapted to local markets and short food supply chains. As defined by the International Federation of Organic Agriculture Movements (IFOAM - Organics International), "*PGS are locally focused quality assurance systems. They certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange*". http://www.ifoam.bio/en/organic-policy-guarantee/participatory-guarantee-systems-pgs (last accessed September 2017).

399 food in school canteens and campaign to raise consumer awareness on the positive impacts of
400 local food.

401 Table 1 below, summarises the main characteristics of the three case studies involving locally-
402 rooted food initiatives forging direct relationships between consumers and producers. While
403 their origins, goals and available resources are diverse, they share a commitment to building
404 sustainable, resilient, diverse and inclusive food systems and weaving more cooperative and
405 sustainable communities. In this paper we will analyse the mechanisms these initiatives deploy
406 to deliver food security and critically discuss their overall contribution to developing more
407 secure food systems.

408 Table 1. Summary of case studies

Aspect	Cardiff	Flanders	Valencia
Place-based contingency	• Low overall consumption of fruit and vegetables of British public • High prices of fruit and veg, but changing with arrival of discounters • Lack of local fruit and vegetable producers • Support for communities and community activities by governmental programmes diminishing • Need for affordable fruit and veg	• High pressure on prices of raw foods • There is market opportunity, especially around cities, with people willing to pay more for local tasty food • Supermarkets increasing their supply of local, fresh and seasonal produce	• Producers are embedded in a highly productive Huerta, whose viability and existence are compromised. Its defence is a binding element for the different actors involved in the AFN model • The peri-urban character of la Huerta shapes AFNs potential and limitations • The new political setting is now favourable for the development of AFN
Initiators	Policy and community driven	Consumer driven	Social movements and farmer driven
Primary purpose	Mainly food poverty alleviation and improve health and wellbeing. Also to contribute to local economic development and community cohesion	Accessing local and organic food from small-scale producers	Local food to maintain a viable farming activity and protect peri-urban agricultural heritage (agriculture as a political device, a transformative driving force)
Territorial scale	City-region	Regional	Peri-urban
Type of organization	Independent groups supported by a publicly funded social enterprise	Formalised network (Voedselteams)	Multiple small-scale initiatives with informal linkages
Public support	Coops are supported by a public social enterprise	Subsidies	Weak and recent policy attention
Social engagement	Volunteers	Volunteers	Activists

409 Source: Authors' elaboration.

5. RESULTS

Availability

The analysis of these three case studies shows that the main contribution of AFNs in terms of food availability is the revitalization of local food production by linking consumers to local farmers. Furthermore, these changes in the local food system can have a positive spill-over effect, for example creating new economic activities alongside the food chain, and social implications by increasing social construction and trust. A key aspect of these AFNs is the type of foodstuffs that are made available, mainly fruit and vegetables, which constitute an essential element of healthy diets and therefore contribute to nutritional security aspects.

While AFNs literature emphasises the quality aspects of food produce around organic, local, territorially embedded and seasonal attributes (Moragues-Faus and Sonnino, 2012; Renting et al., 2003), our case studies develop hybrid food chains to deal with demand requirements. This is particularly the case around the seasonality and origin of products. For example, in the case of Voedselteams, local production cannot provide a sufficient supply during the winter, but consumers also demand foodstuffs from other countries. In this particular case, Voedselteams members solved these tensions by agreeing that globally traded products (e.g. pineapples, chocolate or coffee) could be offered provided that they were organic and fairly traded. While local agri-environmental conditions allow producers in Valencia's peri-urban Huerta up to three vegetables crops per year, some non-local products are sold in farmers' markets to increase diversity of the offer. Food co-op users, on the other hand, seek to provide cheap fruit and vegetables to cater for low income families and therefore their interest in the origin of foodstuffs is relatively low. Food co-ops rely on a mixture of Welsh, British and international producers. In this case, this diversity in the origin of produce also responds to the lack of fruit and vegetable producers in the city-region (and Wales as a whole) and to reduced product availability during the 'hungry gap' period in spring due to weather conditions.

In the case of Valencia and Flanders, these AFNs are promoting particular agricultural practices. Specifically, the agro-ecologic/ organic producers involve the use of polyculture techniques and aim to maintain or even recover traditional varieties. Some of the foodstuffs that these producers sell cannot be found within mainstream channels, remaining in many cases unknown to new generations of consumers (e.g. some tomatoes varieties in the Valencia region). The preservation and use of traditional varieties provides additional resilience[6] to food production activities, since they are adapted to their local environment and foster biodiversity. With 75% of the genetic diversity of agricultural crops lost in the 20th century (FAO, 1998) the role of these AFNs in preserving and providing open-access to seeds constitutes a key contribution to building resilience and delivering food security in the long term. In many cases, these varieties also have an outstanding gastronomic value for their organoleptic quality. However, having a diversified production poses a challenge for producers and processors, who need to find the balance between offering an attractive wide range of different products and the higher production costs it entails. An additional challenge is to introduce new products to consumers who usually feel more comfortable buying only foodstuffs that they recognize and know how to cook. Furthermore, these high-quality products are usually more expensive.

[6] Resilience is the "ability of a system and its component parts to anticipate, absorb, accommodate or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration or improvement of its essential basic structures and functions" (IPCC, 2012) https://www.ipcc.ch/pdf/special-reports/srex/SREX-Annex_Glossary.pdf

These AFNs offer raw vegetables and fruits but also transformed products. In Valencia, peri-urban small-scale processors are transforming local raw produce into jams, vegetable preserves and non-dairy drinks. For its part, the offer of processed food through Voedselteams includes dairy and fruit and veg (e.g. soups, quiches and sauces) from local but also globally-sourced ingredients. In 2012 food co-ops also started to offer "Additional Welsh Produce" linking consumers to local producers of milk, eggs, meat or bread.

Access

In order to understand how these initiatives provide access to healthy food we need to consider economic barriers, socio-cultural resources and physical access. First, the economic dimension of accessibility mainly revolves around prices. High prices have been identified as the main barrier for not buying organic food (Padel and Foster, 2005) and therefore excluding a significant sector of the population from participating in many AFNs. While some "organic" and specialized stores or supermarkets target those with high purchasing power, there is an increasing number of AFNs working to provide quality foodstuffs at affordable prices.

Food co-ops especially improve this economic access dimension of food security by providing affordable fresh fruit and vegetables for less-favoured communities. On the other hand, Voedselteams members are willing to pay higher prices than in conventional channels to gain access to healthy local food. Higher prices, inherent in the fact that Voedselteams rely on organic products, prevent those with lower budgets from entering the food teams, resulting in Voedselteams failing to include lower income households up to now.

Similarly, in the case of Valencia, conventional market channels usually offer cheaper produce than agro-ecological peri-urban initiatives[7]. However, specific foodstuffs sometimes are cheaper and there are often big price differences between conventional supermarkets. In the Valencia case, the change from official organic certification to a participatory guarantee system is contributing to lower prices, together with direct selling mechanisms.

Second, socio-cultural resources also play an important role in providing access to healthy food. In the case of food co-ops, they integrate the preference and needs of different ethnic groups, as long as the produce has an affordable price. However, ethnic minorities, especially immigrant groups, seldom participate in Voedselteams. Conscious efforts are required by these initiatives to expand the current offer to include diverse styles of eating patterns, not least by changing traditional local produce to include new crops demanded by different cultural backgrounds.

Finally, the physical dimension of accesibility is addressed differently by the three initiatives. For example, in rural areas where shopping options are more limited the infrastructure created by food co-ops is particularly important. As a new sourcing outlet, it potentially gives the community a choice of the food they eat. In the case of Flemish Voedselteams and AFNs in Valencia, consumers are granted access to certain foodstuffs which are seldom available in mainstream channels, increasing the diversity of their food options. Nevertheless, buying through food co-ops, Voedselteams or food baskets and responsible consumer groups' initiatives such as the ones in Valencia generally requires investing more time and planning to participate in these AFNs. For example, participants wait days between placing the order and receiving delivery. Moreover, the collection of the produce usually happens at a designated day, time and place which may represent a constraint for those consumers with tighter agendas.

[7] A rough non-exhaustive price comparison was made for a common list of fresh vegetables. Web sites of large distribution groups operating in Valencia were examined and prices were compared with those on the web sites of local producers and with those in the recommended price list of a farmers' market.

The analysis of the three cases reveals that some of the main challenges faced by AFNs regarding accessibility is related to logistics. The AFNs analysed show problems of inefficiency and high logistic costs, mainly due to managing relatively small volumes and dispersed distribution. Farmers' strategies to cope with these distribution challenges are diverse. Some producers set up their individual infrastructure, which involves some difficulties, mainly investing time that could be dedicated to farming activities, and the need for a refrigerated van. Others have addressed the problem through collaboration, grouping their respective orders and placing them in the same delivery route. Another alternative includes outsourced transportation to an external firm. This is the case of Voedselteams, where a transport company manages all the orders in the region, collects them from the farmers, and delivers the produce to each team. Ensuring suitable food collection points constitutes another challenge. For example, food depots generally require complying with food safety regulations which result in expensive rents or administrative processes (see below). In many cases such as the case of buying groups, AFNs operate in an *alegal* form, constituting a category of activity that has not yet been regulated, and therefore have a high degree of flexibility (Moragues-Faus, 2017a).

Utilization

The AFNs studied shape the utilization dimension of food security by affecting consumers' eating habits and the diversity of their diets. Of particular interest are Cardiff's food co-ops which emphasize the importance of changing food habits and provide affordable and healthful foodstuffs. Nonetheless, the three cases analysed provide a specific selection of foodstuffs, mainly fresh fruit and vegetables, which shape participants habits and provide a more nutritional diet. In the cases of Valencia and Cardiff, veg boxes and buying groups establish a predefined and pre-selected offer of products (local and seasonal) and its quantity. This has several implications regarding food utilization.

Consumers' inability to modulate the amount or type of products they wish to receive is linked to food waste in different ways. Some consumers interviewed consider this an opportunity to try new products and recipes; indeed, the limited and seasonal range of available products is argued to be an advantage as it, for example, encourages innovation and creativity in cooking practices (Crivits & Paredis, 2013). For others, standard veg boxes create several disadvantages; on the one hand, consumers may need to keep buying the same products through other channels to adapt the quantity to their household needs. On the other hand, there is also a need to adapt some everyday practices: vegetables need to be prepared, cleaned and eventually precooked to preserve them.

Indeed, different types of knowledge play a key part in assuring that the utilization dimension of food security is fulfilled. Our research shows the close relationship between using food efficiently -i.e. reducing food waste- and the knowledge of participants on different produce and cooking options (e.g. brining, canning, and use of non-eatable parts of the vegetables, i.e. to prepare seasonings). AFNs studied work as a site for learning but at the same time certain types of knowledge are required to participate. For example, consumers are sometimes faced with unfamiliar products which pose challenges in terms of taste and preparation. This challenge is also an opportunity to learn about local and seasonal produce and create stronger links between participants. Interviewees from the three initiatives highlighted different forms of knowledge sharing, for example, by providing recipes in the food basket, giving cookery classes or having direct contact with the producer in the farmers' market. Dissemination and expansion of food knowledge can also occur through other means and spaces. As was noted in Welsh food co-ops, they have progressively invested fewer resources in raising awareness of cooking and healthy

eating since there is an increasing amount of food-related information in the UK media. Furthermore, stakeholders such as the public sector and civil society organizations are running campaigns.

Food safety constitutes another key aspect of food security that requires consideration and that poses several challenges to the AFNs studied. While aiming to ensure safe diets and an adequate utilization of food, the current European hygiene assurance standards also act as a major constraint to some small producers and processors. Indeed, in some countries, AFNs have the same legal requirements as bigger food enterprises and consequently bear high costs for small operations. The European hygiene regulations allow certain flexibility in their application to small-scale structures and short food supply networks. However, countries interpret the European regulations differently. For instance, a frequent complaint of AFNs in Valencia revolves around the lack of adaptation of the hygiene regulations to small-scale initiatives. In the same line, food safety is an issue for Voedselteams' food depots. If these teams were forced to register at the official food safety body, operational costs both for food teams and supplying farmers would increase and the latter would also be required to comply with stricter rules and regulations that might threaten their existence.

Stability

The temporal element of food security, that is, the delivery of the other three dimensions over time presents specific challenges for AFNs.

First, some of the initiatives studied depend on voluntary work. Volunteers are vital to the functioning of food co-ops and Voedselteams. While this can be considered a positive aspect that allows to reduce operating costs, there is an inherent risk related to volunteers' burnout or drop-out that raises important questions around the viability of these initiatives. For example, data collected from Voedselteams shows that voluntary engagement is a major problem. Some interviewees argued for a different system including compensations -free goods or services- to volunteers in exchange for their work. However, as previously recognised in the food movement around the value of non-waged labour (Ekers et al., 2015), reliance on voluntary work can also contribute to community strengthening and social movement building which can conversely have a positive impact on building resilience.

The comparative analysis of the three cases also revealed how over-reliance on public subsidies and on other organizations can compromise the financial sustainability of AFNs and their food security outcomes. In this sense, the food co-ops and Voedselteams, the two more "formalised" cases, are more dependent and potentially vulnerable. For example, at the moment the Voedselteams model is financially unsustainable without external support. The initiative receives subsidies due to its status as a socio-cultural organization. In the case of food co-ops, they rely on one hand on the support of the RRU which is publicly funded by Welsh government; and on the other hand, they benefit from other organizations' resources such as free venues and lower running costs. The co-ops dynamics show that their success and sustainability are largely dependent on their embeddedness in other local initiatives and the extent to which they are networked. In contrast, the Valencian AFNs initiatives depend entirely on their own capacity to remain economically sustainable which, among other factors, has resulted in a relatively high rate of appearance and disappearance of initiatives. These AFNs seem to be more vulnerable to changes in consumer habits and therefore, stable customers' engagement is a critical element. According to the interviewees, it is equally important for the sustainability of these networks to improve the effectiveness of their operations such as increase in size and work in grouped farms. A local expert forecasts a horizon of farm expansion coupled

with "casualties along the way" for the organic/agro-ecological agriculture within the area. Farmers' mutual assistance groups play a relevant role in increasing their sustainability. In this line, efforts to strengthen collective action among agro-ecological farmers in Valencia initially gave rise to the *Ecollaures*[8] association, which quickly evolved towards *SPGEcollaures*, founded in 2012 as the first Participatory Guarantee System operating in the Region. Similarly, since 2014 Voedselteams co-organize the annual Farmers' Forum (*Boerenforum*),[9] a space that helps to build resilience among farmers by increasing trust, knowledge-sharing and social cohesion. Since 2015, Voedselteams have also put in place a PGS for all regions. This participatory certification system constitutes a mechanism to assess producers' practices, promote and refine sustainability measures and select new entrant producers.

Finally, the interviewees highlighted the motivations of AFN participants as a key aspect of their stability. For example, participants in Valencia's buying groups show a commitment to promote social change through the act of buying food. A Participatory Action Research 2012-2013 study (Utópika & ISF, internal report) concluded that buying groups in the city of Valencia had a common socio-political project that coalesced around the struggle for food sovereignty (see Moragues-Faus, 2017a). This broader political project also included specific criteria to select products and producers, such as organic, local and seasonal. Other criteria not necessarily shared by all groups include: agro-ecological products; foodstuffs from small-scale producers; direct contact with the producer; fair prices for both farmers and consumers; being a cooperative organization with fair working conditions; from producers involved in projects such as the defence of the Huerta or protection of heritage varieties. These supporting practices are also observed in Voedselteams. Although the most important aim of joining a food team is to gain access to healthy and local food, the importance of social aspects was also emphasized during the interviews. Reasons often mentioned to enter a food team were the setting up of direct ties between consumers and producers and the creation of social cohesion; the support of local farmers; the increase of transparency along the food chain; and the improved access to healthy, local and fair food[10]. In the case of Cardiff food co-ops, over and above their function of providing affordable, fresh, and local produce, supporting the local community was also mentioned as an important motivation for getting involved.

Table 2 summarises the main characteristics of the contribution of the AFN to FS in the three case studies.

[8] Small-scale farmers' networks in the Huerta area originally were created to give mutual support to their members and coordinate common objectives, such as the defence of agricultural territory, the promotion of agro-ecological farming and local consumption, and fostering producer-consumer relations based on social justice. In 2012 it became *SPGEcollaures*, a Participatory Guarantee System, whose main purpose is social transformation.

[9] The *Boerenforum* has been organized annually since 2014 by Voedselteams together with Wervel, a Belgian organization that focuses on the right to healthy and fair agriculture and food. The forum provides a voice to those alternative farmers who are not members of any of the mainstream farmers' unions.

[10] There are however, substantial differences between teams and regions in the importance placed to each of these aspects. In East-Flanders, for example, Voedselteams members are quite strict about their values compared to the other regions. The stronger engagement in this region is explained by a significant development of SFSC and sustainability initiatives which provided Voedselteams with a network to build on.

617 Table 2. Summary of the contribution of the analysed AFN on the FS dimensions

	Availability	***Access***	***Utilization***	***Stability***
Cardiff	• Engages partially with local growers and enterprises key in the supply chain • Local is not highly regarded • Need to open the food source from other regions and countries to counterbalance scarce number of local producers and climate conditions • Raw fruit and veg plus regional produces: eggs, meat or bread	• Affordable fresh fruit and veg for less favoured communities • Integrate the preferences and needs of different ethnic groups • Provide healthy food within the community and linked to community activities as spaces • Important in rural areas where shopping options are limited	• Preselected offer of products requires cooking skills and product knowledge and to adapt some everyday practices • Set bags, potential to generate more food waste. In order to avoid this, food co-ops started cookery classes and recipes to avoid waste	• Reliance on public subsidies and other organizations' resources and dependence on volunteers • Not for profit venture. Dependence on offering low price food to maintain number of participants • Importance of the social aspect (building communities and social networks)
Leuven	• Focus on local organic vegetables, though also offers dairy, meat and fish and processed foods • Since local production is insufficient to provide sufficient supply during winter and consumers demand other products, food is also sourced from other latitudes	• Prices of products (organic) are higher than in conventional channels • Ethnic minorities seldom participate due to higher prices and not integrating their eating patterns • Professionalization of online order system and of the delivery system, though there is room for much improvement	• Hygiene assurance normative for producers and local depots is under pressure of food safety control • Cooking skills are needed. Preparing unprocessed food might lead to healthier food patterns • Waste reduction schedule for summer / holiday periods	• It is not financially sustainable. It depends on government subsidies and relies on voluntary work • Competition with growing organic supermarkets and online food shops
Valencia	• Agronomic conditions allow up to 3 annual harvests of fruit and veg • Recent rapid spread of this type of initiative • Need to find the balance between a wide-range attractive offer and production costs • Some processed products are available and non-local products can be incorporated to increase the offer	• Prices are usually higher than in conventional channels • AFN provide access mechanisms to fresh local, organic and seasonal food • Consumers are granted access to some foodstuffs not easily accessible through conventional retailers	• New food access pathways may affect everyday practices • Preselected offer of products requires cooking skills and product-knowledge • Health/hygiene assurance standards are a problem for small scale processors	• Sustainability is compromised by disappearance of producers, who endure several constraints for their development and viability • Importance of building social capital • Adoption of regulatory changes at several scales and in several domains need to be considered

618 Source: Authors' elaboration.

619

6. Discussion

The initiatives analysed are strongly rooted in the set of ecological, socio-economic, cultural and political dynamics linked to their particular place. This is a common aspect shared amongst a variety of local food projects, that is, the territorial embeddedness of these initiatives shapes their characteristics and in turn these projects contribute to distinct place-making processes (Moragues-Faus and Sonnino, 2012). This highlights the importance of taking a territorial and place-based approach in understanding the contribution of specific initiatives to food security at different levels. Despite the local specificities, the cross-national comparison has provided us with addition insights regarding the potential contribution of AFNs to food security outcomes.

Firstly, the three case studies represent local food initiatives that promote new ways of producing consuming and distributing food, building closer relationships between producers, consumers and other food actors in the vicinity, and therefore creating local food networks. While each of these initiatives have specific goals and different organization models, they all contribute in different ways to weaving a more localised socio-economic fabric aimed at establishing new **relationships between food security outcomes and specific territories**. Food is mobilised as a means of reconnecting people and stimulating new forms of social cohesion and business models. These AFNs display characteristics of the territorial approach to food security championed by the OECD/FAO/UNCDF (2016), who recognise the need for a paradigm shift in addressing food security policies. The inclusion of the regional and context-specific nature of food security is considered critical to deliver appropriate long-term responses to food insecurity challenges.

The three case studies build on their territorial constraints and advantages differently. For example, Welsh community food co-ops aim to deliver healthy and affordable fresh produce for all, relying on a mixture of Welsh, British and international products handled by local suppliers. Although customers and volunteers generally show little interest in local food, the project helps to build more resilient food chains in the region by a top-down emphasis on engaging local suppliers, both wholesalers and actual producers. Whereas co-ops in South Wales are supplied by wholesalers because of the lack of suitable producers nearby, co-ops in North and West Wales are mostly supplied by growers, who can also be wholesalers, growing veg and buying-in fruit (and veg out of season). This territorial differentiation shows how the same initiative (food co-ops) supported equally by governmental programmes can evolve into different networks of actors and activities - as well as related food security impacts - due to different territorial characteristics.

Flemish Voedselteams aim to support locally-based organic producers and processors through fairer prices in exchange for healthy local food. For some of these suppliers, Voedselteams means taking the first step in SFSC initiatives, allowing them to establish direct contact with consumers and to gain control over prices. Although the weight of farmers' sales to Voedselteams is very diverse (ranging from 5% to more than 50%), an increasing number of farmers seek to participate in this new selling channel. This increased interest responds to smaller farms struggle to compete with larger farmers, which offer lower prices and consequently, many farmers seek for new and innovative marketing outlets to avoid squeezing further their incomes. For many producers, Voedselteams is an opportunity to create added value for their products. However, the stagnation of demand in some locations and its seasonal fluctuations prevent some farmers from abandoning conventional chains.

With regards to the AFNs in Valencia, the proliferation of food-related initiatives in the city shows both a social revaluation of peri-urban agriculture and the emergence of new food-related

666 business opportunities. New organic/agro-ecological farmers are trying to reconnect with urban
667 consumers and forge closer production-consumption relations, while some older farmers are
668 also adopting organic farming and starting to explore SFSC. The implementation of new
669 programmes to protect and promote agricultural production in the area has also fostered a new
670 regulatory landscape that among others supports long-term farmers' investments and reduces
671 challenges posited by urbanization processes. These changes to the policy and governance
672 dimensions of places show the interdependencies between territorial characteristics and the
673 delivery of food security outcomes.

674 The second element that emerges from the analysis is the **hybridization of these initiatives**, as
675 AFNs aim to scale-up, increasing their capacity to deliver food security. Growth and viability
676 requirements sometimes involve using methods associated with conventional channels. These
677 hybridization processes relate to Ilbery and Maye's (2005, p. 828) findings, who identify a
678 "considerable blurring of the boundary between conventional and alternative systems" and
679 describe how strong economic imperatives drive " 'alternative' producers to regularly 'dip in
680 and out' of different conventional nodes" (ibid, p.840).This "conventionalization" can be
681 observed in Valencia and Flanders and translates into several practices. For instance, in order to
682 become more attractive to consumers, both Voedselteams and Valencia's peri-urban producers
683 incorporate non-local and out of season produce in their offer. In the same line, to enhance
684 market possibilities, many agro-ecological producers participating in the local PGS also
685 embrace official third-party organic certification, despite clashing with their values. Some
686 initiatives in Valencia also reported a reduction of the range of products offered and a trend
687 towards specialization to increase their competitiveness. While a very diverse offer could be
688 expected to attract growing number of consumers, the fact is that most consumers do not feel
689 comfortable buying products that they cannot recognize and do not know how to cook.
690 Voedselteams, on the contrary, has broadened their supply over the years in response to
691 consumers' requests. Fish, meat and a variety of dairy products were added to their supply.

692 Another common hybridization example is the reliance on transport agencies to distribute
693 foodstuffs. This is particularly important for Voedselteams, where they regularly outsource the
694 transport of produce. Moreover, as the projects grow and the produced volume increases, these
695 initiatives expand their markets beyond the local area, which implies higher selling prices. Some
696 interviewed participants argue for the need to reach bigger and specialized markets -such as
697 school canteens- to bring economic stability to existing initiatives and to scale the phenomenon
698 upwards and outwards, for which additional infrastructure such as a purchasing centre and a
699 distribution platform would be required. For the farmers this might entail losing direct contact
700 with the consumer and accepting an external crop production schedule.

701 The case studies also revealed a process of "alterization" of the conventional food supply chain
702 within their territories. Supermarkets seek to take advantage of new consumer demands met by
703 AFNs and therefore integrate some of these characteristics – local, organic, etc. - within their
704 market repertories. The boundaries between alterization and conventionalization are
705 increasingly blurred. Indeed, from a place-based perspective the three case studies show how
706 AFNs are conditioned but also modify their context, by reinforcing the creation of new
707 consumer demands which are progressively met by different actors. These processes of
708 hybridization developing in multiple directions are highly contextual and therefore benefit from
709 adopting place-based perspectives that contest dichotomic classifications of
710 alternative/conventional (see also Sage 2003 and Renting et al., 2012) Similarly to Gibson-
711 Graham's (2006) diverse economies approach, this place-based perspective opens the possibility

to account for transformations towards food security and sustainability that might be invisible under more classic political economy approaches.

Finally, the third key element arising from the analysis revolves around **the advocacy capacity** of these AFNs, which could encourage a multi-level governance approach that contributes to the implementation of food security strategies and policies and promotes a bottom-up approach for scaling AFNs upwards and outwards. This activist dimension is more central to Valencia's AFNs and to some extent is also present in Voedselteams. Both seek to transform the current food system by pushing to change policies and consumers' behaviour.

Agroecology and food sovereignty are the key political discourses underpinning many of the new farmers' initiatives in Valencia to change food relationships. The socio-political movements in which many of these initiatives are embedded are integrated into the regional food sovereignty platform, *Plataforma Per la Soberanía Alimentaria del País Valencià*, which increases the connectivity between initiatives operating at different scales and gives greater visibility and advocacy capacity to its members. The movement is undergoing a new momentum with the new local and regional administrations, which are implementing new measures under the signature of the Milan Urban Food Policy Pact,[11] such as the creation of a food council that gathers key actors in the city to guide local food policies.

Voedselteams combine both profit and non-profit making activities and has an overall objective of contributing to societal benefits. Dedeurwaerdere et al. (2015) argue that Voedselteams have an "ideological" dimension, aiming to also become a social movement transcending the local scale where they operate. Instead, it functions on a regional or national scale, where it strives to promote a transition towards sustainable agro-food systems. In this way, Voedselteams might contribute to wider changes in the food system through combined action at different levels, e.g., by offering non-profit services and representing an alternative to mainstream marketing channels or by seeking synergies with other similar initiatives. Moreover, through advocacy actions (e.g. Voedselteams inspired the strategic plan on SFSC of the Flemish Government) they can also have an impact beyond their immediate context. However, the interviewees described political alliances and collaborations as few and difficult. In addition, the members' engagement in advocacy action was regarded as weak. Furthermore, Voedselteams' dependence on government subsidies may compromise its real capacity to challenge the regime, although the interviewees acknowledged the potential for a stronger engagement within the organization and identified two main avenues for this purpose: (1) expanding the Farmers' Forum beyond a farmers' network to increase small-scale farmers' bargaining power and (2) increasing collaboration with other similar regional organizations, which could strengthen the influence of these organizations in political spaces and the public debate.

Finally, the users of Welsh food co-ops display a lower degree of political engagement, however, the RRU, co-op facilitators and organizations supporting their activities (such as communities' first centres) have been active in different policy forums such as the Cardiff Food Policy Council or the Wales Food Poverty Alliance. These spaces of deliberation actively promote exchanges of good practice and seek policy reform. However, they do not subscribe to

[11] The Milan Pact is an international protocol concerning food at municipal level. Signatory cities undertake to "work to develop sustainable food systems that are inclusive, resilient, safe and diverse, that provide healthy and affordable food to all people in a human rights-based framework, that minimise waste and conserve biodiversity while adapting to and mitigating impacts of climate change" https://www.milanurbanfoodpolicypact.org/text/ (last accessed January 2018).

752 a specific social movement such as the Valencia participants in their struggle for food
753 sovereignty.

754

755 7. Conclusions

756 This paper analyses three European case studies in order to understand how different AFNs
757 contribute to deliver food security outcomes. This analysis has allowed us to identify key
758 elements where food security debates hinge and provide new insights to ground conceptual
759 discussions on territorial and place-based food security approaches. We summarize our
760 contribution to these debates following the three key elements championed by place-based
761 approaches (Sonnino et al., 2016), mainly, a focus on: re-localization processes; flows of
762 knowledge, materials, capitals and people that take place in and between food systems; and a
763 progressive sense of place that integrates discourses, scales and interdependencies between
764 geographies.

765 First, when compared to conventional mainstream food players, these AFNs are small both in
766 numbers and size, and therefore represent a small share of the food system in quantitative terms,
767 as previously warned by Dixon and Richards (2016). However, the role that AFNs play may be
768 important when evaluating its capacity to ensure food security and facilitate changes in the
769 currently unsustainable food system. Considering that food security dimensions are relevant to
770 all levels of human organization, from the global to the individual and household scale, today,
771 AFNs can play a significant part when we focus on the micro-level. Of particular importance is
772 the example of food co-ops in Wales that have developed a network of community members,
773 wholesalers and producers to provide affordable healthy food to low income households. By
774 and large, all initiatives contribute to increase availability of produce and utilization dimensions,
775 by championing local production and nutritious food and establishing new connections between
776 local actors. Consequently, they ***contribute to re-localization processes*** identified by place-
777 based approaches to food security as providing a transformative basis for wider changes in the
778 food system. Furthermore, AFNs can also fulfil individual food preferences that are generally
779 overlooked in conventional food channels. Preferences in terms not only of types of food (e.g.,
780 traditional varieties usually with outstanding gastronomic value) but also in terms of
781 "acceptability", where social and cultural aspects are considered as well as the individual
782 capacity to promote change in the food system through a conscious buying. These preferences
783 might, however, produce exclusive landscapes for middle classes or focus on particular socio-
784 cultural backgrounds that can hinder the delivery of food security outcomes particularly for
785 vulnerable groups.

786 Second, the cross-comparative analysis of these three case studies shows active ***flows*** of
787 material, capitals and, particularly, knowledge within AFNs. AFNs play a key a role in
788 disseminating information and sharing knowledge, which are both exchanged during market
789 transactions but through social relations nurtured through these collective initiatives.
790 Knowledge enables to improve capacity-building, e.g. food utilization skills that make a
791 positive impact reducing food waste and ameliorating the gastronomic culture. Besides, by re-
792 connecting production and consumption AFNs stimulate social re-linking and raising awareness
793 of consumers about food system unbalanced relationships and the origin of their food that is a
794 prerequisite leading to change in their consumption and shopping habits. These flows of
795 knowledge, capital and materials are not only restricted to alternative initiatives but are
796 increasingly activated with conventional food players. Our cases show how AFNs undergo
797 different hybridization process mainly with the aim to scale up and increase their stability.

Furthermore, the AFNs studied showcase new relationships between different types of food outlets, such as the transfer of food co-op consumers to discounters such as Lidl. While some of these changes might reinforce some of the AFN traits linked to food security outcomes – e.g. improve accessibility of healthy food – it might hinder others, such as re-localization processes. Nonetheless, the vulnerability that the three cases showcase in terms of economic viability, reliance on public funds and/or voluntary labour and exposure to changes in the wider context (e.g. cheap prices by competitors), highlights the need to reflect on current flows and interdependencies within and beyond these AFNs, particularly in material terms. Key questions include how these flows could be re-engineered to deliver long-lasting food security outcomes and who are the actors and what are mechanisms that can assist these changes. A deeper understanding of the place contingent interdependencies of diverse food initiatives – with conventional outlets, government programmes or productive landscapes - will contribute to devise effective tools and interventions to deliver food security in particular contexts.

Finally, the analysis of the three cases show how these AFNs are ***shaped by particular places***, in terms of their opportunities but also limitations. The Welsh food co-ops develop initiatives to sell cheap vegetables in the context of rising levels of food poverty and amidst a placeless foodscape where local foods are less valued. Contrastingly, the Valencian initiatives focus on their centenary agricultural activity in a city where access to healthy food is not portrayed as a problem, rather the focus is on the livelihoods of farmers. These discourses and practices portray particular visions of places that might exclude other dynamics at play, such as increasing levels of unemployment and poverty in non-agricultural sectors of Valencia or the capacity to re-connect consumers with their foodscape in Cardiff. This restricted vision of place prevents to establish more productive linkages to the multiplicity of *discourses, scales and interdependencies* between geographies that result in different levels of food insecurity. The advocacy activity displayed by some of these AFNs shows one mechanism to encourage connections amongst different governance levels to develop food security strategies and policies. For example, the regional food sovereignty platform in Valencia and Voedselteams network in Flanders have fostered collaboration across scales and give greater visibility to its members and activities. These processes have helped to raise the local policy support required to modified rules and regulations. However, these networking activities remain restricted and seldom interact with the diverse discourses, needs and multi-sectoral and scalar interdependencies that hinder food security in particular places.

Our cross-comparison has shown the potential of AFNs in delivering food security outcomes, but also the relatively small impact of individual initiatives and their capacity to fulfil the needs of only particular social groups –e.g. low income groups in Cardiff or middle class families in Leuven. Furthermore, current material flows and low integration of discourses and interdependencies showcased by these initiatives reveals important weaknesses that affect the viability of AFNs in the context on increasing food security challenges. These limitations call for *a relational and place-based approach to food security that explores further how food initiatives are connected to each other and what is their collective impact in providing good food for all in specific places.* Developing tools to understand better the disconnections and also synergies between food networks and how they modify food security outcomes constitutes the necessary next step. These conceptual tools will be instrumental to ground theoretical territorial and place-based approaches that inform effective practical and policy recommendations.

Acknowledgments

This research is part of the project "Assessment of the impact of global drivers of change on Europe's food security" (TRANSMANGO), granted by the EU under 7th Framework Programme; theme KBBE.2013.2.5-01; Grant agreement no: 613532. Dr. Ana Moragues-Faus also acknowledges the funding of the European Commission and the Welsh Government that currently supports her Sêr Cymru fellowship. These results reflect only the authors' view; the funders are not liable for any use that may be made of the information contained therein.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

Arcuri, S., Brunori, G., Galli, F., 2017. Insights on the role of private and public actors in food assistance provision: A literature review for High Income Countries. *Economia agro-alimentare*, https://doi:10.3280/ECAG2017-001006

Clay, E., 2002. Food Security; concept and measurement. Paper for FAO Expert Consultation on Trade and Food Security: Conceptualising the Linkages. Rome http://www.fao.org/docrep/005/y4671e/y4671e06.htm

Barca, F., McCann, P., Rodríguez-Pose, A., 2012. The case for regional development intervetion: Place-based versus place-neutral approaches. J. Reg. Sci. https://doi:10.1111/j.1467-9787.2011.00756.x

Bauler, T., Mutombo, E., van Gameren, V., Crivits, M., Paredis, E., Boulanger, P., . . . Ruwet, C., 2011. Construction of scenarios and exploration of transition pathways for sustainable consumption patterns. Brussels: Belgian Science Policy

Brown, J.C., Purcell, M., 2005. There's nothing inherent about scale: political ecology, the local trap, and the politics of development in the Brazilian Amazon. Geoforum, https://doi:10.1016/j.geoforum.2004.09.001

Brunori, G., Malandrin, V., Rossi, A., 2013. Trade-off or convergence? The role of food security in the evolution of food discourse in Italy. J. Rural Stud. https://doi:10.1016/j.jrurstud.2012.01.013

Cistulli, V., Rodríguez-Pose, A., Escobar, G., Marta, S., Schejtman, A., 2014. Addressing food security and nutrition by means of a territorial approach. Food Secur. https://doi:10.1007/s12571-014-0395-8

Cox, I., 2015. Interim Report: Adding Value and demonstrating sustainable development in the Community Food Co-ops in Wales, EcoStudio

Crivits, M., Paredis, E., 2013. Designing an explanatory practice framework: Local Food Systems as a case. Journal of Consumer Culture, https://doi:10.1177/1469540513484321 joc.sagepub.com

CSM, 2016. Connecting small-holders to farmers: an analytical guide.

Dixon, J., Richards, C., 2016. On food security and alternative food networks: understanding and performing food security in the context of urban bias. Agric. Human Values, https://doi:10.1007/s10460-015-9630-y

DuPuis, E.M., Goodman, D., 2005. Should we go "home" to eat?: toward a reflexive politics of localism. J. Rural Stud. https://doi:10.1016/j.jrurstud.2005.05.011

Elliott, E., Parry, O., Ashdown-Lambert, J., 2004. Evaluation of community food co-ops, Working Paper 85, Cardiff School of Social Sciences, Cardiff University

886 Ekers, M., Levkoe, C.Z., Walker, S., Dale, B., 2015. Will work for food: agricultural interns,
887 apprentices, volunteers, and the agrarian question. Agric. Human Values
888 https://doi:10.1007/s10460-015-9660-5

889 FAO, 1998. Report: Sustaining agricultural biodiversity and agro-ecosystem functions.
890 http://www.fao.org/sd/EPdirect/EPre0080.htm.

891 FAO, 2001. Report: The state of food insecurity in the world.
892 http://www.fao.org/docrep/003/y1500e/y1500e00.htm

893 Gibson-Graham, J.K., 2006. A postcapitalist politics. University of Minnesota Press, Minessota.

894 Goodman, D., DuPuis, E.M., Goodman, M.K., 2013. Engaging Alternative Food Networks:
895 Commentaries and Research Agendas. Int. J. Sociol. Agric. Food 20, 425–431.

896 Goodman, D., DuPuis, E.M., Goodman, M.K., 2012. Alternative Food Networks: Knowledge,
897 Place and Politics. Routledge, Oxon, New York. ISBN: 9780203804520

898 Goodman, M.K., 2004. Reading fair trade: political ecological imaginary and the moral
899 economy of fair trade foods. Polit. Geogr. https://doi:10.1016/j.polgeo.2004.05.013

900 Guthman, J., 2004. Agrarian dreams: The paradox of organic farming in California. University
901 of California Press, Berkeley. ISBN-10: 0520240952

902 Hubeau, M., Coteur, I., Mondelaers, K., & Marchand, F., 2015. Systeembeschrijving van het
903 Vlaamse Landbouw- en Voedingssysteem: een nulmeting. Merelbeke, Belgie: ILVO

904 Ilbery, B., Maye, D., 2005. Alternative (shorter) food supply chains and specialist livestock
905 products in the Scottish - English borders. Environ. Plan. https://doi: 10.1068/a3717

906 Jarosz, L., 2007. The city in the country: Growing alternative food networks in metropolitan
907 areas. Journal of Rural Studies, https://doi.org/10.1016/j.jrurstud.2007.10.002

908 Jones, I., 2012. Evaluation of the Community Food Co-operative Programme in Wales, BMG
909 Research, Welsh Government Social Research 22/2012

910 Kirwan, J., Maye, D., 2013. Food security framings within the UK and the integration of local
911 food systems. J. Rural Stud. https://doi.org/10.1016/j.jrurstud.2012.03.002

912 Lamine, C., 2015. Sustainability and Resilience in Agrifood Systems: Reconnecting
913 Agriculture, Food and the Environment. Sociol. Ruralis, https://doi:10.1111/soru.12061

914 MacMillan, T., Dowler, E., 2012. Just and sustainable? Examining the rhetoric and potential
915 realities of UK food security. J. Agric. Environ. ethics, https://doi:10.1007/s10806-011-
916 9304-8

917 Marsden, T., Banks, J., Bristow, G., 2000. Food Supply Chain Approaches: Exploring their
918 Role in Rural Development. Sociol. Ruralis, https://doi/10.1111/1467-9523.00158

919 Maxwell, S., 1996. Food security: a post-modern perspective. Food Policy.
920 https://doi.org/10.1016/0306-9192(95)00074-7

921 Mooney, P.H., Hunt, S.A., 2009. Food Security: The Elaboration of Contested Claims to a
922 Consensus Frame. Rural Sociol. https://doi/10.1111/j.1549-0831.2009.tb00701.x

923 Moragues-Faus, A., 2016. Participative Action Research: Transforming Cardiff's food system
924 through students' live projects. Report available at http://foodcardiff.com/wp-
925 content/uploads/2016/10/Report-live-projects-2016-cut-.pdf

926 Moragues-Faus, A., 2017a. Emancipatory or Neoliberal Food Politics? Exploring the "Politics
927 of Collectivity" of Buying Groups in the Search for Egalitarian Food Democracies.
928 Antipode, https://doi:10.1111/anti.12274

929 Moragues-Faus, A., 2017b. Problematising justice definitions in public food security debates:
930 Towards global and participative food justices. Geoforum,

931 https://doi:10.1016/j.geoforum.2017.06.007

932 Moragues-Faus, A., Marsden, T., 2017. The political ecology of food: Carving "spaces of
933 possibility" in a new research agenda. J. Rural Stud.
934 https://doi:10.1016/j.jrurstud.2017.08.016

935 Moragues-Faus, A., Sonnino, R., 2012. Embedding Quality in the Agro-food System: The
936 Dynamics and Implications of Place-Making Strategies in the Olive Oil Sector of Alto
937 Palancia, Spain. Sociol. Ruralis, https://doi: 10.1111/j.1467-9523.2011.00558.x

938 Morgan, K., Sonnino, R., 2010. The urban foodscape: world cities and the new food Equation.
939 Cambridge Journal of Regions, Economy and Society. https://doi:10.1093/cjres/rsq007

940 Murdoch, J., Marsden, T., Banks, J., 2000. Quality, Nature, and Embeddedness: Some
941 Theoretical Considerations in the Context of the Food Sector. Econ. Geogr.
942 https://doi: 10.1111/j.1944-8287.2000.tb00136.x

943 Murdoch, J., Miele, M., 1999. "Back to Nature": Changing "Worlds of Production" in the Food
944 Sector. Sociol. Ruralis, https://doi:10.1111/1467-9523.00119

945 OECD, FAO, UNCDF, 2016. Adopting a Territorial Approach to Food Security and Nutrition
946 Policy. Paris. https://doi:10.1787/9789264257108-en

947 Ortiz-Miranda, D., Moragues-Faus, A.M., 2014. Governing Fair Trade Coffee Supply:
948 Dynamics and Challenges in Small Farmers' Organizations. Sustain. Dev.
949 https://doi:10.1002/sd.1570

950 Oxfam and Church Action, 2013. Walking the Breadline: The Scandal of Food Poverty in 21st-
951 Century Britain. http://policy-practice.oxfam.org.uk/publications/walking-the-breadline-
952 the-scandal-of-food-poverty-in-21st-century-britain-292978. Accessed 19 August 2014.

953 Padel, S., Foster, C., 2005. Exploring the gap between attitudes and behaviour:
954 Understandingwhy consumers buy or do not buy organic food, British Food Journal,
955 https://doi.org/10.1108/00070700510611002

956 Renting, H., Marsden, T.K., Banks, J., 2003. Understanding alternative food networks:
957 exploring the role of short food supply chains in rural development. Environ. Plan.
958 https://doi: 10.1068/a3510

959 Renting, H., Rossi, A., 2013. Building Food Democracy: Exploring Civic Food Networks and
960 Newly Emerging Forms of Food Citizenship. Int. J. Sociol. Agric. Food 19, 289–307.

961 Romero, J., Francés, M. (Eds), 2012. La Huerta de Valencia. Un paisaje cultural con futuro
962 incierto. Valencia, Publicaciones de la Universitat de València

963 Sage, C., 2003. Social embeddedness and relations of regard: alternative "good food" networks
964 in south-west Ireland. J. Rural Stud. https://doi:10.1016/S0743-0167(02)00044-X

965 Sonnino, R., Marsden, T., 2006. Beyond the divide: rethinking relationships between alternative
966 and conventional food networks in Europe. J. Econ. Geogr. https://doi:10.1093/jeg/lbi006

967 Sonnino, R., Marsden, T., Moragues-Faus, A., 2016. Relationalities and convergences in food
968 security narratives: towards a place-based approach. Trans. Inst. Br. Geogr.
969 https://doi:10.1111/tran.12137

970 Soriano i Piqueras, V. (2015). La huerta de Valencia un paisaje menguante. Amazon. ISBN-
971 13: 978-1512009231

972 Stanners, D. and Bourdeau, P. 1995. Europe's Environment: The Dobris Assessment.
973 Copenhagen: European Environmental Agency.

974 Tregear, A., 2011. Progressing knowledge in alternative and local food networks: Critical
975 reflections and a research agenda. J. Rural Stud. https://doi:10.1016/j.jrurstud.2011.06.003

976 Valencia city council. Department of Agricultura and Huerta (ongoing review). Pla d'acció

977 integral per a la promoció de l'activitat i el territorio agrícola municipal.
978 http://valenciacapitalsostenible.org/wp-content/uploads/2017/07/PlanAgricola-VAL.pdf.
979 Accessed January 2018.

980 Van Gameren, V., Ruwet, C., & Bauler, T., 2015. Towards a governance of sustainable
981 consumption transitions: how institutional factors influence emerging local food systems
982 in Belgium. Local Environment: The international journal of justice and sustainability,
983 https://doi.org/10.1080/13549839.2013.872090

984 Venn, L., Kneafsey, M., Holloway, L., Cox, R., Dowler, E., Tuomainen, H., 2006. Researching
985 European "alternative" food networks: some methodological considerations. Area,
986 https://doi:10.1111/j.1475-4762.2006.00694.x

987 Vervoort J., Thornton PK., Kristjanson P. et al. (2014). Challenges to scenario-guided adaptive
988 action on food security under climate change. Global Environmental Change,
989 https://doi:10.1016/j.gloenvcha.2014.03.001

990 Weingartner L. 2005. Paper I. The concept of food and nutrition security. In: Klennert K, editor.
991 Achieving food and nutrition security: actions to meet the global challenge: a training
992 course reader. Feldafing: German Society for International Cooperation; p. 3–28.ISBN 3-
993 937235 -71-X

994 Radhika Ch., Hemantha U., 2017. Research study on nutrition security and equity in its access
995 in watershed development programmes. Research Reports Series 107. National Institute of
996 Rural Development & Panchayati Raj. ISBN 978-93-84503-81-9

997 Whatmore, S., Stassart, P., Renting, H., 2003. What's alternative about alternative food
998 networks? Environ. Plan. https://doi:10.1068/a3621

999 Zwart, T.A., Mathijs, E., Avermaete, T. 2016. Can Alternative Food Networks contribute to a
1000 transition towards sustainability in Flanders : Assessing the marketing functions of
1001 Voedselteams. Report available at
1002 http://ageconsearch.umn.edu/record/245069/files/BioeconWP_2016_04_submitted.pdf