

Literature Review on Measuring and Reporting on the UN Sustainable Development Goals by Co-operatives

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Abstract: This literature review aims to uncover existing tools and frameworks for measuring and reporting on the United Nations (UN) Sustainable Development Goals (SDGs) in co-operatives. The existing scholarship indicates limited results, although there is a greater awareness of the potential benefits of and barriers to compliance internationally. Existing tools covered in scholarship include the Global Reporting Initiative (GRI), World Cooperative Monitor (WCM), Clean Development Mechanism (CDM) tool, SDG Compass tool, and the United Nations Research Institute for Social Development (UNRISD)'s Sustainable Development Performance Indicators (SDPI). Co-operatives are uniquely positioned to embrace a collaborative approach to developing and implementing a standardized approach to measuring and reporting as sites of global environmental, economic, and social impacts. This process aligns with, firstly, the UN's (2015) call to action to move co-operatives forward on sustainability and, secondly, the seven co-operative principles that guide co-operatives in their operations, although the latter is not clearly outlined in existing frameworks.

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Keywords: co-operatives; sustainable development goals; seven co-operative principles; measuring; reporting; tools; standards; compliance

Introduction

This literature review outlines findings on measuring and reporting mechanisms and/or approaches used by co-operatives around the world in efforts to gain feedback on their alignment and progress with the United Nations Sustainable Development Goals (SDGs) and the Co-operative Principles. Examining how co-operatives are using these results to inform their operations, management, governance, and practices fills a gap in existing literature. There is concern regarding how to quantify and standardize the measurement of sustainability in co-operatives. Some existing tools that do this include the Global Reporting Initiative (GRI), World Cooperative Monitor (WCM), Clean Development Mechanism (CDM) tool, SDG Compass tool, and the United Nations Research Institute for Social Development (UNRISD)'s Sustainable Development Performance Indicators (SDPI). However, these tools are made for private enterprises and do not reflect the co-operative difference nor the co-operative principles. The literature suggests various motivations for reporting, such as: monitoring global impact of co-operative commitment to sustainable practices; creating comparable data and research to fill existing gaps; considering the impacts of co-operative size on monitoring and reporting the SDGs; monitoring social innovation in relation to sustainability; strengthening communication, engagement, and support with stakeholders as well as relationships and partnerships

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with governmental organizations. This literature review also reveals potential barriers to reporting, such as: quantifying and addressing social impact; limited access to sustainability reports/metrics; limited geographical scope; and potential bias in co-operatives.

Co-operatives are in a key position to embrace reporting on the SDGs and work together to create a standardized method to report on global environmental, economic, and social issues. The 2030 Agenda for Sustainable Development extends to co-operative businesses and will take collective efforts to achieve, as noted by the UN (2015): “We acknowledge the diversity of the private sector, ranging from micro-enterprises to cooperatives to multinationals. We call on all businesses to apply their creativity and innovation to solving sustainable development challenges” (Section *Means of implementation and the Global Partnership*, no. 67). Forming and building partnerships between cooperatives, government, and stakeholders are necessary steps when tracking and measuring co-operative commitment to the SDGs. It is critical to consider motivations for reporting and how these factors influence chosen methods of measuring and reporting that are in place.

Background

There is a growing interest in examining how to approach reporting climate-related activities and results using sustainability reporting. This can be seen on an international scale through the sustainability disclosure standards developed by the International Sustainability Standards Board (ISSB) (IFRS Foundation, 2024a) and the International Public Sector Accounting Standards Board (IPSASB, 2022a). The ISSB was formed in 2021 in response to an increased interest in developing standards and guidelines within organizations independently. The ISSB operates within the International Financial Reporting Standards Foundation (IFRS). In addition, the IFRS develops accounting standards through the International Accounting Standards Board (IASB) (IFRS Foundation, 2024a). The ISSB has issued two standards, the IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information, and IFRS S2 Climate-related Disclosures. These standards consider governance, strategy, risk management, metrics and targets (IFRS Foundation, 2024b).

Chartered Public Accountants (CPA) Canada (2024) has summarized a related national commitment in Canada through the work of the Canadian Sustainability Standards Board (CSSB), Canadian Securities Administrators (CSA), Office of the Superintendent of Financial Institutions Canada, Autorité des marchés financiers, and the Competition Act. The CSSB was formed in 2022 and is operated by CPA Canada. The CSSB develops Canadian Sustainability Disclosure Standards (CSDS) that align with standards outlined by the ISSB. In March 2024, the CSA stated that once the CSSB standards are finalized, the CSA will ask for feedback on a revised rule setting out climate-related disclosure requirements. The CSA notes their apprehension over greenwashing in sustainability reporting (CPA Canada, 2024). In the United States, the Securities and Exchange Commission (SEC) (2024) adopted final rules for the Enhancement and Standardization of Climate-Related Disclosures for Investors indicating the requirement to add climate-related details in registration statements and annual reports. In the European Union, the Corporate Sustainability Reporting Directive also addresses the aim to combat greenwashing and increase reporting of non-financial factors impacting organizational operations (European Parliament and the Council of the European Union, 2022).

Although there is an increase in accountability measures and some overlap in aims and scope, there are still multiple standards at play, which opens the door for varying results. One of the main challenges is there may be specific reporting needs for a company based on the sector and structure in which it operates that may not be accounted for in an overarching standardized approach to sustainability disclosure standards.

This study considers ties to both the United Nations (2015) Sustainable Development Goals Framework and the seven co-operative principles, as described by the International Cooperative Alliance (2024). The following subsections introduce these goals and principles.

United Nations SDG Framework

The 2030 Agenda for Sustainable Development provides 17 Sustainable Development Goals (SDGs) (Table 1) for the United Nations (UN) Member States to address. All SDGs were considered in this analysis.

Table 1: UN Sustainable Development Goals

SDG	Name
1	No Poverty
2	Zero Hunger
3	Good Health and Well-being
4	Quality Education
5	Gender Equality
6	Clean Water and Sanitation
7	Affordable and Clean Energy
8	Decent Work and Economic Growth
9	Industry, Innovation, and Infrastructure
10	Reduced Inequalities
11	Sustainable Cities and Communities
12	Responsible Consumption and Production
13	Climate Action
14	Life Below Water
15	Life on Land
16	Peace, Justice, and Strong Institutions
17	Partnerships for the Goals

Source: United Nations (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. <https://sdgs.un.org/2030agenda>.

Seven Co-operative Principles

The International Cooperative Alliance (2024) outlines seven co-operative principles to guide the cooperative movement.

Table 2: The Seven Co-operative Principles

1	Voluntary and Open Membership	“Cooperatives are voluntary organisations, open to all persons able to use their services and willing to accept the responsibilities of membership, without gender, social, racial, political or religious discrimination.”
2	Democratic Member Control	“Cooperatives are democratic organisations controlled by their members, who actively participate in setting their policies and making decisions. Men and women serving as elected

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		representatives are accountable to the membership. In primary cooperatives members have equal voting rights (one member, one vote) and cooperatives at other levels are also organised in a democratic manner.”
3	Member Economic Participation	“Members contribute equitably to, and democratically control, the capital of their cooperative. At least part of that capital is usually the common property of the cooperative. Members usually receive limited compensation, if any, on capital subscribed as a condition of membership. Members allocate surpluses for any or all of the following purposes: developing their cooperative, possibly by setting up reserves, part of which at least would be indivisible; benefiting members in proportion to their transactions with the cooperative; and supporting other activities approved by the membership.”
4	Autonomy and Independence	“Cooperatives are autonomous, self-help organisations controlled by their members. If they enter into agreements with other organisations, including governments, or raise capital from external sources, they do so on terms that ensure democratic control by their members and maintain their cooperative autonomy.”
5	Education, Training, and Information	“Cooperatives provide education and training for their members, elected representatives, managers, and employees so they can contribute effectively to the development of their co-operatives. They inform the general public - particularly young people and opinion leaders - about the nature and benefits of co-operation.”
6	Cooperation among Cooperatives	“Cooperatives serve their members most effectively and strengthen the cooperative movement by working together through local, national, regional and international structures.”
7	Concern for Community	“Cooperatives work for the sustainable development of their communities through policies approved by their members.”

Source: International Cooperative Alliance (2024) *Cooperative identity, values & principles*. <https://ica.coop/en/cooperatives/cooperative-identity>.

Methodology

This study responds to Rixon and Duguid’s (2022) report on co-operative leadership and their responsibility to adopt the SDGs on a global and local scale: “To help co-operatives better understand their impact in terms of the SDGs, various co-operative industry associations should promote not only adopting SDG initiatives, but also champion a framework to design, measure and report on the co-operative sector’s SDG impact. Accountability is enhanced when co-operatives compare their SDG performance to their peers” (p. 3).

The literature review follows a semi-systematic approach to find related articles on measuring and reporting the SDGs. As Snyder (2019) notes, “a semi-systematic review approach could be a good strategy ... [to] map theoretical approaches or themes as well as identifying knowledge gaps within the literature” (p. 334). Initial research took place from January to May 2024. The primary database utilized was Scopus. The following keyword terms were used: ‘cooperative,’ ‘cooperatives,’ ‘co-operatives,’ ‘co-op,’ ‘sdg,’ ‘sustainable development goal,’ ‘non-profit,’ ‘measure,’

‘reporting.’ Additional sources were discovered in the International Journal of Co-operative Accounting and Management as well as PortailCoop. Approximately 90 articles were identified during the initial review.

The goal of the study is to determine how co-operatives measure and report on the SDGs and what systems or practices are in place to do so in various industries (International Cooperative Alliance, 2024). Although much of the literature did not explicitly tie back to the SDG framework, there were commonalities, such as strong ties to cooperation and partnership, managing and sharing information, and concern for community in relation to sustainability. Some of the tools used to measure sustainability in co-operatives surfaced during these initial searches, while others came through consultation with Dr. Fiona Duguid and Dr. Daphne Rixon.

Existing Literature

This section outlines trends found in existing literature. Trends discussed in this section include measurement tools for the SDGs and associated research.

Tools used to measure SDGs in Co-operatives

SDG Compass tool

One study was found that addresses the SDG Compass tool. Campillo-Alhama and Igual-Antón (2021) outline the results of a descriptive and exploratory study from 2019 on 28 electric co-operatives in Spain regarding corporate social responsibility (CSR) strategies. Their article addresses measuring and reporting on CSR and introduces readers to the SDG Compass tool, “which associates the GRI Indicators (Global Reporting Initiative) with the targets associated with each SDG” (Campillo-Alhama and Igual-Antón, 2021, p. 12). As the authors noted, “[a] semi-structured questionnaire was designed and implemented as a methodological tool to evaluate five key aspects of the strategic management of CSR in electric cooperative organizations: corporate governance, policies and strategies, stakeholder engagement, processes, and commitments and partnerships” (p. 13). This tool addresses common threads in existing literature on sustainability in co-operatives on a global scale.

GRI

Three articles address GRI in reporting sustainability in co-operatives. Carini and Gotz (2020) mention the GRI, which, in 2016, published its first GRI

Sustainability Reporting Standards including economic, social, and environmental metrics and indicators for companies. The UN Global Compact, on the other hand, does not specify guidelines or indicators to measure company progress on its ten principles. Duguid (2020) performed a content analysis of annual reports and websites to determine if co-operatives harness the SDG framework and sustainable practices. She provides an overview of reporting types, such as third party audited, indicator-based frameworks (i.e., GRI) to report on sustainability indicators as well as self-reporting.

Rowlston and Duguid’s 2020 article introduces a reporting model for co-operative sustainability, including ties to both co-operative principles and SDGs. The model is designed so that “co-operative organizations can utilise the Principles and the stratification of interests, mission, goals and activities into Economic, Social and Environmental categories to develop an aligned process of delivering impact in all areas and to each set of stakeholders. The development of the stratified mission, goals and activities determines the relevant outcomes and required reporting” (p. 16). The paper takes into consideration other tools, such as GRI reporting used to measure CSR.

World Cooperative Monitor

One article addresses the World Cooperative Monitor (WCM), which is ran by Euricse and the International Cooperative Alliance (ICA): “Within the scope of recent WCM reporting, Euricse and the ICA have analyzed the practices related to achieving the SDGs implemented by cooperatives ranked in the [2018] Top 300 largest cooperative and mutual organizations” (Carini and Gotz, 2020, p. 45). This article offers tools for co-operatives to track their progress with reaching the SDGs.

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CDM SD tool

One article addresses the CDM SD tool. Olsen, Arens, and Mersmann (2018) discuss a CDM SD tool for Article 6.4 of the Paris Agreement. As noted by the authors, “This article will discuss solutions to the challenge of designing a robust SD assessment system for the new SMM [Sustainable Mitigation Mechanism] based on lessons learned from the CDM SD tool. The argument is that recommendations for a reformed CDM SD tool can have a lighthouse-effect on the development of provisions for SD assessment in the SMM” (Olsen et al., 2018, p. 384).

UNRISD’s Sustainable Development Performance Indicators

Measuring SDGs within the social and solidarity economy is also addressed in the literature. For instance, the UNRISD’s Sustainable Development Performance Indicators (SDPI) project, which ran from 2018–2022 “aims to contribute to the measurement and evaluation of the performance of economic entities in both the mainstream and social and solidarity economy (SSE) in relation to the vision and goals of the 2030 Agenda” (Yi et al., 2022, p. 2). The SDPI follows a two-tier approach in which there is a focus on economic, socioeconomic, environmental, social, and institutional factors in efforts to work towards context-based sustainability accounting. There is a focus on SDG 8 (Decent Work and Economic Growth) and SDG 10 (Reduced Inequalities), referenced ten times each under socioeconomic area, followed by SDG 16 (Peace, Justice, and Strong Institutions), listed nine times under Institutional area, which are categorized under Tier 2: context-based and transformative disclosure indicators (Yi et al., 2022). This resource is a reminder to examine contextual factors impacting co-operative operations to address gaps in SDG reporting.

Organization Impression Management Tactics

Callagher and Garnevska (2023), in a study of agri-food co-operatives in New Zealand, examine Organization Impression Management (OIM) tactics in relation to People, Profit, Planet through an analysis of annual reports (including Chairperson statements). Their approach provides a multi-stakeholder perspective on sustainable development within cooperatives. They conclude that, “OIM scholarship shows key differences between organizations that talk about sustainable development and those that ‘do.’ Thus, examining how co-operatives use impression management alongside other managerial responses to achieve sustainable development requires closer attention” (p. 17).

Additional Tools

Utting and O’Neill (2020) list the following initiatives: *Science Based Targets Initiative (SBTi)* (2015), *SDG Compass* (2015), *Net Positive Project* (2016), *GRI Global Reporting Standards* (2016), *Business Reporting on the SDGs Action Platform* (2017), *European Commission Guidance on Non-Financial Reporting* (2017), *r3.0* (2018), *World Benchmarking Alliance* (2018), *UNCTAD’s Guidance on Core Indicators* (2018), and *IRIS+ system* (2019). They also list a number of tools available for reporting on corporate sustainability. One example is the *Reporting on the SDGs Action Platform* made available through the United Nations Global Impact. According to United Nations Global Impact (n.d.):

Reporting on the SDGs leverages the GRI Standards — the world’s most widely used sustainability reporting standards — and the Ten Principles of the UN Global Compact. By doing so, businesses are able to incorporate SDG reporting into their existing processes, ultimately empowering them to act and make achieving the SDGs a reality. The Principles for Responsible Investment (PRI) initiative is also a partner of the platform, helping to increase the value of corporate sustainability disclosures for the financial community.

The European Commission Guidance on Non-Financial Reporting offered by the Directorate-General for Financial Stability, Financial Services and Capital Markets Union (2019) reflects mandatory compliance with the 2014 EU Directive by companies. There is also the *World Benchmarking Alliance*, a voluntary process to track progress towards SDG benchmarks, including Social (Gender Benchmark and Corporate Human Rights), Food and Agriculture (Seafood Stewardship Index and Access to Seeds Index), Climate and Energy (Just Transition), Nature, Digital Inclusion, Financial System, Urban, and Companies (World Benchmarking Alliance, n.d.). The *United Nations Conference on Trade and Development* (UNCTD) (2019) provides a guide for implementing sustainable development goals. There is a focus on SDG 8 (Decent Work and Economic Growth), which aligns with the trends in academic

papers, followed by SDG 9 (Industry, Innovation, and Infrastructure) and SDG 16 (Peace, Justice, and Strong Institutions).

Discussion

This section outlines links to the Seven Co-operative Principles, motivations for reporting, and examining ties to other sustainability and social frameworks. Results indicate that there is increased movement in the financial sector regarding implementing sustainability standards.

Links to the Seven Co-operative Principles

There appears to be a gap in tools available for measuring the seven co-operative principles, although suggestions on how to approach this surfaced in the existing literature. Five articles address the impacts of measuring the seven co-operative principles in co-operatives. Conde and Rodríguez (2020) approach Social and Solidarity Economy-based economy (SSE) measurement in relation to Colombian co-operatives. The main principles related to achieving the SDGs included Concern for Community, and Education, Training, and Information. They conclude that pursuing a network analysis will show connections between the Cooperative Principles and the SDG framework. Their study confirms that “there is evidence that cooperatives contribute to the fulfillment of the SDGs by virtue of the enhancement of their principles” (Conde and Rodríguez, 2020). Corrigan and Rixon (2017) note the lack of reporting on the seven co-operative principles in a case study of electric co-operatives in the United States. Instead, co-operative performance indicators, such as key performance indicators (KPIs), help gauge “impression management goals and operational demands rather than reporting on fulfillment of the ‘Seven Cooperative Principles’ that are fundamental to the cooperative movement” (p. 60). Although this article does not directly address SDGs, it provides valuable insights on senior management and control of KPIs.

Adderley et al (2021) confirm that accounting and reporting in co-operatives in the United Kingdom do not clearly address “economic, social, and cultural goals” (p. 45). They propose implementing a co-operative accounting Statement of Recommended Practice (SORP) to address gaps in reporting. They state, “SORPs, issued by ‘SORP-making bodies’, are recommendations on financial reporting, auditing, and actuarial practices developed for specific sectors or industries, such as charities, higher education, and pension schemes,” as noted by the Financial Reporting Council (2021). They believe in addressing non-performance (aligning with Maddocks, 2019), and sharing results with internal and external stakeholders to demonstrate alignment with the seven principles and the organizational mandate.

Ravichandran (2020) directly addresses the benefits of co-operatives measuring the seven co-operative principles and SDGs. He highlights the importance of examining economic, social, and environmental impacts in relation to the SDGs:

Cooperative institutions explicitly have economic and social bottom-lines, as they are both associations and enterprises. The 7th Cooperative Principle, Concern for Community, states that “Cooperatives work for the sustainable development of their communities”. Secondly, the SDGs cover all economic activities (agriculture, industry, housing, health, education, production, consumption, etc.), and address all vital global concerns (poverty, equality, employment, gender, climate change, peace, etc.). Cooperative institutions could contribute to all SDGs, both because they are actively involved in these economic sectors and because their impact contributes substantially to the global concerns mentioned by the SDGs. (p. 98)

Ravichandran’s article confirms that the co-operative principles are interconnected with the SDGs. Bickford (2020) also comments on how environmental sustainability falls under the seventh principle. He identifies a gap in the Statement on the Co-operative Identity in which the notes indicate that environmental sustainability is listed as only a part of sustainable development. Guillotte and Charbonneau (2020) confirm that cooperatives’ obligation to sustainable development should be a formalized commitment through policy, which is accepted by the cooperative membership – this is not yet the case in forestry cooperatives in Quebec and Honduras who participated in their study although many practices are in place geared towards SDGs. This confirms there must be a greater emphasis

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on examining the relationship between the SDGs and co-operative principles amongst co-operatives and revisiting how sustainability is defined.

Rixon and Duguid (2022) worked with co-operatives to develop an evaluation framework for measuring SDGs and alignment with co-operative principles. There is a focus on SDG 11, then SDG 16 and SDG 8.

Motivations for reporting

Monitor global impact of co-operatives commitment to sustainable practices

A common theme amongst the literature is that co-operatives must be recognized not only for their contributions to the local community, but also their global impact (Rixon & Duguid, 2022; Ravichandran, 2020; Conde & Rodríguez, 2020; Utting & O'Neill, 2020; Pérez Piñán & Vibert, 2019). Conde and Rodríguez's 2020 study on Colombian co-operatives reveals the importance of looking at meso and macro elements in efforts to address micro elements more effectively. The authors measure the "Release of Resources, Social Surpluses and Merit Goods of Cooperativism." Examining global impacts will reveal important insights on community impacts.

Create comparable data and research to fill existing gaps

Carini and Gotz's study (2020) reveals that reporting on sustainability efforts regarding social and economic factors is a part of ethical business practices and will strengthen the pool of comparable data on a global scale. The more these practices are encouraged, the more data will become available for comparison, eliminating discrepancies, such as those documented in the banking sector. Tan (2021) notes limitations of comparing sustainability results in banking in British Columbia: "Vancity [credit union] does benchmark against other financial institutions for some of its environmental sustainability metrics; however, it is not a perfect comparison" (p. 35). Limited access to information in various reporting methods is addressed under potential challenges. Muthumariappan and Palanisamy (2023) use case studies to highlight how co-operatives can embrace SDGs to face economic and social challenges. Although international examples are provided, specific measurement tools are not the focus of this article, which recognizes the lack of global data on cooperatives and their progress on SDGs, such as creating employment opportunities.

Consider the impacts of co-operative size on monitoring and reporting the SDGs

It is important to consider the impacts of co-operative size on capacity and resources to report. Duguid and Rixon's 2023 article highlights the need to develop a tool for micro co-operatives, which was identified as a gap in their earlier research that addressed the financial challenges of developing co-operative benchmarks in small to medium-scale co-operatives (Rixon & Duguid, 2018). Ravichandran (2020) confirms that "[a]lthough cooperatives, with their focus on members and local needs, are central to the realization of sustainable development worldwide, they have not always been proactive in national and international debates" (p. 98). This sentiment is shared by Muthumariappan and Palanisamy (2023) who believe "cooperatives are central to the realization of sustainable development around the world with their focus on sustainable livelihoods. With little visibility at national and international levels, the potential and importance of the contribution that cooperatives can make to the design and realization of SDGs seems to have been missed by policy makers at respective levels" (p. 15). Ravichandran (2020) and Rowlston and Duguid (2020) confirm that co-operatives often focus on micro-level impacts, which leads to operations being disjointed from macro-level sustainability goals. This may be caused by the lack of measurement tools for SDGs at the micro-level as well as by innovation being viewed as a barrier. Diaz-Sarachaga and Ariza-Montes (2022) discuss using a rating system, which they believe would be beneficial to those involved in social entrepreneurship: "Scoring could help to rank social enterprises according to different preferences: overall ranking, by category, by country and so on" (p. 245). If co-operatives are ranked, it is also important to consider the size of the co-operative and how this impacts operations and fulfillment of the SDGs.

Monitor social and responsible innovation in relation to sustainability

Multiple studies highlight the opportunity to monitor innovative practices within co-operatives in relation to measuring sustainability. Parrilla-González and Ortega-Alonso (2022) discuss the SDGs' role in diversification and economic growth within the olive oil cooperative sector in Andalusia, Spain as well as the role of social innovation in agri-food: "the heads of the organizations assigned scores [in response to a survey] to each of the 17 SDGs based on how important they consider these goals to be for the olive oil industry" (p. 36). Imaz and Eizagirre (2020) discuss

responsible innovation in relation to the SDGs in the Social and Solidarity Economy. Their article addresses implementation of SDGs in co-operative firms. The UN (2015) confirms the need to strive for “innovative and people-centred economies” to obtain sustainable growth and improved quality of life and infrastructure on a global scale.

Strengthen communication, engagement, and support from stakeholders

Co-operatives must demonstrate how the SDGs align with stakeholder values and needs to increase commitment and use of the SDG framework. Tan’s (2021) case study on Vancouver City Savings Credit Union (Vancity)’s environmental sustainability program supports the idea of connecting employee performance to sustainability metrics to demonstrate their personal ties to the larger SDG framework within the organization. Tan (2021) proves that sustainability reporting can heighten accountability and motivation in financial co-operatives, which aligns with the UN (2015) outlook on collective action and accountability amongst stakeholders being key to achieving the SDGs. Rowlston and Duguid (2020) confirm that there is an important link between personal and organizational values amongst stakeholders in co-operatives.

Examining values in co-operatives provides insights on stakeholder needs and engagement. Campillo-Alhama and Igual-Antón (2021) state “[t]he implementation of CSR models and the evaluation of their impact on the creation of corporate value and reputation allows organizations to identify priorities to implement future business strategies aimed at balancing stakeholders’ needs” (p. 15). Imaz and Eizagirre (2020) address the significance of shared vision and collaboration. Campillo-Alhama and Igual-Antón (2021) believe in engaging with stakeholders when evaluating ties to the SDGs within electric cooperative operations in Spain. They note that learning from stakeholder communication and management practices would prove beneficial in co-operatives so that SDGs are better reflected in reports and policies. Mozas-Moral et al.’s (2020) study on second-degree olive oil cooperativism in Spain highlights the use of information and communication technologies in relation to the SDG framework. Yi et al. (2022) state the importance for stakeholders to grasp the “the impacts of economic entities on environmental and social resources needed for sustainable development” (p. 2). The SDPI project report confirms the need to address any hesitation in tracking and measuring social factors impacting cooperative sustainability in relation to sustainability accounting (Yi et al., 2022). Battaglia et al. (2020) discuss the SDGs in relation to consumer co-operatives in the food retailing industry in Italy through their analysis of annual sustainability reports.

Strengthen relationships and partnerships with governmental organizations

Examining partnerships between government and organizations in pursuit of monitoring sustainability is threaded throughout the existing literature (Diaz de León et al., 2021; Pérez Piñán & Vibert, 2019; Ravichandran, 2020). Partnership between the UN, International Labour Organization, and government agencies is one possible solution for finding pathways to measuring the SDGs and social benefits in cooperatives, as noted by Diaz de León et al.’s 2021 study of 134 co-operatives in Mexico City. Ravichandran’s (2020) micro-level study on Primary Agricultural Cooperative Credit Societies (PACS) and SDGs in Tamil Nadu, India provides insights on agriculture and rural development on a smaller scale. Ravichandran (2020) believes “PACS’ role in SDGs can be measured in terms of their role in implementing various government schemes and programmes” (p. 106).

In response to concerns surrounding the Gulf ecosystems, Al-Saidi (2021) discusses regional environmental cooperation in relation to the SDGs and the Gulf Cooperation Council (GCC), which includes Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates. Al-Saidi (2021) reveals the lack of contemporary sustainability topics being addressed by the GCC: “the GCC’s architecture seems ... not to provide political or policymaking powers to bodies other than the Supreme Council as the highest GCC authority” (pp. 11-12). Al-Saidi (2021) believes GCC member countries are underperforming in terms of attaining the SDGs. This literature reinforces the need to grow partnerships with government agencies to increase awareness and reporting of the social benefits and to address policies.

Chaves-Avila and Gallego-Bono (2020) discuss the role of public policies in relation to the social economy (SE) and reaching the SDGs. They note the history of public policies that foster the SE (PPFSE) and related organizations, such as “the United Nations and the European Institutions to the Global Social Economy Forum (GSEF) and International Center of Research and Information on the Public, Social and Cooperative Economy (CIRIEC), two alliances of governments and community stakeholders and policymakers that are aligned with SE promotion” (p. 2). Chaves-

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Avila and Gallego-Bono's 2020 study includes cases about transformative policies for the social and solidarity economy (TPSSE) in Europe and Spain. It includes work with experts and focus groups as well as policy documents. It appears that limited cooperation amongst government and co-operatives creates barriers for such policies.

Examining ties to other sustainability and social frameworks

Examining existing literature on sustainability in co-operatives led to the discovery of related studies on corporate social responsibility (CSR), sustainable development (SD), circular economy (CE), Social and Solidarity Economy-based economy (SSE), and intangible assets (IA), which offer insights on measuring and reporting sustainability. Castilla-Polo and Sánchez-Hernández (2020) present a theoretical model for intangible assets and sustainable development. They believe "that cooperatives and their innate CSR maintain a close relationship with SD through the creation of solid and stable linkages with their members and the community, which translates into social IA" (p. 8). Cavicchi and Vagnoni (2022) provide an example of a measurement tool for circular economy strategy used by co-operatives on a large scale, demonstrating that larger operations have the capacity and support to implement standardized measures and explore connections to the SDG framework. Their analysis reveals a link between circular economy policies and the SDG framework and encourages further exploration of SDG alignment within cooperatives. Flamand (2022) discusses the opportunity for The Co-operators Group Limited to navigate circular insurance in Canada and recommends developing environmental measurements within property circular claims management guidelines.

Pérez Piñán and Vibert (2019) and Tan (2021) address goal-setting. Pérez Piñán and Vibert note concerns around goal setting and the Millennium Development Goals (MDGs), recognizing that "[t]he SDGs emerged from a more democratic and inclusive process of consultation than the MDGs" (p. 438). Interviewees in Tan's (2021) case study on Vancouver City Savings Credit Union's environmental sustainability program noted: "[t]o achieve long-term outcomes internal metrics are important. Subthemes for metrics and reporting that surfaced included: goal-setting and the continuing challenge of choosing the best sustainability reporting tools" (Tan, 2021, p. 34-35). Imaz and Eizagirre (2020) believe that SSE firms discuss the power of transforming business models that align with the SDG framework.

Results

Ties to the SDGs in existing literature

Not all literature offers ties to formal reporting and measuring frameworks, but solid approaches and suggestions to move co-operatives towards more consistent sustainability reporting are presented. The data presented in this article focus on trends found in academic literature (as seen in Appendices A-C). Ties to the SDG framework identified in existing literature are listed in Appendix A. The most addressed SDG in existing literature is SDG 8 (decent work and economic growth) found in eight articles, SDG 12 (responsible consumption and production) found in seven articles, and SDG 2 (zero hunger), SDG 3 (good health and well-being), SDG 4 (quality education), SDG 5 (gender equality), and SDG 13 (climate action) found in six articles. Rixon and Duguid (2022) highlight commonly reported "SDG 8, [as it] is not reflected in the seven principles even when stretching our understanding of the principles. This is concerning since most co-operatives are associated, correctly or incorrectly, with providing reasonable wages and good working conditions" (p. 5). It is interesting to note that although there is no co-operative principle related to decent work or creating decent workplaces, the results in this literature review point to SDG 8 as being a common concern amongst co-operatives. All offer strong ties to the agricultural sector.

Literature reviews and case studies are the most common approaches to studying measurement of the SDGs in co-operatives. Common methods throughout the literature include: analyzing reports, including financial performance reporting (Corrigan & Rixon, 2017; Lafont-Torio, Calderon-Monge, and Ribeiro-Soriano, 2023); annual reporting (Callagher & Garnevska, 2023; Duguid, 2020; McCarthy, 2021); annual sustainability reporting (Battaglia et al., 2020); self-reporting (Duguid, 2020); sustainability reporting (Carini & Gotz, 2020); external reporting (Cavicchi & Vagnoni, 2022). Maddocks (2019) considers the non-profit accountability model developed by Andreus and Costa (2014) and suggests a new model that involves analyzing co-operative mission, co-operative resources, and social responsibilities found in annual reporting. In addition, use of interviews with stakeholders (Bickford, 2020; Corrigan & Rixon, 2017; Olsen et al., 2018; Lafont-Torio et al., 2023; Cavicchi & Vagnoni, 2022; Tan, 2021), questionnaires

(Carini & Gotz, 2020; Conde & Rodríguez, 2020; Campillo-Alhama & Igual-Antón, 2021), survey and multi-stage random sampling (Ravichandran, 2020), and working groups/workshops (Conde & Rodríguez, 2020; Chaves-Avila & Gallego-Bono, 2020; Guillotte & Charbonneau, 2020; Rixon & Duguid, 2022) are documented. Alternate approaches include analyzing company yearbooks (Lopes et al., 2022) and information on websites (Duguid, 2020; McCarthy, 2021; Herranz & García, 2021). Appendix B lists the trends in data collection methods found in the existing literature.

Herranz and García's 2021 article examines how social economy organizations communicate about the SDG framework with "particular attention to organizations with greater economic relevance and representation in Spain, according to CEPES (Confederación Empresarial Española de la Economía Social-Spanish Enterprise Confederation for Social Economy)" (p. 166). The article is in Spanish with an expanded abstract in English. This study uses websites, social media, news, and reports to analyse operations of nearly 100 companies (January 2018 to September 2020). The results indicate that there is limited information regarding SDGs on websites, except for co-operative organizations, such as COBADU, COPISO, CAJAMAR, Amiab Group, and Espriú Foundation. Diaz-Sarachaga and Ariza-Montes (2022) suggest examining corporate reporting and social enterprises in future studies. Guillotte and Charbonneau (2020) state, "the contribution of forestry cooperatives to the SDGs is envisaged from the angle of actions intentionally implemented by cooperatives to generate positive effects or reduce negative effects of their activities in the social, economic and ecological areas of intervention targeted by the SDGs" (p. 25). However, they recognize the limitations of this study, such as the lack of measurement of the SDGs and related actions.

Deng et al. (2022) offer a study on groundwater protection in relation to co-operatives in China. Methods include analyzing national survey data for 29 provinces from the Social Science Survey Centre of Zhongshan University. As noted by Deng et al. (2022), "[t]he findings of this study could create a link between cooperatives and the health of farmers, which could in turn help to improve the human capital of farmers and enhance the sustainable development capabilities of farmers" (p. 10). Although the methods do not specifically reference the SDGs, this study identifies age, gender, health, education, income, and labour as factors, so it has been included.

Existing literature about frameworks for measuring sustainability in co-operatives suggests an emphasis on analyzing reports and interviewing stakeholders. Arranging the results by industry reveals important trends in approaches. Analyzing reports appears in agriculture, banking, retail, and electric co-operatives. Interviews with stakeholders is most prominent in agriculture, banking, and electric co-operatives. Existing research on measuring the SDGs also recommends examining websites for information. There is sparse literature on how to evaluate progress with the co-operative principles in co-operatives. This finding aligns with co-operatives not collectively prioritizing documenting progress on the SDG framework and sharing their results in internal and external reports on a global scale. See Appendix C for details.

Potential challenges in quantifying and measuring social impact and sustainable development

Quantifying and addressing social impact

A reoccurring trend in existing literature includes the challenges faced by cooperatives to quantify and address social impacts/responsibilities. Rixon and Duguid (2018) reveal limited literature on benchmarks for multi-sectoral co-operatives and the lack of focus on social and environmental markers. This aligns with Rowlston and Duguid's (2020) position two years later that "[n]ew measures of value in the areas of Social and Environmental activity need to be developed in order to deliver useful reporting on total co-operative performance" (p. 10).

Utting and O'Neill (2020) from UNRISD discuss the significance of sustainability accounting and how "[t]oday's global crises—financial, climate and health—as well as the Sustainable Development Goals (SDGs) have raised the bar in terms of expectations regarding corporate sustainability performance" (p. 1). Their findings suggest addressing (un)sustainable development in organizations to fill gaps in current measuring: "[p]articularly important are conditions associated with distributive (in)justice, inequality and skewed power relations, which are often neglected within the field of corporate sustainability" (p. 2). Yi et al. (2022) confirm the need to address any hesitation in tracking and measuring social factors impacting cooperative sustainability.

Diaz-Sarachaga and Ariza-Montes' (2022) case study of Mondragon Corporation, a Spanish co-operative, examines a new system "to appraise the impact of social businesses on the fulfilment of the Sustainable Development Goals

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(SDGs)” (p. 242). They recognize the gap in tools used to measure SDGs in social enterprises, which aligns with Lafont-Torio et al.’s 2023 study on the agrifood supply chain in social economy enterprises in Spain. Lafont-Torio et al. (2023) make note of social economy enterprises creating their own tools to monitor and measure SDGs: “The absence of indicators to measure the degree of implementation of the SDGs leads the analysed companies to continue working towards these goals. However, some companies, such as CONSUM, are developing their own internal tools to measure the impact of the SDGs on their business activity” (p. 3863). Interviews with managerial staff at Anecoop S. Coop (ANECOOP) and Consum (CONSUM) highlight challenges faced when attempting to measure the SDGs in this sector. ANECOOP respondents support the SDG framework as it heightens awareness and adaptation in operations. In this case, internal reports, such as financial reports may offer key insights. Audits can be completed by external firms, as was the case for ANECOOP. Lafont-Torio et al. (2023) recognize the challenges of “measuring return on investment in the implemented SDGs because not all impacts can be easily quantified” (p. 3863). Maddocks (2019) adds to the discussion of accountability by analyzing social and general interest co-operatives, moving beyond the non-profit accountability model developed by Andreus and Costa (2014). Maddocks notes accountability dimensions of co-operatives in the proposed model include: co-operative mission, co-operative resources, and social responsibilities, which would all be a part of annual reporting. Although this article does not directly address the SDGs, it discusses the importance of reporting on social and environmental responsibilities, which impacts internal and external stakeholders.

Limited access to sustainability reports/metrics

The accessibility of policies and reports is also telling of the cooperatives’ commitment to their values and sustainable development as well as their commitment to sustainability plans. Duguid (2020) addresses potential limitations, such as limited access to internal and external reporting. Diaz-Sarachaga and Ariza-Montes’ 2022 study of the Mondragon Corporation “revealed serious difficulties in collecting all information necessary from corporate reports, in particular data related to the performance on the SDGs” (p. 249). Tan (2021) indicates that leadership, employee engagement, and publicly available metrics/reporting would need to be prioritized for the Vancouver City Savings Credit Union’s environmental sustainability program to be sufficiently integrated. Similar studies have been done that embrace analyzing cooperative reporting. For instance, Battaglia et al.(2020) discuss the SDGs in relation to consumer co-operatives in the food retailing industry in Italy. Methods include a content analysis of SDGs from the co-operative’s annual sustainability reports (2014-2019). I believe it is critical to look at a variety of reports that may capture SDGs in order to address gaps.

Research suggests gaps in considerations around Equity, Diversity, Inclusion and Accessibility in cooperative performance (Lopes et al., 2022; Pérez Piñán & Vibert, 2019). Lopes et al. (2022) address racial and gender equity in relation to Brazilian cooperativism and the SDG framework. Methods include documentary research and content analysis, including Brazilian Cooperatives (OCB) yearbooks from 2019-2020. The authors recognize the “lack of adequate data on gender and the lack of information on racial belonging” (p. 67) and recommend partnerships within higher education and working groups to address gaps in statistics and policies. Pérez Piñán and Vibert’s 2019 case study of a co-operative vegetable farm in the Limpopo Province, South Africa addresses gender in relation to measurement and accountability of global goals. The researchers address challenges, such as: “[e]mphasis on profit over all else; forms that speak an inaccessible language; costly demands for duplicate cheques, competitive quotations, and elusive government documentation; [and] insensitivity to gender roles and to circumstances of resource scarcity and spatial location” (p. 445). These barriers hinder cooperative progress with the SDGs and “in all these ways the state and development agencies repeatedly undermine the sustainability- and community-oriented goals of the women” (p. 445). These issues must be addressed to strengthen existing partnerships between government agencies and co-operatives.

Lack of standardisation/requirement to report on the SDGs

Much of the literature discusses the challenges co-operatives face, such as lack of requirements and standardization for measuring and reporting the SDGs, which leads to inconsistencies. Duguid and Rixon (2023) note the lack of resources to develop a measuring tool for small to medium co-operatives. This aligns with Ravichandran’s study (2020), which identifies the following challenges that contribute to the success of the SDGs: external environment, size, professional management, innovation, and entrepreneurial competencies (Ravichandran, 2020, p. 112-113). McCarthy’s 2021 article addresses measuring and reporting on social impact in credit unions in Ireland. She notes

the lack of obligation and standardized method to complete the evaluations. Methods include a content analysis of annual reports (sponsorship/donations, co-operative governance, services) and websites. Results indicate barriers to implementing social impact measurement, such as it not being seen as a “strategy tactic,” yet there is a draw to it because of its ability to increase the co-operative’s legitimacy; McCarthy indicates there was interest in a standardized template and measures as a result.

This review reveals opportunities to review social economy policies for connections to measuring the SDGs in cooperatives (Chaves-Avila & Gallego-Bono, 2020; Diaz-Sarachaga & Ariza-Montes, 2022; Lafont-Torio et al., 2023). Parrilla-González and Ortega-Alonso (2022) highlight the lack of sustainability policies in olive oil co-operatives in Andalusia, Spain. Campillo-Alhama and Igual-Antón (2021) believe that implementing clear CSR policies and stakeholder engagement is important to gauging progress with SDGs within electric cooperative operations in Spain. Al-Saidi (2021) reveals the lack of contemporary sustainability topics being addressed by the GCC and flaws in policy: “the GCC’s architecture seems to prioritize loose policies and not to provide political or policymaking powers to bodies other than the Supreme Council as the highest GCC authority” (p. 11-12). There appears to be concern regarding control of policies (or lack thereof) that impact co-operative operations and sustainability efforts. Examining ties between policy and sustainability more broadly in the future would prove beneficial.

Additional challenges

Co-operatives also encounter financial challenges when measuring SDGs (Duguid and Rixon, 2023; Rixon and Duguid, 2018); potential bias (Diaz-Sarachaga and Ariza-Montes, 2022); and limited geographical scope (Diaz-Sarachaga and Ariza-Montes, 2022; Duguid, 2020; Mozas-Moral et al., 2020; Lafont-Torio et al., 2023; Campillo-Alhama & Igual-Antón, 2021; Herranz & García, 2021; Adderley et al., 2021). Parrilla-González and Ortega-Alonso (2022) highlight how olive oil co-operatives in Spain can be linked to green tourism due to their location near heritage sites and rural landscapes; this proximity can contribute to economic growth.

Duguid (2020) indicates that adoption of the SDGs is greater on an international scale than in a Canadian context. In addition, “[b]ased on the international top 50 co-operatives and Canadian co-operatives scans and ignoring differences like size and industry, European and Japanese co-operatives seem to be far ahead of North American co-operatives. ... this raises the question of how much country context matters” (Duguid, 2020, p. 67). Our findings indicate that there is a greater focus on SDG adoption and metrics in Europe, including several studies on co-operatives in Spain. Although this is the case, Adderley et al. (2021) confirm that accounting and reporting in co-operatives in the United Kingdom do not clearly address “economic, social, and cultural goals” (p. 45).

Conclusion

This literature review confirms that measurement tools for the United Nations SDG framework in co-operatives and ties to the seven co-operative principles are limited. Currently available tools include GRI, WCM, CDM tool, SDG Compass tool, and UNRISD’s SDPI.

More literature on SDGs being addressed by co-operatives exists in the agricultural sector. Although there is a greater awareness and response to the SDG framework internationally, the lack of regulations for measuring and reporting causes challenges for co-operatives pursuing the SDGs. Standardizing the process and quantifying the SDGs are common concerns amongst stakeholders. The literature suggests various motivations for reporting, such as monitoring global impacts, creating comparable data and research, considering co-operatives’ size and impacts on operations, monitoring social innovation, and strengthening communication, engagement, and support from stakeholders and governmental organizations. This literature review also reveals potential barriers to reporting such as quantifying social impact, limited access to reports/metrics, limited geographical scope, and potential bias.

Co-operatives have a direct impact on global environmental, economic, and social issues. There is a greater need to document their progress on social impacts. Measuring and reporting the SDGs is a necessary response to the UN’s (2015) call to action to move co-operatives forward on a sustainable path while embracing innovative and inclusive practices.

Literature Review on Measuring and Reporting on the UN Sustainable Development Goals by Co-operatives

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Appendix A: Ties to the SDG framework in existing literature

SDG	Name	Total	Author(s)	Data Type(s)
1	No Poverty	5	Rixon and Duguid (2022); Guillotte and Charbonneau (2020); Carini and Gotz (2020); Diaz de León et al. (2021); Ravichandran (2020)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Examples of Frameworks; Ties to the cooperative principles; Agriculture
2	Zero Hunger	6	Guillotte and Charbonneau (2020); Biggeri et al. (2022); Pérez Piñán and Vibert (2019); Battaglia et al. (2020); Ravichandran, (2020); Parrilla-González and Ortega-Alonso (2022)	Agriculture; Agriculture; Agriculture; Retail; Agriculture; Agriculture
3	Good Health and Well-being	6	Rixon and Duguid (2022); Guillotte and Charbonneau (2020); Deng et al. (2022); Carini and Gotz (2020); Diaz de León et al. (2021); Parrilla-González and Ortega-Alonso (2022)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Environment; Examples of frameworks; Ties to the cooperative principles; Agriculture
4	Quality Education	6	Rixon and Duguid (2022); Guillotte and Charbonneau (2020); Biggeri et al. (2022); Mozas-Moral et al. (2020); Diaz de León et al. (2021); Parrilla-González and Ortega-Alonso (2022)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Agriculture; Agriculture; Ties to the cooperative principles; Agriculture
5	Gender Equality	6	Rixon and Duguid (2022); Guillotte and Charbonneau (2020); Pérez Piñán and Vibert (2019); Lopes et al. (2022); Diaz de León et al. (2021); Parrilla-González and Ortega-Alonso (2022)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Agriculture; Examples of frameworks; Ties to the cooperative principles; Agriculture
6	Clean Water and Sanitation	3	Rixon and Duguid (2022); Guillotte and Charbonneau (2020); Deng et al. (2022)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Environment
7	Affordable and Clean Energy	5	Rixon and Duguid (2022); Guillotte and Charbonneau (2020); Campillo-Alhama and Igual-Antón (2021); Ravichandran, (2020); Parrilla-González and Ortega-Alonso (2022)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Energy; Agriculture; Agriculture

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SDG	Name	Total	Author(s)	Data Type(s)
8	Decent Work and Economic Growth	8	Rixon and Duguid (2022); Guillotte and Charbonneau (2020); Mozas-Moral et al. (2020); Battaglia et al. (2020); Carini and Gotz (2020); Diaz de León et al. (2021); Ravichandran, (2020); Parrilla-González and Ortega-Alonso (2022)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Agriculture; Retail; Examples of Frameworks; Ties to the cooperative principles; Agriculture; Agriculture
9	Industry, Innovation, and Infrastructure	4	Rixon and Duguid (2022); Guillotte and Charbonneau (2020); Mozas-Moral et al. (2020); Parrilla-González and Ortega-Alonso (2022)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Agriculture; Agriculture
10	Reduced Inequalities	5	Rixon and Duguid (2022); Guillotte and Charbonneau (2020); Lopes et al. (2022); Carini and Gotz (2020); Ravichandran, (2020)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Examples of frameworks; Examples of frameworks; Agriculture
11	Sustainable Cities and Communities	2	Rixon and Duguid (2022); Guillotte and Charbonneau (2020)	Examples of Frameworks/Ties to the cooperative principles; Agriculture
12	Responsible Consumption and Production	7	Rixon and Duguid (2022); Guillotte and Charbonneau (2020); Mozas-Moral et al. (2020); Battaglia et al. (2020); Carini and Gotz (2020); Diaz de León et al. (2021); Parrilla-González and Ortega-Alonso (2022)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Agriculture; Retail; Examples of frameworks; Ties to cooperative principles; Agriculture
13	Climate Action	6	Rixon and Duguid (2022); Guillotte and Charbonneau (2020); Mozas-Moral et al. (2020); Campillo-Alhama and Igual-Antón (2021); Carini and Gotz (2020); Parrilla-González and Ortega-Alonso (2022)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Agriculture; Energy; Examples of frameworks; Agriculture
14	Life Below Water	1	Rixon and Duguid (2022)	Examples of Frameworks/Ties to the cooperative principles
15	Life on Land	5	Rixon and Duguid (2022) Guillotte and Charbonneau (2020) Mozas-Moral et al. (2020);	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Agriculture;

SDG	Name	Total	Author(s)	Data Type(s)
			Ravichandran, (2020); Parrilla-González and Ortega-Alonso (2022)	Agriculture; Agriculture
16	Peace, Justice, and Strong Institutions	3	Rixon and Duguid (2022) Guillotte and Charbonneau (2020); Biggeri et al. (2022)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Agriculture
17	Partnerships for the Goals	3	Rixon and Duguid (2022) Guillotte and Charbonneau (2020); Parrilla-González and Ortega-Alonso (2022)	Examples of Frameworks/Ties to the cooperative principles; Agriculture; Agriculture

Appendix B: Trends in data collection methods in existing literature

Trend	Total	Author(s)	Data Type(s)
analyzing reports (i.e., financial performance reports, annual reports, annual sustainability reports, self-reporting, sustainability reports, external reports, corporate reports)	10	Callagher and Garnevska, 2023; Corrigan and Rixon, 2017; Lafont-Torio et al., 2023; Duguid, 2020; McCarthy, 2021; Battaglia et al. 2020; Carini and Gotz, 2020; Cavicchi and Vagnoni, 2022; Maddocks, 2019; Diaz-Sarachaga and Ariza-Montes (2022)	Examples of Frameworks/Agriculture; Electric/Examples of Frameworks/Ties to co-operative principles; Examples of Frameworks; Research on SDGs in Co-operatives; Banking; Retail; Examples of frameworks; Agriculture; Examples of frameworks; Agriculture
interviews with stakeholders	6	Bickford, 2020; Corrigan and Rixon, 2017; Olsen et al. 2018; Lafont-Torio et al. 2023; Cavicchi and Vagnoni, 2022; Tan, 2021	Ties to co-operative principles; Electric/Examples of Frameworks/Ties to co-operative principles; Examples of Frameworks; Agriculture; Agriculture; Banking
questionnaires	3	Carini and Gotz, 2020; Conde and Rodríguez, 2020; Campillo-Alhama and Igual-Antón, 2021	Examples of frameworks; Examples of frameworks; Energy
survey	2	Ravichandran, 2020; Deng et al. (2022)	Agriculture; Environment

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Trend	Total	Author(s)	Data Type(s)
working groups/workshops	4	Guillotte and Charbonneau, 2020; Conde and Rodríguez, 2020; Chaves-Avila and Gallego-Bono, 2020; Rixon and Duguid, 2022	Agriculture; Examples of frameworks; Social Economy; Examples of Frameworks/Ties to co-operative principles/ Research on SDGs in Co-operatives
company yearbooks	1	Lopes et al., 2022	Examples of frameworks
information on websites	3	Duguid, 2020; McCarthy, 2021; Herranz and García, 2021	Research on SDGs in Co-operatives; Banking; Social Economy

Appendix C: Trends in methods in existing literature

