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Working Co-operatively for Sustainable and Just Food System Transformation

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Abstract: Co-operative ways of working can be understood as people-centred approaches. This article considers how co-operative ways of working have the potential to support the scaling-out of sustainable and just food systems in the context of Wales through people-centred change. Drawing upon a series of interviews with stakeholders involved in the sustainable and the co-operative food sector within Wales and international case studies, opportunities and challenges facing the scaling-out of sustainable and just food systems are considered. Findings demonstrate the potential of co-operative and community-based approaches to sustainable production, processing, distribution, and trading of healthy food that is affordable, culturally appropriate, and based upon an ethic of justice and care for land, workers, and animals. Community supported agriculture, incubator farms, food hubs, and platform co-operatives are identified as key mechanisms for sustainable and just food systems. Capacity building through education, information, and training are further critical foundations for co-operative and people-centred ways of working. In order to accelerate sustainable and just food futures, community-based participation, networks for training, access to resources and land, and transformative forms of governance, including legislative change, are key. We conclude by highlighting implications for future research into policy transfer and food system transformation.

Keywords: food justice; sustainable food systems; people-centred; co-operative; transformation; Wales

1. Introduction

This article investigates how co-operative ways of working, as people-centred approaches, can support the scaling-out of sustainable and just food systems. Based on fieldwork conducted within the Welsh food sector and a set of international case studies, the article considers the opportunities and challenges of sustainable and just food system transformation within Wales, and the potential role of co-operative approaches. It makes a contribution to the sustainable food systems literatures as a case study that considers the linkages between co-operative ways of working, people-centred approaches, and sustainable and just food system transformation.

Drawing upon sustainable and just food literatures, food systems are understood to include “the various processes and infrastructures involved in feeding a population, including growing and harvesting, processing, distribution, marketing, wholesaling, retailing, consumption and the disposal of waste” [1] (p. 319). Food systems are recognised as “an interactive, interdependent web of activities and relationships” [1] (p. 319). As indicated in the EAT Lancet Commission Report: “food systems have the potential to nurture human health and support environmental sustainability; however, they are currently threatening both” [2] (p. 447). There is growing understanding of the need to make large-scale shifts towards more sustainable and regenerative food systems [3–5]. Food systems currently have a major impact upon the water-food-energy nexus, recognised as central to sustainable futures [6]. Agriculture is the largest consumer of global freshwater resources and a major contributor of greenhouse gas emissions, whilst food production and supply accounts for one quarter of global

energy use [6]. Meanwhile, the dual challenges of climate change and malnutrition play out in ways that affect most those who are most vulnerable [2]. According to Willett et al. [2], the ‘planetary healthy plate’ can provide both a sustainable and healthy diet for all. Derived from sustainable food production that operates within ‘safe operating spaces’ “for environmental systems and processes that contribute to the stability and resilience of the Earth system” [2] (p. 461), the proposed ‘planetary health plate’ “largely consists of vegetables, fruits, whole grains, legumes, nuts, and unsaturated oils, includes a low to moderate amount of seafood and poultry, and includes no or a low quantity of red meat, processed meat, added sugar, refined grains, and starchy vegetables” [2] (p. 447).

The ‘planetary health plate’ promotes an integrated understanding of the connections between planetary health and diet. However, food justice remains largely overlooked in this conceptualisation. Many would suggest that food justice is a critical dimension of sustainable food systems and sustainable healthy diets. Healthy food needs to be understood not only as fresh and nutritious, but also “affordable, culturally-appropriate and grown locally with care for the well-being of the land, workers and animals” [7]. From a rights-based approach, food justice is understood as “communities exercising their right to grow, sell and eat healthy food” [7]. Integrating these understandings of what constitutes a sustainable and just food system, we draw upon the concept of ‘just sustainabilities’, defined as “the need to ensure a better quality of life for all, now and into the future, in a just and equitable manner, whilst living within the limits of supporting ecosystems” [8] (p. 5). ‘Just sustainabilities’ highlights the need to consider the well-being of future generations in any understanding of sustainable food justice, attending not only to inter-generational justice, but also intra-generational justice. Within any conceptualisation of what counts as a ‘just food system’, epistemic and contributive justice as well as distributive justice need to be considered [9,10].

We further acknowledge the work of agri-food scholars who contest normative assumptions that local food systems, alternative food networks, or forms of direct exchange offer necessarily more sustainable, just, and equitable food systems. Born and Purcell [11] warn of the ‘local trap’, whilst DuPuis and Goodman [12] (pp. 360–361) warn that ‘local’ “is not an innocent term”, challenging the ‘unreflexive localism’ of many local food system narratives based upon the interests of a ‘sectionalist, authoritarian elite’. As DuPuis and Goodman highlight, ‘unreflexive localism’ does not necessarily create the radical new political processes that are envisaged [12]. Guthman [13] and Alkon [14] further challenge the tendency for colour-blindness and universalism of alternative food scholarship, which compromises the very social justice goals it claims to value and work towards. These critiques highlight the importance of an inter-sectional approach in attending to the investigation of sustainable and just food systems. We suggest people-centred approaches have the potential to create space for such work.

Scaling-out is identified as a pathway for food system change, alongside scaling-up and scaling-deep [15,16]. Pitt and Jones note the inconsistencies in distinctions between scaling-up and scaling-out, suggesting this “might be due to the reality that geographical expansion requires organizational growth” [15] (p. 4). Building upon Pitt and Jones, and Moore, Riddell, and Vocisano, we understand scaling-out as a form of horizontal and distributed scaling [15,16]. Scaling-out is based upon community-based capacity-building, including increasing the number of people or communities impacted or involved [16], whilst scaling-up is understood as “expanding institutional capacity” [15] and “changing institutions at the levels of policy, rules and laws” [16] (p. 75). Scaling-deep is understood as “changing relationships, cultural values and beliefs, ‘hearts and minds’” [16] (p. 75), centred upon acknowledgement that “culture plays a powerful role in shifting problem-domains, and change must be deeply rooted in people, relationships, communities and cultures” [16] (p. 77). Drawing upon these conceptualisations of scaling change, we highlight the need to attend to organisational and institutional structures as well as intersectionalities, suggesting scaling-up tends towards vertical integration and hierarchical forms of organisational structure, whilst scaling-out requires horizontal and distributed forms of organisational structure. Acknowledging the important role of scaling-up and scaling-deep within transformation processes and the need for further critical work on this, in this article we focus on the role of scaling-out to explore the question of people-centred change.

Whilst there is growing understanding and awareness around what constitutes a healthy and sustainable diet, achieving a sustainable and just healthy diet for all remains a global challenge. This paper focuses on the case of the nation of Wales, United Kingdom, in order to explore two research questions. First, what are the opportunities and challenges to scaling-out sustainable and just food systems within Wales? Second, can co-operative ways of working foster sustainable and just food systems through people-centred approaches? As Section 2 outlines, currently unsustainable and unjust food systems prevail within Wales. Section 3 presents the methodological approach. Drawing upon a series of interviews with stakeholders involved in the sustainable and the co-operative food sector within Wales and a set of indicative case studies, Section 4 presents an overview of barriers and opportunities to working co-operatively in Wales and the scaling-out of sustainable and just food systems. In Section 5, we identify five foundations of people-centred approaches found synergistic with co-operative ethics, building upon Levkoe and Sheedy, Kortzen, and Samuels [1,17,18]. Findings demonstrate the opportunity of co-operative ways of working and community-based approaches to deliver sustainable production, processing, distribution, and trading of healthy food that is affordable, culturally appropriate, and based upon an ethic of justice and care for land, workers, and animals. We conclude by highlighting implications for future research into policy transfer and food system transformation. In order to accelerate towards sustainable and just food futures, transformative forms of governance, including legislative change, are recognised as key.

2. Context

2.1. Food Justice in Wales

Currently unsustainable and unjust food systems prevail within Wales. Marginal food security is common, particularly prevalent amongst young people [19]. Around one in four children are living in households for whom a healthy diet is increasingly unaffordable [20]. Low pay and poor quality employment mean that many working people remain in relative poverty and experience food insecurity [21,22]. The increase in food banks across Wales suggest growing levels of relative poverty and food insecurity, including amongst the working population [23]. Links between poor health and poverty are pronounced. There are further indications of health inequalities with regards to fresh fruit and vegetable consumption in Wales—less than one quarter of adults report to eat the recommended five-a-day portions of fruits and vegetables, whilst less than one-third of children report to eat at more than one portion of vegetables once a day or more [24,25]. Those living in more deprived communities are less likely to eat fruits and vegetables than those living in more affluent communities [24]. As the South Wales Food Poverty Alliance (SWFPA) note, achieving a healthy diet is complex. Key barriers to accessing healthy food include: Lack of finances; lack of nutrition knowledge and cooking skills; lack of access to affordable and healthy foods, and lack of cooking facilities or the ability to use them [26] (p. 10). Improving access to healthy food (including fresh vegetables, fruits, whole grains, legumes, nuts, and unsaturated fats) through addressing these barriers has the potential to enhance the long-term health and well-being of people living in Wales. One key step that could improve access is the scaling-out of food systems that support the production, distribution, and trading of healthy, nutritious, affordable, culturally-appropriate food. However, a people-centred approach further highlights the need for capacity-building within the current food system.

2.2. Sustainable Food Production in Wales

According to recent estimates, the amount of vegetables and fruits produced in Wales meets an estimated 5% of the recommended five a day requirement for the population of Wales [25,27]. Within the UK more generally, it is estimated that domestic production accounts for 57% of vegetable supply and 16% of fruit supply (2017 figures) [28]. Currently, the agricultural industry in Wales is dominated by livestock (49% sector output)—mainly cattle and sheep; and livestock products (37% sector output)—including milk/milk products and eggs [29]. Crops account for a small proportion of

sector output (6.3%), around half of which are horticultural products—including fruits and vegetables; and half of which are split evenly between cereals and potatoes [29]. Arable farming in Wales accounts for 4.8% of total agricultural land use: Predominantly wheat (25.2%); barley (21.2%), and; crops for stock-feeding (18.7%), whilst horticulture accounts for 0.1% proportion of total agricultural land use: Predominantly commercial orchards, other orchards, and small fruits (55%); vegetable and salad growing in the open (22%), and; glasshouse (1.4%) [30]. Under-reporting of horticultural activity is likely, since many horticultural producers do not receive agricultural subsidy or are under the typical threshold for returning farm business data, hence they may not be included in national-level statistics [31]. That being said, arable and horticultural production still accounts for a very small proportion of crops consumed within Wales.

The current gap between the nation's dietary requirement for fresh fruits and vegetables and what is being produced presents both challenge and opportunity for the scaling-out of sustainable and just food production. Within Wales and beyond, there are likely to be increasing pressures both from a public health perspective and environmental perspective for large-scale shifts towards more plant-based diets derived from sustainable food systems. Scaling-out sustainable arable and horticultural production in Wales could enable more people opportunity to both attain a sustainable and healthy diet and participate in sustainable food systems. Amidst growing awareness of the need for sustainable food systems, prospects for sustainable agriculture sector are good, particularly for the sustainable horticulture and arable sector. At present however, there are a number of obstacles preventing the scaling-out of sustainable production within Wales.

2.3. Scaling-out Sustainable Food Systems in Wales: Challenges

Currently, the area of land used for sustainable production is marginal, although promising. 4.9% of agricultural land within Wales is categorised as organic—higher than any other UK nation—England (3.1%), Scotland (1.6%), and Ireland (0.8%), and the global average (1.4%) [32,33]. Sustainable production is currently limited by three key factors: First, the challenge of competing with low-cost food based on economies of scale. Power within food supply chains has dramatically consolidated over time [34,35] (p. 6). Centralised systems prioritise suppliers that are vertically integrated, whilst minimising opportunities for individuals to influence management practices [26,34,35]. Second, the lack of infrastructure and processing facilities, particularly for small-scale sustainable meat, cereal, and horticulture products. Anecdotal evidence suggests many small-scale Welsh horticultural growers supplying multiple retailers have not been able to compete with larger scale farms that can offer the volumes and stringent qualities required by consolidating markets. Regional processing and distributing centres within Wales are in steady declined, replaced by national 'mega-hubs' [36]. Meanwhile, there are few facilities for small to medium-scale processing of cereals such as oats, wheat, and barley within Wales. Third, the ageing farming population. Currently, farmers in Wales are typically male and relatively old. Young farmers (under 40 years old) in the UK make up 5.3% of farm managers, compared with the EU average of 10.6% [37]. Whilst these statistics obscure farming demography, as they focus only upon farm managers, rendering trainees and other farm-workers invisible [38], sustainable farming remains a relatively unlikely career choice amongst young people living and working within Wales, particularly amongst those from non-farming families.

The scaling-out of sustainable production within Wales requires a new generation of sustainable farmers and growers. At present however, new entrant farmers and growers face a suite of challenges in Wales including: Limited opportunities for learning about sustainable agriculture; limited training provision in business and commercial skills, and access to land, capital, and markets [39,40]. Taherzadeh further identifies a 'missing link' in learning pathways for sustainable agriculture, with lack of mid-level farming opportunities which allow entrants to gain more experience after initial training and before heading their own farm business [38]. Land prices, particularly of smaller parcels of land; land retirement and farm consolidation; lack of tenure security; loss of farmland due to local development; and access to credit constitute significant challenges to accessing land in Wales [39,40].

Welsh agriculture currently accounts for 3.6% of regional employment and a total gross value added (GVA) to the Welsh economy of 0.6% [41]. Sustainable forms of agriculture are a key component in the scaling-out of sustainable food systems within Wales and have the potential to make significant contributions to the Welsh foundational economy through job creation and income generation [42]. Evidence suggests sustainable forms of agriculture create more jobs per farm and potentially more value. In the UK, it is estimated that organic farming provides 32% more jobs per farm than equivalent non-organic farm [43]. Local and regional food economies have also been found to have a ‘multiplier effect’—for example, income from an organic box scheme was found to generate about twice as much for the local economy as supermarkets [44].

However, at this juncture, there is a need to return to the critical agri-food literature warnings of the ‘local trap’, ‘unreflexive localism’, as well as colour-blindness and ‘universalism’ [11–14]. We argue that co-operative approaches have the potential to overcome a number of the challenges outlined above and support the scaling-out of inter-sectional, democratic, participatory, and empowering forms of sustainable production, processing, distributing, trading, and training within Wales, as well as job creation and income generation. As explored in the remainder of this paper, co-operative approaches foster people-centred approaches to producing, processing, distributing, and trading sustainable crops; support new entrant farmers and growers, and cultivate people-centred food systems.

2.4. Co-operatives: People-Centred Ways of Working?

Co-operatives have been described as “the only type of enterprises that have an internationally agreed ethical code of values” [45] (p. xi). In 1995, members of the International Co-operative Alliance (ICA) agreed and adopted *The Statement on the Co-operative Identity, Values and Principles*. Within the statement, a co-operative is defined as “an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise” [45] (p. 34); co-operative values are defined as including “self-help, self-responsibility, democracy, equality, equity, and solidarity, as well as ethical values of honesty, openness, social responsibility and caring for others”; seven co-operative principles, as outlined below, are described as “guidelines by which co-operatives put their values into practice” [45] (p. i).

1. Voluntary and open membership
2. Democratic and member control
3. Member economic participation
4. Autonomy and independence
5. Education, training, and information
6. Co-operation among co-operatives
7. Concern for community

The ICA Statement has enabled recognition of co-operatives amongst international bodies, including the United Nations (UN) and International Labour Organisation (ILO) [46,47]. Whilst the definition, values, and principles of co-operatives constitute an internationally agreed and recognized set of guidelines, they are not legally binding. The ways in which they are applied depend upon the “economic, cultural, social, legal and regulatory context and particularities within which co-operative operates” [45] (p. xi). Although co-operative identity and values are ‘immutable’, principles can be ‘reformulated and restated’ [45] (p. 1). As Green states, co-operative economies are ‘diversified and pluralistic’ [45] (p. ix). The ways in which co-operatives operate on the ground can vary significantly. However, co-operatives as entities are underpinned by a globally agreed ethical code focused around people-centred approaches. Indeed, we suggest co-operative values and principles are closely aligned to five key foundations of people-centred approaches: Processes of democratisation; redistribution of power; strengthening participation; equality and justice, and transformative governance [1,17,18].

Cooperatives were established as a practical means of enabling working people to meet their everyday needs, and as a route to building a better society. At its simplest, co-operative action is

about “people working together equitably as members of a formal and open body that exists to meet their economic and wider needs” [48] (p. 7). For the founders of the UK co-operative movement, the co-operative was not simply about finance (whether through credit or retailing), but about how the working and living conditions of people and the communities within which they lived could be improved [49] (p. 21). Within a people-centred business model, people are at the core, and any profit is seen as a means to serve the people. With a focus of inclusive and democratic participation; people over profit; co-operation over competition; capacity building through education, information, and training; and concern for community as core principles, co-operative ways of working could support with the scaling-out of more people-centred approaches. We suggest co-operative approaches provide opportunity to address some of the root challenges currently limiting sustainable and just food futures.

3. Materials and Methods

A series of interviews with key identified stakeholders were conducted to improve understanding of the opportunities and challenges to scaling-out of sustainable and just food systems in Wales, and how co-operative ways of working have the potential to foster sustainable and just transformation. Interviewees included representatives from a range of organisations and businesses operating within the food sector (including in the horticulture, dairy, meat, and processing sectors) that employed formal or informal co-operative ways of working. As well as those operating as co-operative societies, organisations and businesses oriented to sustainability and food justice that self-defined as co-operative were considered.

During initial stakeholder mapping, co-operatives in the meat and dairy sectors were found to be medium to large-scale co-operatives of between 20 to 7500 producer members, largely working to supply multiple retailers. Those in horticulture working formally or informally as co-operatives were more likely to be small-scale and community-based, tending to operate as single farm units. As outlined in Figure 1, twelve stakeholders representing nine co-operative businesses, two organisations working with co-operative principles informally, and a representative from the Wales Co-operative Centre were interviewed.

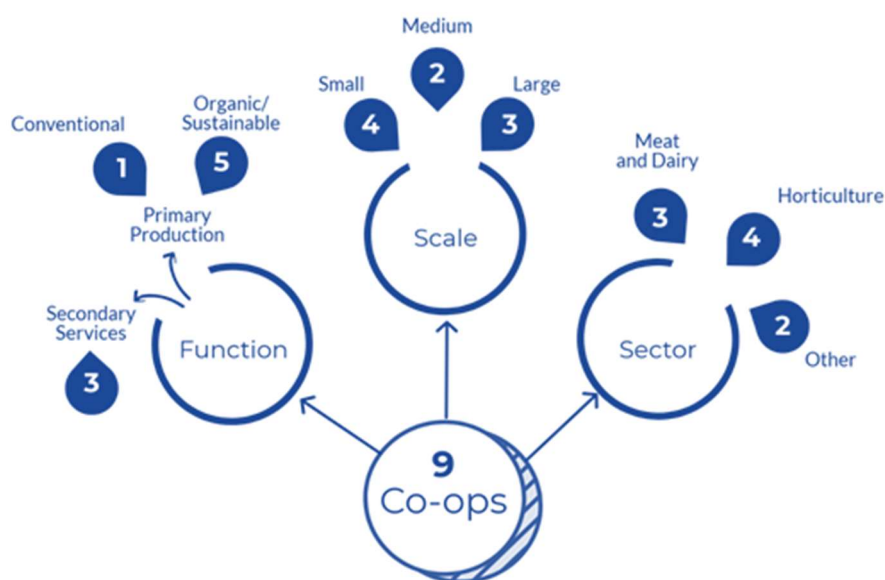


Figure 1. Sample of co-operatives by function, scale, and sector.

Small-scale includes single farms or small collectives of farms. Medium-scale co-operatives of between 20–500 producer members. Large-scale includes co-operatives of more than 500 producer members.

Research was conducted between May–September 2019. Five key topics were discussed in the interview [see Appendix A for more information]:

- Investigating cooperative ways of working
- Co-operative ways of working in Wales
- Training and learning
- Cooperative ways of working and sustainable food systems
- Cooperative ways of working and the policy environment

An interview question guide was followed during interviews (see Appendix A). Interviews were recorded, transcribed, and analysed thematically. Fieldwork was accompanied with desk-based research on international exemplars of co-operative approaches within the food sector. Research was underpinned by the BSA [50] and Cardiff University guidelines on research ethics and research integrity [51]. The research received ethical approval by Cardiff University Research Ethics Committee [SREC/3334].

4. Results

Drawing upon interviews, this section is presented in two parts. The first part presents key identified challenges and opportunities to producing co-operatively; distributing, processing, and trading co-operatively; and learning co-operatively in Wales. The second part presents key identified opportunities to scaling-out sustainable and just food systems, drawing upon a series of indicative case studies.

4.1. Working Co-Operatively in the Welsh Food System

4.1.1. Producing Co-operatively in Wales

Many producers interviewed voiced difficulty operating amidst a wider food system where the ‘real’ costs of food are often not translated. As one producer reflects:

“That’s the dilemma with food production. People expect it cheap. And to have it cheap you need economies of scale both from the farm side and the processing side and then that involves hauling the stuff half way around the country.”

For some producer-led, farmer-owned co-operatives, working together as a co-operative gives more collective bargaining power and guaranteed prices, regardless of farm size. This can be particularly beneficial for small-scale producers. According to one producer interviewed, an advantage of working co-operatively for small-scale producers is that they are able to work together to reach markets that could otherwise be inaccessible. Other forms of service-based agricultural co-operatives were identified whereby membership provides producers technical services that support compliance with quality accredited schemes and thus access to markets that would be otherwise difficult to reach.

Amongst small-scale horticultural producers interviewed, many identified opportunity in local and regional food economies. Several voiced difficulty of selling fresh produce to multiple retailers for prices that are not viable. According to one horticultural producer:

“The elephant in the room is that we are basically training people into an economically unviable career. But we need it to be economically viable if we want food to be produced locally and ecologically.”

Schemes with pricing structures that reflect the ‘real’ ecological and social costs of producing and distributing food were favoured amongst producers interviewed.

4.1.2. Distributing, Processing, and Trading Co-operatively in Wales

The lack of distributing and processing units within Wales, particularly within the organic dairy, meat, and cereal sectors was identified as a key challenge facing small-scale producers. The quote below highlights a key challenge currently facing small and medium-scale cereal growers within Wales:

“I have personally grown 140kg of milling quality oats this year as part of that network, but I cannot dehull them for human consumption. There are no de-hullers in Wales [...] We need funding for shared grain processing hubs, which will allow more small scale growers to grow grains and have them eaten by people in their communities.”

Transport costs were also identified as a significant sustainability challenge mentioned amongst stakeholders from the meat and dairy sector—particularly when it comes to transporting raw produce with a short lifespan, such as milk.

4.1.3. Learning Co-operatively in Wales

Education, training, and information were discussed with all stakeholders in this study, including both support for setting-up and managing co-operatives, as well as the broader training landscape for sustainable food systems. Long-term funding was identified as the main obstacle by stakeholders in terms of accessing high-quality training and relevant advice. Amongst stakeholders, there was a broad agreement that the food education and training landscape is “pretty sparse”, particularly in horticulture. Work-based apprenticeships and traineeships, formal training programmes to support new entrants, and qualifications and training centres for trainers were identified as initiatives that could support the scaling-out of sustainable food futures in Wales. Some stakeholders emphasised the importance of accreditation of training at recognised educational levels whilst others, particularly small-scale producers, saw themselves as key actors in expanding training opportunities through apprenticeship and mentoring networks. Improving training provision for sustainable production was identified as key. As one grower reflects, there is currently “not much training, but a lot of opportunity.” Many stakeholders also mentioned the importance of mentoring schemes at all stages.

A history of episodes of short-term funding has resulted in gaps in the food-sector training and mentoring landscape within Wales. Whilst many smaller-scale stakeholders connected sparse training opportunities with lack of funding, large-scale stakeholders were critical of the quality of government-funded training and expressed a preference for private consultancy or formal high-level qualifications. Training delivered by a broad range of actors on the basis of short-term government grants was considered potentially damaging to quality in comparison with core funding provided to experienced and trusted organisations. Scope for collaboration between organisations and educational institutions to provide accreditation was further recognised.

Despite increased recent efforts to support horticulture within Wales through programmes such as Tyfu Cymru [52], those interviewed highlighted the gap in horticultural training, and many were not aware of the full range of opportunities available to them. With constantly shifting training landscapes, stakeholders may fail to identify the appropriate training available to them.

4.2. Scaling-out Co-operative Ways of Working for Sustainable and Just Food Systems: Opportunities

4.2.1. Scaling-out Sustainable Agriculture

Community Supported Agriculture (CSA) emerges as an approach for small-scale growers that can support recognition of the ‘real’ costs of food and the scaling-out of sustainable agriculture through co-operative approaches to production, distribution, trading, and training. CSA is understood as “a partnership between farmers and consumers in which the responsibilities, risks and rewards of farming are shared” [53]. As a form of direct supply, it can facilitate more autonomous forms of sustainable production (including volumes, crops, and qualities sold) and more co-operative relations (including membership) [54].

Cae Tan [55] is one of the largest CSAs in Wales, operating in the Gower Peninsula, South-west Wales. As a grower-led CSA, decision-making is guided by the growers and supported by members, who pay for a share of the crop in the form of a weekly box of veg. Two growers manage farm operations, supported by an apprentice and volunteers. 120 members pick up their weekly veg box from a local hub. Through a one-year apprenticeship scheme, Cae Tan creates both training

and employment opportunities for new entrant growers. Over the last four years, out of the four apprentices, two have secured employment in horticulture—one has become assistant grower at Cae Tan and one has set up a salad growing social enterprise on Cae Tan land, whilst another is in the process of setting up other CSAs in the Swansea area. Alongside the apprenticeship scheme, Cae Tan run a Sustainable Schools Programme, where primary school pupils from 5 local schools learn about sustainable farming.

4.2.2. Scaling-out Sustainable Distribution, Processing, and Trading

Findings suggest working together could or already does enable interviewees to overcome some of the challenges they face, including accessing capital to purchase equipment, reaching markets, and navigation of future challenges in Wales, particularly amidst a current context of climate emergency and political uncertainty. Informal and formal producer co-operatives enable collective approaches to: Processing; distribution (including transportation and sales); packaging, labelling, and promotion; organising of quality control; use of equipment and storage facilities; management of waste; and collective procurement of inputs [56] (p. 4). Working together particularly enables small-scale producers to overcome barriers—for example, sharing of resources and equipment avoids large capital costs, whilst processing hubs support more resource efficient approaches to processing.

Co-operatively-run processing food hubs are identified as another way of working co-operatively. Food hubs can support: Distributing collectively (including transportation and sales); sharing markets; purchasing and sharing infrastructure and equipment; and developing learning networks to address problems and share good practice [57]. They can include: Food distribution centres, online platforms, farmers' markets, community kitchens, and certification programmes.

Co-operative approaches to online software and digital tools are further identified as a key means of addressing certain challenges facing the food sector—enabling technical assistance (for example, software that supports producers attain specific quality standards); distribution (for example, via online platforms); and network building (for example, via online social media platforms). This includes platform co-operatives—digital platforms “designed to provide a service or sell a product - that [is] collectively owned and governed by the people who depend on and participate in it” [58].

Open Food Network (OFN) [59] presents an innovative case of using technology to support local food economies. As a platform co-operative, open source software supports the distribution of food via food hubs. Via an online platform, producers can sell to food hubs as well as direct to consumers, wholesalers can manage buying groups and supply food hubs, and communities can set up food hubs enabling trade and distribution within the local community. Currently, over 1000 producers and around 50 community enterprises running local food hubs are registered on the OFN-UK. As a model of co-operatively managed software, all members (including food producers, food hubs, and shops) collectively own the software and data.

4.2.3. Scaling-out Learning for Sustainable and Just Food Futures

Amongst some stakeholders, education within co-operatives around co-operative ethics was noted as crucial to the continuation and sustainability of the co-operative and the co-operative movement more broadly. Many identifying with co-operative ethics had first encountered co-operative ways of working during training and work experience at other co-operatives, highlighting the necessary educational role of co-operatives in scaling-out. Some further noted the need for a “critical mass” in terms of numbers of co-operatives operating in Wales in order to scale-out co-operative ways of working within Wales. Whilst co-operatives have the potential to be more self-sustaining as co-operative economies grow, currently the opportunity for co-operative-to-co-operative exchange is limited by the relatively small number of co-operatives existing in the food sector in Wales. At present, there are an estimated 478 co-operatives in Wales (of which only 22 are within the agri-food sector) [60,61]. Stakeholders recognized a role for institutional support for new and fledgling co-operatives within the food sector in order to scale-out co-operative approaches within Wales and achieve the “critical mass” required.

Additionally, stakeholders identified need for networks of training that provide opportunities for new entrants, address identified gaps in the training landscape, and link different actors within the food system through knowledge exchange. Long-term core funding is required to establish and sustain such initiatives. Highlighted opportunities include the training and community educating roles of CSAs and incubator farms, as well as accredited training schemes operated via farm networks.

Mach Maethlon, a food co-operative and vegetable box scheme based in the Dyfi Valley, launched a pilot incubator farm scheme, *Pathways to Farming*, in 2018 [62]. The scheme aims to increase the number of sustainable horticultural food producers in the area and support the local food economy through training new entrants on micro-farm plots [62]. Participants are provided with training and support to develop innovative business models and access local markets through a 12-month programme. In the first year of the scheme, out of 12 trainees, 9 have gone on to grow produce for local sale, including 4 trainees who have joined together to create a veg box scheme [63]. Working with other local producers, they have developed a local food hub through the OFN network. However, they face a challenge in maintaining their active role in the broader Welsh training landscape if they are unable to access long-term institutional support and funding.

5. Discussion

Drawing upon interviews with stakeholders, key challenges and opportunities facing the scaling-out of sustainable and just food systems in Wales are identified. Accounting for the 'real cost' of food so that sustainable agriculture is economically viable; addressing gaps in distribution, processing, and trading infrastructure, particularly for small-scale producers; and improving sustainable food system and business training opportunities emerge as key. However, though fragmented, findings indicate a range of people-centred, community-based approaches to production, distribution, trade, and education. Case studies demonstrate a range of mechanisms addressing some of the systemic barriers within current unsustainable and unjust food systems. From sharing the risks, rewards, and responsibilities of farming via CSAs; scaling-out of training and opportunities for new entrant farmers through incubator farms; sharing equipment and other resources via producer co-operatives; and community-based mechanisms for processing, distributing, and trading food via platform co-operatives and food hubs. These approaches are focused upon placing people at the centre of food system transformation.

5.1. People-centred Approaches to Food Systems

As a capacity-building approach to development, people-centred approaches are about more than economic development and the re-distribution of financial and material resources—the purpose of a people-centred approach is to enhance people's lives [64] (pp. 15-16). Within the context of sustainable and just food systems, a people-centred approach is not only about ensuring access to sustainable and healthy diets for all, it is also about building people's capacity to participate and determine sustainable and healthy food systems. Drawing upon Levkoe and Sheedy, Korten, and Samuels [1,17,18], we identify five foundations of people-centred approaches that support the scaling-out of co-operative ways of working: 1. Processes of democratisation; 2. redistribution of power; 3. strengthening participation; 4. equity and justice; and 5. transformative governance. Co-operative approaches to the production, distribution, and trading of food demonstrate opportunity for embedding these foundations within sustainable and just food futures. The importance of transformative governance and a supportive legislative framework is noted as particularly critical in order for scaling-up and scaling-deep, as well as scaling-out.

First, processes of democratisation within sustainable food systems hinge upon a rights-based approaches to growing, trading, and eating sustainable and healthy food. Scaling-out community-based production, distribution, trade, and training increase opportunities for individuals to become food citizens and exercise democracy in terms of decision-making around food system approaches and practices. Such processes require education across different strands of society which provides exposure

to, and training in co-operative values, people-centred economic and business models and participative modes of governance.

Second, redistribution of power within sustainable food systems requires people-centred change within the food system, as well as within society more broadly. Power has been dramatically consolidated within food supply chains [1,23]. Findings demonstrate co-operation as a means of reclaiming and redistributing power, providing opportunity for the emergence not only of distributive justice, but also epistemic and contributive forms of justice. A key channel for the redistribution of power is the exchange of experience and knowledge within co-operative networks to counter the current commodification of knowledge and education which maintains transformation as privilege.

Third, people-centred approaches are about strengthening people's opportunities and abilities to participate meaningfully. The scaling-out of CSAs, incubator farms, and food hubs increases opportunities for participation in food system futures. Such mechanisms, as shown in the case studies in section four as well as those discussed below, can combine production of healthy, sustainable food whilst also supporting community-based reconnection with the land and food production, thus strengthening capacities for informed participation in the food system.

Fourth, equity and justice are critical foundations of a people-centred approach. As Levkoe and Sheedy [1] suggest, a people-centred approach needs to include undocumented and disenfranchised people as well as engaged citizens. This entails identifying the constraints to achieving a sustainable and just diet for all—including those marginalised within society, as well as identifying what is constraining people from participation in the cultivation of sustainable and just food systems, and what vehicles can strengthen their ability to participate.

The fifth and final foundation of a people-centred approach is transformative governance. According to Samuel, the ultimate goal of a people-centred approach is social transformation, rooted in a desire to “challenge and change unjust power relations at all levels” [18] (p. 617). Transformative governance hinges upon application of, and legislation for, the four foundations outlined above. Levkoe and Sheedy suggest that for any kind of food policy rooted in principles of equity and ecological sustainability to be effective it “requires meaningful engagement from civil society, and specifically, the people that produce, harvest, gather, process, distribute, and eat food” [1] (p. 321). A people-centred approach “is about mobilising the politics of the people to ensure that the politics of the state is accountable, transparent, ethical and democratic” [18].

Co-operative approaches to production, distribution, trading, and training demonstrate opportunity for embedding people-centred foundations within sustainable and just food futures. The importance of i. community-based participative approaches; ii. networks for training, access to resources and land; and iii. a supportive legislative framework, are noted as critical in order for scaling-up and scaling-deep, as well as scaling-out.

5.2. *People-centred Approaches to Food System Transformation in Wales*

5.2.1. Community-based Participative Approaches

Findings suggest producer and multi-stakeholder co-operatives, food hubs, and platform co-operatives enable more co-operative ways of working amongst producers, distributors, suppliers, traders, and consumers. However, for sustainable food system transformation to become embedded within places and communities, there is need for democratic, community-based participation. Drawing upon Blay-Palmer et al., we understand food hubs to comprise of “networks and intersections of grassroots, community-based organisations and individuals that work together to build increasingly socially just, economically robust and ecologically sound food systems that connect farmers with consumers as directly as possible” [57] (p. 524). As Blay-Palmer et al. [57] highlight, food hubs hinge upon community-based organisations and individuals working together. Between 2004–2015, around 300 community food co-operatives across Wales were created through the Community Food Co-operative programme funded by the Wales Rural Regeneration Unit [65]. Following the end

of funding for this programme in 2015, a large number of the community food co-operatives have since ceased to exist. Food hubs may need initial institutional support in terms of capital costs and capacity building through training, mentoring, and network building. However, without sufficient community-based forms of democratic participation, there is a risk that such initiatives can become overly dependent upon institutional support and direction, and vulnerable if funding ceases.

The Stop Community Food Centre [66], located in a low income neighbourhood in Toronto, presents an example of how a community-based urban food hub can support food justice through supporting access to local, ecological produce, cultivating local food economies, and building community-based skills. Access to healthy, affordable food is supported through a community meal programme and market scheme, whilst community food training programs, peer advocacy, and support, community action training, social justice clubs, and volunteer programs support development of skills, knowledge, and confidence [67]. Taking a people-centred approach, The Stop prioritises capacity-building to address and sustain food justice and operate as a social enterprise.

5.2.2. Networks for Training, Access to Resources and Land

CSAs and incubator farms are identified as key mechanisms for scaling-out sustainable production, providing opportunities for new-entrant growers to gain access to land, training, tools and markets through a co-operative approach, as well as member education. Through improving access to sustainable, healthy food and supporting education, training, and learning around sustainable food systems, Cae Tan and Mach Maethlon demonstrate transformative potential. As exemplified by the case of The New Entry Sustainable Farming Project, incubator farms can also play a key role in addressing systemic inequalities within food systems.

The New Entry Sustainable Farming Project (Massachusetts, US) was launched in 1998 by Tufts University's Friedman School of Nutrition Science and Policy with the aim of integrating recent immigrants and refugees with farming backgrounds into agriculture within Massachusetts [68]. Their mission is "to improve local and regional food systems by training the next generation of farmers to produce food that is sustainable, nutritious, and culturally-appropriate and making this food accessible to individuals regardless of age, mobility, ethnicity, or socio-economic status" [68]. The scheme provides farmer training, land access, and support for market entry. A CSA scheme generates income for new entrant farmers, whilst a Food Access programme further provides fresh produce to over 2000 food insecure individuals. Through the Food Access programme, donations, grants, and CSA membership close the gap between what food insecure consumers can afford and what farmers need to cover production costs and wage. As a result, food insecure individuals gain access to fresh, sustainably grown, culturally appropriate, affordable produce whilst new farmers benefit from income generated.

As demonstrated by the cases of Cae Tan, Mach Maethlon, and New Entry, CSAs and incubator farms could play an important role in sustainable and just food futures—cultivating openings for epistemic and contributive, as well as distributive, justice. At present, however, they represent a minority in terms of food supply in Wales. Currently, there are nine horticultural CSAs in Wales producing fruit and vegetable shares for approximately 410 share-holders [69], whilst there is one fledgling incubator farm in Wales, Mach Maethlon [62]. Institutions such as schools and universities, as well as legislative change, have the potential to play a key role in supporting the emergence of networks for training, as well as access to resources and land. We further identify opportunities for producer and multi-stakeholder co-operatives to facilitate the sharing of skills and expertise. As a multi-stakeholder co-operative of small-scale farmers, employees and agricultural development organisations, L'Atelier Paysan act as a learning network, sharing designs for tools, self-built machinery, and agricultural buildings adapted for small-scale organic farming, as well as creating space for farmer-to-farmer exchange [70].

5.2.3. Supportive Legislative Framework

Although the co-operative movement has emerged largely independent of legislation, Watkins notes “without an appropriate legislative framework, a co-operative movement in the form of a growing economic organism is not possible or even conceivable” [48] (p. 39). The economic, social and environmental role co-operatives play has been acknowledged by a number of international bodies including the UN and ILO [46,47,71]. National, regional, and local governments can play a key role in fostering co-operative values through implementing policies, rules, and laws that promote and encourage co-operative ways of working within society. Indeed, “it is no accident that co-operatives are more prolific in countries where policy has provided them with incentives and made their creation a priority” [72] (p. 17).

Currently within Wales, although the foundational economy highlights the importance of food, the policy environment is lacking in terms of legislating for sustainable and just food systems and co-operative ways of working. However, the Well-being of Future Generations (Wales) Act 2015 [73] presents opportunity for embedding co-operation within legislation and policy. In order to scale-out sustainable and just food systems, legislation needs to focus on enabling and promoting people-centred approaches capable of addressing sustainability and justice.

In Italy, support for co-operatives is enshrined in national law and economic policy [74,75]. Laws and policies strengthen the co-operative economy through supporting existing co-operatives and creating new ones [75]. DePasquale, Sarang, and Vena suggest Italian co-operative success reflects “broader values and politics” [74] (p. 940). Co-operative capital is considered not only the property of current members, but the legacy for future generations [74]. Whilst part of the strength of the Italian co-operative economy is the range of horizontal, vertical, and inter-connected networks [75], societal values have been fostered through long-term national and regional state investment in co-operation. Such support is reflected in the strength of the co-operative economy—4.5% of the Italian population are employed by cooperatives, and in some regions such as Emilia-Romagna, co-operatives produce around 30% of GDP, whilst two out of every three inhabitants are members of a co-operative [76]. Co-operative ways of working can also be fostered at a local and municipal level. In New York City, US, the city government is adopting regulations to assist co-operatives through prioritising co-operatives when they enter a contract for goods or services [74].

In the Welsh context, we identify a significant gap in terms of quality and availability of advice, training, and support for co-operation in the food sector. We further highlight broader need for public information campaigns, schools-based learning, and post-school learning to raise public awareness and understanding of co-operation. There is a need for long-term, core funding for infrastructures to be established to improve training, advice, support, and information around co-operation. Such investment would support greater public knowledge about co-operative values and co-operative food economies within Wales. There is also a key educating role amongst co-operatives both in terms of educating members and their wider community on co-operative ethics, as well as supporting other co-operatives through providing mentoring and advice on co-operative structure and sharing sectoral expertise. This internal and external form of co-operation is a key component of the co-operative economy within Wales and has the potential to scale-out co-operation for sustainable and just food futures, as well as increasing availability of sustainable food systems training. Drawing upon the people-centred foundation of processes of democratisation, there is recognised need for education which provides exposure to, and training in, co-operative values, people-centred economic and business models, and participative modes of governance.

6. Conclusions

In this article, our focus on co-operative ways of working as playing a potentially important role in people-centred food system change makes a contribution to the sustainable food systems literatures. Drawing upon fieldwork, findings demonstrate a number of key challenges and opportunities to scaling-out sustainable and just food systems in the context of Wales. As highlighted by the case studies,

co-operative ways of working including CSAs, incubator farms, producer and multi-stakeholder co-operatives and food hubs are promising mechanisms for this transformation. Currently, however, co-operative economies remain marginal within Wales. Challenges include: Access to land, training, and resources; lack of distributing, processing, and trading facilities, particularly those that are community-based and community-led; and limited training opportunities in sustainable food systems and co-operative ethics.

We identify five foundations of people-centred approaches to food system change: 1. Processes of democratisation; 2. redistribution of power; 3. strengthening participation; 4. equity and justice; and 5. transformative governance. Integrating these foundations with our findings, we suggest three key mechanisms which have the potential to embed people-centred approaches in the scaling-out of sustainable and just food systems: i. Community-based participative approaches; ii. networks for training, access to resources and land; and iii. supportive legislative framework. Transformative governance is noted as particularly critical in order for scaling-up and scaling-deep, as well as scaling-out. The need for further work on scaling-deep co-operative, people-centred approaches is noted—which requires “investment in transformative learning, networks and communities of practice” [16] (p. 77). Such work could further explore the important role of contributive and epistemic, as well as distributive, justice in achieving people-centred food system change.

In Wales, the gap between the nation’s requirement for a sustainable and healthy diet and current domestic production presents significant opportunity for the scaling-out of sustainable and just food systems based upon co-operative, people-centred approaches.

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Appendix A

Interview question guide

1. Investigating co-operative ways of working
 - Could you just briefly describe how your organisation works as a co-operative?
 - Why has your organisation decided to work as co-operative?
 - What do co-operative values mean to you?
 - For you, what distinguishes co-operative ways of working from other ways of working?
2. Co-operative ways of working in Wales
 - What has been your experience operating as a co-operative in Wales?
 - What do you consider to be the main opportunities of working as a co-operative in Wales?
 - What do you consider to be the main barriers of working as a co-operative in Wales?

3. Training and learning
 - How did you first encounter co-operative ways of working?
 - What is your view on training opportunities around co-operative ways of working in Wales and setting up co-operatives?
 - What about the current landscape of apprenticeships, trainings and mentoring?
4. Co-operative ways of working and sustainable food systems
 - What do you understand as a sustainable food system?
 - What do you consider to be key challenges to achieving a sustainable food system in Wales?
 - Do you think co-operative ways of working can help us achieve a sustainable food system in Wales?
5. Co-operative ways of working and the policy environment
 - Do you think the policy environment in Wales could change in any way to foster co-operative ways of working?
 - How do you think the policy environment could support the scaling-out of co-operative ways of working in Wales?

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