

## THE ROLE OF SOCIAL ENTREPRENEURSHIP IN DECARBONIZATION: A NEW AVENUE FOR SOCIAL ENTERPRISES

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**Purpose:** The objective of this paper is to explore potentially new area where social economy and social enterprises can become active while contributing to the field of green transition at the same time. Moreover, it shows the examples of innovative ideas and good practices introduced by social economy organisations, including social enterprises, and municipalities to promote way for the decarbonization of the social economy activities.

**Design/methodology/approach:** The study draws on qualitative research and is based on the analysis of innovative good practices collected as part of the international project "Social Economy for a Just Green Transition (JustGreen)".

**Findings:** The findings emphasise the potential of social economy to contribute to sustainability transitions and decarbonization efforts at the community level.

**Research limitations/implications:** The research methodology focuses on analysing existing practices and literature rather than conducting primary data collection. While this approach provides valuable insights, it may lack contextual understanding that can be achieved through in-depth interviews, surveys, or case studies.

**Social implications:** The research highlights the role of social economy in creating opportunities for marginalised groups and individuals. By focusing on decarbonization and sustainability, social economy can contribute to social empowerment by providing training, employment, and economic opportunities for disadvantaged communities.

**Originality/value:** The originality and value of this paper lie in its exploration of the intersection between social economy and decarbonization efforts. While there is existing research on both topics individually, this paper contributes by examining the specific role of social economy in driving decarbonization and its associated social implications.

**Keywords:** decarbonization, social entrepreneurship, social enterprise, social economy, European Green Deal, sustainability.

**Category of the paper:** Research paper.

## 1. Introduction

Growing concerns regarding climate change, unmet social needs and other societal problems that, if left unsolved, may have dramatic consequences on the global scale (George et al., 2016), have intensified calls to harness the potential of alternative forms of business and social innovation (eg. Fagerberg, Hutschenreiter, 2019; Markman et al., 2019; Ranabahu, 2020; Kaufmann, Danner-Schröder, 2022). This paper focuses in particular on challenges reflected by the ambition of the European Commission to invest in a green Europe and work towards a climate neutral Europe by 2050 through the proposed European Green Deal and Sustainable Europe Investment Plan (eg. EC, 2011; 2018; 2019; Kougias et al., 2021). Social enterprises or value-driven 'hybrid' businesses, which operate in between the private, public and non-profit sectors, are often perceived as having particular advantages in simultaneously meeting economic, social and environmental needs (Battilana et al., 2015; Borzaga et al., 2020; Defourny, Nyssens, 2021; Ówiklicki, Pacut, 2023). Therefore, this paper explores potentially new area where social enterprises can become active while contributing to the field of green transition at the same time. It aims to show the examples of innovative ideas and good practices introduced by social economy organisations, including social enterprises, and municipalities to promote way for the decarbonization of the social economy activities. Moreover, it highlights how social enterprises and the social economy can contribute to the transition towards a low-carbon economy. These goals were achieved based on the analysis of innovative good practices gathered and disseminated as a part of the international project "Social Economy for a Just Green Transition (JustGreen)". This paper encompasses three main sections. Firstly, it reviews the existing academic literature pertaining to social entrepreneurship and explores emerging areas of activity for social enterprises and social economy organisations. Following that, it outlines the empirical research methodology employed and interprets the findings obtained. Lastly, it highlights the theoretical and practical implications derived from the research and proposes avenues for future investigations.

## 2. Theoretical assumptions

### 2.1. Social entrepreneurship and social enterprises

Social entrepreneurship (SE) and social enterprises are widely recognised as a crucial tool for social and economic policy, particularly in addressing issues like unemployment, social exclusion, and sustainable regional and local economic development (Borzaga, Bordini, 2012). Social enterprise is an umbrella term that refers to various organisations that engage in trading activities with the primary goal of achieving a social purpose (Haugh, 2007). As highlighted by

Ebrahim et al. (2014), social enterprises blend characteristics of both charitable organisations and for-profit businesses and aim to generate profits, which are then reinvested to achieve multiple bottom lines, including social and environmental impact, in addition to financial sustainability (Cieslik, 2016). Social enterprises therefore seek to strike a balance between fulfilling a social and/or environmental mission and market activities (Defourny, Nyssens, 2021; Bacq et al., 2016), which is why they are often referred to as hybrid organisations – being neither commercial organisations nor traditional non-profit organisations. They primarily rely on commercial activities as their revenue source, operating and scaling up their operations through market activity rather than relying solely on donations or grants (Ebrahim et al., 2014). Social enterprises are situated within the third sector of the economy, which emerges where there are shortcomings in the provision of social welfare by the market or government entities. They have progressively emerged as significant contributors to social progress. The autonomous nature of the social-economic model employed by these organisations offers a promising approach to reducing reliance on state social welfare and has demonstrated its effectiveness as a model for driving social change (Hillman et al., 2018). Social enterprise possesses the potential to revitalize communities by addressing local needs, fostering community independence, and cultivating social capital among individuals and communities (Haugh, 2007). As a result, community-level approaches and social enterprises enable increased engagement with local stakeholders, facilitating the customization of sustainability initiatives according to the specific requirements of each community.

Over time, the number of social enterprises has increased significantly, and they are now present in various economic sectors (Zahra, Wright, 2016; Defourny, Nyssens 2021; Defourny et al., 2021). As a result, their scope of engagement is gradually expanding to tackle emerging societal challenges, including climate change, pollution, financial and gender inclusion, as well as digitisation. In recent times, the field of social entrepreneurship and the social economy has been experiencing rapid evolution, driven by emerging innovations and trends across major sectors of the global economy. Social enterprises are increasingly introducing innovative solutions not only in areas like professional activation, social and health services, and local development but also in sectors such as renewable energy, socially engaged agriculture, the environment (including recycling), and culture (e.g. Stratan, 2017; Lekan et al., 2021; Costanza, 2023; Alevizou et al., 2017; van der Horst, 2008; Sengupta et al., 2020; Hudcová et al., 2018). This expansion is a result of countries adopting broader social goals that align with the United Nations' Sustainable Development Goals (SDGs). Consequently, many social economy organisations and social enterprises now prioritize "green policy," poverty reduction, gender equality, and environmental sustainability (EC, 2020). In line with these objectives, there has been a growing interest in the circular economy, short food chains, energy cooperatives, and various other areas with the potential to generate significant social and environmental impact. One of those areas is decarbonization.

## 2.2. Decarbonization as a new avenue for social enterprises

There is no doubt that the European Union is well aware of the climate challenges. Many directives reflect the EU's commitment to advancing renewable energy sources and making substantial progress in mitigating greenhouse gas emissions (GHG) emissions to address climate change challenges. To name a few, in 2011, the European Commission introduced the 'Roadmap for moving to a low-carbon economy in 2050' (EC, 2011). This roadmap set forth the objective of reducing greenhouse gas emissions in the EU-27 by a minimum of 80% in 2050 compared to the emissions recorded in 1990. In 2018, the European Union Renewable Energy Directive II (EC, 2018) came into effect, establishing a target of achieving a 32% share of renewable energy and a minimum of 40% reduction in GHG emissions by 2030, relative to the levels recorded in 1990 (Kougias et al., 2021). Subsequently, during the 25th session of the Conference of the Parties (COP25) in December 2019, Ursula von der Leyen, the President of the European Commission, introduced the European Green Deal (EC, 2019). This comprehensive package encompasses a range of policy initiatives designed to achieve climate neutrality and foster sustainability within the EU economy (Kougias et al., 2021). The European Green Deal aims to attain climate neutrality by 2050 and endeavours to assist organisations in becoming global leaders in clean products and technologies. Additionally, it aims to ensure a fair and inclusive transition to a sustainable economy (EC, 2019) and represents EU's biggest action to reach climate neutrality. Following a comprehensive impact assessment, it emerged that, under current EU legislation, the European Union would only achieve a 60 percent net emission reduction by 2050. Therefore, in 2020, as part of the '2030 Climate Target Plan', the Commission established that the interim target of a 55 percent net emission reduction by 2030 was necessary to achieve climate neutrality by 2050 (Wilson, 2021). To reach this goal, the European Commission adopted the "Fit for 55 Package" in July 2021.

At present, global energy systems are experiencing a profound transformation, shifting from centralized models reliant on fossil fuels to decentralized (EC, 2011) and decarbonised systems (Allen et al., 2015). By definition, decarbonization is a process of reducing and eliminating fossil fuel use in the economy, a process in which state institutions conduct various policies and political processes to promote economic and social practices that reduce the generation of carbon emissions (e.g. Hildingsson et al., 2019; Gajdzik et al., 2022; Gajdzik et al., 2020). Ultimately, the objectives of decarbonization go beyond relative decoupling of emissions from economic activity towards liberating society and the economy from its high-dependence on fossil energies (Gough, Meadowcroft 2011). Decarbonization strategies mainly consist of material transition (e.g. circular economy and bio-based construction), energy transition (e.g. energy efficiency improvement and renewable energy supply), or green lifestyle (e.g. less floor area per capita or gradually decreasing room temperatures are a result of the increased awareness of environmental protection and the reduction in vacancy rates) (Yang et al., 2022).

It can also address the decarbonization of buildings, especially the old stock – mainly through energy efficiency improvements and the use of renewable energy – which not only reduces carbon emissions, but also generates co-benefits in health, energy affordability and the labour market (Roca-Puigròs et al., 2020). Decarbonization may also involve green mobility understood as, among other things, (i) elimination of emissions from transportation, (ii) electrification of private vehicles and public transportation, (iii) promotion and development of the market for zero- and low-emission vehicles (electric cars, scooters, bicycles) and public transportation, (iv) long-term transition to alternative and climate-neutral fuels for transportation, or (v) promotion of car and bicycle sharing and other similar solutions (Results of 2<sup>nd</sup> workshop on decarbonization, 2021). Finally, it is important to note that decarbonization can also be understood within the social dimension. This includes various aspects such as the creation of new green jobs, including those in the form of social enterprises. Additionally, decarbonization can create new markets for clean technologies and products, leading to increased employment opportunities in sectors such as construction and sustainable transport, with a greater demand for local labour. Decarbonization efforts also contribute to the fight against energy poverty and aim to improve living conditions while maintaining a healthy environment (Results of 2<sup>nd</sup> workshop on decarbonization, 2021). Therefore, in the social dimension of decarbonization, the focus goes beyond technological solutions and includes addressing social equity, justice, and community engagement. It recognises that the transition to a low-carbon economy should not exacerbate existing inequalities but rather promote inclusive and fair outcomes. This is emphasized by Healy and Barry (2017), who promote a 'just transition' approach, stressing the necessity of providing support for communities that have been left out or adversely affected by the processes of transitioning to low-carbon energy.

Interestingly, social economy organisations and social enterprises have not been given significant consideration as means for sustainability transitions, even though both the European Union's Green Deal and other EU directives present both challenges and opportunities for social enterprises. Most of the existing studies highlight the role of social entrepreneurship and social innovation in tackling energy poverty (eg. Hiteva, Sovacool, 2017; Thomas et al., 2020). Even still, commercial actors as social innovators addressing energy poverty have received limited attention in research, which has mostly focused on the role of public agents (Bouzarovski, Simcock, 2017). Additionally, energy poverty can be described as a one of *Grand Challenges*<sup>1</sup> due to its intricate, interconnected, multifaceted, and often unnoticed characteristics (George et al., 2016). It necessitates the collaborative involvement of various interconnected stakeholders (Elia, Margherita, 2018). Therefore, exploring the potential for social enterprises to engage in decarbonization could open up new avenues for their involvement and contribute to the broader field of green transition. In a qualitative research

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<sup>1</sup> The scientific community uses the label “*grand challenges*” to address broad societal problems that, if left unsolved, may have dramatic consequences on the global scale. The Grand Challenges (GC) concept was revitalized in 2015 when the United Nations adopted the 2030 Agenda for Sustainable Development defining a set of 17 grand challenges in terms of the Sustainable Development Goals (SDGs).

study conducted by Hillman et al. (2018) on a sample of seven energy focused social enterprises based in the UK, it was discovered that in general social enterprises have not yet been thoroughly explored as viable instruments for facilitating sustainability transitions. However, they can have a significant impact on local communities by demonstrating how to become involved in the energy system and empowered to take action against climate change in their own lives. Moreover, most interviewees expressed optimism on the contribution of social enterprises to the shift to a low carbon energy system. Also, social entrepreneurs may find the aspects of invisibility, stigmatisation, and empowerment of marginalised individuals, which have been extensively explored by researchers studying energy poverty (Day et al., 2016; Bouzarovski, Simcock, 2017), to be compelling. For instance, in a study conducted by Cieslik (2016) examining a pilot development intervention in rural Burundi, it was found that equipping village solidarity groups with energy generators had a positive impact. These groups achieved self-sustainability by selling energy, thereby becoming economically viable structures. As pointed out by Hillman et al. (2018), there is a need for further research on the role of social enterprises as catalysts for low-carbon transitions at the community level. Therefore, this paper investigates the value of social economy organisations and social enterprises as a driver of sustainability at the community level, with an emphasis on the field of decarbonization.

### **3. Research methodology and research results**

The research material and data for the analysis were collected as part of the international project *Social Economy for a Just Green Transition (JustGreen)* financed by the European Union through the COSME program (Grant Agreement number 101015873), in which the author of this paper was involved in 2021. Just Green project aimed at promoting the transition of social economy organisations into a greener and fairer economy and society, following the United Nations Sustainable Development Goals slogan of *leaving no one behind*. Within this objective, three key themes were explored in order to develop strategies (i) to bridge social economy and the circular economy, (ii) to promote decarbonization of the social economy, and (iii) to foster short food supply chains and agroecology. Transversal to these topics was the goal of leaving no one behind (IV), namely fostering social entrepreneurship by targeting work integration of vulnerable groups and unmet social needs, often of most vulnerable (i.e. elderly, disabled people) (Project proposal, 2020). To address the above objectives, the project consortium put together five very diverse partners with demonstrated good practices, together with a broad spectrum of social economy stakeholders, which allowed to position the social economy within the green (and digital) transition and to reinforce the dynamics of social economy organisations within local and inter-regional ecosystems, boosting learning, cooperation and the building of a transnational Social Economy community.

The project involved four municipalities, namely the Municipality of Vila Nova de Famalicão from Portugal, Comune di Mozzo from Italy, Gmina Świetochłowice from Poland, Budapest-Terézváros from Hungary and one European network – European Network of Social Integration Enterprises (ENSIE). Over the course of one year (02.2020 to 01.2021) the project created conditions to involve a group of participants – 24 social economy organisations and social enterprises with more and less experience in European projects, and more and less experience in the field of green transition topics – in an enriching process of sharing and mutual learning as well as fostering the establishment of bonds and contacts. The project also aimed to promote cooperation among different types of stakeholders from various countries and regions and empowered participants for a just and greener transition.

The objectives of the year-long project were pursued through three workshops in partnering countries (in Portugal, Poland and Italy), three parallel online thematic working groups in which project participants explored the area circular economy, decarbonization or short food supply chains (6 online working sessions each) and other dissemination activities (preparation and dissemination of newsletters, preparation of promotional films, etc.).

One of the most important tools used in the project were **good practices**. Good practices are powerful instruments for learning and inspiration that lead to the development of new approaches and the dissemination of practices considered appropriate for today's cooperation and development challenges. A good practice is not only a practice that is good, but a practice that has been proven to work well and produce good results, and is therefore recommended as a model. It is a successful experience, which has been tested and validated, in the broad sense, which has been repeated and deserves to be shared so that a greater number of people can adopt it (FAO, 2016).

In the context of the JustGreen project a good practice was a practice that:

1. Is performed by a social economy organisation, whether in collaboration with other entities OR is performed by a municipality and directly involves one or more social economy organisation(s) (SEO);
2. Has been directly relevant to promoting circular economy or decarbonization or short food supply chains;
3. Has had a positive effect on inclusion or employment issues (for instance: generates jobs, facilitates access to goods and services, provides participation or learning opportunities - for vulnerable groups);
4. Has been validated, meaning that points 2 and 3 are supported by quantitative or qualitative evidence;
5. Has included measures that will ensure the sustainability of its effects;
6. Has included measures that promote transparency;
7. Is replicable by other organisations, in other contexts and/or for the benefit of other groups (FAO, 2016; Results of Online Working Group Session 1).

Over the course of a year 42 good practices submitted by both municipalities<sup>2</sup> and 24 organisations taking part in the project have been analysed in order to find out (1) What kind of a good practice is it? (Initiative of local/regional authorities involving social economy organisation and/or initiative of social economy organisations), and (2) What is the area of this practice? (circular economy, decarbonization or short food supply chains). The following paper presents good practices in the field of decarbonization without addressing the other two areas.

Given the limited knowledge about decarbonization as a new area of engagement for social economy organisations and the strategies they employ to scale up their positive impacts in the transition to a more sustainable economy and society, this paper aims to address these issues by exploring two research questions:

RQ1: What are the different approaches to decarbonization as reported by the analysed social enterprises' good practices?

RQ2: What is the maturity level of the identified good practices in question?

The following section of the paper presents a description of the five good practices collected during the project period. The good practices reported by partnering organisations have been analysed and assessed using the criteria employed in the project, including collaboration 1, collaboration 2, environmental value, social value, transparency, and maturity (refer to the radar charts for individual good practices below). Subsequently, the good practices were consolidated in a table to provide a synthesis. The table also highlights the most significant aspect from a project perspective, which is the social or environmental value generated by each practice.

### **3.1. Good practice 1: Smart Building Automation System, Escolla Profissional CIOR, Cooperativa de Ensino de Famalicão, Portugal**

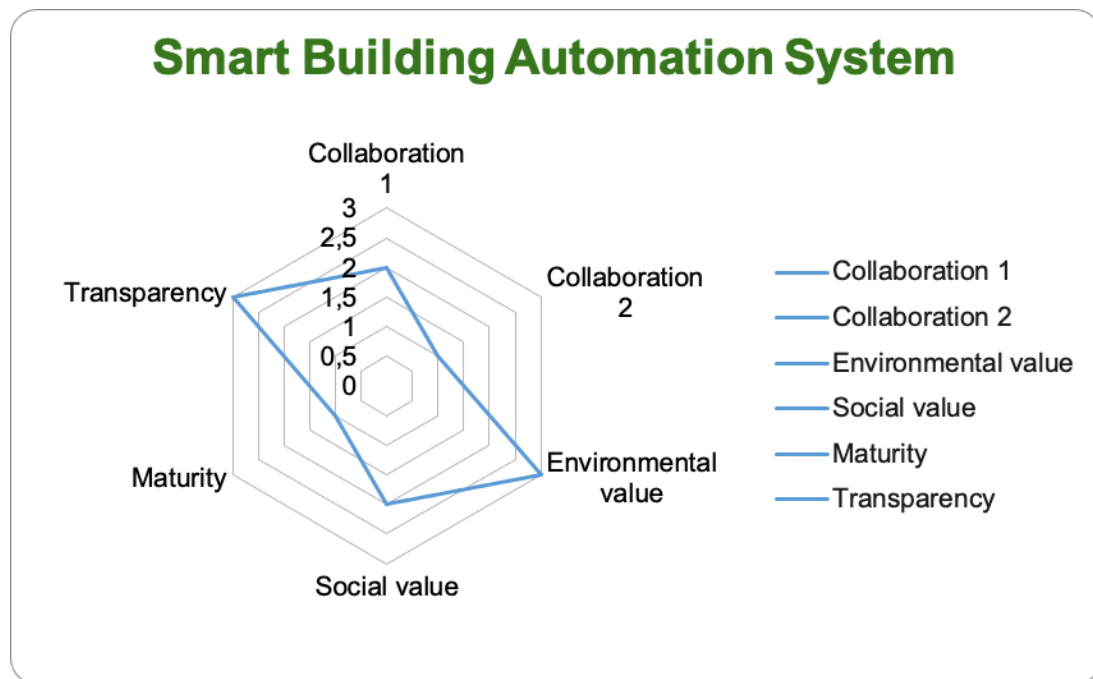
Escolla Profissional CIOR is an educational, training and socio-cultural project aimed at responding to the challenges of acquiring professional qualifications. More than just a vocational school, CIOR is an active agent and partner in the development of the local and regional community. The idea for the Smart Building Automation System project arose from the need felt at CIOR to reduce expenses associated with electricity consumption (e.g., lighting, air conditioning, and computers). The project enables integrated management, control, and automation of lighting, air conditioning, sockets, computers, room temperature, blinds, CCTV circuits, alarms, and more. Essentially, it is a complete home automation system, Open-Source, applied beyond the domestic scope. The installation of the smart system and renovation work were carried out by a group of students attending vocational courses in Electronics and Electrical Installations as part of their final project, enhancing learning opportunities for future self-employment. Studies conducted allowed for estimating the annual difference in electric energy consumption before and after the installation of the automation system. As a result of the project implementation, annual bills decreased from €4,200 to €1,486. The reduction in

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<sup>2</sup> Municipality of Vila Nova de Famalicão from Portugal, Comune di Mozzo from Italy, Gmina Świetochłowice from Poland, and Budapest-Terézváros from Hungary.



electrical consumption also directly impacts the emission of CO<sub>2</sub> and other gases responsible for the greenhouse effect (2<sup>nd</sup> project newsletter).

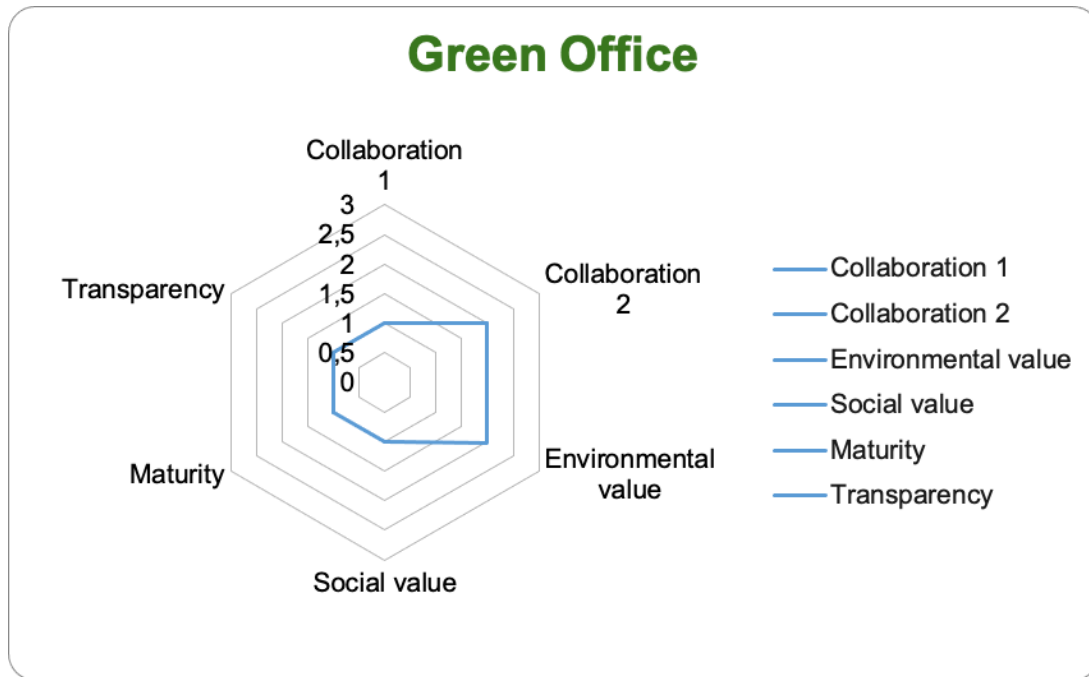


**Figure 1.** Radar chart for good practice 1.

Source: own elaboration based on project materials.

### 3.2. Good practice 2: The Green Office, Social Integration Centre in Świętochłowice, Poland

A Social Inclusion Centre (CIS) is an institution that implements a specialised program aimed at working with individuals who are socially excluded or at risk of exclusion, over a specific period of time. The primary goal of CIS is to restore and enhance the ability of socially excluded individuals to independently and effectively fulfil social roles, as well as to enable them to navigate the labour market autonomously. The Green Office encompasses a range of practices that involve the daily activities of CIS employees. These practices include maximising the use of natural daylight, turning off unnecessary lighting, powering down devices after work, switching off devices from standby mode, utilizing double-sided printing and copying, and implementing waste segregation. Moreover, the procurement of supplies and services is based on selecting economically and environmentally advantageous offers. Additionally, the electronic circulation of documents is employed to promote the rational use of paper (2<sup>nd</sup> project newsletter).

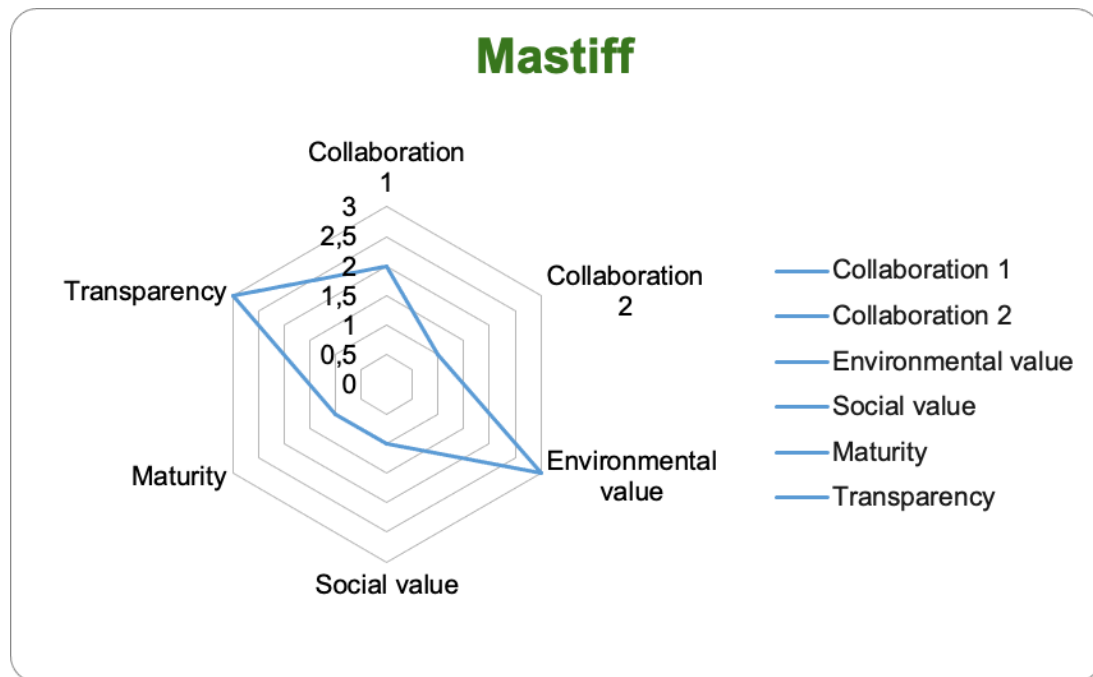


**Figure 2.** Radar chart for good practice 2.

Source: own elaboration based on project materials.

### 3.3. Good practice 3: Mastiff Cargo Bike, Budapest, Hungary

MASTIFF is a self-designed and self-developed Long John-type cargo bike manufactured in Hungary. The brand was established in 2020 and now offers a stable, fast, and practical partner for everyday transport and delivery. It is available in both a normal and pedal electric cycle version. With its versatile accessories (such as open transport boxes, child box, aluminium convoy box), MASTIFF is ideal for both companies and families. MASTIFF is not only cheap to maintain and operate, but also environmentally friendly and carbon-neutral. It has zero emissions, and by replacing just one van, we can save 12 tons of CO<sub>2</sub> emissions. Additionally, MASTIFF can navigate through traffic jams and access areas where cars are prohibited. Indirectly, MASTIFF can help sustain short supply chains and improve sustainability, facilitating the environmentally friendly transportation of food and other commodities. Interestingly, the authorities of the Budapest-Terézváros historic district also support such a solution as they aim to reclaim the historic centre from cars, including urban freight transport, and prioritize the needs of residents and tourists (2<sup>nd</sup> project newsletter).

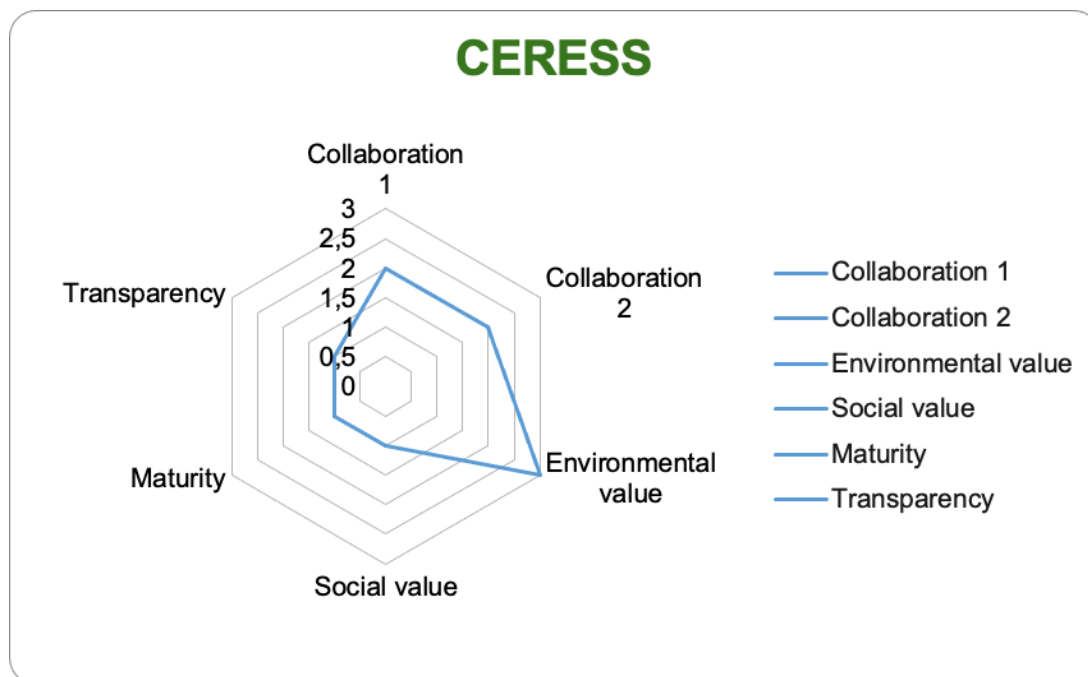


**Figure 3.** Radar chart for good practice 3.

Source: own elaboration based on project materials.

### 3.4. Good practice 4: Ressorlar - CERESS: Comunità Energetiche Rinnovabili, Lombardy Region, Italy

Since 2021, in Italy, it has been possible to establish "Renewable Energy Communities" (CER) among buildings. These communities allow for the exchange of self-produced renewable energy for direct consumption on-site. Previously, this was not permitted, which meant that those who generated renewable energy had to feed any unused energy back into the national system. However, with this new development, renewable energy produced by a company, private house, or school building can now be utilized and consumed by nearby houses, shops, or state buildings within the same neighbourhood. This maximises the utilisation of renewable energy, enabling its consumption even by those who do not have their own photovoltaic system. The aim is to reduce reliance on fossil fuel-based energy sources and promote the transition towards a decarbonised economy and society. Specific economic and fiscal incentives are provided to encourage the establishment of these Renewable Energy Communities. CERESS, a start-up within the Ressorlar Group, is responsible for promoting and organizing these energy communities. They oversee the technical, administrative, and economic management throughout the entire process (2<sup>nd</sup> project newsletter).



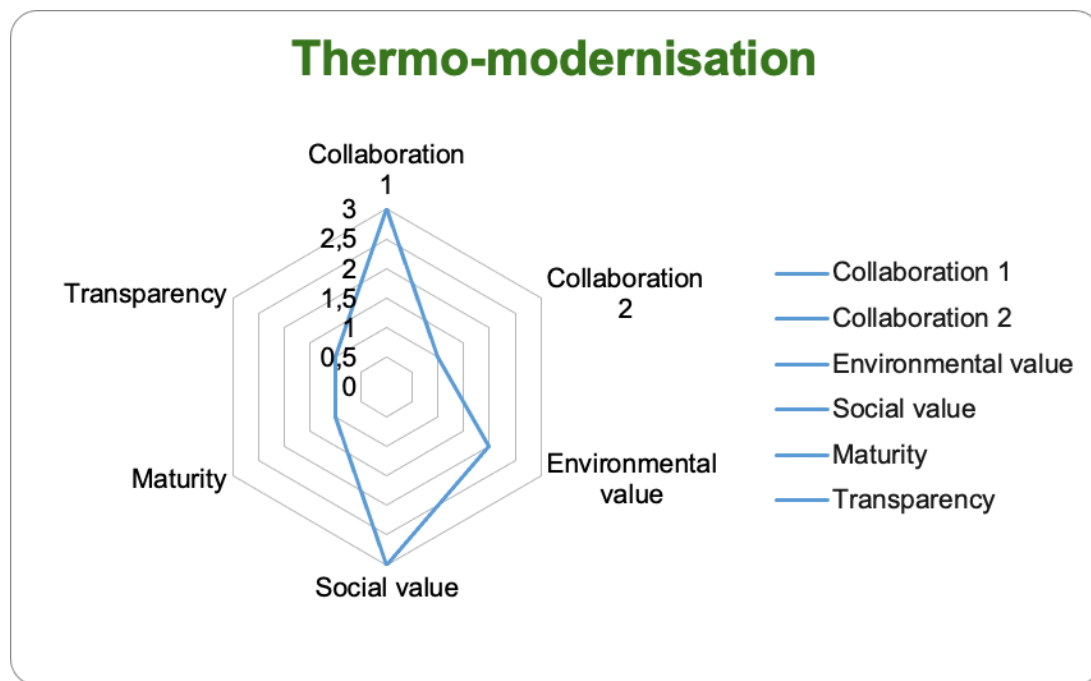
**Figure 4.** Radar chart for good practice 4.

Source: own elaboration based on project materials.

### 3.5. Good practice 5: The thermo-modernisation of public buildings, the Municipality of Świętochłowice, Poland

The thermo-modernisation of a complex of buildings owned by the Świętochłowice Commune, along with the renovation of apartments, serves as a prime example of pro-ecological activities in the city. This initiative showcases a commitment to environmental sustainability by implementing energy-efficient measures and improving the thermal performance of the buildings. By upgrading the apartments, the project aims to enhance comfort for residents while reducing energy consumption and lowering greenhouse gas emissions, thus contributing to a greener and more sustainable urban environment. The entire building has been connected to the city's central heating network, which will contribute to reducing the use of high-emission solid fuel heat sources such as coal, wood, and pellets. The main renovation works were carried out by the municipal company, in which the Świętochłowice commune is a 100% shareholder. Additionally, some renovation works were performed by socially excluded individuals as part of their professional and social reintegration program at the Social Integration Center in Świętochłowice and the social enterprise. The following list outlines the works performed by individuals in social employment: replacement of windows and doors, replacement of basement windows, renovation and painting of the staircase and minor cleaning work. The positive outcomes of this project include the connection of 11 flats to the municipal central heating network. Moreover, the removal of 22 tiled stoves will lead to a significant reduction in CO<sub>2</sub> emissions, estimated to be around 66%. Additionally, the engagement of individuals at risk of social exclusion in the project aligns with the fundamental objectives of

the social economy, which include preventing social exclusion and mitigating social tensions. By providing employment opportunities and involving marginalized individuals in the work, the project aims to address social challenges and promote inclusivity within the community (2<sup>nd</sup> project newsletter).



**Figure 5.** Radar chart for good practice 5.

Source: own elaboration based on project materials.

The following table presents a summary of good practices as well as social or environmental value generated by each practice.

**Table 1.**

*Summary of good practices*

Organisation	Country	Good practice and its short description	Year of the beginning of the practice	What kind of a good practice is it?	
				Initiative of local/regional authorities involving SEO	Initiative of SEO
Escolla Profissional CIOR, Cooperativa de Ensino de Famalicão	Portugal, Vila Nova de Famalicão	Smart Building Automation System which enables integrated management, control, and automation of lighting, air conditioning, computers, room temperature etc.	2019	X	

Cont. table 1.

Impact	<ol style="list-style-type: none"> <li>1. It provides an opportunity to increase students' social and environmental awareness while also fostering a sense of solidarity as they apply and develop their professional skills.</li> <li>2. The reduction in electrical consumption also directly impacts the emission of CO<sub>2</sub> and other gases responsible for the greenhouse effect.</li> <li>3. The project offers the advantage of reusing appliances or small components instead of abandoning them in nature.</li> <li>4. It provides an opportunity to increase students' social and environmental awareness while also fostering a sense of solidarity as they apply and develop their professional skills.</li> </ol>				
Centre for social integration	Poland, Świętochłowice	The Green Office encompasses a range of practices that involve the daily activities of employees aimed at promoting sustainability and reducing environmental impact.	01/2020		X
Impact	<ol style="list-style-type: none"> <li>1. Reducing electricity consumption directly decreases CO<sub>2</sub> and other greenhouse gas emissions. In fact, there has been a 13% decrease in energy consumption compared to the previous year, resulting in a significant reduction in emissions.</li> <li>2. In comparison to the previous year, there has been a 10% decrease in paper consumption. This reduction in paper usage demonstrates an effort to promote sustainability and reduce environmental impact.</li> </ol>				
The Municipality of Świętochłowice	Poland, Świętochłowice	The thermomodernization of a complex of buildings aimed at contributing to a greener and more sustainable urban environment.	04/2021	X	
Impact	<ol style="list-style-type: none"> <li>1. According to the energy audit, the building's energy efficiency is projected to improve by 65.49%. Additionally, the overall reduction in PM<sub>10</sub> suspended dust, including benzopyrene, benzo(a)pyrene, dioxins, and furans, is estimated to be 0.0007 Mg per year. These improvements indicate a positive impact on both energy conservation and air quality.</li> <li>2. Additionally, some renovation works were performed by socially excluded individuals as part of a professional and social reintegration program conducted by the Social Integration Centre and the social enterprise. This allowed socially excluded individuals to actively participate in the renovation process, gaining valuable skills and contributing to their social reintegration.</li> </ol>				
MASTIFF Cargo Bike	Hungary, Budapest	Locally manufactured and environmentally friendly equipment for urban freight transport.	09/2020		X
Impact	<ol style="list-style-type: none"> <li>1. The reduction of urban freight transport directly impacts the emission of CO<sub>2</sub> and other gases responsible for the greenhouse effect.</li> <li>2. Cargo bikes are environmentally friendly and carbon-neutral. It has zero emissions, and by replacing just one van, we can save 12 tons of CO<sub>2</sub> emissions per year.</li> </ol>				

Cont. table 1.

Ressolar - CERESS: Comunità Energetiche Rinnovabili	Lombardy Region, Italy	Renewable energy communities that allow for the exchange of self-produced renewable energy for direct consumption on-site	12/2021		X
Impact	<ol style="list-style-type: none"> <li>1. The creation of many semi-autonomous local energy communities, independent of the national grid, facilitates the transition away from large power plants that produce significant amounts of energy and reduces dependence on foreign energy sources.</li> <li>2. By enabling the local consumption and sharing of renewable energy, this approach contributes to reducing reliance on fossil fuels and fostering a more sustainable future.</li> </ol>				

Source: own elaboration based on project materials.

As shown in the table above, the JustGreen project encompasses various good practices that differ in their focus. Many of these practices are directly associated with environmental impact, as their implementation directly reduces CO<sub>2</sub> and other greenhouse gas emissions or energy consumption. Indeed, this aligns with the fact that social enterprises commonly establish mission statements that give precedence to social and environmental objectives. By participating in decarbonization activities, they take responsibility for their carbon footprint and contribute to mitigating the impacts of climate change. It aligns with their core values and helps them set an example for other businesses. However, it is important to note that presented good practices also have a social dimension. They generate new green job opportunities, foster employment in the construction sector for socially marginalised individuals, enhance living conditions while ensuring a healthy environment, and offer avenues for increasing students' awareness of social and environmental issues as well as their green skills. A common feature of these good practices is their relatively low level of maturity, which is due to the fact that the area of decarbonization is a relatively new area of interest for social entrepreneurs. Nevertheless, it is undeniable that presented good practices demonstrate the growing involvement of the social economy and social enterprises in decarbonization efforts. This involvement may lead to the exploration of new solutions for social needs, the implementation of diverse measures to reduce carbon footprint, and the utilisation of new technologies and digital social innovations to improve the quality of services provided by social economy organisations. Embracing decarbonization often requires implementing new technologies and innovative solutions. Engaging in these activities can lead to learning experiences that foster adaptability and resourcefulness within the social enterprise. Participating in decarbonization activities can also impact the attraction and retention of customers as consumers are increasingly conscious of the environmental impact of their choices.

## 4. Conclusions

Nowadays it is crucial to recognise the significant educational role that social economy and social enterprises can play in stimulating and empowering individuals regarding practices in the field of decarbonization. Therefore, by showing examples of new areas of engagement of social economy and social enterprises, this the study develops the knowledge concerning strategies using which they seek to scale up their positive impacts in transition to a more sustainable economy and society. An essential added value of the study is that its outcomes are not limited to polish context, but also shed light on other countries, where the level of development of social entrepreneurship varies. Moreover, the good practices presented show how new initiatives of social economy may emerge or be strengthened, for instance related to exploring new responses to social needs or buildings and contributing to the targets of zero-carbon economy.

The findings of this study also suggest that social enterprises, through their involvement in decarbonization, are responding to the increasing demands of consumers who have become more environmentally aware. Moreover, their activities contribute to the further growth of this environmental consciousness. Engaging in decarbonization activities offers numerous advantages for social economy and social enterprises, including the opportunity to assist low-skilled workers who may be at risk of job loss due to automation and robotization (EC, 2020). However, these entities often encounter challenges, particularly in terms of insufficient financial resources. Therefore, it is advisable for business institutions to provide support to social economy in accessing funding and obtaining relevant information on funding opportunities.

The main limitations of the presented study stem from the adopted methodology, which focuses on analysing existing practices and literature rather than conducting primary data collection. While this approach provides valuable insights, it may lack contextual understanding that can be achieved through in-depth interviews, surveys, or case studies. Additionally, the data collection process primarily focused on internal stakeholders. Undoubtedly, the study would have benefitted from the inclusion of interviews with external stakeholders such as municipality officials, the local community, or other recipients of these initiatives. Due to these limitations, the authors exercise caution in interpreting the obtained results and their generalisability. Furthermore, the authors acknowledge that the paper does not fully exhaust the research problem but rather serves as a contribution to further research. Fortunately, this research topic has recently garnered attention, as evidenced by the work of Manjon, Merino and Cairns (2022), whose systematic review of the literature reveals a fragmented understanding of social entrepreneurship and social innovation approaches to addressing energy poverty, as expected in this emerging area of research. Nevertheless, presented study's results provide valuable insights for business practices and can be utilised by other social entrepreneurs, as well as representatives of business support institutions.



## Acknowledgements

The dissemination of findings received funding from the subsidy for development of Young Scholars 2023, University of Economics in Katowice.

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