



Inter-Agency Task Force on  
**Social and Solidarity Economy**

# **Role of Co-operatives in Facilitating the Implementation of the Sustainable Development Goals**

*An Experience from Nova Scotia, Canada*

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## Abstract

Attainment of the Sustainable Development Goals (SDGs) will require concerted effort throughout societies everywhere. Although co-operatives, as community-embedded local organizations, have been promoted in advancing SDGs, to what extent co-operatives are furthering the SDGs is understudied. To fulfill the aim of understanding the nature and extent to which existing co-operatives in Nova Scotia are facilitating the SDGs, a mixed-method framework was developed and applied to SDG assessment in an organizational context. Through a textual content analysis, we analyzed the extent of overlap between the localized SDGs and the mission statements of 179 NS-based co-operatives and further quantify the performance of co-operatives in the facilitation of each SDG. By descriptive frequencies and crosstab statistics, we analyzed the distribution of facilitated SDG across various co-op sectors. Results indicate that the purposes of NS-based co-ops do align with many SDGs. However, the alignment is highly variable across different co-op sectors. In contrast, environmentally-related SDGs are much less addressed by local NS-based co-operatives. Methodological and empirical practices are suggested to further holistically assess and enhance the impact of co-operatives on advancing SDGs, especially from an environmental perspective.

## Keywords

Sustainable Development Goals (SDGs), co-operatives (co-ops), Nova Scotia (NS), content analysis, mission statement

## Bio

Ms. Shen obtained her master's degree in Environmental Studies from the School for Resource and Environmental Studies (SRES), Dalhousie University. Her academic research and professional interests in exploring innovative approaches to organizational sustainability, especially for socially-oriented businesses in local contexts. This study is generated from her master's thesis, which is supported by Dalhousie University, Canadian Co-operative Association, Government of Nova Scotia, Co-operatives and Mutuals Canada, and the Committee on Co-operative Research (CCR) of International Co-operative Alliance (ICA). Authors for contributing on this paper as well as her thesis project include: her supervisor, Dr. Peter Tyedmers, and two committee members – Dr. Michelle Adams and Dr. Louis Beaubien. Dr. Tyedmers is a Full Professor at SRES, Dalhousie University, and he is particularly motivated to critically examine choices that we make in the name of sustainability to help ensure that we are indeed moving in a positive direction. Dr. Adams is the current director and an associate professor at SRES, and her work focuses on the policies, strategies and technologies that can improve the sustainability of both industry and the communities they intersect. Dr. Beaubien is an associate professor and the associate dean of Rowe School of Business, Dalhousie University; his research interests revolve around the design of financing and governance models, and information system strategy in a variety of organizations, most recently, the co-operative and healthcare sectors.).

# 1 Background

Under the global agenda for sustainability, effective implementation of the Sustainable Development Goals (SDGs) will require concerted effort from all stakeholders and at all scales. The primary organizing principle of co-operatives around the world is to fulfil community needs, which can vary in scale and form (Beaubien and Rixon 2014). Based on common guiding principles and the traditional focus on addressing underserved issues within communities, co-operatives are regarded by some as among the most important vehicles for implementing the SDGs and contributing to local sustainable development (International Labour Organization (ILO) 2014; ICA and ILO 2014). However, the extent to which established, locally-focused co-operatives enhance the achievement of SDGs remains unstudied. Here, we set out to analyse the extent to which co-operatives operating in Nova Scotia, Canada may contribute to fulfilling the SDGs through an analysis of organizational objectives as expressed in their mission statements.

To date, research examining the potential economic, social and environmental impacts co-operatives have in local communities have been described mainly through case studies of specific co-ops (Folsom 2003; Zeuli et al. 2003; Palme et al. 2005). Other studies have undertaken a quantitative approach to understand the economic impacts of co-ops using input-output models (Karaphillis and Lake 2014). Other authors have, however, criticized these purely economic analyses as poorly representing the range of benefits, especially non-financial impacts associated with co-ops (Gordon 2004; Deller 2009). While some studies have examined measure of diverse social impacts of large co-operatives at aggregate (e.g., Beaubien and Rixon 2014), very few studies have set out to examine and measure multiple potential contributions of diverse co-ops in a local community (Hough and Novkovic 2012; Leclerc, Brown and Hicks 2012). Given concerns regarding how to measure non-financial impacts of local co-operatives, some authors argue that development of interdisciplinary holistic analytic approaches are needed to assess sustainability impacts of local organizations (Beaubien and Rixon 2014; Bebbington, Brown and Frame 2007; Wiek et al. 2012; Schaltegger et al. 2015). To fill this gap, Baumgartner (2014) proposed a holistic model to measure sustainability performance that included using corporate mission statements as the basis upon which to assess organizational performance in line with sustainability objectives at normative and strategic levels. Concurrently, other studies have used mission statement analysis to examine corporate financial, social, and entrepreneurial performance (Pearce and David 1987; 2008; Stevens, Moray and Bruneel 2015) and mission statement analysis continues to be “developed, disseminated and valued” (Stallworth Williams 2008, 98) in studies that seek to better understand the performance of various organizations (Ferreira and Otley 2009; Dermol 2012; Morioka and Carvalho 2016). The SDG framework provides a new context within which mission statement analysis can be used to assess the potential contributions of organizations, including co-operatives.

To explore the use of mission statement analysis in furthering the SDGs, we look at co-operatives in Nova Scotia, Canada. In Canada, the federal government has committed to implementing national sustainability strategies and actions in line with the SDGs (Government of Canada 2016). Particularly in the Province of Nova Scotia (NS), co-operatives have long supported communities in addressing local concerns, since the first consumer-member store in North America was founded in Stellarton, NS in 1861 (MacPherson 1975). Currently, locally-based Nova Scotian co-operatives are highly diverse and are playing an important role in society providing child-care (e.g., Inverness Early Years Co-op), personalized health-care (e.g., Pictou County Home), other social services for vulnerable groups (e.g., SSG Support Services Group), advancing media technologies in public services (e.g., the Atlantic Film Co-op), providing

recreation facilities (e.g., Deanery Project Co-operative), and recently advancing renewable community energy services (e.g., the Wind Energy Co-operative) (Thériault 2012). Housing co-ops, in particular, are well established throughout Nova Scotia (Thériault 2012).

Our analysis of the extent to which co-operatives operating in Nova Scotia, Canada contribute to fulfilling the SDGs was pursued through two research questions:

(1) For a diverse sample of existing co-operatives active in Nova Scotia, to what extent do their mission statements align with the SDGs in a local context?

(2) Are there any differences in the extent to which localized SDGs are supported between different co-operative sectors (by industry, age, profit status, and membership structure)?

## 2 Methodologies

### 2.1 Sample

Co-operatives<sup>1</sup> incorporated under the Nova Scotia *Co-operative Associations Act* (Province of Nova Scotia 1989), and active as of September 1, 2016, according to the Registry of Joint Stock Companies (Government of Nova Scotia 2016) formed the population (n=279) of co-operative businesses to potentially analyze. For all co-operatives in the population, a web-based search was conducted to identify all those for which there were publicly accessible mission statements. As corporate mission statements can vary widely in length (Jauch and Glueck 1988; Sufi and Lyons 2003) and textual analysis challenges increase with volume, the data structure of a mission statement is fulfilled through the combination of Fred (1996)'s practitioner theory and Zeuil et al. (2004)'s co-operative model. When mission statements were available for a co-op, additional details regarding its operations were collected including business sector or activity (e.g., housing, fishing), profit status (e.g., for-profit or not-for-profit), age, and membership structure of the co-op (e.g., consumer or producer<sup>2</sup>) for further statistical analysis.

### 2.2 Analytical Process

Given that the SDGs have been developed to address sustainability challenges globally and our analysis was conducted in a very specific socio-economic setting, we had to first interpret the SDGs in a local Canadian context. This was done using contextual content analysis to understand and identify aspects of the SDGs that are applicable in a Canadian context through a goal-oriented reading of the SDGs. More specifically, we undertook a systematic textual analysis using Nvivo (qualitative data analysis software, QSR International Pty Ltd (QSR) 2016) and an Excel spreadsheet (Microsoft Corporation 2016). Details of the systematic textual analysis of the SDGs are described in Shen (2019). In total, we identified 61 targets distributed across all 17 SDGs, together with 7 sub-targets and 23 specific codes, that were all relevant in a Canadian context. These Canadian context specific aspects of the SDGs then became the coding categories used in our subsequent analysis of co-op mission statements. The analysis of the contents of mission statements also was conducted using the Nvivo. Here, we employed the Keyword in Context (KWIC) coding technique (Leech and Onwuegbuzie 2011)

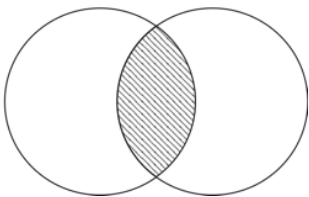
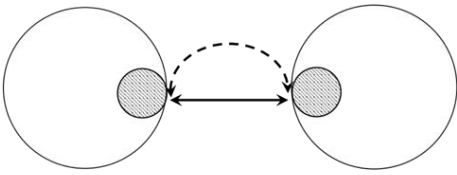
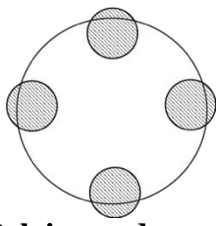
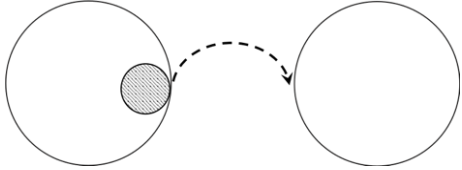
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<sup>1</sup> In this study, local co-operatives refer to those co-ops that are registered provincially or territorially and as such can only operate within these jurisdictions (Industry Canada 2015). Comparatively, financial co-ops (e.g., credit unions and co-op banking) are distinguished from the legislation of other co-ops since the intensive debate of financial co-operative system beginning in the 1950s (MacPherson 2012; Industry Canada 2015;) and therefore are not studied in this paper.

<sup>2</sup> Producer co-ops in this study refer to both producer and employee owned co-ops, following the classification of marketing co-ops used by the Co-operative Branch under Government of Nova Scotia.

to identify if any keywords (including stemmed words) from the SDG-derived codes appeared in the textual description of a co-op mission statement. As such, we were able to identify if the contexts of mission statements were textually linked with one or more codes based on the sequential coding categories. As aspects of some SDGs and their targets support the achievement of others in various ways, it was also necessary to identify these inter-linkages so that the extent to which co-op purposes align with SDGs, whether directly or indirectly were fully understood. Consequently, in parallel with the content analysis of the mission statements, we identified textual inter-linkages among Canadian context relevant SDGs and targets using our previously derived coding categories. More specifically, four forms of textual inter-linkages were identified: mutually supporting, bidirectional enabling, relying and supporting, and unidirectional enabling (Table 1).

*Table 1.* Visualisation of four types of linkages between SDGs and their targets along with the specification of those linkages that arise in the localized Canadian context

<p>Mutually Supporting (5 pairs)</p>  <p><i>Note.</i> <b>Mutually supporting (A &amp; B)</b> indicates targets A and B can be both fulfilled by achieving one or the other (e.g. targets 1.4 &amp; 11.1).</p>	<p>Bidirectional enabling (27 pairs)</p>  <p><i>Note.</i> <b>Bidirectional enabling (A &amp; B)</b> indicates approaches to achieving targets A &amp; B directly or indirectly contribute to the achievement of one another (e.g. targets 11.6 &amp; 12.4).</p>
<p>Relying and supporting (34 pairs)</p>  <p><i>Note.</i> <b>Relying and supporting (A &amp; B)</b> indicates target A relies on the achievement of target B, and target B specifies the content of target A therefore supports the overall achievement of target A (e.g. targets 1.4 &amp; 4.3; 11.1 &amp; 4.3).</p>	<p>Unidirectional enabling (40 pairs)</p>  <p><i>Note.</i> <b>Unidirectional enabling (A→B)</b> indicate achievement of target A can indirectly facilitate the general achievement of target B, but not vice versa. <b>Bolded text</b> indicates the linkages between SDGs and sub-targets (e.g. targets 4.a → 5.5).</p>

As some keywords had been previously identified as textual inter-linkages among some SDGs and sub-targets through the SDG localization process, we multi-coded the same textual description to the linked codes based on keyword search, in these instances. More specifically,

for mutually supporting, and relying and supporting relationship types of SDGs and targets (Table 1), we co-coded the same descriptions from the co-op statements based on their interconnected themes and keyword search. For directly and indirectly enabling types of SDGs and targets (Table 1), when the co-op statement was coded under one goal and/or target, we checked if the coded text in the co-operative mission statement had additional textual alignment with one or more linked goals and/or targets. For example, through a search query of the keyword *education* (including its stemmed words), we identified 48 instances of its use amongst the co-operative statements assembled (Table 1). By reviewing every instance in the context in which it occurred, we coded three co-op statements as aligning with the corresponding coding categories (under the SDG target 1.4): *1.4 Inclusive access to basic services*. Just as importantly, however, as the keyword *education* also linked target 1.4 with targets 11.1 and 4.3, we also coded the sentences in these inter-linked coding categories. After the deductive coding process, and reviewing the then as coded mission statements, we identified that some mission statement contents had not been coded, although they aligned conceptually with one or more SDGs. This occurred when the specific keywords used for searching were missing from these mission statements. Consequently, we applied an inductive coding strategy to all previously uncoded portions of co-operative mission statements and developed sub-codes and keywords under the initial coding categories that aligned substantively with one or more of the localized SDGs.

After the coding process, we counted and merged the number of codes that aligned with each co-operative's mission statement by SDGs and targets, and also calculated the number of distinctive SDGs their mission statements addressed. This provided a descriptive synthesis of SDGs nominally facilitated by each of the sampled co-ops. By using SPSS (IBM Corporation 2016) we statistically analysed the overall SDG performance of the sampled co-ops through different co-op characteristic lenses (e.g. their industry, age, profit status, membership structure). To comparatively analyze the association among SDG performance and various co-operative characteristics, we cross-tabulated different levels of SDG alignment by categorical sectors. Specifically, we categorized the levels of SDG alignments as: a) no alignments, b) few alignments (two or under alignments), and c) multiple alignments (including and greater than three alignments). We conducted chi-square tests (including post-hoc tests) to examine the association between various SDG alignment levels (no, few, and multiple) and each co-op characteristic. This enabled us to specify the association between co-op characteristic (e.g. age, business sector, etc.) and each level of SDG alignment. In addition, we examined the associations among the distribution of co-operative characteristics and applied descriptive analysis to understand the extent of SDG alignment with various co-op characteristics.

### 3 Results

#### 3.1 The alignment of the mission statements of NS-based co-operatives with the SDGs

In total, the mission statements of 179 active NS-based co-operatives were collected from a variety of online sources including corporate websites and government reports. This sample represents approximately 65% of the total co-operatives that were active as of September 1, 2016. The aggregate mission statements from the 179 co-operatives amounted to more than 23,000 words that were then assessed against the localized SDGs (and the average word count of 179 mission statements is around 125 words).



Figure 1a. United Nations' Sustainable Development Goals (UNGA, 2015)

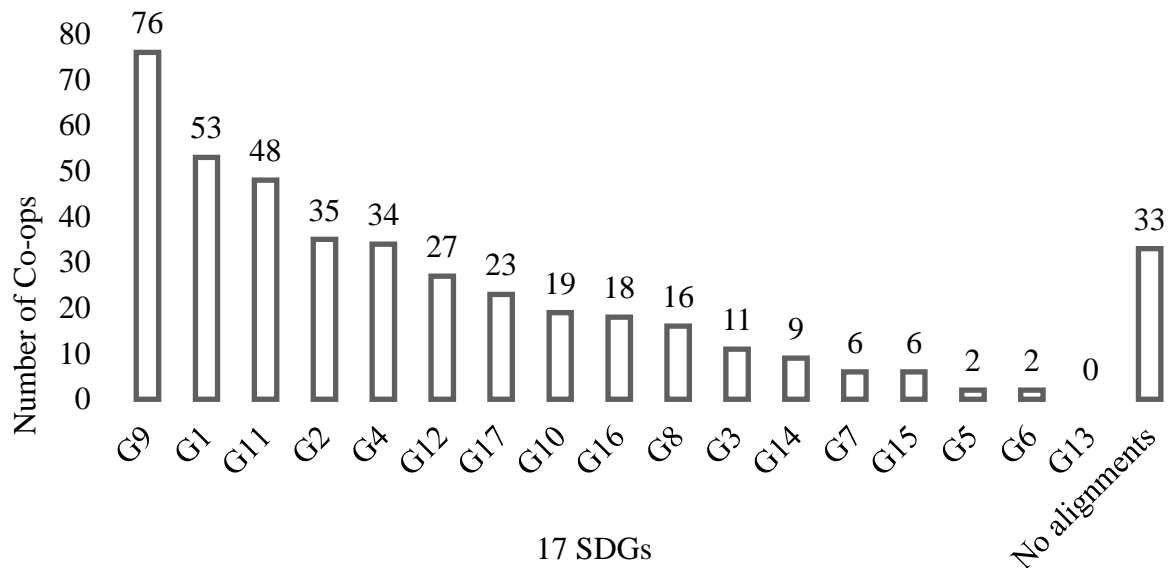


Figure 1b. Frequency with which the purposes of 179 Nova Scotian co-operatives align with the Sustainable Development Goals

Figure 1b shows the frequency with which text within the mission statements of NS-based co-operatives aligned with each of the localized SDGs. Importantly, co-operatives, which were coded under various targets within the same goal, were counted only once within that SDG to ensure there was no double counting, but a co-op can be multiply coded under different goals. As shown from Figures 1a and 1b, Goal 9 (*industry & infrastructure*) appears to be the most facilitated goal amongst the studied co-operatives, as more than 40% (n=76) of the 179 co-op mission statements examined align with this goal. Similarly, NS-based co-ops had relatively frequent alignments with Goal 1 (*poverty reduction*), Goal 11 (*cities & communities*), Goal 2 (*food*), and goal 4 (*education*) (n ranging from 34 to 53). In contrast, the purposes of very few co-ops (under 10) aligned with Goal 5 (*gender equality*), Goal 6 (*water & sanitation*), Goal 7 (*energy*), Goal 14 (*marine environment*) and Goal 15 (*land environment*). None of the 179



studied NS-based co-operatives had purposes that aligned with Goal 13 (*climate change*). Importantly, using this analytical framework, nearly 20% of the purposes of the sampled co-ops (n=33) did not align with *any* of the SDGs.

### 3.2 Characteristics of NS co-operatives and potential associations with extents of SDG alignments

Table 2 summarizes the major characteristics of the 179 co-operatives assessed in this study along with the characteristics of all 279 co-operatives that were active in NS and described in the provincial registry database as of September 1st, 2016.

Service industry co-operatives were the most common in both the included and overall co-operative datasets, representing 26 % and 24%, respectively. Housing co-ops appear less frequently (14%) within the assessed co-operatives than in the entire population (almost 23%). In contrast, agriculture co-operatives were marginally over-represented amongst the assessed co-ops (18% of the total assessed), relative to their occurrence in the total co-op population (Table 2). Co-operatives in other industries distribute similarly in both datasets.

*Table 2.* Characteristics of assessed co-ops and all registered co-ops in Nova Scotia as of September 1, 2016

Industry	N (%) of Co-ops			Other characteristics	N (%) of Co-ops			
	Included	Excluded	Total		Included	Excluded	Total	
Agriculture	32 (18%)	3 (3%)	35 (13%)	Profit Status	For-Profit	74 (41%)	48 (48%)	122 (44%)
Craft	13 (7%)	5 (5%)	18 (6.5%)		Non-profit			
Fishery	6 (3%)	5 (5%)	11 (3.9%)				105 (59%)	52 (52%)
Forestry	6 (3%)	3 (3%)	9 (3.2%)	Membership Structure	Consumer			
Housing	25 (14%)	39 (39%)	64 (23%)				98 (55%)	74 (74%)
Investment	11 (6%)	7 (7%)	18 (6.5%)		Producer			
Retail	15 (8%)	6 (6%)	21 (7.5%)				81 (45%)	26 (26%)
Service	46 (26%)	22 (22%)	68 (24%)	Age	≤10 yrs.	80 (45%)	19 (19%)	99 (35%)
Worker	24 (13%)	10 (10%)	34 (12%)		>10 yrs.	99 (55%)	81 (81%)	180 (65%)
Miscellaneous	1 (1%)	0	1 (0.4%)					

In the cases of profit status and membership structure, both non-profit and consumer-member co-ops appear more frequently than for-profit and producer-member co-operatives in both the study and overall datasets respectively (Table 2). In both datasets, co-ops that are older than 10 years are much more common than younger co-operatives (Table 2).

Results of our cross-tabulation of co-ops' characteristics and the extent of their alignment with SDGs appear in Table 3. From the chi-square results, there are statistically significant associations between co-op profit status & membership structure and degrees of SDG alignment ( $\chi^2(6) = 20.82, p < 0.01$ ), and between industry sector and degrees of SDG alignment (Fisher's Exact value = 47.79,  $p < 0.001$ ) (Table 3). In contrast, the association

between age and SDG alignment is not statistically significant ( $\chi^2(2) = 0.885, p > 0.05$ ) (Table 3). Based on results of effect size, we can conclude that there are moderate associations between profit status & membership structure and SDG alignments (effect size = 0.27), and between industry sector and SDG alignments (effect size = 0.35). Both effect sizes are statistically significant at the 0.01 level.

Table 3. Crosstabulation of co-op characteristics and SDG alignments, and results of chi-square tests

Characteristic	Degree of SDG alignment								Chi-square test		
	No alignments (N=33)		Few alignments (N=74)		Multiple alignments (N=72)		Total		Test Value	Effect size	
	N <sup>1</sup>	% <sup>1</sup>	N <sup>1</sup>	% <sup>1</sup>	N <sup>1</sup>	% <sup>1</sup>	N <sup>1</sup>	% <sup>1</sup>			
Profit Status & Membership Structure	Non-profit & Consumer	6	<b>9.2</b>	21	32.3	38	<b>58.5</b>	65	100	20.82**	0.24**
	For-profit & Consumer	12	<b>36.4</b>	13	39.4	8	<b>24.2</b>	33	100		
	Non-profit & Producer	8	20	21	52.5	11	<b>27.5</b>	40	100		
	For-profit & Producer	7	17.1	19	46.3	15	36.6	41	100		
Age	Age ≤10 yrs.	13	16.3	32	40.0	35	43.8	80	100	0.885	0.07
	Age >10 yrs.	20	20.2	42	42.4	37	37.4	99	100	<i>(p &gt; 0.05)</i>	
Industry	Agriculture	4	12.5	18	<b>56.3</b>	10	31.3	32	100	<u>47.79</u> ***	0.37***
	Craft	5	38.5	5	38.5	3	23.1	13	100		
	Fishery	0	0.0	1	16.7	5	<b>83.3</b>	6	100		
	Forestry	1	16.7	0	0.0	5	<b>83.3</b>	6	100		
	Housing	3	12.0	3	<b>12</b>	19	<b>76</b>	25	100		
	Investment	4	36.4	4	36.4	3	27.3	11	100		
	Retail	5	33.3	8	53.3	2	<b>13.3</b>	13	100		
	Service	6	13	18	39.1	22	47.8	46	100		
	Worker	5	20.8	16	<b>66.7</b>	3	<b>12.5</b>	24	100		
Miscellaneous	0	0.0	1	100	0	0.0	1	100			

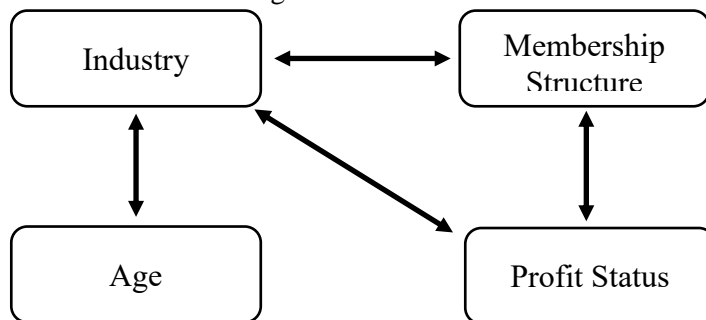
Note. <sup>1</sup>Number and percentage of co-operatives in each categorical sector achieving different levels of alignment. No alignments indicate categorized co-ops whose statements are not aligned with any of the 17 SDGs, few alignments indicate the co-ops who align with one or two SDG goals, and multiple alignments indicate the co-ops who align with three or more goals. \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . The underlined test value was provided by Fisher's Exact test, and others were provided by Pearson Chi-square test.

In order to identify the association between each characteristic type and each categorical level of SDG alignment, we conducted a post-hoc test by comparing the proportions of co-ops in each characteristic sector by each level of SDG alignment. The bolded figures in Table 3 are statistically significant at the adjusted 0.05 level, indicating values that differ discernibly from other values. Looking within the profit status and membership structure characteristics, non-profit and consumer-member co-ops most frequently align with multiple SDGs (58.5%), and

only six co-ops with these characteristics (representing only 9.2% of these co-ops) did not align with any SDGs. In contrast, both for-profit and consumer-member, and non-profit and producer-member co-operatives aligned less frequently with multiple SDGs at 24.2% and 27.5% respectively. Moreover, the proportion of for-profit and consumer-member co-cops with no alignments accounted for 36.4% of all of these co-ops – the highest rank of non-alignment among other co-op characteristic sectors. Turning to the industry sector characteristic, a larger proportion of both agricultural and worker co-operatives (at 56.3% and 66.7% respectively) have relatively few alignments (Table 3). More than 70% of fishery-, forestry- and housing-focused co-operatives align with multiple SDGs. In contrast, the proportions of retail and worker co-operatives both have low rates of multiple SDG alignments, at 13.3% and 12.5% respectively. (Except for the above, there is not a significant difference among other co-op sectors in few or multiple alignments. Especially at the level of no alignments, the proportions of the studied co-operatives do not statistically differ across all industries.)

To further understand the level of alignment associated with the distribution of co-op characteristics, we analyzed the association between each pair of characteristic categories using chi-square tests, the results are significant at 0.05 level. From Figure 2, we can identify the association of co-operative industry with other characteristics, and there is an association between membership structure and profit status. The possible effect of self-association is apparent among various co-op characteristic sectors with the exception of the relationship between age and profit status.

*Note.* All results are significant at 0.05 level.



*Figure 2.* Associations among co-operative characteristics

To better understand the significant associations that exist between some co-op characteristics and those co-ops' alignment with the SDGs, we graphically illustrated the distribution of SDG alignments in each industry sector (omitting one co-op whose industry sector was miscellaneous), by membership structure, profit status and age (Figure 3). The resulting visual representation help illustrate and interpret the statistical results described above.

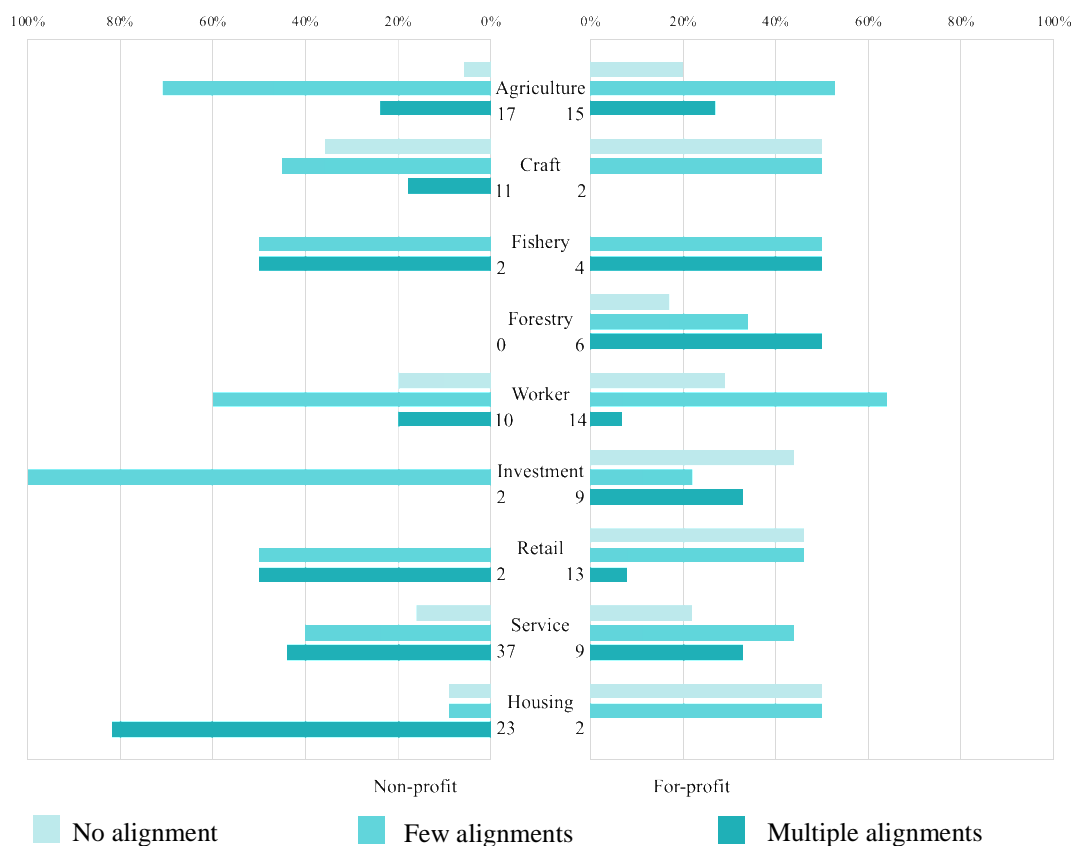


Figure 3. Frequency and strength of alignments of the purposes of Nova Scotia-based co-ops with the SDGs across various industries

frequent alignments with multiple SDGs than any other co-op sector. More specifically, service and housing sector co-ops, and, in particular, housing sector co-ops that were established for more than ten years prior to 2016, display stronger alignment with the SDGs (Figure 3). In contrast, for-profit and consumer-member co-ops had purposes that aligned far less frequently with the SDGs (Figure 3, Table 3). Specifically, the proportion of for-profit and consumer co-ops with no alignments with any SDGs is greater than that of any other co-op sector. Amongst all for-profit and consumer member co-ops, retail co-operatives are the most common sub-type, accounting for almost 40% (13 out of 33). Interestingly, about 40% of all for-profit retail co-ops (age > 10 yrs.), had no alignments with any SDGs. Less than 10% of all for-profit retail co-ops, regardless of age, aligned with multiple SDGs (Figure 3, Table 6). Among producer-member co-ops, most non-profit co-ops aligned with very few SDGs (Figure 3). These were typically described as agricultural, craft or worker co-ops. While both non-profit and for-profit agriculture and worker co-ops are most likely to have few alignments with SDGs, their sister producer-member co-ops, in the fishery and forestry sectors tend to have multiple alignments with SDGs (Figure 3). This tendency is statistically significant (Table 3), although fishery and forestry sector co-ops only account for about 3% of all the co-ops studied and in existence in NS in 2016 (Table 2).

#### 4 Discussion

Our results illustrate that at a local level in Canada, most studied co-operatives (80% of the total sample) have purposes that align with at least one SDG (Figure 1b). In terms of substantive alignment with the SDGs, most of the co-ops studied tend to facilitate social and

economic objectives (Figure 1). This supports earlier findings by the ILO (2014) and the ILO and ICA (2014) that indicate that co-operatives “could be an important instrument for achieving the SDGs” (ILO and ICA 2014, 4) and more specifically, can make substantial contributions to the “economic, social and societal” dimensions of the SDGs (ILO 2014, 14).

In Nova Scotia, the alignment with socio-economic SDGs occurs primarily in relation to the provision of affordable and quality basic services and infrastructures, especially housing (associated with Goals 1, 9, and 11), food (Goals 1, 2, and 11), health care (Goals 1, 3, 9, and 11), public transportation (Goals 1, 9, and 11), early childhood education and professional trainings (Goal 1, 4, 9 and 11); Similarly, alignment also occurs in relation to improving the access to resources (especially for small-scale and artisanal businesses (Goals 2, 9, and 14<sup>3</sup>) and the awareness of sustainable development (Goal 4), and further promoting a more sustainable production and consumption (Goal 12). It is important to note, however, that the depth of alignment with these social objectives is highly variable (Figure 1) and some socio-economic SDGs (such as Goal 5) are not, relatively, explicitly represented currently by co-ops in Nova Scotia. Given that principles of “voluntary and open membership”, “democratic member control” and “cooperation among co-operatives” (p.1, ICA, 1995) broadly align with Goals 5 (*gender equality*), 10 (*equality*), 16 (*institutions*) and 17 (*partnerships*)<sup>4</sup>, it is somewhat surprising then that these four SDGs were not more frequently supported by the specific purposes of the co-ops whose mission statements were analysed (Figures 1a and 1b).

The particular alignment of Nova Scotian co-ops is perhaps not too surprising given the history of the co-operative movement in NS. Since 1920s, the Nova Scotian co-operative movement grew substantially through the efforts of the Antigonish Movement (MacPherson 1975). Many of these co-operatives strived to stretch their identities and purposes to create education and training opportunities for their members (e.g. the Nova Scotia Co-operative Union), improve and stabilize production for farmers and fishermen (e.g. *Farmer’s and Fishermen’s Co-operative Society Acts* (Province of Nova Scotia 1935)), and further empower the public with economic development and social benefits (e.g. through housing co-ops and business-oriented co-ops) (Nova Scotia Co-operative Council (NSCC) 2014). In addition to the development of traditional co-operative stores and producer-member co-ops, co-operatives in Nova Scotia have emerged to support different leisure activities (e.g. theatre and music co-ops), transportation, health-care and a variety of services to not only for their members, but also the public as a whole (NSCC 2014).

More specifically, housing co-operatives in our study, mostly non-profit, tend to align with multiple SDGs by providing socially-affordable housing for the public and especially people in vulnerable situations, based on the comparison of different co-op sectors (Table 3 and Figure 3). Since 2001, the federal government has invested in the Affordable Housing Initiative (AHI) to provide affordable units within provinces and territories, which enables housing co-operatives to become a primary focus in the co-operative development of Canada (Pomeroy and Falvo 2013; Government of Canada 2013; Leviten-Reid and Lake 2016). Based on the studied dataset, the majority of non-profit co-ops which have been in operation for more than 10 years tend to facilitate SDGs at various dimensions. Non-profit housing was suggested to be more supportive in maintaining the affordability and self-governance for tenants than for-profit housing (Achtenberg 2006; Goldblatt 2004; Wiener 2006). However, the extent of affordability which either non-profit or profit housing co-ops can provide is relatively flexible, considering the distinctive mission of organizations, incorporation of shared place and community

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<sup>3</sup> Particularly artisanal fishing communities in Nova Scotia.

<sup>4</sup> Please refer to Shen (2019) for more insights.

orientation of housing development (Leviton-Reid, Lake and Campbell 2016). Concurrently, the accountability of fish and forest co-operatives for food sustainability, resource management, and conservation concerns local co-ops and is managed through community-based structures (Hanna 2000; Baskaran and Anderson 2005; Hull and Ashton 2008), which potentially embodies Nova Scotian co-ops to enlarge their impacts on advancing SDGs from various aspects. Results show that more than 80% of studied fish and forest co-ops distinguishably address multiple SDGs in their mission statements, although they only represent a small population among Nova Scotia co-op sectors (Figure 3). Among those co-ops (with multiple alignments with SDGs), both fish and forest co-ops in our studies articulate themselves as promoting small-scale business (Goal 9), sustainably exploiting resources (Goal 12) and facilitating participatory management (Goals 16 and 17) in their mission statements. Apart from the common contribution to SDGs, fish co-ops also articulate their objectives in promoting sustainable food production (Goal 2) and artisanal fishery (Goal 14), while forest co-ops identify their missions in sustainable forest management (Goal 15) and forest ecosystem conservation (Goal 6). Although the few fishery and forestry co-ops in our studies concerned with sustainably using fish or forest resources (Goals 14 and 15), addressing issues related to environmental sustainability, such as climate change (Goal 13) and water stewardship (Goal 6), were not overly apparent in the mission statements of the local co-ops analysed (Figure 1). Among the NS-based co-op sectors, specifically, more than 90% of studied for-profit and retail co-ops tend to align with no or few SDGs. Their alignments are mostly with goal 1 (*poverty reduction*) and goal 2 (*food*), while other environmentally-oriented SDGs are less addressed by those co-ops. This is supported by other recent studies, most of which find that although such sustainability issues, as food safety and waste management, concern most retail organizations, the implementation of most business practices could result in more environmental impacts on the whole supply chain (Vijayan et. al 2014; Chkanikova and Mont 2015; Devin and Richards 2018).

In comparison to the relatively strong alignment with social and economic related SDGs, however, the environmentally-related SDGs are much less addressed by local NS-based co-operatives. It has been suggested by Fleming and Jones (2013) that such a gap in local-scale concern for global-scale environmental issues in organizational purposes should not be surprising. In this context, it could be argued that the lack of seeming concern amongst local organizations to address these pressing global-scale challenges is a recognition that they need to be tackled at larger scales of organization. The ILO (2014) also indicates that “co-operatives and the wide SSE can make substantial, if not unique contributions to the achievement of the economic dimensions of the SDGs” (13) and “co-operatives should focus their energy on these goals and targets for which they are best suited” (14). However, the counter argument is that if not addressed locally by someone, somewhere, then they will never be addressed by anyone, although environmental policies and initiatives at the local level cannot be simply implemented by a ‘top-down’ paradigm (Gibbs 1998). Typically, in a local context, we insist that how to manage these issues is equally important for co-operatives to facilitate local sustainability and further advance SDGs. Beyond the empirical cases that well-represent environmental initiatives which organizations put in a local context, more specifically, how local businesses plan their environmental strategies and further manage their performance remains much to be explored (Henri and Journeault 2010; Crutzen and Herzig 2013). Although the socioeconomic role of local co-operatives is a widespread concern in most literature (Bateman 2007; Levi and Davis 2008; Norhatan 2018; Tarhan 2018), the potential significance and responsibility of local co-ops in dealing with the challenge of localizing and resolving environmental issues is overlooked and

should be discussed in further literature. As co-operatives are regarded as a business-focused model among SSE organizations and further one of the important vehicles in delivering local sustainability, it is suggested that the triple roles of co-operatives in facilitating economic, social and especially environmental development is equally important to consider in a local context. In addition, my research has also illustrated how the globally-developed SDGs can be translated or downscaled for use as a practical tool or framework for assessing the purposes of organizations. This localized interpretation and analysis of the global SDG framework can be further adapted to other local communities to identify their SDGs and targets. Although a shift has been seen on driving local concerns from the MDGs to the SDGs, Patel and colleagues (2017) noted that given the ambiguity and multi-scalar nature of the SDG framework, local policies, regulations and governance were necessary to be referred to in the process of localization, especially regarding environmental policies.

Our study has a broader limitation of our decision to rely on the explicit contents of mission statements as the basis upon which to understand the purposes of co-operatives. Certainly, there are other ways of understanding both the intended actions of co-ops, as well as their actual impacts in communities. Such further research could be undertaken using a broader suite of corporate data at the operational level (e.g. corporate strategies, annual report, and other discourses) or through analyses of actual change that co-ops have made. A final issue that arises from the analysis that is based on the classification of Nova Scotian co-ops is that the classification system used by the provincial government is somewhat inconsistent with the way co-ops are organized more generally<sup>5</sup>.

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<sup>5</sup> For example, in Nova Scotia worker co-ops are included in producer-member co-ops when in other jurisdictions they are described separately, and agriculture co-ops are considered amongst producer co-ops when elsewhere they can be aligned with consumer co-ops.

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