

Sustainable Rural Well-being and Sustainable Food Systems

Introduction

Many empirical studies in rural well-being and food systems reveal the complex nature of the various challenges and the opportunities in rural contexts. This review investigates supports for food production that might also strengthen plant production, local consumption and rural communities. Questions driving this review are how might support for agriculture, rural, and food policies enhance rural well-being? What might be the similar interests served by agricultural and rural development? What elements might constitute sustainable or unsustainable rural society and food systems? What approaches may bolster agricultural and rural well-being, including rural and regional resiliency, vibrancy, sustainability, and prosperity through food system policies and practices?

Rural townships and agricultural producers have experienced “volatile commodity prices brought about by movements in global capital, and the growing power of transnational agribusiness” (Holden & Bourke 2014, p. 209). Smallholder farmers’ livelihoods have been undermined by food and agribusinesses that are powerful, consolidated actors throughout the food system who have a range of options for the global sourcing of cheap inputs including labour, thereby increasing competition and lowering prices for these commodities (Scrinis 2016).

A farming sector may be a prerequisite for viable rural areas. According to Katz-Rosene (2017), the National Farmers Union of Canada is distressed by growing impediments to farmer autonomy and local control of land and production. These factors are foundational to food sovereignty and are threatened by excessive farm debt loads, input financing, conversion of farmland to non-farm users, and land grabbing to name a few. Rural communities, like farmers producing food, face multiple external and internal stresses that are simultaneously technical, cultural, political, social, ethical, economic, and environmental (Cox, Frere, West & Wiseman 2010, Aked & Thompson 2011). Strategies are sought that effectively offer agriculture-supporting, health-enhancing, damage-preventing, environmentally-sustaining and community-rejuvenating results.

Several authors suggest that food systems and rural communities may align when their development efforts are channelled towards resilience of both systems (Knickel et al. 2018, Si & Scott 2016, Sitaker, Kolodinsky, Jilcott Pitts & Seguin, 2014). In 2016, the agriculture and agri-food sector in Canada employed 12.5% of national total employment, approximately one out of every eight people employed (Statistics Canada 2017). Agriculture is a global contributor through exports, and a producer of an array of food for Canadians and the world (McInnes 2011). However the decades of rapid expansion to conventional agriculture have been associated with farmland consolidation, specialized production methods, cheap labour, and low unit returns for farmers and many adverse ecological, socio-political, economic, and equitable impacts (Jackson, Minjares, Naumoff, Shrimali & Martin 2009).

Transdisciplinary research has indicated that countries with resource-intensive, specialized agriculture were more wed to these industrial methods and less inclined to consider alternative modernization trajectories (Knickel et al. 2018). A recurring theme in the research was the experience of frustration by rural residents that “their community’s prospects were dependent upon decisions made in distant parliaments and boardrooms” (Holden & Bourke 2014, p. 209). This parallel between rural residents and rural farmers in experiencing alienation and disempowerment could fuel growing despair and desire for relocation.

Agricultural and rural knowledge systems have been influenced by dominant and influential paradigms. Higher education and agricultural institutions demonstrate an attachment to the model of technologically-driven agricultural industrialization. Research that challenges such conventional thinking is less likely to be funded or sufficiently explored (Pretty 1997). Consequently, these decades have witnessed a focus on and investments in technologically-driven agricultural industrialization with inadequate attention paid to the adverse impacts on rural communities throughout the world (European Commission 2015 as cited by Knickel et al. 2018). More recently, researchers and policy-makers have been seeking to address significant environmental and structural challenges arising from food production and consumption practices. International food policies have been feeding: climate change, water stress, energy pressures, environmental contamination and biodiversity loss, demographic change, and the nutrition transition (over-, under-, and malnutrition) leading to a host of social justice and health concerns, particularly rising non-communicable diseases and inequitable access to food (Lang 2009).

Methods

A set of search terms was developed to broadly cover the wide range of topics and issues that fall under the umbrellas of both ‘sustainable food systems’ and ‘sustainable rural development.’ These search terms included sustainable food systems, rural, fisheries, agri-investments, agri-tourism, rural well-being, and rural prosperity. From the search tools, the results produced 32 articles selected by their abstracts. These were distilled down to the most applicable or relevant. These articles were then read in depth, and their lists of references along with articles that cited them were reviewed for further relevant articles.

Definitions in this Study

RURAL | This analysis defines rurality based on relative proximity of its inhabitants to large urban centres (Bollman & Alasia 2012, Statistics Canada 2001, 2012), to services and/or markets, as well as to each other (ie low population density) (FAO 2007). Given these broad understandings, it is clear that rurality exists on a spectrum in which different locales may find themselves at different degrees of rurality (Statistics Canada 2001, 2012). Within these formal definitions of ‘rural’ we focus on the economic, environmental and social drivers of rural community well-being through agriculture, fisheries, food production, processing and consumption. These definitions help to illuminate some of the unique and evolving challenges and opportunities of rural life.

WELL-BEING | Our understanding of ‘rural well-being’ is informed by several formal measurements of ‘well-being’. Elements contributing to well-being appear relatively consistent across diverse geographies and contexts. Several explorations of well-being in European settings (Glendinning, Nuttall, Hendry, Kloep & Wood 2003, Brereton, Bullock, Clinch & Scott 2011) aligned with Kevany, Ma, Biggs and MacMichael (2017)’s outlining of well-being from a Canadian viewpoint, that also built upon descriptions from Bhutan. These include the Genuine Progress Indicator, Canadian Index of Well-being, and Gross National Happiness in Bhutan. A combination of such indices were deployed in an applied study of rural community well-being (Kevany et al. 2017). This study captured well-being under four broad categories of vibrancy, prosperity; resiliency; along with sustainability. These dimensions included measures of individual and community health, economic innovation and entrepreneurship as well as their interconnectedness (Kevany et al. 2017). An OECD (2017) report on quality of life in Ireland distilled factors contributing to rural well-being into economic, social, human, and natural capital. The application of these indices are supplemented with attention to the perceptions held by individuals of their health, employment opportunities, and sense of community inclusion and involvement (Fahey and Smyth 2004, Mondelez International 2014). Considering the unique contexts of rural life, this analysis then investigated factors more specifically relevant to rural well-being.

RURAL WELL-BEING | Some considerations of the multifaceted attributes of rural well-being included geographic, social, economic, historical and resource-related conditions. Geographic factors may include the locale’s environmental features, climatic conditions, and accessibility to or remoteness from resources as well as larger populations. Social determinants of well-being range from standards of living, social connectivity and cohesion (including family and social life, shared values, and sense of security, safety, and belonging), to access to and quality of employment opportunities, medical and social services, and recreational opportunities and spaces (World Health Organization 2003, Yip et al. 2007, Kelly et al. 2011, Mondelez International 2014). Such contextual and community influences need to be factored into investigations of individual health and vitality (Kelly et al. 2011). Studies also find that stronger sense of community belonging and social supports help to alleviate challenges that may arise with rural life. The occurrence of isolation and depression make them noteworthy in efforts to increase well-being in rural settings (Romans, Cohen & Forte 2011).

SUSTAINABLE FOOD SYSTEMS | Food systems analyses include many factors: actors, activities, relationships and impacts. Actors include individuals, families, organizations, companies, policy makers and regulators, as well as institutions. Activities involved may be production, inputs, infrastructures, processes, and research of impacts. Relationships are found throughout the many stages of production, processing, distribution, preparation, consumption, and disposal of food (Gottlieb & Joshi 2010, European Commission 2015, Tendall et al. 2015). Impacts consider the health, environmental, social, economic, and historical, political and spiritual outcomes arising from food systems. Other definitions may include the socio-economic, political, and environmental outcomes of the diverse activities, with attention to ways of redressing arising social and environmental inequities (Gottlieb & Joshi 2010, p. 5, European Commission 2015). Sustainable diets are an array of largely plant-derived foods that fully nourish humans, more equitably distribute food and earnings, without harming animals and with

minimal impact on eco-systems (Mason & Lang 2017). Sustainable and sovereign food systems ensure the world's increasing population can produce and access sufficient food while ecosystems and human health are adequately preserved. For the purposes of this analysis, 'sustainability' incorporates a 'resilience' lens, as it is a prerequisite for sustainability (Milestad & Darnhofer 2003, Goldberger 2011, Leeuw & Aschan-Leygonie 2000).

One can further engage with what a sustainable food system may look like by breaking it down into three essential aspects of being environmentally sound, economically viable, and socially just (Mason & Lang 2017). Sustainable food systems provide nutrient-dense foods that contribute to environmental health, appropriate land use and protection, liveable wages and conditions for domestic and international farmers and food workers throughout the food chain, and affordable healthy foods that are culturally appropriate for citizen-consumers. Other points of measurement or comparison of the sustainability of systems, as noted by Reganold, Glover, Andrews and Hinman (2001), were indicators around soil quality, crop performance, orchard profitability, environmental quality, and energy efficiency.

Sustainable regional food systems may offer value for increasing food security and accessibility, sovereignty and prosperity, in addition to supporting sustainability principles and practices. This analysis understands food system sustainability as its capacity to maintain—through both proactive and reactive measures—the provisioning of accessible, nutritious, appropriate, and adequate foods for all through varying conditions and disturbances (Tendall et al. 2015). Tendall et al. (2015) breaks this capacity down into its constituent parts of being able to absorb, withstand, and learn as well as the resourcefulness and adaptability of the system actors. This includes the ability to cope with and adapt to changing conditions and systems as integral to resiliency and thus sovereignty and sustainability.

Findings

Rural challenges: Rural communities face multiple external and internal stresses (Aked & Thompson, 2011, Cox et al. 2010). Some scholars suggest that rural regions are disproportionately subjected to deleterious neoliberal policies with their social, economic, and environmental impacts (Holden & Bourke 2014). Consequently, greater socio-economic disadvantages are identified with rural areas, as well as greater vulnerability from exposure to and trauma from environmental adversity (e.g., severe drought, fires, water contamination, and unprecedented climate change). There is a decline in community infrastructure leading to poorer access to health and social services (Collins, 2017), and greater geographic and social isolation (Kelly et al. 2011, Fraser et al. 2005). Coady and Cameron (2012) identify disproportionately poorer health in rural settings. Rural residents often experience greater prevalence of diabetes, heart disease, cancers, and non-communicable diseases, economic disparity and social isolation (WHO 2003, Hanlon & Halseth 2005, Marsden 2009). Other findings suggest that rural communities rely upon but are unable to influence larger food systems. Pugliese (2001) and Sitaker et al. (2014) highlight the economic implications suffered by rural areas at the hands of large agri-business as small and medium sized farmers become outcompeted by larger, consolidated farms. Profit margins are reduced in a business model that emphasizes enlarging and concentrating production to benefit from economies of scale. Both food producers and rural communities are impacted by farmland consolidation. The growing costs of farmland, farm

taxes, farm expenses, and infrastructure needed for food processing are prohibitive (Agriculture and Agri-food Canada (AAFC) 2016). The actual loss of farmland is a growing concern as is the cost for new entrants or those wishing to make food productive their livelihood (Connell et al. 2013, Cameron, Rosado & Mederos 2018). These authors are flagging threats to sustainability and sovereignty. In an inquiry into rural well-being, Anderson (2015) considers aspects distinct from their urban counterparts. In doing so, they find that rural community health and vibrancy are impacted by public infrastructure investments particularly around accessibility of services and facilities (Anderson 2015, Hanlon & Halseth 2005). In their findings in rural communities, conditions of and satisfaction with housing are found to affect a sense of attachment to a community (Auh & Cook 2009). As well support from local government services influence residents' sense of pleasure in the region and are identified as components of social capital (Auh & Cook 2009).

European scholars de los Ríos, Rivera, and Garcia (2016) and Knickel et al. (2018) add that the agricultural practices as well as political structuring of the conventional food system weaken the limited lands' and communities' buffering capacities and increase instability. Climate change, environmental strains arising from political and economic neoliberalism place undue pressures and diminish the resilience, development, and in turn the prosperity, of rural areas (de los Ríos et al. 2016, Knickel et al. 2018). Expensive investments, increased labour costs, and concerns over reliability of price premiums are financial concerns noted by Austrian organic farmers (Milestad & Hadatsch 2003). In China, the research by Si and Scott (2016) present a mutually beneficial relationship among sustainable agriculture, regional food systems, and rural development. Their case study considers how rural development policy that focuses on creating bottom-up, democratically-run governance structures could play a role in scaling up and uniting the fractured elements of Chinese food system actors. Their rural development campaigns provide a framework for discussing, uniting, and localizing more disparate food related initiatives. They seek to advance political, health, social and economic goals through increasing food security, sovereignty, and sustainability. They reject the industrialized food systems, and propose alternative rural governance structures and food networks that reinforce each other's goals (Si & Scott 2016). Jarosz (2008) contributes similar findings, asserting that not only are rural communities well-positioned to affect one another's goals, the quality and characteristics of food initiatives are enhanced by rural restructuring and growing relationships to urban centres. Broad (2016) reminds readers that issues in food, their distribution across society and the impacts on health and the environment are mirrored in rural regions and broader society.

Challenges with Modern Food Systems

Past debates around food provisioning were often around whether people deserved better food, and should be afforded support for a healthy diet, and how the land and its biology should be reshaped to produce more food (Lang 2009). The industrialization of food systems, through producing 'industrial scale foods' and particularly the production of industrial scale meat, have been contributing to the world's most pressing environmental problems, through increasing climate change with the growth of greenhouse gas emissions (methane, nitrous oxide, carbon dioxide) and extensive water and air pollution, biodiversity loss, and soil deterioration and land degradation (Burlingame & Dernini 2012, Weis 2007). Billions of animals are bred, raised and slaughtered in a system designed to be efficient. Thousands of animals become confined to extremely small areas that foster fighting, infection, and discomfort. This leads to significant

amounts of antibiotics being applied to farm animals and growing concerns with antibiotic-resistant bacteria and superbugs that can outpace medical advances. Such prominence of animal foods within the standard western diet, necessitate the ubiquitous practice of channelling grains and legumes to animal feed. This places upward pressure on the value and cost of these feed stocks and lessens the abilities of small producers to compete in the global supply chain. It also has the side effect of undermining the availability and accessibility of grains and legumes for the more marginalized populations to obtain adequate nourishment (Ferber 2000). Other considerations include the growing distrust in the quality and safety of food that has been emerging since the late 1970s. Public confidence in agriculture has been challenged by 'food scandals' such as salmonella and bovine spongiform encephalopathy (BSE) to dioxine residues in milk and E. coli in spinach. Larger-scale production, particularly more clandestine and opaque meat production practices, with laws prohibiting filming or promotion of their practices, are breeding distrust in modern food production (Mason & Lang 2017, Weis 2007)

Dietary aspirations have been affected by long-term trade patterns and corporate branding, and the extent to which consumer preferences now lean towards processed products – from white bread and baked goods to fried chicken, packaged noodles and high-fructose corn syrup drinks – not only in urban areas but among smaller-farm systems and other rural people. This implies that food sovereignty might not only be about defending food cultures but also about reinvigorating or even rebuilding them, and consciously working to enhance 'food literacy' and modify consumer tastes (Edelman et al. 2014). Knickel et al. (2018) research shows the mismatches around visions and strategies about prosperity and well-being and market developments, policy instruments and outcomes.

In the USA, large-scale, specialized production systems are able to take advantage of economies of scale and benefit from technology, farm policy, and changing market conditions and structures (Halloran & Archer 2008). Technology incentives serve to aid in their increasing production size and greater specialization of crops. Farm policy, with a focus on export markets and a heavily influential lobbying base, reinforce the specialized production of specific commodity crops (Halloran & Archer 2008). Within large, industrial food systems there is a concentration of power structures and networks; a smaller number of producers benefit from this model. These large scale, industrialized food systems advance at the cost of the interests of less developed countries, small producers, and rural communities (Lang 2009, Rivera et al. 2018).

Alternative food movements contributing to sustainable rural food systems

Food is central in people's lives as a source of culture, community, employment, health, environmental stewardship, and democratic participation (Broad 2016). Citizen-consumers are seeking ways to help to rectify the environmental, social, economic, and health impacts of industrial food systems. They are emphasizing local, 'healthy,' and/or fresh food (Slocum 2007). More are seeking to know how food is produced, procured, and consumed (Broad 2016). Consequently, there is greater emergence of 'ethical foodscapes' and value-based supply chains (Lang 2009), agro-ecological practices (Knickel et al. 2018) and alternative food movements (AFM) and alternative food networks (AFN) (Allen & Wilson 2008, Slocum & Cadieux 2015). Networks of producers, consumers, and other actors may work together to appeal to differentiated consumer markets: organic, integrated, local, regional, artisanal, health conscious, ethical, fair trade, health food, regional quality food, farmers' markets, community supported

agriculture (CSA), organic food, slow food, convenient and fast foods, small scale production, cooperatives, and observable and interactive farming communities, through agro-tourism, permaculture, and agro-ecology. There are emerging opportunities in differentiated food markets, like boutique, higher quality-food markets as well as in mass food markets (Marsden 1998, Milestad & Darnhofer 2003). Direct marketing strategies also contribute to reduced reliance on powerful procurers (i.e. large grocery stores) and redistribute power and autonomy back to the farmers themselves (Milestad & Darnhofer 2003). Some popular food initiatives include the campaigns around Slow Food and Buy 'Local' and farmers' markets, community supported agriculture initiatives, and community gardens (Slocum 2007), food hubs, cooperative storefronts or depots. Citizen/consumers can become mobilized around disparate but related issues within sustainable food systems discourse. Agents engaged in these movements may be motivated by an array of drivers. Some may seek greater accessibility to foods that adequately and equitably nourish people; others may want to support liveable incomes for farmers and farmworkers (Sumner, Mair & Nelson 2010). Some may want to know the source of food through shorter supply chains connecting consumers and producers. Civic engagement, democratic participation, and strengthened feelings of community also are products of AFM (Alonso & O'Neill 2011, Franklin, Newton & McEntee 2011). Building community and fostering space for deliberation enable members to mobilize around issues and help to counter the unaccountable impact of the conventional food systems. If community-focused food systems can support ecological, socially just outcomes, AFNs may play a role in sustainable rural development. Yet the potential for rural development and AFN programs to support one another is relatively unexplored area (Deller, Lamie & Stickel 2017).

The shifting face of the alternative food movement has brought two areas of scholarship to question the 'alternativeness' of the AFM and the roles they may play in building sustainable regional food systems. Some authors noted that the false binaries of alternative-conventional, local-global, sustainable-unsustainable are not reflective of reality, and obstruct substantive progress (Smithers & Joseph 2010). These scholars assert that projects of the AFM exist on a spectrum of 'alternative' and 'conventional/industrial' as spaces of experimentation and exploration of their transformative capacity as well as from their susceptibility to subordination by the corporate world (Johnston, Biro & MacKendrick 2009). Where the conventional food system reacts to the uptake of its alternative counterpart by adopting some of its practices (i.e. organic foods increasing availability in grocery stores) such that it is increasingly difficult to draw a clear line between the 'two' food systems, and necessitates further attention to practice/praxis (Cadieux & Slocum 2015). Some advocates have criticized blanket support for AFM without assessing whether they address the underlying issues of justice, race, class, gender, and accessibility that these movements seek to redress (Allen 2010). Some authors have raised concerns around whether the AFM may be more elitist or individualistic rather than focused on changing dysfunctional, if not corrupted, systems (Allen 2010, Allen, FitzSimmons, Goodman & Warner 2003, Born & Purcell 2006). While involvement in the AFM may be a success for some, fostering community and democratic participation equitably across society through food is a challenge. AFN are found to be, at times, more elitist or individualistic rather than focused on shifting system (Mount 2012, Smithers & Joseph 2010, Wittman, Beckie, & Hergesheimer 2012). For example, involvement in a CSA may appear like a responsible action by some as it fosters some degree of shared community and being more environmentally friendly. However it does not facilitate equitable or democratic participation in a community, as this form of AFN is

currently less accessible and seen as a niche market for a majority of Canadians. Seeking qualities like local, authentic, or meaningful food consumption could be motivators for some while presenting challenges for others striving for access to decent foods or working to co-create substantial shifts to regional food systems. It seems clear as well that the growing interest in AFMs was helped through growing interest in food issues in general. Advocates also propose that the development of food system regionalization lead to increased regional food sovereignty (Dorward, Smukler & Mullinix 2017) and sustainable rural regions can designate support for farmers along with marginalized and vulnerable peoples (Sbicca & Myers 2017). Si and Scott (2016) and Smithers and Joseph (2010) have noted that it is difficult for AFNs to scale up largely because each AFN is disconnected from others and separately designed and marketed around how they are uniquely trustworthy, authentic and local. Many are working to oppose coercive trade agreements while also igniting critical consciousness in citizen/consumers. More conscious consumers are engaging in their own food activism by shopping at farmer's markets and buying locally grown food, engaging schools and other organizations to buy from local farmers and processors.

Intersection of Sustainable Food Systems and Rural Development

Rural areas and agriculture share the same actors, and their relationship to the economy, ecology, and society (Pugliese 2001). Viable rural areas depend upon farming activity, economically and culturally (Baldock, Dwyer, Lowe, Petersen & Ward 2001). Farmers seek to navigate sustainable practices, foster economic growth, social well-being and ecological conservation (Pugliese 2001). The multifunctionality of rural areas is a historical outcome of the confluences with farming. "Terroir", as an example, may include an emphasis on the rural nature, cultural landscapes, and local resources of agricultural production (see Barjolle, Boisseaux & Dufour 1998). Creative and diverse practices can serve to improve 'whole farm profitability' by increasing economic buffers in case of certain crop failures, as well as enhance resistance to pest and soil infestations, and contribute to what Halloran and Archer called 'whole farm profitability' (2008, p.301).

Such innovations connect rural and regional as well as urban and rural areas in new and productive ways. They may call for some reassembling, redefining and appreciating of more sustainably produced goods and services (Marsden 2009, Burlingame & Dernini 2012). Halloran and Archer (2008) provide examples of "strategic alliances" (p.301) between farmers that take advantage of the benefits of diversified production without requiring a dramatic change in knowledge and or land expansion. Such alliances allow farmers in close proximity to one another, each who would typically produce a single type of crop, to introduce crop rotations by 'sharing' land with each other. They provide an example of a potato-broccoli alliance, where farmers facilitate crop rotation by planting on each other's land. This also affords them multiple environmental benefits of crop rotation. It proves to be economically viable as this rotation becomes more profitable. Strategic alliances between farmers not only improve environmental stewardship with immediate economic benefits, it creates a more widespread system of "integrated agricultural production" (Halloran & Archer 2008, p.301) beyond the individual farm unit. Another creative example associated with economically viable rural food production is in Pennsylvania where they initiate a local wholesale produce auction, allowing farmers to reduce concerns about transportation costs and proximity to markets as well as restrictions associated with selling large amounts of a single crop to grocery stores. Milestad and Darnhofer (2003)

noted some financial benefits of diversified, collaborative and ecological agriculture. Diversification can serve to buffer against fickle market effects on prices, weather and climate influences on yields and other problems that arise in food businesses. Some benefits were reduced reliance on external inputs and more control over one's seeds and production processes. Examples might be "multifunctional agriculture and agri-food, environmental cooperatives, social and enterprise community initiatives" (Marsden 2009, p. 120). Communal kitchens, may be another example if certified would enable access to various food actors in the region and could become assets in building prosperous food systems.

Some examples from European jurisdictions include the establishment of new markets with different consumers to buy agricultural produce, expand export markets, and devise strategies to increase regional autonomy and new urban-rural partnerships. They also provide non-food eco-services and countryside amenities and expand beyond economic limitations and boundaries and adopt more progressive standards, foster local trading systems to strengthen community bonds and pay more attention to quality of life and the provision of public goods and ecosystem services (like demonstrated in the Belgian, Danish, and Swedish case studies at ReTHINK, n.d.). Knickel and colleagues (2018) also cited effective approaches involving the redesign of supply chains as a strategy for enhancing resiliency. Efforts to develop alternative supply chains may decrease dependency on retailers, help producers retain more value added along the chain, and more evenly share benefits through cooperation among chain partners. The use of direct marketing and customer engagement through internet connections allows rural businesses and farmers to engage directly with consumers. Such a collection of actions appear to have increased transparency and built consumer trust in local brands and produce (Knickel et al., 2018). Communities can be enhanced and even rebuilt when citizens support local food businesses and land preservation. Galvanized by a vision of healthy farms, healthy food, and healthy communities, examples of innovative rural supporters can be found. FarmWorks Investment Cooperative and Annapolis Valley Farmland Trust (AVFT) have taken different but complimentary approaches to tackle modern challenges in the food and agriculture environment. FarmWorks (n.d.) provides capital, mentoring and promotion to qualifying food related businesses while AVFT secures and protects prime farmland from encroachment and assists farmers using a conservation easement approach to ensure farm land remains in production in perpetuity.

With the recognition that rural prosperity was not readily realized through modernized agriculture (Rivera et al. 2018), others are investigating how sustainable food systems could be instrumental in cultivating sustainable regional and rural development (Deller, Lamie & Stickel 2017). Milestad and Darnhofer (2003) offer findings that show that building resilience requires dynamism and spaces for collective learning and collaboration among farms and communities. Collaborative efforts increase community flexibility and improve problem solving. A study by Barnes, Hansson, Manevska-Tasevska, Shrestha and Thomson (2015) shows the long-term viability of Scottish and Swedish farms. The researchers attribute the significantly greater viability of Scottish farms to their emphasis on production diversity in their rural planning policy (as compared to overall productivity and environmental protection in the Swedish rural policies). Research also reveals that off-farm activities appear helpful for many to balance out farm income (Milestad & Darnhofer 2003). However, reliance on off-farm activities may add challenges in

areas that require specialized knowledge, trained labour, and significant time demands (Milestad & Darnhofer 2003).

Many elements can be leveraged to enhance regional food systems. Other interventions are found to support agriculture and rural development through blending organizational efforts. Programs such as the Good Food Challenge by the national organization Meal Exchange, and the Charting Growth to Good Food project by the Wallace Center in Virginia, USA, incorporate system components that aim to make food available that is ecologically produced, humane, affordable, and fair. They also pay attention to the contexts and geographic locations that produce the food. An example in Eastern Ontario is the formation of a Local Food Conference (Eastern Ontario Local Food n.d.). These sessions have been held since 2011 and have improved business connections and built strong community relations across the food landscape (Andrée & Elsharkawy 2017). Such county fairs and contests are designed to foster food literacy and food pedagogy and provide space for sharing and reproducing culture and skills and passing on of traditional knowledge as well. Another example comes from Columbia Basin Trust – Food Security initiatives that share food processing resources across the region (Columbia Basin Trust 2018). Other illustrations are the social and environmental movement of Transition Towns that have brought together citizens to plan actions needed for sustainable communities and food sovereignty (Transition Network n.d.). And at the farm level, examples of effective teaching farms have emerged like Everdale Farm (Schreiner, Levkoe & Schumilas 2018). Cooperative efforts, including credit unions like VanCity Credit Union (Gill & Pitre-Hayes 2008), have invested in food initiatives and worked to build community through Farm Folk and City Folk fora (Harris, Nixon, Newman & Mullinix 2016). Sustain Ontario provides education around an array of food issues like the value in reduced pesticide use and benefits of supporting farmers' markets like found in Guelph and Waterloo (Levkoe 2017).

Further Research

It remains important to recognize the heterogeneous nature of rural communities and the distinct populations with distinct memories of their histories and evolving narratives about their futures. More investigation would be helpful into how holistic and collective notions of rural well-being impact upon individuals and the confluence between history, land, place, identity, spirituality and interconnectivity. It ought to be noted that the literature on food systems often overlooks fisheries and fish farming. With a focus on agricultural rural communities more research is needed on the impact of fisheries as well as other innovations like hemp and cannabis production as possible approaches for more sustainable rural communities. The use of data driven processing with electronic tools and virtual apps may be important areas of study to help improve business performance. More small-scale qualitative research becomes essential to effectively and respectfully investigate individual and community lifestyles that would be elusive in quantitative studies.

Discussion and Recommendations

Citizens, Industry and Government Actions to Strengthen Rural Settings and Food Systems

Food movements call for the protection and valuing of local and rural food cultures as an alternative to the onslaught of cheap and imported processed foods. Strengthening sustainable,

regional food systems may necessitate approaching farms and rural areas not as individual, isolated actors but rather as related parts of larger networks and regions. Food systems invariably involve rural and urban issues that might include the loss of farmland and other concerns. Many issues need attention and modification like environmental pressures, climate change, growing levels of NCDs, and inactive lifestyles. To make needed shifts to more sustainable practices, Lang (2009) recommended that governments, citizen/consumers, corporations along with change agents become engaged with policy. In examining farm production and the economic structures, several authors recommend that current structures and practices be modified to support social and environmental sustainability, as the environment must not be viewed as primarily serving the economy (Day-Farnsworth & Morales 2011, Halloran & Archer 2008, Weis 2007).

Communities are seeking to systemically identify strengths and opportunities and to address problems more comprehensively (Florida 2002). Policy makers may be encouraged to view food policy through an ecological public health lens and to build ecological health into their business model and to inject health and social justice more effectively into the sustainability agenda. Sustainable visions for well-being must include workable strategies for enhancing prosperity, human flourishing, social cohesion and improving levels of well-being, with minimal adverse impact on the environment (Jackson et al. 2009). Inequities of power also must be acknowledged as impediments to rural vibrancy and well-being. Policy developers and regulators are cautioned against making policy and regulations too cumbersome to small-scale producers. To creatively support rural and agricultural development regulators may employ: the power of government mandates, funds collected through taxes, suitable legislation or regulations like environmental protection or waste management, or zoning, like farmland preservation, incentives to support local producers and processors, possible subsidies to support sustainable practices, as a social good, support for local and regional branding, useful research and data driven decision making. Planners also may devise ways to harness waste as an asset in the evolving bio-economy. Investments in infrastructure like storage facilities for regional food processing or food hubs also become essential.

Knickel et al. (2018, p.5) asserts that, “learning, adaptation and realignment are critically important in maintaining livelihoods” despite the absence of discussion of these factors in the literature. Improved health and well-being are more likely to improve when individuals and communities come together to learn from one another, identify issues impacting health and well-being, and together decide on plans and actions to address the issues (Coady & Cameron 2012). Stakeholders may be encouraged to support collective initiatives, co-learning and co-innovation processes that lead to more local capacity building. More sophisticated and orchestrated efforts would enable citizens to design programs and then assess the impact of policies, projects and programs on their health and that of their community (Coady & Cameron 2012, Flora, Flora & Gasteyer 2016). Agents of change may seek to build capacity through shared governance, building resilience and improving learning channels (Knickel et al. 2018, de los Ríos et al. 2016).

As de los Ríos et al. (2016) proposed, rural prosperity must be linked to agricultural sustainability through effective communication tools, electronic platforms, and artificial intelligence tools. Like Marsden (2009) found, efforts should be made to improve the physical and technological infrastructure to regenerate rural communities and improve technological capacity for increasing communications between interested groups and individuals. Place-based

knowing and community exchange, combined with scientific agricultural knowledge too should be supported to foster community-building agro-ecological practices (Knickel et al. 2018). Social learning has been effective in supporting innovation, building new partnerships and relationships, affording shared management approaches, and learning tools that enable sharing of information and knowledge among a broad range of actors (Hinrichs, Gulespie & Feenstra 2004). By incorporating such platforms, regional food-system actors could keep track of inventory and administration and negotiation strategies, and in a timely manner, fulfill customer needs. These tools also can be used to meet on, plan from, and move towards expanding production or marketing goals, and reaching out to customers.

The movements' support for diverse local production systems are recommended to improve food and diet quality (Scrinis 2016) by providing space and opportunity for positive interactions with vegetables and healthy foods to increase these as food choices (Froehlich Chow, Leis, Humbert, Engler-Stringer & Muhajarine 2015) and enhance the health of citizens and the environment. Agroecological initiatives that emphasize more nutritious crop varieties and crop diversification can play important roles in improving diet quality (Scrinis 2016, Fanzo, Lachat, Sparling & Olds 2013). The re-valuing of whole and minimally processed foods, fresh, local and organic foods, and the need to develop cooking and gardening skills are advocated by various food movements (Scrinis 2016, Lang 2009). Citizen consumers also can utilize their buying power by supporting the production of sustainably produced food, healthy eating habits, respect for worker's rights, and support for the local business economy. These actions may enlarge opportunities for small and mid-sized farmers and job creation along the food supply chain (Good Food for All Taskforce 2010).

Rural agri-development must be considered in the context of global agri-food systems in which local rural environments are embedded. To counter the pervasive influence of conventional agriculture, de los Ríos et al. (2016) suggests connecting rural prosperity to agricultural sustainability by highlighting collaborative management strategies, knowledge sharing with adequate platforms, skills, and shared goals to foster innovation. Investments in rural-specific resources, capacities and opportunities could be positioned to help farmers to harness markets and withstand pressures from wider national and international competition. Others recommend rural areas shift from a productivist to a 'post-productivist' food regime (Ilbery & Bowler 1998, Schucksmith 1993), whereas some suggest the establishment of creative 'rural development paradigms' (van der Ploeg & Renting 2000). These areas may be contested as to their meaning as well as to whether or not they should be pursued (Evans, Morris, Winter 2002). Almstedt, Brouder, Karlsson, and Lundmark 2014 work on differentiating between productivism, post-productivism, and post-production. Productivism is agriculture with the focus intently on yield (and returns); post-productivism is agriculture mindful of externalities (environment, forestry and land use change (Mather et al 2006), while offering high value-added and innovative products (Macken-Walsh 2009). Post-productivism in rural development is no longer the monopoly of farmers as it expands beyond agriculture. Post-productivism is part of the 'new rural development paradigm' because of its transition from focusing solely on primary agriculture onto other revenue streams and industries (Macken-Walsh 2009).

Forging ways to work together across disciplines to enhance rural well-being also are called for. While farmers and rural communities work to develop CSAs or farmers' markets they would benefit from developing their common visions. Structures that connect grocers, producers,

consumers, policy makers, funders, marketers, wholesalers, institutional purchases, academic, researchers, extension services and make connections between urban and rural too would be valuable to expand and sustain business pathways for farmers and rural businesses. Like other studies, we recommend greater alignment of policies with public officials, businesses, and citizens together managing community strategies and plans. In addition to attention to the physical location, housing availability, and environmental features, fostering a sense of connectedness must become a dominating feature of healthier, more robust rural communities (Collins, 2017, Auh & Cook 2009, Fraser et al. 2005). Interventions that strengthen connectedness and increase accessibility through transport services would increase access for youth along with other actors involved in bolstering rural well-being.

Policy recommendations

Policies and practices ought to support small-scale production, cooperatives, and alternative food systems and protect ecosystem services and replace unsustainable practices. The Dutch Council for Rural Areas (Council for Rural Areas 1998) identified the capacity to regain the creation, operation, and evolution of alternative food supply chains through building consumer trust as a major factor driving value-added opportunities and rural development (van der Ploeg & Renting 2000). Opening opportunities in the bio-economy and circularity may improve prosperity while also supporting biodiversity and sustainability (Kitchen & Marsden 2009). Creative marketing of agro-tourism may be helpful to promote natural assets, cultural landscapes, and local agricultural production. As forces for strengthening rural communities, planners and policymakers also should bolster community attachment through strengthening the quality and availability of housing in community development efforts as well as accessibility of social services and public facilities and programs along with local government services (Auh & Cook 2009). Building on results that improved conditions for rural Chinese, Aboriginal Australians and Dutch populations, policies should produce an environment that enhances social networks and support community vitality and well-being (Yip et al. 2007). Planners could catalogue existing wholesale food system infrastructure and cooperative agricultural clusters as they contribute to regional economic development. Efforts may also be needed around marketing regional attractions and distinct culinary identities. These features and benefits could then be emphasized in strategic marketing and branding efforts (Day-Farnsworth & Morales 2011). Policy planners could emphasize that good agricultural policies must serve as good economic, social, environmental and health policies to foster prosperous, equitable and sustainable 21st-century rural communities and sustainable food systems.

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