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How to cite this article:

Yakar-Pritchard, G., Ridley-Duff, R., Çalıyurt, K. & Akkuş, Y. (2023). How to study the co-operative contribution to sustainable development. *Journal of Co-operative Studies*, 56(2), 7-22. <https://doi.org/10.61869/WKPO5512>

# How to Study the Co-operative Contribution to Sustainable Development

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The purpose of this study is to develop research instruments that enable analysis of the contribution of co-operatives to sustainable development. We achieve this by posing three research questions that explore the links between co-operative principles (CPs) and sustainable development goals (SDGs). Data obtained using qualitative methods guided the development of a quantitative survey tool designed to systematically measure the contribution of co-operatives to sustainable development (RQ1). This study also provides empirical evidence of a strong alignment between CPs and SDGs (RQ2). Whereas earlier studies began with forms of wealth and/or SDGs and connected them to CPs, this study contributes to the knowledge by articulating how co-operatives, as a movement, contribute to all SDGs by operationalising CPs 1-3 and 5-7 agreed by the International Cooperative Alliance. Finally, this study found a high level of support within the co-operative movement for the SDG framework (RQ3).

## Introduction

Today, the co-operative system is recognised as an essential social and economic movement providing employment for over 270 million people in developed and developing countries (Eum, 2017). According to the World Cooperative Monitor report (Carini et al., 2022), the combined turnover of the top 300 co-operatives worldwide exceeds 2,171 billion USD. This makes co-operatives powerful platforms that form an important part of the economy in most developed and developing countries, while the economic activities carried out through them provide scope to contribute to sustainable development (Birchall, 2011; Ghauri et al., 2022). There is broad agreement among many actors such as the United Nations (UN), the International Labour Organization (ILO), and International Cooperative Alliance (ICA) that the co-operative enterprise is the most appropriate type of organisation to address aspects of poverty and social exclusion (Wanyama, 2014). Co-operatives can also play an important role in welfare maximisation and socio-economical development (Kinyuira, 2015). A report published by the UN in 1994 claimed that co-operatives directly contribute to the improvement of living standards for at least half of the world population (Shaw, 2006). The unique nature and values of co-operatives put them in an important position to help achieve the UN's sustainable development goals (SDGs) by contributing to the resolution of social, environmental, and economic issues.

Although co-operatives potentially contribute to the achievement of SDGs in almost every sector of the economy, many initiatives have not been fully explored yet (Iyer, 2020). In particular, there is a gap in the relevant literature regarding the measurement and evaluation of co-operatives' contribution to the SDGs. This study seeks to fill the gap in this field. Consequentially, the aim of this study is to comprehend and develop a research instrument that can analyse the role of co-operatives in sustainable development. It does this by evaluating actions that connect co-operative principles (CPs) and SDGs. This understanding can help in the development of theory on linkages between SDGs and CPs.

The main research questions developed to inform the study are as follows:

RQ1: How can the contribution of co-operatives to sustainable development be measured?

RQ2: How might CPs and SDGs be linked to each other?

RQ3: What level of support exists within the co-operative movement for the SDG framework favoured by their apex bodies?

In this study, we propose to use both quantitative and qualitative data collection to develop thorough and in-depth answers to the research questions. Our goal is to develop the basis for investigating and understanding this phenomenon from a different perspective by means of a survey embedded in a mixed method study. The survey design has been influenced by a qualitative inquiry into the co-operative contribution to sustainable development.

This study is structured as follows: first, the literature related to the subject of the research is presented. Second, research philosophy and methodology are introduced by discussing the research theory, data collection methods, study population, and the selected methods for data analysis. Third, the results of qualitative and quantitative analyses are presented. Finally, the contributions, limitations and future research recommendations of the study are demonstrated in the conclusion section.

## **Sustainable Development**

The term sustainability was derived from the Latin verb *sustenerere* (Becker, 1997). The concept was first used during the eighteenth century in German forestry literature as *Nachhaltigkeit* (sustainability) (Wiersum, 1995). In recent history, the concept of sustainability started to be used within a more holistic framework together with the concepts of environment and development. Various important changes can be observed when the historical development of the concept of sustainability is examined. The Convention on Wetlands (also known as the Ramsar Convention, held in 1971 in the city of Ramsar, Iran) was the first of the inter-governmental agreements for the preservation of natural resources and policies on sustainability (Ramsar Convention Secretariat, 2013). The United Nations Conference on the Human Environment, held in Stockholm, 1972, was the primary conference where the first step was taken with regard to international environmental issues. This conference was a turning point for the development of international environmental policies (United Nations [UN], 1972).

The concept of sustainability gained importance in the international arena following the establishment of the relationship between sustainability and development in the Brundtland Report entitled *Our Common Future*, prepared in 1987 by the World Commission on Environment and Development (WCED) (Becker, 1997). The issues of environment and development were re-examined in this report (UN, 1987) and the concept of sustainable development was defined officially for the first time. According to this definition, sustainable development was expressed as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (UN, 1987, p. 41).

A vital part of the mindset encouraged by the report was addressing poverty in all its forms, and that this should be the overriding priority. The United Nations Conference on Environment and Development held in Rio de Janeiro, 1992, promoted the argument that human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature (UN, 1992). Out of this, international agreement was reached on millennium development goals (MDGs) during the UN General Council held in New York, September 2000, with the participation of 189 member countries (Devlet Planlama Teşkilatı & UN Turkey, 2013). These set goals up to the year 2015.

Even though important advancements have been made to reach MDGs, they have been criticised with regard to issues such as the ongoing trade deficit between developed and developing countries, threats related to environmental sustainability, excessive use of natural resources, increases in carbon dioxide emissions, as well as the strong gender-based inequalities that are ongoing in many parts of the world (Wanyama, 2014). Nevertheless, the campaign established three dimensions in sustainable development (social, economic, and environmental) and began debates on how they could be integrated and operate in a synergistic manner to overcome these issues (Cumming et al., 2017).

MDGs have been superseded by the 2030 Agenda for Sustainable Development. This advanced a new framework by setting out a vision to redirect development activities towards a more sustainable path (UN Development Programme, 2016). Thus, the MDGs were replaced starting from 2015 by SDGs with the addition of a series of goals. At the UN Conference on Sustainable Development (Rio+20) held in Rio de Janeiro in 2012, member countries decided to start the process of developing the sustainable development goals (SDGs). The declaration, entitled *The Future We Want* was unanimously accepted at the end of the conference by the UN member countries (UN, 2012). In addition, the potential role of co-operatives in actualising this sustainable development was also emphasised during the conference (Wanyama, 2014).

In 2015, the UN announced the SDGs to eliminate poverty, protect our planet, and ensure that people live in peace with improving welfare systems (UN, 2015). The SDGs are unique in that they address issues that affect us all and reaffirm the commitment of international communities to end poverty everywhere (Iyer, 2020). However, sustainable development requires a combination of a well-governed state, strong and responsible private sector enterprises that are effective and inclusive, and a global partnership promoting a lively co-operative economy (Schwettman, 2014).

## **Sustainable Development and Co-operatives**

Co-operatives, through characteristics that combine social solidarity with productive co-operation, provide a useful strategy for resolving many of the economic, environmental, and social issues that currently exist. As noted above, the UN has acknowledged that co-operatives play an important role in achieving SDGs and are significant players in the private sector (UN, 2015). Additionally, the European Union Consensus on Development has recognised that co-operatives create sustainable business models, and has stated that various actors, including co-operatives, are needed to achieve sustainable development (Iyer, 2020). The ILO published a report titled *Cooperatives and the Sustainable Development Goals: A contribution to the post-2015 development debate* which considered co-operatives to be alternative business models to achieve sustainable development (ILO, 2014). The report also stated that co-operatives are initiatives that satisfy the socio-cultural interests of their members, in addition to helping them make economic progress, and protecting the environment (Wanyama, 2014).

Co-operatives have the potential to guide us in times of social, economic, environmental, and political difficulty (Herbert, 2015). It depends, however, on their ability to adapt to changing conditions, as well as their flexibility (Simmons et al., 2015). Co-operatives can use SDGs as a general framework to shape their strategies, goals, and activities under changing conditions (GRI et al., 2015). For this purpose, it has been suggested that co-operatives should focus their energies on the best goals and targets (Schwettmann, 2014).

Finally, Ridley-Duff and Wren (2018) explain how SDGs can connect with the field of social enterprise through the practices associated with co-operative social entrepreneurship. In their mapping of a social enterprise approach, they grouped SDGs into ways that make them more auditable. Firstly, goals 1 (No Poverty), 2 (Zero Hunger), 5 (Gender Equality), and 10 (Reduced Inequalities) were grouped in terms of their focus on addressing poverty and inequality. Secondly, goals 3 (Good Health and Well-being), 4 (Quality Education), 8 (Decent Work and Economic Growth), 16 (Peace, Justice and Strong Institutions), and 17 (Partnerships for the Goals) were seen as advancing the quality of work and life. Thirdly, goals 6 (Clean Water and Sanitation), 7 (Affordable and Clean Energy), 13 (Climate Action), 14 (Life Below Water), and 15 (Life on Land) all contribute to sustaining the environment. Lastly, goals 9 (Industry, Innovation and Infrastructure), 11 (Sustainable Cities and Communities), 12 (Responsible Production and Consumption) are primarily focused on managing the economy sustainably. These groupings form the basis for this paper's exploration of how co-operatives can contribute to SDGs. First, we outline the research methods used in the study.

## Philosophy and Study Methodology

Both co-operative principles (CPs) and SDGs are socially constructed concepts (Alvesson and Wilmott, 1996, 2003). They are, at one and the same time, attempts to express ontological realities (the world as it is) and epistemological inquiries (how the world can be known to us). CPs were first agreed internationally in 1937, were revised in 1966 and again in 1995 (Birchall, 2011). After each iteration, concepts were confirmed or changed, and debates about them were elaborated and exchanged (ICA, 2015). They are made 'real' through their integration into legal systems, reporting requirements, and educational curricula (McCulloch, 2019; Ridley-Duff & Bull, 2019).

Whilst newer, the MDGs and SDGs (agreed in 2000 and 2015 respectively) are also starting to influence legal and regulatory issues. They not only impact on accounting practice through commitments to measure and audit them, but also through the growing influence of 'integrated accounting' practices (Bartelmus, 1992; International Federation of Accountants, 2016). The International Cooperative Alliance's commitment to SDGs (ILO, 2014) not only prompted a specific commitment to sustainability in the ICA's *Blueprint for a Co-operative Decade* (Mills & Davies, 2013), it has also provided one of the motivations for the latest round of consultations on co-operative identity (UK Society for Co-operative Studies, 2022).

We argue that the investigation of normative systems (irrespective of whether they are imposed autocratically or agreed democratically) can be elucidated by survey methods as they can quantify levels of social support for specific values and policies. In this particular context, the global co-operative movement's commitment to support SDGs prompts the need for research instruments that establish their alignment with internationally agreed co-operative principles.

Scientific testing (Miller, 1962) is based on finding naturally occurring samples of people and processes who can participate in the empirical testing of a framework that seeks to describe reality. As the frameworks of SDGs and CPs are already well-established, and there is a commitment by the global co-operative movement to them both, they can be considered 'real' activities of the co-operative movement. Thus, we can assess programmes and activities created by co-operatives that do or do not align with SDGs, to establish if there is alignment between the framework and co-operative action.

Our approach is based on sampling agricultural co-operatives, the second largest sector of co-operatives (Carini et al., 2014). Agricultural co-operatives represent a good sample to test whether the co-operative movement actively supports SDGs because they are the largest co-operative sector influencing the management of the natural environment. Secondly, by designing and testing the survey with users, we can assess alignment between SDGs and CPs.

Shamir (1993) argues that ethical values are made and remade through practical activity rather than academic debates. Pragmatism as a research philosophy depends on establishing a connection between actual activities and expressed values. As a result, we adopted mixed methods as a strategy for studying whether pragmatism is present amongst study participants. The mixed methods approach involves collecting and analysing data from multiple sources in a single study that aims to answer research questions that neither quantitative nor qualitative questions could answer alone (Dawadi et al., 2021). We argue that this approach enables researchers to be faithful to the issue at hand by engaging with the 'substantive rationality' of people who develop co-operative social enterprises (Bull & Ridley-Duff, 2019). By assessing the programmes and activities of agricultural co-operatives, we can provide insights into the co-operative contribution to sustainable development.

The study data were collected through focus group interviews and surveys conducted in an agricultural sales co-operative in Turkey. The industry records show that there are 12,990 primary co-operatives operating in the agricultural areas of Turkey with a total of 3,890,478 members, 126 co-operative regional unions, and seven co-operative central unions (T.C. Ticaret Bakanlığı, 2021). Agricultural sales co-operatives have a significant share among

co-operatives operating in the agricultural sector. As of 2021 there are 322 unit co-operatives and 17 regional unions with 602,248 members in agricultural sales co-operatives (T.C. Ticaret Bakanlığı, 2021). The agricultural sales co-operative union that provided the sample for this study has 48 co-operative units in 13 cities. In addition, the Istanbul Chamber of Industry ranked it in the top 150 of Turkey's top 500 industrial establishments in 2021 (Istanbul Sanayi Odasi, 2021). Therefore, the top-level executives in the general management of this agricultural sales co-operative union can be considered a representative sample for agricultural co-operatives in Turkey.

Our research involved mixed methods in two phases: firstly, qualitative research was conducted with focus groups to assess what questions to ask, and the language used to ask them. We conducted three focus group interviews, in groups of seven, with a total of 21 managers from the sales co-operative union. In addition, during the focus group discussion, co-operative managers were asked to complete an exercise activity designed to understand how CPs might be linked with SDGs. These interviews were held in a meeting room of the co-operative union, involving one moderator, two researchers, and one observer.

The focus group interviews were audiotaped and researchers took notes during the interviews. The audiotaped recordings were transcribed, producing 43 pages with 15,403 words. Each interview text was reviewed for coding and categorisation, then a thematic analysis of the data was performed using the MAXQDA programme. The results were synthesised and a total of 50 questionnaire items were developed under four themes: poverty and inequality, quality of work and life, sustaining the environment, and managing the economy sustainably. Ridley-Duff and Wren (2018) was used to group the SDGs.

The second stage involved testing a draft survey instrument with a sample of agricultural co-operatives. Survey data was collected from the managers of the agricultural sales co-operative union and its affiliated co-operatives in the TR21 region of Turkey (n=42). The quantitative research population consists of the managers of agricultural sales co-operatives from which qualitative research data were collected. The reason for this choice is both to aim for participant validation in qualitative analysis and to enable more valid and reliable results to be obtained from the same population in mixed methods (Creswell, 2021). Responses were received from 42 out of 69 managers in the study. The data obtained were analysed using the Smart PLS programme. The bootstrapping method under the SmartPLS program can generate random subsamples from the existing data. This allows for the possibility of analysis even in data obtained from not normally distributed or low participant numbers. The small size of the research universe in this study necessitated the use of the Smart PLS program and the bootstrapping method.

## Results

In this research, we firstly explored how CPs and SDGs might be linked to each other. Table 1 shows the link between CPs and SDGs, according to data obtained from the focus group participants. The numbers in the cells represent the frequency of focus group participants claiming that the corresponding CPs are linked with the related SDGs. Considering these results, there appear to be strong links between CPs 5 (Member Education), 6 (Co-operation amongst co-operatives), and 7 (Concern for Community) and all SDGs. There are strong links between CPs 1 (Open Membership) and 2 (Democratic Control) and SDGs 5 and 10, and between CP 3 (Member Economic Participation) and SDGs 1 and 2, but their potential contribution to other SDGs appears to be limited. We also see there is no SDG that is wholly linked with CP 4 (Autonomy).

Table 1: Mapping the connections between CPs and SDGs

SDGs Groups	SDGs	CPs						
		CP 7	CP 6	CP 5	CP 4	CP 3	CP 2	CP 1
Group 1 — Addressing poverty and inequality	1 No poverty	13	14	10	3	14	4	6
	2 Zero hunger	13	14	9	1	12	2	6
	5 Gender equality	11	4	10	3	4	10	13
	10 Reduced inequality	12	6	7	6	7	10	10
Group 2 — Improving the quality of work and life	3 Good health and well-being	11	4	10	2	9	7	6
	4 Quality education	11	5	16	3	2	3	4
	8 Decent work	10	4	8	3	6	1	7
	16 Peace and justice	8	5	8	8	5	9	6
	17 Partnerships	9	11	8	3	3	1	6
Group 3 — Sustaining the environment	6 Clean water and sanitation	12	10	8	0	1	2	1
	7 Affordable clean energy	12	8	10	2	2	1	2
	13 Climate action	14	7	9	2	0	1	2
	14 Life below water	11	6	12	2	0	1	2
	15 Life on land	12	4	12	0	0	1	2
Group 4 — Managing the economy sustainably	9 Industry, innovation and infrastructure	10	9	10	5	6	0	4
	11 Sustainable cities and communities	13	5	11	5	3	2	6
	12 Responsible consumption and production	14	8	11	3	7	2	7

### Qualitative analysis results

Table 2 shows the codes obtained from the focus group interviews, indicating the frequencies of the focus groups that emphasise each code, and the total frequencies. These were initially encoded by the researchers in an exploratory manner. In the second-level coding, the codes were reorganised using the hypothesis coding method, based on the SDGs. The codes were then grouped into categories and these categories were gathered under Ridley-Duff and Wren's four themes (Saldaña, 2021). At this point, a fifth theme (Definition of Sustainable Development) emerged that does not fall under the SDGs, but is prominent in describing sustainable development. This theme has been included in the grouping to understand the concept of sustainable development from the participants' perspective.

Table 2: Codes and frequencies

Theme	Category	Code	Focus Group 1	Focus Group 2	Focus Group 3	Total Code Frequency
Poverty and inequality	Reduce Inequality	Gender equality	2	5	0	7
		Equality	2	1	1	4
		Women's and girls' empowerment	1	1	1	3
		Equal service to all affiliated co-operatives and members	0	4	1	5
		Sell products on equal terms	0	1	1	2
		The gender gap in employment	0	1	0	1
		Lack of women in management	1	3	0	4

	Poverty Reduction	The purchasing power of the consumer	0	3	0	3
		Increasing social well-being	0	4	0	4
		Food security	0	3	1	4
		Food safety and quality standards	2	3	1	6
		Price stability	2	1	1	4
		Increasing member income	6	3	1	10
		Product variety	0	6	0	6
		Sales price	2	1	0	3
		Sustainable agriculture	2	1	5	8
		Production performance	4	0	1	5
		Support given to the members	5	1	8	14
		Lack of co-operative banks	0	1	0	1
Quality of work and life	Education, training and information	Training and information activities for members	0	0	4	4
		Training activities for all employees	7	2	3	12
		Lack of training activities	2	0	0	2
	Employment	Collaborate with local suppliers	1	0	0	1
		Contribute to local employment	3	0	1	4
	Decent work	Fair work distribution	0	0	2	2
		Equal pay for equal work	0	1	1	2
		Legislation	3	0	1	4
		Occupational health and safety	1	0	0	1
		Well-being in retirement	0	0	1	1
		Employees' rights	1	0	6	7
		Union	0	0	2	2
		Solidarity	0	0	2	2
		Close-knit culture	3	0	0	3
		Private health insurance	3	0	2	5
Sustaining the environment	Accountability	Audit	1	0	1	2
		Audit	4	1	0	5
		Sustainable use of land	0	0	1	1
		Recycling	3	0	0	3
		Reduce carbon emissions	1	0	0	1
		Save energy	1	0	0	1
		Energy sources	1	0	3	4
		Waste treatment	3	0	2	5
Managing the economy sustainably	R&D and Innovation	Environmental management unit	1	0	0	1
		Lack of activities for environmental protection	0	0	7	7
		Lack of R&D investments	1	0	0	1
	Economic growth	R&D	2	0	0	2
		Innovation	1	0	1	2
		Responsible production	0	0	4	4
		Reduce import dependency	0	2	1	3
		Economic and social development	1	3	5	9
		Sustainable economic growth	3	2	0	5
		Lack of economic resources	0	5	3	8



Definition of Sustainable Development	Population growth	0	0	1	1
	Future generations	2	2	1	5
	Balance	3	0	0	3
	Planning	1	0	5	6
	Policies	0	3	0	3
<b>Total</b>		<b>82</b>	<b>64</b>	<b>82</b>	<b>228</b>

The distribution of the 228 codes identified is fairly evenly spread amongst the focus groups. Some codes were emphasised by one focus group only, however, other codes were emphasised by all focus groups. For example, all focus groups emphasised the following codes: Increasing Member Income, Sustainable Agriculture, Support Given to the Members, Training Activities for All Employees, and Economic and Social Development.

During the focus group discussions, most participants agreed that co-operatives contribute to reducing poverty and inequality, particularly by providing support to their members and increasing their income levels. In addition, they highlighted the contribution of co-operatives in supporting sustainable agriculture and helping ensure price stability in the market.

Moreover, [our co-operative] is the price setter in the market; that is, it is the institution that plays the biggest role in determining the sunflower price in Turkey. Therefore, this is a good situation for farmers. So, they can sell their products at good prices even if they do not sell them to us. This is because the prices are formed in the market ... (Group 1, P3).

In addition, under the theme of reducing inequality, participants emphasised that the principle of open membership and equality means that co-operatives are open to membership for anyone who meets the requirements. A separate inequality issue that the participants underlined, however, was gender inequality in employment. They noted that despite the presence of female employees, managers, and members in co-operatives, their ratio in employment is quite low. Some participants stated that the sector of the co-operative, as well as rural culture, may be influential in the occurrence of gender inequality in employment.

We now have six board members, and you cannot see even a single woman in any of these 48 co-operatives. No woman applies and no one employs (Group 2, P5).

The participants stated that the co-operative union and its affiliated co-operatives have various activities and practices to improve the quality of work and life of their employees and members. One of the topics the participants emphasised most under this theme was the education and awareness-raising activities provided by co-operatives to their employees and members. In addition, some participants underlined the importance of co-operatives in achieving regional employment. They also emphasised the policies for fair distribution of tasks, equal pay for equal work, and employee rights under the category of decent work.

... our co-operatives organise rural programmes with the officials of various seed companies during crop planting seasons, which allows both product promotion and knowledge exchange among members, manufacturers, and company officials. Our co-operative enables the organisation of these programmes (Group 3, P7).

The participants explained that the co-operative's factory has an environmental management unit and implements several eco-friendly practices, such as waste treatment, recycling, and energy-efficient lighting to ensure environmental sustainability. They also noted that the co-operative provides affordable soil analysis services to its members and producers in the region, contributing to the sustainable use of land. In addition, a participant stated that the co-operative has a plan to switch to the use of renewable energy sources, which would help reduce carbon emissions.

For example, soil analyses are currently performed in our factories. In other words, by avoiding excessive or unnecessary fertilisation, we protect nature and soil (Group 3, P4).

Finally, participants noted that co-operatives contribute to sustainable management of the economy by ensuring economic growth, supporting R&D and innovation activities, and implementing sustainable consumption and production policies. In addition, they emphasised the importance of reducing dependence on imports for economic sustainability by ensuring domestic manufacturing of imported products.

### Quantitative analysis results

A factor analysis was performed for a total of 42 survey data items collected from the managers of agricultural sales co-operatives in the TR21 region of Turkey using the Smart PLS programme. The items with weak factor loadings were removed one by one, and the analysis was repeated each time. Eighteen of the 50 items for which a factor analysis was performed were excluded from the analysis as their factor loadings were weak (Tabachnick et al., 2013). T values and significance values were calculated for the remaining items using the bootstrapping method. Table 3 shows the factor loadings, standard deviations, T values and significance values for the remaining items.

Table 3: Factor analysis values

Dimension	Item	Factor Loadings	Standard Deviation	T Statistics	P Values
Sustaining the environment	Performing activities to reduce environmental pollution	0.861	0.046	18.852	P<0.001
	Preventing and recovering land loss	0.818	0.065	12.513	P<0.001
	Having waste treatment activities	0.793	0.105	7.531	P<0.001
	Having recycling activities	0.859	0.044	19.502	P<0.001
	Obtaining energy from renewable resources	0.774	0.133	5.8	P<0.001
	Saving energy	0.755	0.15	5.029	P<0.001
	Protecting natural resources and ensuring their sustainable use	0.872	0.06	14.44	P<0.001
Managing the economy sustainably	Contributing to sustainable consumption	0.814	0.062	13.166	P<0.001
	Contributing to sustainable production	0.854	0.038	22.303	P<0.001
	Contributing to the adoption of sustainable technologies (improved seeds, organic fertilisers, smart farming practices, etc.)	0.87	0.056	15.572	P<0.001
	Reducing foreign dependency by increasing domestic production	0.781	0.081	9.626	P<0.001
	Ensuring effective use of economic resources	0.757	0.102	7.397	P<0.001
Quality of work and life	Providing equal pay for equal work	0.736	0.099	7.426	P<0.001
	Conducting training and informative activities for members	0.821	0.05	16.505	P<0.001
	Contributing to regional employment	0.839	0.046	18.144	P<0.001
	Ensuring accountability and transparency	0.769	0.08	9.613	P<0.001
	Performing audit activities (internal audit and/or independent audit)	0.828	0.071	11.638	P<0.001
	Ensuring fair distribution of duties for employees	0.811	0.068	11.947	P<0.001

	Contributing to the welfare sustainability for employees in the retirement period as well	0.73	0.069	10.557	P<0.001
	Providing additional benefits for employees	0.801	0.088	9.146	P<0.001
	Providing private health insurance for employees and/or their families	0.776	0.069	11.289	P<0.001
	Supporting union activities	0.872	0.04	21.729	P<0.001
	Supporting social assistance activities	0.905	0.038	23.789	P<0.001
Poverty and inequality	Selling products on equal terms throughout the country	0.773	0.071	10.891	P<0.001
	Contributing to the increase in social welfare	0.81	0.075	10.814	P<0.001
	Contributing to price stability in the market	0.763	0.136	5.595	P<0.001
	Ensuring food safety	0.838	0.062	13.522	P<0.001
	Producing in accordance with relevant standards (ISO, HACCP, TSE, etc.)	0.784	0.114	6.899	P<0.001
	Ensuring improvement in production performance	0.849	0.066	12.837	P<0.001
	Supporting sustainable agriculture	0.802	0.103	7.773	P<0.001
	Ensuring the continuity of production by supporting members	0.815	0.113	7.22	P<0.001
	Contributing to the reduction of income inequality across the country	0.721	0.068	10.622	P<0.001

The factor loadings and T values for the statements in Table 3 were above the desired level. In addition, there was a significance level of P<0.001 for each statement. The VIF (variance inflation factor) values of all statements were below 10, where seven of them had a VIF value above 5.

Table 4: Reliability and validity values

Dimension	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Managing the economy sustainably	0.878	0.899	0.909	0.666
Poverty and inequality	0.927	0.931	0.939	0.634
Sustaining the environment	0.918	0.923	0.935	0.673
Quality of work and life	0.947	0.95	0.954	0.656

Considering the validity and reliability values in Table 4, the Cronbach's Alpha, rho\_A, Composite Reliability, and Average Variance Extracted (AVE) values were well above the desired levels.

Table 5: Discriminant validity

Dimension	Managing the economy sustainably	Poverty and inequality	Sustaining the environment	Quality of work and life
Managing the economy sustainably	<b>0.816</b>			
Poverty and inequality	0.462	<b>0.796</b>		
Sustaining the environment	0.81	0.41	<b>0.82</b>	
Quality of work and life	0.545	0.705	0.514	<b>0.81</b>

In Table 5, the Fornell-Larcker criterion was examined to control the discriminant validity in factor analysis dimensions. Considering the values in Table 5, the cell values where each dimension intersects with itself are greater than the values in the other vertical and horizontal cells. Thus, the discriminant validity was achieved.

Table 6: Significance levels of themes

Themes	Mean	Standard Deviation
Managing the economy sustainably	4.74	0.544
Poverty and inequality	4.14	0.952
Sustaining the environment	4.60	0.627
Quality of work and life	4.10	0.958

Table 6 shows the significance levels asked to the participants for each theme. Considering these values, the level of significance of all the themes, including managing the economy sustainably, sustaining the environment, poverty and inequality, and quality of work and life is very high for the participants.

## Discussion and Conclusions

Co-operatives have a unique position in achieving sustainable development due to their nature. The focus group interviews provide evidence that co-operatives can play an effective role in achieving sustainable development in Turkey, a developing country, which represents a geographically specific contribution to knowledge. Evidence from the focus groups suggests that co-operatives contribute to sustainable development by sharing wealth and power between producers, entrepreneurs, consumers, employees, and citizens. Besides creating economic value, we found that they focus on environmental and social value. Co-operatives help to reduce poverty and inequality by providing economic opportunities to their members, ensuring the continuity of production, and supporting sustainable agriculture. We found that they play a significant role in the improvement of work and quality of life by providing their members and employees with the opportunity to access quality education and training activities, although — in Turkey — this is influenced strongly by gender.

Alongside co-operatives that contribute to sustaining the environment by performing activities to reduce environmental pollution and protecting natural resources, we found that agricultural co-operatives contribute to the sustainable management of the economy by supporting sustainable production and consumption by providing and adopting sustainable technologies, such as improved seeds, organic fertilisers, and smart farming practices. However, we also identified some barriers to co-operatives achieving SDGs related to inequality. Some of the barriers related to gender gaps in employment, a lack of women in management, a lack of training activities, a lack of activities for environmental protection, and low R&D investments. In addition, co-operative managers also stated that co-operatives need more economic resources in order to contribute more to SDGs.

The aim of this study was to explore how co-operatives can contribute to SDGs. The study was developed in three parts. First, we developed a survey instrument to understand how the contribution of co-operatives to the SDGs can be systematically measured (RQ1). Investing in survey design is critical for better understanding and measuring the contribution of co-operatives to the SDGs. We used data obtained by qualitative methods to design a questionnaire which served as the data collection tool for quantitative research. In the first stage, qualitative analyses resulted in the development of 50 items addressing four themes: poverty and inequality, the quality of work and life, sustaining the environment, and managing the economy sustainably. In the final stage, pilot survey results led to the elimination of 18 of these items, leaving 32 survey items addressing the four themes to measure the contribution of co-operatives to sustainable development, plus a fifth theme on the definition of sustainable development.

Secondly, this study contributes to the development of existing frameworks (Ridley-Duff & Bull, 2019) by examining the relationship between CPs and SDGs in a practical way (RQ2). We determined that there is a strong alignment between SDGs and CPs. As evidenced in the study, participants collectively believe that actively implementing six of the CPs (with the exception of CP4) actively contributes to every SDG. The study is important because it makes it possible to reverse the direction of the mapping and make new arguments. Whereas earlier studies started with forms of wealth and/or SDGs, and then connected them to CPs, the result of this study suggests that co-operatives, as a movement, contribute to all SDGs by operationalising the CPs agreed by the ICA.

Finally, this study examined the level of support within the co-operative movement towards the SDG framework (RQ3), and we found a high level of support for the SDG framework within this part of the co-operative movement. These results are in line with the previous findings highlighting that co-operatives contribute directly to SDGs (Ridley-Duff & Bull, 2019; Ridley-Duff & Wren, 2018).

In summary, the main contribution of this study is the development of a survey tool to measure the contribution of co-operatives to SDGs as, prior to this study, we found no systematic measurement tool in the existing literature on how this contribution can be measured and evaluated. The designed survey instrument (see Appendix 1) can specifically measure the contribution of (agricultural) co-operatives to sustainable development and understand their potential. In addition, the study also helps to understand the direction of the relationship between CPs and SDGs.

Although this study illustrates the contribution of co-operatives to sustainable development, it is subject to certain limitations. One of the main limitations is the small sample size. We have only obtained data from an agricultural sales co-operative union and their affiliated co-operatives. Future studies may apply the developed scale more broadly to agricultural co-operatives operating in other countries or different sectors. In addition, we suggest that the scale we developed should be considered in conjunction with other variables associated with co-operatives, and their potential relationships should be examined.

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## References

- Alvesson, M., & Willmott, H. (1996). *Making sense of management: A critical introduction*. Sage Publications Ltd.
- Alvesson, M., & Willmott, H. (Eds.). (2003). *Studying management critically*. Sage Publications Ltd.
- Bartelmus, P. (1992). Accounting for sustainable growth and development. *Structural Change and Economic Dynamics*, 3(2), 241-260. [https://doi.org/10.1016/0954-349X\(92\)90005-Q](https://doi.org/10.1016/0954-349X(92)90005-Q)
- Becker, B. (1997). *Sustainability assessment: A review of values, concepts, and methodological approaches*. Consultative Group of International Agricultural Research.
- Birchall, J. (2011). A 'member-owned business' approach to the classification of co-operatives and mutuals. *Journal of Co-operative Studies*, 44(2), 4-15.
- Bull, M., & Ridley-Duff, R. (2019). Towards an appreciation of ethics in social enterprise business models. *Journal of Business Ethics*, 159, 619-634. <https://doi.org/10.1007/s10551-018-3794-5>
- Carini, C., Costa, E., Fontanari, E., Gotz, I., Ranicki, C., & Rigotti, A. (2014). World co-operative monitor: Exploring the co-operative economy. Report 2014. ICA/EURICSE. <https://monitor.coop/en/media/library/research-and-reviews/world-co-operative-monitor-2014>
- Carini, C., Eum, H., Han, A., Delvecchio, P., Gotz, I., & Vitali, M. (2022). *World cooperative monitor: Exploring the cooperative economy*. Report 2022. EURISCE/ICA. <https://monitor.coop/en/media/library/research-and-reviews/world-cooperative-monitor-2022>
- Creswell, J. W. (2021). *A concise introduction to mixed methods research* (2nd ed.). SAGE Publications, Inc.
- Cumming, T. L., Shackleton, R. T., Förster, J., Dini, J., Khan, A., Gumula, M., & Kubiszewski, I. (2017). Achieving the national development agenda and the Sustainable Development Goals (SDGs) through investment in ecological infrastructure: A case study of South Africa. *Ecosystem Services*, 27, 253-260. <https://doi.org/10.1016/j.ecoser.2017.05.005>
- Dawadi, S., Shrestha, S., & Giri, R. A. (2021). Mixed-methods research: A discussion on its types, challenges, and criticisms. *Journal of Practical Studies in Education*, 2(2), 25-36. <https://doi.org/10.46809/jpse.v2i2.20>
- Devlet Planlama Teşkilatı Müsteşarlığı, & United Nations Turkey. (2013). *Binyıl Kalkınma Hedefleri Raporu Türkiye 2010*. T.C. Başbakanlık Devlet Planlama Teşkilatı Müsteşarlığı ve Birleşmiş Milletler Mukim Koordinatörlüğü. <https://www.undp.org/tr/turkiye/publications/binyil-kalkinma-hedefleri-raporu-turkiye-2010>
- Eum, H. (2017). *Cooperatives and employment: Second global report*. CICOPA. <https://www.cicopa.coop/publications/second-global-report-on-cooperatives-and-employment/>
- Ghauri, S., Jackson, E. L., Marinova, D., & Mohammadi, H. (2022). Agricultural co-operatives for managing natural capital to achieve UN Sustainable Development Goals 12–15: A conceptual framework. *Journal of Co-operative Organization and Management*, 10(2), 100188. <https://doi.org/10.1016/j.jcom.2022.100188>
- GRI, UN Global Compact, & WBCSD. (2015). *SDG Compass: The guide for business action on the SDGs*. SDG Compass.
- Herbert, Y. (2015). Leadership in hegemony: Sustainability reporting and co-operatives. In L. Brown, C. Carini, J. G. Nembhard, L. Hammond Ketilson, E. Hicks, J. McNamara, S. Novkovic, D. Rixon, & R. Simmons (Eds.), *Co-operatives for sustainable communities: Tools to measure co-operative impact and performance* (pp.294-309). Co-operatives and Mutuals Canada Centre for the Study of Co-operatives.
- International Cooperative Alliance. (2015). *Guidance notes to the co-operative principles*. <https://www.ica.coop/en/media/library/research-and-reviews/guidance-notes-cooperative-principles>
- International Federation of Accountants. (2016). *The 2030 agenda for sustainable development: a snapshot of the accountancy profession's contribution*. <https://www.ifac.org/knowledge-gateway/developing-accountancy-profession/publications/2030-agenda-sustainable-development>
- International Labour Organization. (2014). *Co-operative movement engagement in sustainable development and the post-2015 process: Survey findings*. [https://www.ilo.org/empent/Publications/WCMS\\_248497/lang--en/index.htm](https://www.ilo.org/empent/Publications/WCMS_248497/lang--en/index.htm)
- Istanbul Sanayi Odası. (2021). *Türkiye'nin 500 büyük sanayi kuruluşu*. <https://www.iso500.org.tr/>
- Iyer, B. (2020). Chapter 6 — Cooperatives and the sustainable development goals. In M. Altman, A. Jensen, A. Kurimoto, R. Tulus, Y. Dongre, & S. Jang (Eds.), *Waking the Asian Pacific co-operative potential* (pp. 59-70). Academic Press. <https://doi.org/10.1016/B978-0-12-816666-6.00006-9>
- Kinyuira, D. K. (2015). Influence of the co-operative business model on the sustainable performance of co-operative enterprises. *International Journal of Co-operative Management*, 7(2), 12-23.
- McCulloch, M. (2019). Accounting for co-operative purposes: Reclaiming the conversation. *International Journal of Co-operative Accounting and Management*, 2(1), 4-18. <https://doi.org/10.36830/IJCAM.20191>

- Miller, G. A. (1962). *Psychology: The science of mental life*. Penguin Books.
- Mills, C. & Davies, W. (2013). *Blueprint for a Co-operative Decade*, Oxford: Centre for Mutual and Employee-Owned Business. <https://ica.coop/en/media/library/the-blueprint-for-the-co-operative-decade>
- Ramsar Convention Secretariat. (2013). *The Ramsar Convention manual: A guide to the Convention on Wetlands* (Ramsar, Iran, 1971) (6th ed.). Ramsar Convention Secretariat.
- Ridley-Duff, R., & Bull, M. (2019). *Understanding social enterprise: Theory and practice* (3rd ed.). Sage Publications.
- Ridley-Duff, R., & Wren, D. (2018). Social enterprise, sustainable development and the FairShares model. *Japanese Journal of Human Welfare Studies*, 11(1), 23-42.
- Saldaña, J. (2021). *The coding manual for qualitative researchers*. Sage.
- Schwettmann, J. (2014). *The role of cooperatives in achieving the Sustainable Development Goals: The economic dimension*. International Labour Office.
- Shamir, R. (1993). Formal and substantive rationality in American law: A Weberian perspective. *Social and Legal Studies*, 2(1), 45-72. <https://doi.org/10.1177/096466399300200103>
- Shaw, L. (2006). *Overview of corporate governance issues for co-operatives*. The Co-operative College.
- Simmons, R., Yuill, B., & Booth, J. (2015). Governing resilient co-operatives: Agricultural co-operatives in Scotland. In S. Novkovic & K. Miner (Eds.), *Co-operative governance fit to build resilience in the face of complexity* (pp. 35-48). International Co-operative Alliance.
- T.C. Ticaret Bakanlığı. (2021). *Türkiyede kooperatifçilik*. <https://ticaret.gov.tr/kooperatifcilik/bilgi-bankasi/kooperatifler-hakkinda/turkiyede-kooperatifcilik>
- Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2013). *Using Multivariate Statistics*. Pearson.
- UK Society for Co-operative Studies. (2022, November 17). *New Cooperativism seminar series. Seminar 1: New Cooperativism and sustainable development*. <https://www.ukscs.coop/articles/co-operativism-seminar-series>
- United Nations. (1972). *Report of the United Nations Conference on the Human Environment*. <https://www.un.org/en/conferences/environment/stockholm1972>
- United Nations. (1987). *Report of the world commission on environment and development: Our common future*. United Nations.
- United Nations. (1992). *United Nations conference on environment and development: Agenda 21*. <https://www.un.org/en/conferences/environment/rio1992>
- United Nations. (2012). *Report of the United Nations conference on sustainable development*. <https://www.un.org/en/conferences/environment/rio2012>
- United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. <https://www.un.org/en/conferences/environment/newyork2015>
- United Nations Development Programme. (2016). *UNDP support to the implementation of the 2030 agenda for sustainable development*. <https://www.undp.org/publications/undp-support-implementation-2030-agenda>
- Wanyama, F. O. (2014). *Cooperatives and the Sustainable Development Goals: A contribution to the post-2015 development debate. A policy brief*. ICA/ILO. [https://www.ilo.org/global/topics/cooperatives/publications/WCMS\\_306072/lang--en/index.htm](https://www.ilo.org/global/topics/cooperatives/publications/WCMS_306072/lang--en/index.htm)
- Wiersum, K. F. (1995). 200 years of sustainability in forestry: Lessons from history. *Environmental Management*, 19(3), 321-329.

## Appendix 1: Survey Instrument

Item No	Factor	Item	Likert scale				
			(1)	(2)	(3)	(4)	(5)
1	Poverty and inequality	*Increasing the welfare level by increasing the income of the members					
2		*Contributing to the purchasing power of the consumer					
3		Ensuring food safety					
4		Producing in accordance with relevant standards (ISO, HACCP, TSE, etc.)					
5		Ensuring improvement in production performance					
6		Supporting sustainable agriculture					
7		Ensuring the continuity of production by supporting members					
8		Contributing to the reduction of income inequality across the country					
9		*Contributing to the achievement of gender equality					
10		*Contributing to the empowerment of women and girls					
11		*Providing equal service to all affiliated co-operatives and/or members					
12		Selling products on equal terms throughout the country					
13		Contributing to the increase in social welfare					
14		Contributing to price stability in the market					
15	Quality of work and life	Providing equal pay for equal work					
16		Ensuring fair distribution of duties for employees					
17		*Ensuring the occupational health and safety of employees					
18		Contributing to the welfare sustainability for employees in the retirement period as well					
19		*Providing employees with rights above the labour market (leave, pay, etc.)					
20		Providing additional benefits for employees					
21		Providing private health insurance for employees and/or their families					
22		Supporting union activities					
23		Supporting social assistance activities					
24		*Providing internal and/or external training activities for all employees					
25		Conducting training and informative activities for members					
26		Contributing to regional employment					
27		*Collaborating with local suppliers					



28		Ensuring accountability and transparency						
29		Performing audit activities (internal audit and/or independent audit)						
30	Sustaining the environment	Performing activities to reduce environmental pollution						
31		Having waste treatment activities						
32		Having recycling activities						
33		Obtaining energy from renewable resources						
34		Saving energy						
35		*Reducing carbon emissions						
36		*Taking action to tackle climate change and its impacts						
37		Protecting natural resources and ensuring their sustainable use						
38		*Supporting biodiversity						
39		*Combat desertification						
40		*Ensuring the sustainability of forests						
41		Preventing and recovering land loss						
42		Managing the economy sustainably	*Promoting sustainable agriculture					
43			*Promoting R&D					
44	*Promoting innovation							
45	Contributing to sustainable consumption							
46	Contributing to sustainable production							
47	Contributing to the adoption of sustainable technologies (improved seeds, organic fertilisers, smart farming practices, etc.)							
48	Reducing foreign dependency by increasing domestic production							
49	*Contributing to the realisation of sustainable economic growth							
50	Ensuring effective use of economic resources							

Notes: \* The items with weak factor loadings were eliminated from the survey instrument. The survey instrument was designed using a five-point Likert type scale (1=Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree, 5= Strongly agree).