Article

A Food-Circular Economy-Women Nexus: Lessons from Guelph-Wellington

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Abstract: Resource nexus approaches have been expanding to include additional sectors beyond standard water, energy, and food approaches. Opportunities exist by re-imagining the resource nexus approach with the framework of the United Nations Sustainable Development Goals (SDGs). Emerging research and policy themes, such as the circular economy and gender, can provide additional context to traditional nexus arrangements. To illustrate this, we analyze SDG implementation and interaction from 40 unstructured interviews from SMEs participating in Guelph-Wellington's Seeding Our Food Future (SOFF) program, part of the wider Our Food Future (OFF) initiative led by the City of Guelph and Wellington County in Ontario, Canada. Results show that 16/17 SDGs and associated targets were present on the program. Environmental SDGs were implemented the most, followed by social and economic ones. SDGs 2, 12, and 5 had the most general implementation and direct paired interactions and were associated with the broadest number of SDGs across the project. These findings support the existence of a Food-Circular Economy-Women nexus in Guelph-Wellington's agri-food sector. Further analysis shows that this nexus is most active in agriculture, and that women are responsible for introducing a social aspect, which addresses food security. Results can inform food system and circular economy researchers and practitioners.

Keywords: United Nations Sustainable Development Goals; circular food economy; food security; entrepreneurship; Guelph-Wellington

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1. Introduction

Sustainable development has evolved to include an economic, environmental, and social component [1]. The United Nations Sustainable Development Goals (SDGs) are an evidence-based framework of 17 goals, 169 targets, and 232 indicators. They were designed for sustainable development planning and programming in all countries of the world from 2016 to 2030 [2]. The SDGs were constructed as an interdependent group, best achieved by mutually reinforcing actions which are in the process of being understood [3]. Researchers and practitioners have noted that there are more significant connections among goals than are explicitly reflected in the SDGs, and that there are too many links to capture [4]. Much work is required to clarify the complex interactions between the goals [5]. This process is compounded by the reality that SDGs are also often situated within area-specific policy, business, and research silos [6]. Within this context, some critics have been encouraged to suggest the SDGs lack theoretical integration [7].

The nexus approach overcomes silo-thinking by addressing connections, synergies, and trade-offs between multiple distinct entities [8]. There are a variety of nexus arrangements. At its core, a nexus is one or more connections linking two or more things [9]. It is generally understood as an integrative process which links ideas and actions of different stakeholders across sectors and levels to achieve sustainable development [10]. Nexus approaches are typically used to understand socio-ecological systems and are useful for integrated management and governance across sectors, systems, and scales [11]. Government, business, and civil society are often incentivized to adopt nexus approaches as a potential means to achieving multiple sustainable development goals [12].

A resource nexus approach most commonly includes water, energy, and food; since access to each, and their effective management, has been identified as key to development [9]. While still conceptually ambiguous and developing in application, the water-energy-food nexus integrates resource sectors to promote sustainability and better resource allocation [13]. It is common for interactions between two aspects to be addressed, either water-energy or water-food [14]. There has been further expansion of the concept to include land [15], climate [10], materials [6], biodiversity [16], and social systems [16].

It is useful to expand on existing nexus frameworks to include more and different sectors [8]. Evidence from research suggests Sustainable Consumption and Production (Goal 12) best manages trade-offs and should be central to broader SDG nexus strategies [15]. Opportunities exist to integrate Goal 12 into innovative nexus frameworks that fill in gaps. For example, social goals linked to the SDGs, such as health, education, and gender equality, are addressed less frequently than environmental and economic goals [17]. When social systems were included, areas like cultural values and identity, social networks, and livelihoods were addressed [16].

Directly linked to Goal 12 of the SDGs is the development of a circular economy. It involves the transition of production and consumption systems from a dominant linear model of ‘take-make-use-dispose’, to one that maximizes resource use and minimizes the need for raw materials and non-renewable resources [18,19]. While circular practices and perspectives are increasingly being adopted, only 8.6% of the world’s economy is defined as circular [20]. The agri-food sector offers socio-ecological entry points to engage with the circular economy. A number of themes are frequently discussed: the development of innovative sector specific business models [21]; strategies to prevent and minimize food loss and waste across the entire value chain [22]; and the implementation of new technologies (e.g., traceability for food safety and quality, carbon, and Internet of Things) [23].

The relationship between gender equality and food security due to the prevalent position of women as key managers of food at the household level is well documented [24,25]. Women have been found to be more likely to purchase local food [26], and local purchasers tend to waste less produce [27]. While women tend to express more concern than men about food waste in social equity and budget, a generalized link between women as consumers and reductions in household food waste is not possible. This is because of the impact of marital status, family size, and age [28]. Recent literature on the potential and limitations for SDG 5 and gender equality to help improve household food insecurity concludes that a bold interpretation of SDG 5 along with synergies with other SDGs is desirable [29]. As the literature does not adequately capture the influence of gender within the food supply chain [30], additional research which highlights the influence of SDG 5 in the food system would be useful.

In this paper, we use the SDGs to explore the possibility of new resource nexus synergies in the agri-food sector. The Guelph-Wellington Our Food Future initiative, and the Seeding Our Food Future program within it, forms the backdrop for exploring emerging possibilities.

2. Materials and Methods

Our Food Future (OFF) is a project led by the City of Guelph and County of Wellington as part of Canada’s Smart Cities Challenge. In partnership with local organizations, including Innovation Guelph (one of 17 Regional Innovation Centres in Ontario, Canada), the goal is to create a circular food economy in Guelph-Wellington. Central to this is the application of a quadruple bottom line which gives attention to: prosperity through economic growth; planet through environmental sustainability; people through greater social equity; and purpose through a clear vision of an inclusive green economy of the future. The project aims to use data, technology, and local expertise to re-invent how food is produced, distributed, and consumed. Three key goals have been laid out to meet this vision: (a) increase access to affordable, nutritious food by 50%; (b) create 50 new circular businesses and collaborations; and (c) increase circular economic revenues by 50% by recognizing the

value of “waste” [31]. The project identifies characteristics of a circular food business. These include contributing or creating solutions within the circular food economy through the development of new business models, technologies, products, or services. These circular economy solutions would design waste out of the food system, reduce emissions, expand access to affordable and nutritious food, and regenerate natural systems [32].

An initiative of OFF, Seeding Our Food Future (SOFF) was designed by the City of Guelph and County of Wellington to respond to COVID-19 by supporting the recovery, development, and growth of 40 local food system businesses in Guelph-Wellington. Managed by Innovation Guelph, it combined seed funding and mentorship support, an optional sustainability course, and the chance to apply for an interest free loan. All applicants were businesses, not-for-profits, or social enterprises located in Guelph-Wellington. The program ran from 15 July 2020 to 31 May 2021. Eligibility criteria focused on the agri-food sector and required contributions to a circular food economy [32]. The criteria broadly encouraged activities that supported the three goals of the Our Food Future project, with the strongest reference to the second goal. One of the criteria (b) explicitly referred to sustainability, while another addressed a social benefit (d):

- (a) starting a new business;
- (b) pivoting to a more circular/sustainable business model;
- (c) implementing circular practices, systems, or processes;
- (d) creating or pivoting to a business model that supported inclusive access to nutritious food;
- (e) enabling a business to use data and technology;
- (f) initiating a collaboration

A total of 20 City of Guelph and 20 County of Wellington businesses were accepted into SOFF. There were a wide variety of food system businesses represented, divided into the following sectors: agriculture (40%, with 27.5% in traditional farming and 12.5% in urban agriculture); retail (15%); hospitality (15%); processing (12.5%); tech (10%); and other (7.5%). Traditional farming included mixed farming, produce, and livestock. Urban agriculture included hydroponics, aquaponics, and living walls. Retail included grocery stores, markets, and delivery services, along with prepared meals. Hospitality included restaurants, a teahouse, and food tours. Processing included alcoholic beverages, starch products, and jams. Tech included apps and platforms, along with drones. The category labelled other included services such as retrofitting and consulting.

Businesses accepted into SOFF were interviewed by Innovation Guelph staff about the general background of their business and for details about their project. Businesses located in the City of Guelph engaged in conversations with the City Connector, while those in Wellington County spoke to the County Connector. These interviews were informal, unstructured conversations. This format was used so that participants could reveal life experiences connected to the completion of their SOFF project, and include details about their background and motivation towards circularity in a relaxed, non-judgmental manner [33,34]. Responses from the businesses were written into a story piece format of roughly 500 words that would be appropriate for a “Circular Business Highlight of the Week” feature. Each would be published on foodfuture.ca, Our Food Future’s webpage, under the Kitchen Table section which contains blogs for community consumption [35]. SOFF businesses reviewed and approved their stories for publication through an email exchange with Innovation Guelph staff. The stories were published between January and June of 2021.

To explore the possibilities of new resource nexus synergies in the agri-food sector, we first examined 40 Circular Business Highlight of the Week stories which summarized each SOFF project. We broadly identified the SDGs and representative targets [36] that were implemented and noted which area of sustainability was addressed: environmental, economic, or social (Table 1). We then noted which of the SDGs each businesses addressed (Table 2).

Table 1. SDGs and Associated Targets Implemented by SOFF Businesses.

SDG	Target	Area
1. End poverty in all its forms everywhere	1.5 Build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social, and environmental shocks and disasters	Social
2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding, and other disasters and that progressively improve land and soil quality	Environmental
3. Ensure healthy lives and promote well-being for all, at all ages	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination	Environmental
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development	Social
5. Achieve gender equality and empower all women and girls	5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic, and public life	Social
6. Ensure availability and sustainable management of water and sanitation for all	6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	Environmental
7. Ensure access to affordable, reliable, sustainable, and modern energy for all	7.3 By 2030, double the global rate of improvement in energy efficiency	Environmental
8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	Economic
9. Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation	9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	Environmental
10. Reduce inequality within and among countries	10.2 By 2030, empower and promote the social, economic, and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion, economic, or other status	Social
11. Make cities and human settlements inclusive, safe, resilient, and sustainable	11a. Support positive economic, social, and environmental links between urban, peri-urban, and rural areas by strengthening national and regional development planning	All
12. Ensure sustainable consumption and production patterns	12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse	Economic
13. Take urgent action to combat climate change and its impacts	13.2 Integrate climate change measures into national policies, strategies, and planning (reduce GhGs without reducing food production)	Environmental

Table 1. Cont.

SDG	Target	Area
14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	N/A	N/A
15. Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss	15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Environmental
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, and inclusive institutions at all levels	16.7 Ensure responsive, inclusive, participatory, and representative decision-making at all levels	Social
17. Strengthen the means of implementation and revitalize the global partnership for sustainable development	17.16 Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology, and financial resources, to support the achievement of the sustainable development goals in all countries, particularly developing countries	Economic

Table 2. SOFF Businesses and Implementation of SDGs.

	1	2	3	4	5	6	7	8	9	10	11	12	13	15	16	17
3 Beets to the Wind		*	*		*		*	*	*			*	*			
4th Line Cattle Co.		*			*									*		
5th Bean			*			*	*	*				*	*			
A Friendlier Co.					*			*			*	*			*	
Ag Business & Crop		*						*				*				*
Ambiances Gourmandes	*				*	*						*				
Bioferm								*		*						
Elora Farmers' Market												*				
Eramosa Herbals		*		*	*								*	*		
Escarpment Labs								*				*				
Fan/Joy				*	*							*			*	
Friendly Society		*														
Food Venture Program				*	*					*						
GR 365N		*		*				*	*							
Grow Well Eat Well				*										*		
Handsome Devil Bistro			*				*					*				
Heartwood Farm		*		*								*	*	*		
Junction Food Network		*			*						*					
Kortright Presbyterian Church		*													*	
New Earth Solutions		*	*			*		*	*							*
Planet Bean												*				*

Table 2. Cont.

	1	2	3	4	5	6	7	8	9	10	11	12	13	15	16	17
Red Express					*											
Reroot Farm		*			*		*					*		*		
Retour Bistro			*							*	*	*				
Spiral Farm		*										*		*		
Taste Detours				*	*						*					
The Conscious Kitchen					*					*	*	*				
The Urban Orchardist		*														
Transition Guelph									*							*
Uprooted Farm		*			*	*		*								
Urban Stalk		*						*	*	*		*			*	*
vegetaBALES		*			*											
Ward 1		*				*										
Waterfarmers		*				*		*	*							*
Well Baked Box												*				
Wellington Made					*							*				
Wild Grove		*										*		*		
Winterhill		*	*			*	*						*	*		
Zerocery												*			*	
Zocalo Organics	*	*										*				
Total	3	21	6	7	16	7	5	11	6	5	5	18	4	9	5	6

* Denotes Implementation.

To assist in creating a core nexus, cumulative totals for each SDG were presented in a bar chart (Figure 1). The SDGs with the three highest totals of SDG implementation (2, 12, and 5) were combined to form a Food-Circular Economy-Women nexus. To further illustrate the central position of the nexus SDGs, a radar diagram was made to illustrate the connection between each of these SDGs and the other SDGs in SOFF projects (Figure 2).

Figure 1. SDG Implementation in SOFF SMEs. # Denotes Individual SMEs.

Figure 2. % Linkage of SDGs to Other SDGs in SOFF Projects.

To further explore the possibility of new resource nexus synergies in the agri-food sector, we constructed a pyramid of interactions between pairs of SDGs that were implemented in SOFF projects, also noting the number of cases per interaction (Figure 3). To reinforce the importance of SDG 5 to the nexus, social benefits that were not present in SDGs and targets were recorded, along with sector and leadership characteristics (Table 3).

Figure 3. Number of Interactions and Cases between SDGs.

Table 3. Additional Social Benefits Implemented by SOFF Businesses.

SOFF Participant	Social Benefit Not Listed in SDGs and Associated Targets	Sector and Leadership Characteristics
A Friendlier Co.	Partners with The SEED to supply them with containers and integrate the returnable container model with meal delivery services	Tech Women owned and led
Elora Farmer's Market	Provides improved access to food through a discount window, this offers food at more accessible prices and prevents excess food from being wasted	Retail Women owned and led
Eramosa Herbals	Donates to Indigenous Communities	Agriculture Women owned and led
Fan/Joy	Runs programs to support rural youth and families experiencing stress, anxiety	Hospitality Women owned and led
GR 365N	Works with community agencies to provide food security and literacy training through hydroponic training programs and partnerships	Agriculture
Kortright Presbyterian Church	Grows staples vegetables (potatoes, carrots, and onions) for Royal City Mission, Hope House, and Chalmers Community Services Centre	Agriculture
Reroot Farm	Donates a portion of the gourmet frozen soups to local food bank	Agriculture Women owned and led
Spiral Farm	Works with a prepared meal service to make use of her excess produce	Agriculture Women owned and led
Urban Stalk	Partners with the Guelph Food bank to help address food insecurity	Agriculture
Zocalo Organics	Donates unsellable vegetables to the community	Agriculture Women owned and led

To illustrate the wider SDG and sectoral context of SOFF, the number of Food-Circular Economy-Women nexus SDGs (2, 12, and 5) implemented by sector were recorded (Figure 4), along with SDG and sector totals for each business (Table 4).

Figure 4. SDG Nexus Implementation by Sector.

Table 4. SOFF SDG Implementation and Sector.

SOFF Business	SDGs	Agriculture	Retail	Hospitality	Processing	Tech	Other
3 Beets to the Wind	8	*					
5th Bean	6				*		
New Earth Solutions	6	*					
Urban Stalk	6	*					
Winterhill	6	*					
A Friendlier Co.	5					*	
Eramosa Herbals	5	*					
Heartwood Farm	5	*					
Waterfarmers	5	*					
Ag Business & Crop	4					*	
Ambiances Gourmandes	4			*			
Fan/Joy	4			*			
GR 365 N	4	*					
Reroot Farm	4	*					
Retour Bistro	4			*			
Uprooted Farm	4	*					
Zocalo Organics	4	*					
4th Line Cattle Co.	3	*					
The Conscious Kitchen	3		*				
Handsome Devil Bistro	3			*			
Spiral Farm	3	*					
Taste Detours	3			*			
Junction Food Network	3					*	
Wild Grove	3	*					
Escarpment Labs	2				*		
Food Venture Program	2						*
Grow Well Eat Well	2					*	
Kortright Presbyterian Church	2	*					
vegetaBALES	2	*					
Ward 1	2				*		
Wellington Made	2				*		
Zerocery	2		*				
Transition Guelph	2						*
Elora Farmers	1		*				
Friendly Society	1			*			
Planet Bean	1		*				
Red Express	1		*				
Urban Orchardist	1						*
Well Baked Box	1		*				
Bioferm	1				*		
Average # of SDGs Adopted	3.2	4	1.83	3.16	2.6	3.5	2.33

* Denotes Sector.

The study has a few limitations. The sample size of 40 businesses were self-selecting organizations interested in sustainability and the circular food economy. The sample had greater representation from agricultural and retail sectors. Businesses were supported financially to adopt circular practices. The interviews were not part of this study as they were conducted in support of the Our Food Future project. As a result, answers from respondents might not be representative of the entirety of an organization's circular activities. Taking these limitations into consideration, the results of this study effectively illustrated the natural development of the foundation of a Food-Circular Economy-Women nexus under conditions of local government and community organization support. This approach focuses on the narratives that businesses present for themselves without any potential pressure to meet specific expectations in structured or semi-structured interviews.

3. Results and Discussion

A review and analysis of 40 Kitchen Table stories reveals that 16/17 SDGs and 16 associated targets were addressed in the program. Of the combinations, seven addressed the environment, five focused on social issues, and three prioritized economic concerns. One was relevant for all three (Table 1). This result shows that in general, SOFF businesses pursued SDGs and associated targets in a manner which was consistent with sustainable development [1]. Environmental SDGs and associated targets were given the most attention by SOFF participants, with 49 being implemented. Social SDGs and targets were second, with 41 instances of implementation; while economic SDGs and targets were third with 35 (Table 2). These results support the use of the nexus approach for framing the SOFF project, as it was designed to achieve multiple sustainable development goals [12].

SDGs 2, 12, and 5 were implemented the most by SOFF businesses (Figure 1). Initial research into key interactions between SDGs at the target level identified a relationship between SDG 2, focused on sustainable food production, and SDG 5, focused on gender equality; but have not yet made the link between these and SDG 12, focused on reducing food waste and losses [37]. Results suggest that having the three core nexus components of Food-Circular-Economy-Women is a positive framework for a network of SMEs to provide value to various stakeholders based on principles of sustainability. This compliments the efforts of water-energy-food nexus approaches by addressing more sectors [8] and integrating livelihoods and social systems [16].

It was common for multiple SDGs to be joined to one another in a SOFF project, which reinforced the efficacy of the nexus approach [12]. In fact, 12/17 SDGs were addressed alongside half or more of the other SDGs. SDGs 2, 12, and 5 were the most frequently adopted and the most connected to other SDGs (Figure 2). There were a total of 85 interactions between individual SDGs (Figure 3). SDG 2 and 12 connect the most to one another. In the second highest category, SDG 5 connects to SDG 2 and 12, while SDG 2 also connects to SDG 8 and 15. The top two sections of the pyramid consist of SDG 2 (four times), SDG 12 (two times), and SDG 5 (two times). SDG 8 and 15 are each present once. The prominence of SDGs 2, 12, and 5 reinforce the Food-Circular Economy-Women nexus. Of further interest is the presence of SDG 8 (two times) which focuses on economic growth, in the third and fourth highest sections of the pyramid; and SDG 9 (two times) which focuses on infrastructure, in the fourth highest section of the pyramid. These relationships are a useful point of reference for future research and policy as SDGs are still in the process of being understood [3], with a particular need being a deeper understanding of connections between goals [4].

It is salient that women owned and led businesses are responsible for driving engagement between SMEs and food security organizations in Guelph-Wellington, as women have been linked to household food security [24]. A total of 7/10 organizations providing social benefits not listed in SDG goals and targets were women-led (Table 3). It is also of note that these businesses are primarily involved in agriculture, a finding which will further the understanding of gender's influence within the food supply chain [30].

Food-Circular Economy-Women nexus SDGs are implemented most often by SOFF participants engaged in agriculture, and least often in processing and other sectors. SDG 2 is the most prevalent in agriculture, while SDG 12 is most common in retail and hospitality. SDG 5 is never implemented less than SDG 2 or 12 in any sector (Figure 4). Broader SDGs and associated targets are implemented most often in agriculture, and least often in retail (Table 4). This approach provides a conceptual link between components of the agri-food value chain which is often lacking when SDGs are analyzed in relation to one another or within projects [7].

These results have additional relevance for the circular economy. Research shows that environmental and economic domains appear more frequently than social ones in metrics [38,39]. Critics suggest the circular economy is neutral to social benefits [40] and note there is no holistic framework to capture social indicators [41]. Of particular concern, is the neglect of the issue of equality for all members of society in circular economy research and policy [42,43]. In contrast, our results show that the SOFF project, while positioned within a large circular economy project, implemented social goals more often than economic goals. Further to this, the nexus included SDG 5 as one of its component parts.

An analysis of SDG implementation and interactions is also useful to provide content to the wider research and understanding of global SDG progress. Since 2015, SDG 2 has seen a 1.1% increase, SDG 12 has experienced a 0.4% decrease, and SDG 5 has recorded a 2.6% increase worldwide. Each of these SDGs have further been negatively impacted by the ongoing COVID-19 pandemic [44]. The Sustainable Development Report SDG Index evaluates that Canada has significant challenges remaining with respect to SDGs 2 and 5, while major challenges are present for SDG 12. It further notes that while Canada does have national SDG monitoring with 60 indicators, it has not included SDGs in its national COVID-19 recovery [44]. Thus, the implementation of 16/17 SDGs by businesses participating in SOFF, the strong influence of practices in alignment with SDGs 2, 12, and 5, along with 85 interactions between pairs of SDGs, serve as an example to policy makers. Local, provincial, and national governments in Canada have a blueprint of what might be possible for COVID-19 recovery through support of the agri-food sector.

It has been suggested that two key principles are required to achieve the SDGs. The 'leave no one behind principle' is a pledge of the 2030 Agenda and focuses on equity and fairness, which includes inequalities and discrimination by gender. The 'principle of circularity and decoupling' refers to changing patterns of consumption and well-being from environmental degradation through circularity that promotes reuse and recycling of materials [45]. This can take place through reductions in GHGs [46] and food loss and waste [47], with cities playing a key role [48]. The SOFF project uniquely demonstrates attention to both key principles by integrating environmental, social, and economic considerations in an emerging Food-Circular Economy-Women nexus.

4. Conclusions

Analysis of 40 Guelph-Wellington SOFF stories reveals that the area supports an emerging Food-Circular Economy-Women nexus. SDGs 2, 12, and 5 form the core of the nexus as they are most frequently implemented by businesses. These three SDGs are also at the summit of SDG implementation pyramid as they were paired most often in SOFF projects. Most SOFF projects linked multiple SDGs together, with the three core nexus SDGs linked to the broadest number. SDG adoption is most prevalent with firms engaged in agriculture. While businesses are most interested in implementing environmentally beneficial practices, social issues are prioritized over economic activities. The adoption of activities which support social benefits not yet captured by SDGs and associated targets are most prevalent amongst women owned and led businesses, with agriculture being the most represented part of the food system. Each business pursuing additional social benefits elected to focus on improving food security, which is consistent with the strong link between women and gains in the area.

Ultimately, this study provides a useful reference point for stakeholders looking to create a circular food economy with environmental, social, and economic value. It shows that a large community project led by a city can generate broad sectoral buy-in from a variety of agri-food SMEs, and that this work can integrate the two key principles required for successful SDG implementation: ‘leave no one behind’ and ‘circularity and decoupling.’ This supports and informs emerging research and policy which considers SDG implementation and interaction. It further encourages circular economy projects to address food security.

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