Monitoring industrial ecosystems

PROXIMITY AND SOCIAL ECONOMY

Analytical report – 2024 edition

This report was prepared by Luena Collini, Kincsö Izsak and Carmen Moreno from Technopolis Group for the European Commission Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs. However, it does not necessarily reflect the views of the European Commission.

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Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
Directorate B – Simplification and networks
Unit GROW.B.4 – Industrial Forum, Alliances and Clusters

European Innovation Council and SMEs Executive Agency (EISMEA)
Unit I.02 - SMP/SME Pillar, Internal Market and Support to Standardisation
E-Mail: EISMEA-SMP-COSME-ECOSYSTEMS@ec.europa.eu

European Commission
B-1049 Brussels

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This report has been prepared within the 'European Monitor of Industrial Ecosystems' (EMI) project with the objective to analysing the green and digital transformation of industrial ecosystems and progress made over time, in this specific case, the proximity and social economy (PSE).

Green Transition

In 2024, 23% of proximity and social economy organisations adopted carbon-reduction strategies, while 73% took energy-saving actions. The most progress was in energy conservation, waste reduction, and sustainable product design.

Over 2 000 active social economy startups are tackling environmental issues in the EU. 40% focus on climate change mitigation, 24% on circular economy, and 15% on sustainable consumption. These startups use digital technologies, such as AI and platforms, to promote sustainability and social impact.

As part of the study, a web crawling of company websites was carried out to explore the role of the social economy ecosystem in the green and digital transition. AI-enhanced crawling was then applied to over 35 million organisation websites and additional sources, such as social media and news platforms, to identify relevant organisations. In terms of entity types, most organisations were evenly distributed across non-profits (24%), associations (23%), and public benefit associations (22%), with smaller percentages of mutuals (15%) and cooperatives (14%).

Among industry-specific organisations, energy/renewables and textiles/recycling have the highest proportion referencing green technologies and environmental initiatives. These are followed by the agri-food, retail, and construction sectors. Many cooperatives engage in organic farming, local food distribution, and fair-trade practices, supporting sustainability principles. Retail organisations are increasingly adopting eco-friendly practices, such as reducing packaging waste, tackling food waste, sourcing sustainable products, and ensuring ethical supply chains. The construction sector, traditionally resource-intensive, is gradually incorporating green technologies. Social economy organisations contribute by promoting energy-efficient designs, using sustainable materials, and advocating for affordable, eco-friendly housing. In contrast, healthcare has the lowest share of organisations referencing green technologies.

Many social startups integrate their social mission with environmental goals. A significant proportion, around 40%, focus on climate change mitigation by reducing greenhouse gas emissions through renewable energy solutions, sustainable transport initiatives, carbon offsetting efforts, and eco-friendly agricultural practices. Approximately 24% work towards establishing circular economy models by promoting reuse, recycling, waste reduction, and the development of sustainable production processes. Another 15% concentrate on sustainable consumption and production, encouraging responsible consumer choices, ethical business practices, and the implementation of sustainable supply chains. Finally, around 7% specifically address conservation and biodiversity, engaging in activities such as reforestation, marine conservation, and sustainable agricultural practices to protect natural ecosystems.

Concerning private investments, between 2015 and 2023, venture capital investment in social economy startups and young organisations focused on local consumption and short value chains experienced overall growth, with both the number of funding rounds and total investment volume increasing. Investment activity peaked in 2021, reaching EUR 337 m, before experiencing a decline in 2022 and 2023. Late-stage funding rounds played a crucial role in driving the market peaks in 2020 and 2021. Early-stage and seed funding also grew between 2015 and 2019 but began to decline from 2020 onwards.

Regarding skills, the shift towards sustainability presents a significant skills challenge for social enterprises, as there is a gap between the expertise required for green practices and the skills available in the workforce. **Many social economy organisations struggle to recruit professionals with specialised knowledge in fields central to the green transition, such as renewable energy, circular economy initiatives, sustainable agriculture, and eco-friendly construction.** In renewable energy, organisations face difficulties in finding experts for energy-efficient technologies and system maintenance. The textile sector requires specialists in sustainable materials, waste management, and recycling innovations. Agricultural cooperatives need professionals skilled in organic farming, precision agriculture, and biodiversity conservation. The construction sector also increasingly demands expertise in green building materials, energy-efficient design, and retrofitting for sustainability. Social entrepreneurs often require additional training in technological implementation, sustainable business models, and environmental impact measurement. According to the Eurobarometer 2024, organisations in the PSE industrial ecosystem employ, on average, 2.7 full-time workers in green jobs. However, 61% reported having no green job professionals, while 30% employ only 1–5 individuals in such roles. Additionally, the EMI Enterprise Survey conducted in 2024 found that 19% of social economy organisations had created new positions focused on environmental sustainability over the past five years. To assess the availability of professionals with green transition skills, LinkedIn data was analysed. In 2024, 7.9% of professionals in the PSE industrial ecosystem had skills related to sustainability, an increase from 2022.

Digital Transition

The proximity and social economy plays a key role in the digital transition, promoting inclusion in the digital economy and supporting SMEs in adopting digital technologies. These organisations help drive local development, resilience, and a fair green and digital transition. Digital tools, such as mobile apps and platforms, connect producers with consumers, optimise supply chains, and enhance resource management in sectors like tourism, retail, energy, and agri-food. Community engagement is also strengthened through digital platforms, cooperatives, and training programmes, ensuring accessibility for disadvantaged groups. Social enterprises advocate for inclusive digital policies, funding, and skills development while pushing for regulations on data privacy and monopolies. AI is increasingly used in social innovation, particularly for sustainability.

Only 13% of social economy organisations have a structured digital transformation strategy, despite the benefits digital tools offer, such as cost reduction, networking opportunities, and improved service delivery. Most organisations primarily use basic digital technologies, such as user interfaces and data analysis, while only a few frontrunners are adopting more advanced technologies like AI, cloud computing, and IoT. Barriers to digital adoption include limited financial resources, a lack of technical expertise, and poor connectivity, particularly in rural areas, which hinder innovation and scalability.

Digital platforms are key enablers of collaboration, crowdfunding, and e-learning, while applications of AI and IoT contribute to sustainability and social care efforts. The renewable energy sector, including energy cooperatives and organisations in the green transition, is the most frequent adopter of digital tools, using them for monitoring, smart grids, and community engagement. Around 28–29% of social startups have integrated digital technologies, mainly in the form of online platforms and mobile apps, with limited adoption of more advanced solutions.

The digital transition within the proximity economy varies significantly depending on the sector. Given the short value chains characteristic of this economy, digital tools such as platforms and mobile apps are commonly used to connect producers and consumers in industries like tourism and retail. Meanwhile, more advanced technologies are found in sectors such as energy and agri-food ecosystems. The analysis showed a growing number of startups in this sector over time. Agriculture, particularly agri-tech and farming, emerged as a dominant area, with 34 startups dedicated to food production and farming innovation. The food and beverage sector, including food

processing, organic food, and niche markets like craft beer, accounted for 23 startups. Additionally, e-commerce, marketplaces, and retail featured prominently, with 21 startups highlighting the role of online platforms in local consumption. Delivery services, including food and grocery delivery, appeared 10 times, while supply chain management and logistics accounted for 7 startups. Manufacturing was mentioned by 6 companies. Regarding digital technologies, the Internet of Things (IoT) was central to the business models of five startups, while Artificial Intelligence and Machine Learning were used by three. Sustainability and green technologies were a primary focus for five startups, reflecting a growing commitment to environmentally friendly practices. Other areas, such as tourism (3 startups) and healthcare and pharmaceuticals (1 startup), featured less frequently, indicating a more specialised focus.

A review of the literature indicates a notable digital skills gap within the sector, especially among small and micro-enterprises, ranging from basic IT proficiency to more advanced capabilities like data management and analysis. This shortage of skilled workers is a significant barrier, preventing many organisations from effectively adopting and using digital technologies.

Social economy organisations, often working with limited resources, face difficulties in recruiting and retaining workers with the necessary digital skills, which further hampers their ability to integrate digital tools. The financial constraints also make it challenging to invest in digital technologies and training, as they struggle to afford hardware, software, internet access, and staff training costs. These challenges create a divide in the sector, where some organisations are embracing digital transformation, while others remain behind due to a lack of resources, skills, and infrastructure. The digital skills most in demand include data management, analytics, and digital marketing, highlighting the sector's growing need to adapt to technological advancements and improve its operational and outreach capabilities.

2. Introduction

2.1. Objectives

This report has been prepared within the '**European Monitor of Industrial Ecosystems' (EMI)** project, initiated by the European Commission, Directorate General for Internal Market, Industry, Entrepreneurship and SMEs and the European Innovation Council and SMEs Executive Agency (EISMEA). The overall objective of the project is to **contribute to the analysis of the green and digital transformation of industrial ecosystems** and progress made over time.

The EU's updated industrial strategy[1] has identified 14 industrial ecosystems[2] – one of them being **'Proximity and Social Economy'**[3] - that is in the focus of this report. The industrial strategy defined industrial ecosystems as encompassing all players operating in a value chain: from the smallest startups to the largest companies, from academia to research, service providers to suppliers. The notion of ecosystems captures the complex set of interlinkages and interdependencies among sectors and firms across the EU. Industrial transition is driven by technological, economic, and social changes, and by the adoption of green and digital technologies and that move towards sustainable competitiveness. The process is however characterised by complex, multi-level, and dynamic developments. To make transition sustainable, technological change needs to be coupled with new business models, the necessary investments and financial tools, skills, regulatory framework conditions and behavioural change across the ecosystem.

The indicator framework includes a **set of traditional and novel data sources that allow shedding new light on ongoing transformation patterns.** The novelty of the analysis lies in the exploratory and innovative data sources used across the different chapters of the report. **Due to its effort to analyse industrial ecosystems using a standardised set of indicators, the study cannot address all aspects of the green and digital transition.** Therefore, additional analysis and industry-specific data sources should be used to supplement a full assessment.

Measuring performance and change is vital to allow policymakers and industry stakeholders to track progress over time and get feedback whether the system is moving in the desired direction. To measure performance, a dedicated **monitoring and indicator framework** has been set up for the purposes of this project with an aim to capture them in regular intervals (see the overview of the monitoring framework in Figure 1).

The **methodological report** that sets the conceptual basis and explains the technical details of each indicator is found in a separate document uploaded on the EMI website. Moreover, some of the specific industry codes used throughout this analysis have been also included in Appendix B. The green and digital technologies considered in this study include the following:

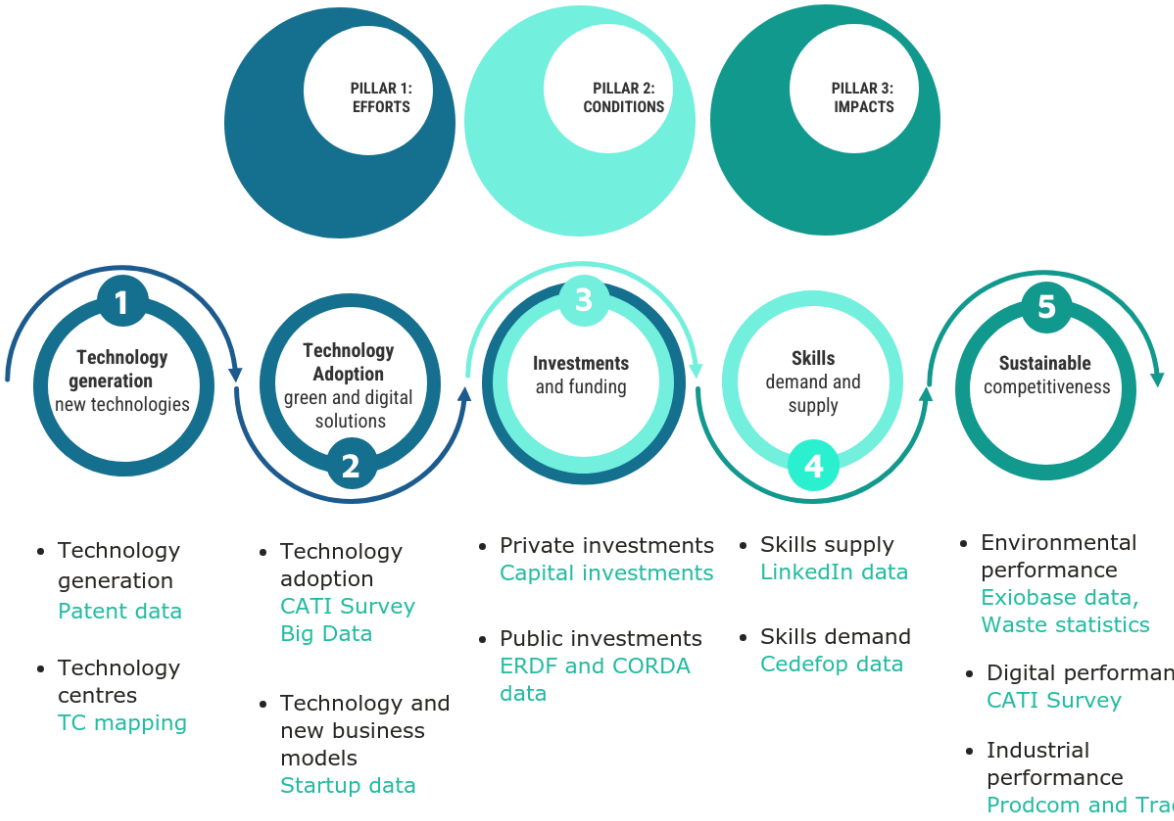
- *Green transition technologies*: advanced materials, biotechnology, clean production technologies, energy saving technologies, recycling technologies, renewable energy.
- *Advanced digital technologies*: advanced manufacturing and robotics, Artificial Intelligence and big data, augmented and virtual reality, blockchain, cloud computing, Internet of Things, digital security.

[1] European Commission (2020). A New Industrial Strategy for Europe, COM/2020/102 final and European Commission (2021). Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery, COM(2021) 350 final

[2] The 14 industrial ecosystems include: construction, digital industries, health, agri-food, renewables, energy intensive industries, transport and automotive, electronics, textile, aerospace and defence, cultural and creative culture industries, retail, proximity and social economy, and retail

[3] The PSE industrial ecosystem has been defined following the Annual Single Market Report and including the NACE codes of G47, I, L, N81, N82, Q87-88, S95, S96, T.

Figure 1: Overview of monitoring industrial ecosystems and relevant data sources



Source: Technopolis Group, IDEA Consult and Fraunhofer ISI

This report contributes to the analysis of the **key pillars put forward in the 'Blueprint for the development of transition pathways'**[4] of the Industrial Forum developed in 2022.

More specifically, the report builds on the **Transition Pathway for Proximity and Social Economy**[5]. The pathway highlights that social economy entities need support to scale up their green innovations, develop their capacity for greening their operations, and access green finance and markets. Regarding the digital transition social economy entities need to develop data management skills and awareness, and increase their use of technology and platforms to reach new markets and customers. The proximity and social economy industrial ecosystem includes a wide range of entrepreneurship business models of varying scale and capacity. The **European industrial strategy**[6] also acknowledges the role of proximity and social economies as key industrial ecosystem in transforming the EU industrial landscape into a sustainable and resilient economy. As part of this effort, strengthening the digital capabilities of SMEs within the sector has been identified as a key need of the ecosystem, as outlined in the **Action Plan for the Social Economy.**[7]

Moreover, the digital and green transitions of the social and proximity industrial ecosystem should be placed in the context of broader initiatives such as the **Green Deal Industrial Plan.**[8] This major initiative under the European Green Deal aims to leverage the substantial

[4] https://ec.europa.eu/docsroom/documents/49407/attachments/1/translations/en/renditions/native
[5] European Commission (2022). Transition Pathway for Proximity and Social Economy Ecosystem. Available at: https://ec.europa.eu/docsroom/documents/52015
[6] European Commission (2021). Updating the 2020 New industrial strategy building a stronger single market for Europe's recovery.
[7] European Commission (2021). Building an economy that works for people: an action plan for the social economy.
[8] European Commission (2023). Communication on a Green Deal Industrial Plan for the Net-Zero Age, COM(2023)62 final

opportunities stemming from the twin transition. The regulatory framework supporting this transformation, including the **European Green Deal**[9], the **Fit for 55 package**[10] and the recently approved **Net-Zero Industry Act**[11] provide robust incentives and financial backing for sustainable development. The social and proximity economy with its strong local dimension and focus on short value chains, plays a crucial role in the broader industrial transformation. As many European cities have now committed to climate neutral plans by 2030[12] and almost 11,000 European cities have already developed their Sustainable Energy and Climate Action Plans (SECAPs), they provide a natural arena for the social economy and proximity ecosystem to flourish. As also highlighted by **Letta report**, cities have now an increased responsibility to manage the twin transition of their local economies.[13] As cities lead the way in deploying green technologies, the social and proximity economy helps ensure that this industrial transformation remains inclusive, community-driven, and sustainable.

2.2. Scoping the PSE industrial ecosystem

As in the case of the EMI analysis conducted in 2023[14], the **social economy** is defined as encompassing organisations placing people and social and/or environmental purpose over profit, reinvesting profits to carry out activities in the interest of their members and/or users, or society at large, in quality services, jobs, and in the sustainable development of the communities in which they operate, following democratic and/or participatory governance principles. Social economy organisations combine societal goals with an entrepreneurial spirit. At a European level, there is no single legal form for social economy organisations. Social economy organisations can take the form of cooperatives, mutual benefit societies, foundations, associations (including charities), and social enterprises[15].

A recent study on the benchmarking the socio-economic performance of the EU social economy[16] provides estimations on the relevance of this **ecosystem within the EU, identifying more than 4.3 million entities,** ranging from cooperatives, mutual benefit societies, associations to foundations. The **social economy employs 6.3% of the population**, and generating a **turnover of EUR 912 bn in the EU in 2021.**[17] The vast majority of enterprises in the social economy are SMEs, with **micro enterprises accounting for more than 93%.**[18] Globally, it is estimated that there are 10 million social enterprises, generating over EUR 2 trillion in annual turnover more than the fashion or advertising industry[19].

An important feature of the proximity and social economy is its close interlinkages with other industrial ecosystems, such as retail, the agri-food, textiles, tourism, energy. With regards to retail, for example, social economy and proximity companies, particularly SMEs are considered as key element of the social fabric in urban and rural local communities.

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[9] European Commission (2019). Communication on the European Green Deal, COM(2019)640 final, Available at : https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

[10] Fit For 55 Package, available at : https://commission.europa.eu/publications/legal-documents-delivering-european-green-deal_en

[11] Regulation on establishing a framework of measure strengthening Europe's net-zero technology products manufacturing ecosystem (Net Zero Industry Act), 2023/0081(COD).

[12] EU Mission for Climate-Neutral and Smart Cities, 110 cities have been selected to participate to the Mission and develop their Climate City Contracts. Available at: https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/climate-neutral-and-smart-cities_en

[13] Enrico Letta (2024). Much More than a Market, available at: https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf

[14] https://monitor-industrial-ecosystems.ec.europa.eu/sites/default/files/2023-12/EMI%20PSE%20industrial%20ecosystem%20report.pdf

[15] https://single-market-economy.ec.europa.eu/sectors/proximity-and-social-economy/social-economy-eu/social-enterprises_en

[16] European Commission (2024). Benchmarking the socio-economic performance of the EU social economy, improving the socio-economic knowledge of the proximity and social economy ecosystem. Available at: https://op.europa.eu/en/publication-detail/-/publication/8aa2a5cb-74a7-11ef-a8ba-01aa75ed71a1/language-en

[17] Ibid.

[18] Ibid.

[19] WEF (2025). Unlocking the Social Economy: Towards Equity in the Green and Digital Transitions, Insight Report

These businesses contribute significantly to the retail ecosystem, offering proximity and contributing to vibrant cities.[20] In the agri-food ecosystem, the social economy is well established in most EU Member States. For instance, in the Netherlands, cooperatives dominate the market with an 83% share, while Finland, Italy, and France also have significant cooperative presence in their agricultural sectors.[21] In Italy alone, there are 5 459 agricultural cooperatives generating an average turnover of EUR 7.26 million and employing over 160 000 workers.[22] Among the relatively recent ecosystems witnessing a growth in the social economy activities, tourism stands out as a key example. In nearly all EU Member States social economy initiatives are emerging within the tourism ecosystem, focusing on providing employment opportunities for disadvantaged individuals, or connecting tourism facilities with small scales agricultural producers.[23]

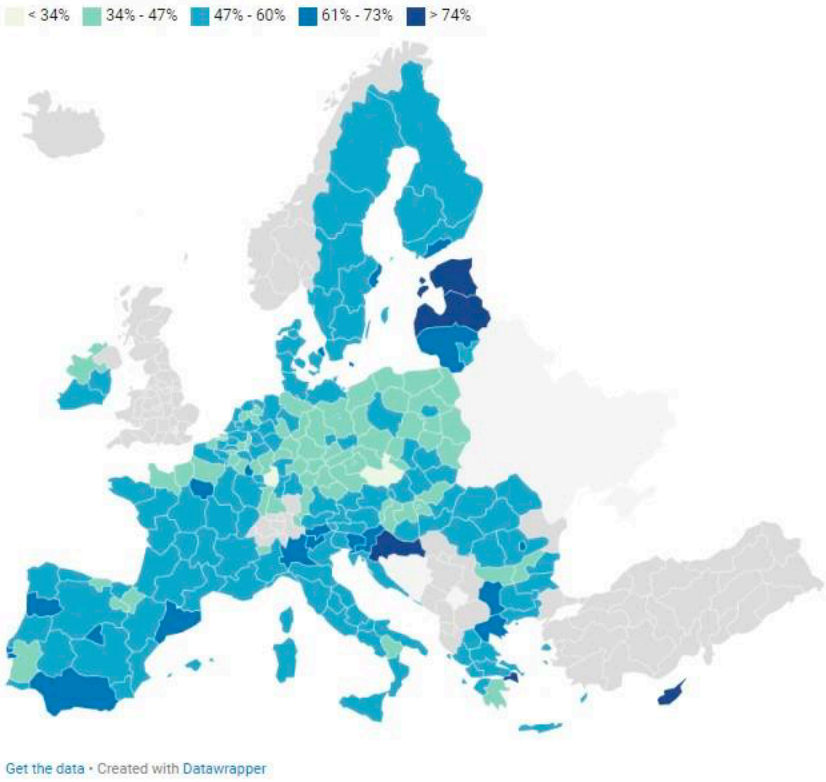
The **proximity economy** is defined as a way of organising the economy around direct relationships with the objective of creating growth not solely in terms of financial capital, but also of social capital and contributing to the well-being and sustainability of our societies[24]. The key features of the proximity economy are the geographical dimension, namely local and short value chains, and the organisational dimension, i.e. direct relationships in terms of coordination, social and relational perspective. Examples of such activities include but are not limited to personal and contact services, small shops, bars and restaurants, repair, cleaning, and maintenance services. The proximity economy also acts as the 'last-mile' delivery of goods and services of many of the ecosystems to the local businesses and citizens. Cities are hubs of the proximity economy, as they foster human centric city models (such as the 15-minutes city), local and short value chains, and enhance innovation, economic and social cohesion. Civil security services (fire fighters, police forces, emergency teams, etc.), are not included in this ecosystem, although subsumed under it in some sources.

Capturing the value of the proximity economy appears to be challenging, due to the fact that production processes for goods and services are often scattered and involved diverse and geographically disperses set of processes inputs and outputs along the value chain.[25] On the other hand, providing accurate assessment of proximity economy needs to account for trade relationship in a territory including the sourcing of inputs and the distribution of outputs happening locally or within a region, in short value chains.

A recent study on the scoping of the socio-economic performance of the EU proximity economy[26] has attempted to capture the presence of short value chains, using intra-regional trade as a proxy. **The results highlighted that approx. 54% of overall economic output generated in EU regions can be attributed to trade flows within the same region**, as shown in the figure below.

[20] European Commission (2024). Study on the twin transition of SME retailers, Publications Office of the European Union, available at: https://data.europa.eu/doi/10.2873/184606, by Perez Fernandez de Retana, M., Strauka, O., Iannacci, A. et al.
[21] Ibid.
[22] Euricse (2023). La cooperazione in Italia: tratti distintivi e traiettorie di sviluppo, Euricse Research Report, n. 31|2023.
[23] Galera et al. (2022). Report on trends and challenges for work integration social enterprises (WISEs) in Europe. Current situation of skills gaps, especially in the digital area. Available at: https://www.bwiseproject.eu/en/results
[24] European Commission (2021). Scenarios towards co-creation of a transition pathway for a more resilient, sustainable and digital Proximity and Social Economy industrial ecosystem, SWD(2021) 982 final.
[25] Almazán-Gómez, M. Á., Llano, C., Pérez, J., & Mandras, G. (2023).The European regions in the global value chains: New results with new data. Papers in Regional Science, 102(6), 1097–1126. https://doi.org/10.1111/pirs.12760
[26] European Commission (2024). Scoping the socio-economic performance of the EU Proximity economy. Available at: https://op.europa.eu/fr/publication-detail/-/publication/5d76c6a9-73d8-11ef-a8ba-01aa75ed71a1/language-en

Figure 2: Regional breakdown of intra-regional trade as a proxy for the proximity economy



Source: European Commission (2024) Scoping the socio-economic performance of the EU proximity economy

According to the estimations made in the study, a substantial contribution of the total EU added value of the 14 ecosystem can be attributed to short regional supply chains. In particular, the study estimates that **nearly EUR 6 000 bn of this added value is linked to the proximity economy**, when defined as encompassing short regional supply chains.[27]

Similarly to the social economy, the **proximity economy plays a key role across various ecosystems**, in particular agri-food, retail and energy, construction and tourism. In the agri-food ecosystem, while shortened and regionalised agri-food value chains are not new, there has been an increase in initiatives and platforms reconnecting producers and consumers with the support of digital tools. For example, the so-called market gardeners initiatives facilitate direct relationships between producers and consumers.[28] In the energy ecosystem, proximity businesses span from community-funded renewable projects to large-scale cooperatives, integrating various industries under a single umbrella. Meanwhile, in the construction sector, the adoption of circular economy principles creates opportunities to transform local construction practices. The diversity of business models, scale and approaches within the proximity economy highlights its adaptability to the specific needs of different industries.

The interlinkages between the social and proximity economy are multifaceted. The social economy has a strong local dimension and, therefore, its business models often take part in the proximity economy. In particular **both concepts mutually reinforce one another**. First, the social economy businesses play a crucial role in promoting proximity and sustainable development within territories. Their strong connections to the regions they operate in provide them with a unique understanding of local needs, which drives

[27] European Commission (2024). Scoping the socio-economic performance of the EU Proximity economy. Available at: https://op.europa.eu/fr/publication-detail/-/publication/5d76c6a9-73d8-11ef-a8ba-01aa75ed71a1/language-en

[28] An example is market gardeners in Bamberg, available at: https://gaertnerstadt-bamberg.de or groontuugs initiative available at: https://openfoodnetwork.de/groontuugs/shop?locale=en_DE#/about_panel

innovation in social and environmental practices aligned with territorial development goals. This local focus not only strengthens the social framework of communities but also fosters resilient and sustainable territorial ecosystems.[29] On the other hand the proximity economy supports social economy enterprises to generate a competitive advantage, by better understanding the needs of their members, therefore providing them with a more meaningful value proposition.[30] Interesting examples include reuse and repair activities carried out by cooperatives[31] that focus on geographical proximity, or cooperatives that aim to mitigate food waste by connecting actors who have residual food resources with those who want to utilise them in durable value chains, such as the Intelligent Food cooperative[32].

[29] Enrico Letta (2024). Much more than a market, speed, security and solidarity. Available at: https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf
[30] OECD (2022). "Policy Brief on Making the most of the Social Economy's Contribution to the Circular Economy", *OECD Local Economic and Employment Development (LEED) Papers*, p. 22. Available at: https://www.oecd.org/en/publications/policy-brief-on-making-the-most-of-the-social-economy-s-contribution-to-the-circular-economy_e9eea313-en.html
[31] An example is RREUSE international network representing social enterprises active in re-use, repair and recycling. Available at: https://rreuse.org
[32] Available at: https://intelligentfood.nl

3. Green transition

3.1. The role of the proximity and social economy in the green transition

The proximity and the social economy intersect significantly within the context of the green transition. In particular, geographical proximity and collaboration are essential elements that facilitate **circular activities and the creation of shortened value chains**.[33] The role of the ecosystem in the green transition is therefore multifaced, addressing several challenges and opportunities related to environmental sustainability.

Geographical proximity-based models, which involve activities relying on the close relations between value chain actors (eg. producers and consumers) are typically marked by **reduced transportation needs and environmentally sustainable production practices.**[34] Additionally, geographical proximity is also a key enabler of industrial symbiosis, which can be defined as collaboration between different, often geographically proximate entities. Identified as a key **solution for resource efficiency and energy efficient systems**, industrial symbiosis practices are gaining attention as effective solutions for reducing waste.[35] Examples are businesses focusing on biomass waste that can be repurposed and integrated into power grids to generate energy, demonstrating the industrial symbiosis potential to optimise resource use and support sustainability.[36]

On the other hand, the social economy, with its focus on **community-driven solutions**, supports the green transition by promoting sustainable and inclusive practices. New social economy initiatives facilitate communication between producers and consumers, triggering a **new attitude towards sustainability in the whole production-consumption system**. Relevant examples are clean and shared mobility services, low carbon industrial applications, sustainable (social) housing and local renewable energy cooperatives.[37] [38]

Additionally, **social innovation** is a key component of the social economy. With its primary focus on deploying business methods to solve social or environmental problems, social enterprises apply market-based strategies to achieve social and environmental objectives.[39] Examples include social enterprises addressing the challenge of the right to repair for smartphones, by designing and producing smartphones with minimal environmental and social harm, that can be easily repaired and upgraded by user themselves.[40] Social economy businesses actively participate in **circular economy value chains**, particularly in areas like electronics and textile recycling[41]. Social enterprises also promote reuse, repair, and recycling, and making products more affordable[42].

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[33] European Commission (2024). Scoping the socio-economic performance of the EU Proximity economy. Available at: https://op.europa.eu/fr/publication-detail/-/publication/5d76c6a9-73d8-11ef-a8ba-01aa75ed71a1/language-en

[34] Urbact (2021). The power of short food supply chains: shortening distance to reduce uncertainty. Available at: https://urbact.eu/articles/power-short-food-supply-chains-shortening-distances-reduce-uncertainty

[35] Hubs4Circularity, Community of practice (2023). Manual: business models and trends for industrial symbiosis and industrial urban symbiosis.

[36] Ibid.

[37] Trinomics, Ricardo-AEA (2015). Cooperative production, financing and use of low carbon technologies. Case studies, http://trinomics.eu/wp-content/uploads/2015/06/LowCarbonConcepts.pdf.

[38] Stephanie Cesbron, Louise Evans, Neil Walmsley and James Tweed, Koen Rademaekers, Roel van der Veen, Nick Rothengatter and Jessica Yearwood (2014). Cooperative production, financing and use of low carbon technologies, Case studies.

[39] Kowalska, K., Szczygieł, E., Szyja, P., & Śliwa, R.(2022). Green skills in the field of Social Economy

[40] OECD (2022). "Policy Brief on Making the most of the Social Economy's Contribution to the Circular Economy", *OECD Local Economic and Employment Development (LEED) Papers*, p. 22. Available at: https://www.oecd.org/en/publications/policy-brief-on-making-the-most-of-the-social-economy-s-contribution-to-the-circular-economy_e9eea313-en.html

[41] European Commission (2022). Transition Pathway for the Proximity and Social Economy Ecosystem https://single-market-economy.ec.europa.eu/sectors/proximity-and-social-economy/transition-pathway_en

[42] WEF (2025). Unlocking the Social Economy: Towards Equity in the Green and Digital Transitions, Insight Report

In the context of the just transition, the social economy can also play an important role in **reskilling workers**, thus **cushioning the impact of decarbonising industries**.[43] In particular, many organisations in the proximity and social economy ecosystem are active in the field of reskilling, upskilling and facilitating access to the labour market.[44] Social economy actors contribute to reducing the carbon footprint of other industries. They play a key role in decarbonising social infrastructure like hospitals and affordable housing, enabling energy communities, and providing innovative, inclusive, and environmentally friendly transport and mobility services[45].

Additionally, **relational proximity**, namely direct relationships in terms of coordination and knowledge sharing, shapes the ecosystem around these connections. This creates **growth not solely in terms of financial capital, but also of social capital and contributing to the well-being and sustainability of our societies**.[46] For instance, new short food supply chains represent local food movements, bringing together producers, consumers and institutions. They aim to preserve 'traditional farming practices through new approaches.[47]

Through impact investing, **microfinance, and innovative financing schemes**, the social economy provides capital for green initiatives, particularly for underserved communities[48].

As more enterprises link profit with social and sustainability objectives, and the growing interest of consumers in environmentally and social sustainable services and products, there is an opportunity to increase collaboration between social economy enterprises and traditional business model, with the social economy emerging as a potential business partners.[49]

3.2. Industry efforts to green the industrial value chain

3.2.1. Taking environmental action and adopting green technologies

Proximity and social economy organisations play a vital role in addressing environmental challenges. This section explores the specific actions undertaken by them to reduce their environmental impact, highlighting the diverse strategies they employ to balance ecological responsibility. The adoption of technologies and circular business models in the proximity and social economy industrial ecosystem has been investigated by the Eurobarometer on SMEs, resource efficiency and green markets in 2024[50] and by the EMI Enterprise Survey.

In the ecosystem, **23% of organisations had a strategy in place to reduce their carbon footprint and become climate neutral or negative in 2024**, an increase from 16% in 2021.

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[43] European Commission (2021). Building an economy that works for people: an action plan for the social economy.
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[46] Antonio Lopolito, Pasquale Marcello Falcone, Edgardo Sica (2020). The role of proximity in sustainability transitions: A technological niche evolution analysis ,Research Policy, Volume 51, Issue 3,2022,104464,ISSN 0048-7333,https://doi.org/10.1016/j.respol.2021.104464.
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[48] WEF (2025). Unlocking the Social Economy: Towards Equity in the Green and Digital Transitions, Insight Report
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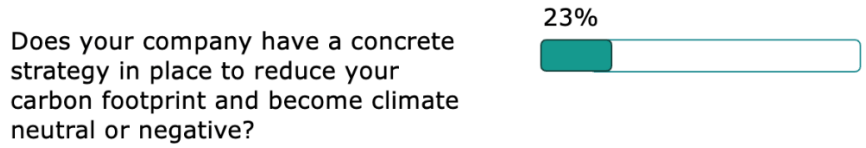
[50] https://europa.eu/eurobarometer/surveys/detail/3221

Figure 3: Share of companies in the PSE industrial ecosystem that has adopted a strategy to reduce their carbon footprint



Source: Eurobarometer survey 2024

In 2024, 73% of organisations within the PSE adopted measures to save energy, 70% implemented actions to minimise waste, and 61% took steps to *save* water, as indicated by the Eurobarometer survey results. Between 2021 and 2024, notable progress is evident in these areas, driven by two key factors: the growing pressure on the PSE to reduce their energy bills and an increasing recognition of the importance of taking action to address environmental challenges. Rising energy costs have compelled many organisations within the proximity and social economy sector to adopt more efficient practices, not only to cut expenses but also to ensure long-term operational sustainability. The most significant improvements were observed in energy conservation and waste reduction, alongside advancements in designing products that are easier to maintain. However, the least adopted measure during this period was selling residues and waste to other companies.

Figure 4: Share of companies in PSE industrial ecosystem that have undertook specific actions to become resource efficient in 2021 and 2024

Environmental measures	***Share of adoption (2021)***	***Share of adoption (2024)***
Saving energy	56%	73%
Minimising waste	61%	70%
Saving water	42%	61%
Saving materials	52%	57%
Recycling, by reusing material or waste within the company	48%	47%
Switching to greener suppliers of materials	31%	40%
Designing products that are easier to maintain, repair or reuse	19%	30%
Using predominantly renewable energy	25%	26%
Selling your residues and waste to another company	13%	23%

Source: Eurobarometer survey 2024

More specifically, 42% of organisations have implemented energy *s*aving technologies, such as energy-efficient lighting, heating, or cooling systems. These measures not only contribute to reducing the carbon footprint but also help them cut costs and improve energy efficiency. Meanwhile, 15% of social economy organisations reported adopting recycling technologies as part of their efforts to minimise waste and promote sustainability. These technologies enable the efficient processing and repurposing of materials, reducing reliance on raw resources and lowering environmental impact.

Figure 5: Share of companies in PSE industrial ecosystem that adopted a green transition technology in 2024

Green Technologies	***Share of adoption (2024)***
Energy-saving technologies	42%
Recycling technologies	15%
Advanced materials	7%
Clean production technologies	5%

Source: EMI Enterprise Survey, 2024

3.2.2. Green transition in the social economy ecosystem

As part of this study, a web crawling of company websites was conducted to gather further insights about the role of the social economy ecosystem in the green and digital transition. This approach offers two key advantages: first, it allows to leverage the vast amounts of data available across millions of existing websites; second, it provides a rich, nuanced, and up-to-date source of information about the activities undertaken by organisations. However, it is important to recognise that this analysis is inherently incomplete due to the unique characteristics of this ecosystem and the limitations of the available data. Many entities operating within the social economy, such as cooperatives, non-profits, and smaller social enterprises, may not have a strong or even existing online presence. This makes it challenging to fully capture their impact and contributions through web-based data collection alone. Additionally, this approach relies to a large extent on self-descriptions,and are not objective measurements of efforts and investments in green and digital transitions – rather, they should be taken as indications of the types of technologies and approaches that appear to be adopted in a given ecosystem.

The process of identifying social economy organisations' websites began with the collection of relevant keywords, categories, and descriptions associated with the industrial ecosystem (e.g., 'social enterprise,' 'cooperative,' or 'non-profit association'). An initial web crawl was conducted to establish a baseline of organisation websites, which underwent manual validation.

Using this validated sample, an AI-enhanced web crawling process was applied to over 35 million organisation websites, as well as additional sources such as social media and news platforms. Artificial Intelligence was employed to identify organisations likely to belong to the ecosystem. Intelligent crawling technology facilitated the identification of links within each website that were most likely to lead to related entities. The detection process underwent several iterative cycles of manual checks to improve the model's performance and produce a final list of organisations. The process also included translating websites into English. Once organisations linked to the social economy ecosystem were identified, a deep crawl of their websites was conducted to detect signals of green and digital transition. Initially, AI was used to identify these signals based on a predefined list of topics (e.g., 'civic tech' or 'biodiversity'). Feedback on these signals was incorporated into the training of a model, enabling it to detect additional indications of digital or green transition. This iterative process, combined with manual checks, improved the accuracy and quality of predictions.

When it comes to the type of entity, the majority are evenly distributed among non-profit organisations (24%), associations (23%), public benefit associations (22%). A smaller percentage, around 15% are mutuals, while cooperatives account for 14%.

Figure 6: Type of social economy organisations captured

Source: Technopolis Group 2024 based on glass.AI search

Regarding the topics dealt by these entities, the analysis revealed a multifaceted approach to social change within the ecosystem. In particular, **in the majority of the website scraped there is a strong emphasis on sustainability, education and community engagement**, which highlights a proactive response from social entities to pressing societal issues, such as climate change and social inequalities. In addition, the presence of diverse themes highlights the increase recognition from social economy entities of the interconnectedness of various social challenges.

The results of the analysis shows that 14.3% of the websites referred to green technologies.

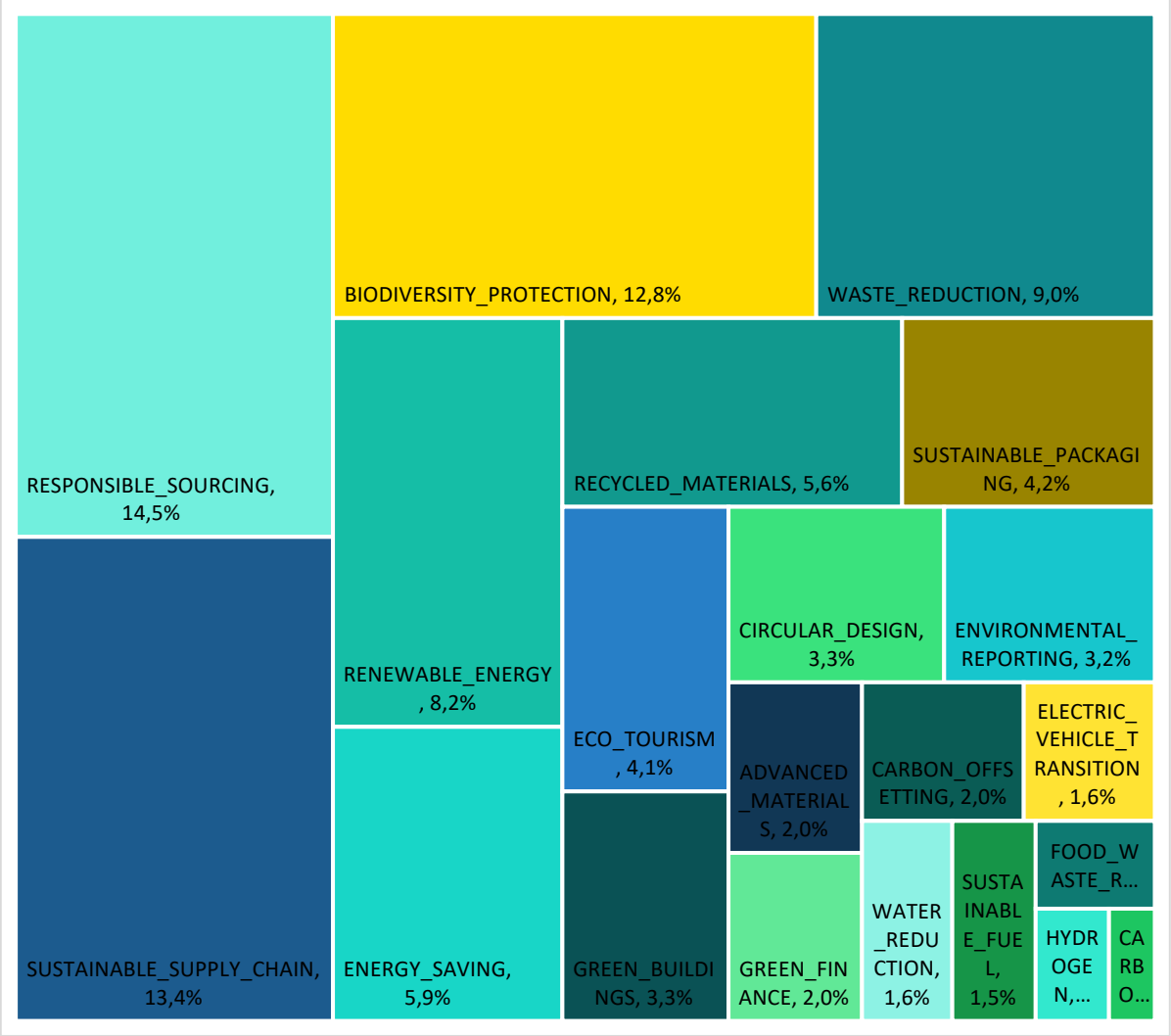
- **Sustainability and environment** were the most mentioned topics with 471 mentions, indicating a strong commitment among social entities to promote eco-friendly practices and environmental awareness.
- **Education and empowerment**- related topics were also mentioned in many websites, such as youth empowerment (320 mentions), training (225 mentions) and peer support (471).
- Additionally, topics such as **community and social services** were also highly mentioned together with child welfare (241 mentions), youth support (165 mentions).
- Lastly **health and disability support** also represented a relevant share of topic mentioned, in particular, disability advocacy (216 mentions), elderly care (192 mentions) and health care (171 mentions).

Concerning the green transition, the most frequent topics on websites were:

- responsible sourcing (22%) (that links also to the use of recycled materials)
- energy efficiency (9%)
- sustainable materials (7%)
- sustainable agriculture (6.8%),
- renewable energy (6.7%),

- circular economy (6.1%),
- sustainable consumption (5.8%).

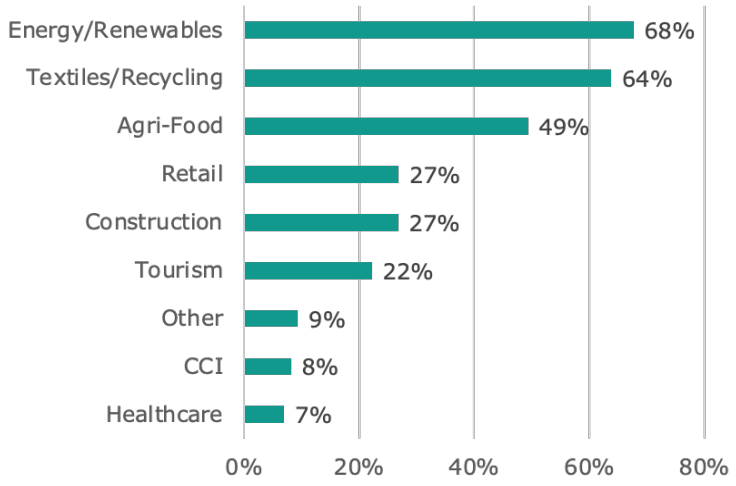
Figure 7: Overview of most recurrent topics of social economy organisation websites



Source: Technopolis Group 2024 based on glass.AI search

Among organisations focusing on specific industries, it is unsurprising that energy/renewables and textiles/recycling have the highest proportion referencing green technologies and environmental actions. These are followed by the agri-food, retail, and construction sectors. Many cooperatives are involved in organic farming, local food distribution, and fair-trade practices, which align with the principles of sustainability. Retail initiatives also play a significant role, with organisations increasingly adopting eco-friendly practices, such as reducing packaging waste, *tackling food waste,* sourcing sustainable products, and implementing ethical supply chains. The construction sector, while traditionally resource-intensive, is progressively integrating green technologies. Social economy organisations in this field contribute by promoting energy-efficient designs, using sustainable materials, and advocating for affordable, environmentally friendly housing solutions. Unsurprisingly, healthcare has the lowest share.

Figure 8: Share of social economy organisations that refer to green transition technologies and actions on their website



Source: Technopolis Group 2024 based on glass.AI search

3.2.3. Social economy startups working on the green transition

In the wake of rising environmental challenges and the pressing demand for sustainable solutions, **startups focusing on environmental sustainability are rapidly becoming a significant force in entrepreneurship**. According to the Regions Alliance for Interconnected Startups Ecosystems (RAISE Project), key trends among innovative ventures include the growth of multidisciplinary companies, the involvement of diverse professionals profiles, the replicability of their business models across different markets, and an emphasis on social networks and platform-based business models.[51] In this section, progress of the social economy towards the twin transition has been captured by analysing the Crunchbase[52] and Net Zero Insights[53] data sources (no data is available from these data sources, nor from comparable ones, for the proximity economy). The analysis captures more than 2 000 innovative social startups founded after 2015 that aim at creating a positive impact for the society. These companies address social innovation and social entrepreneurship.

The analysis highlights a diverse range of approaches within the social economy to address the green transition. Many companies are combining their social mission with environmental goals, highlighting the interconnectedness of these challenges. The most common environmental objectives these companies address include:

- **Climate change mitigation**: 40% of the green transition related social startups directly target climate change by reducing greenhouse gas emissions through activities such as developing renewable energy solutions, promoting sustainable transportation, facilitating carbon offsetting, and supporting sustainable agriculture and forestry.
- **Circular Economy**: 24% are working towards establishing circular economy models. This includes promoting reuse and recycling, reducing waste, and developing sustainable materials and production processes.
- **Sustainable consumption and production**: 15% of the companies encourage sustainable consumer choices and responsible business practices. They promote

[51] RAISE project (2024). The rise of green start-ups: entrepreneurship at the forefront of sustainability. Available at: https://theraise.eu/startup-news/the-rise-of-green-startups-entrepreneurship-at-the-forefront-of-sustainability/
[52] https://www.crunchbase.com/.
[53] https://netzeroinsights.com/.

sustainable products and services, raise consumer awareness, and implement sustainable supply chains.

- **Conservation and Biodiversity**: 7% of the companies specifically focus on protecting biodiversity and natural resources. This includes initiatives such as reforestation, marine conservation, and sustainable agriculture practices.

Social startups are leveraging digital technologies to create positive social and environmental impact. Numerous companies are using technology to improve access to financial services, promote financial inclusion, and support sustainable finance.

- **Artificial Intelligence:** Several companies utilise AI, machine learning, and data analytics to address social and environmental challenges. They apply these technologies for impact measurement and reporting, sustainable development initiatives, and improving healthcare services.
- **Platform Development**: Many companies have developed digital platforms to connect communities, facilitate social action, and promote sustainable practices. Examples include platforms for social impact initiatives and supporting content creators.

The following examples showcase how **social economy and proximity organisations with a green business model** are part of the green transition.

Box 1: Examples of social economy and proximity organisations with a green business model

Product as a service: business models where consumers pay for access to a service provided by a product, rather than buying and owning the product itself. For example, *Fairphone*[54] is an Amsterdam based social enterprise established with the purpose of creating a viable market for ethical electronics. Fairphone challenges the traditional smartphone models by promoting longer-lasting designs and long-term software support, aiming for a lifespan of 8 to 10 years for the Fairphone 5. Their modular design simplifies repairs and upgrades, making it more environmentally friendly to fix devices rather than replace them. Additionally, it encourages DIY repairs by offering affordable spare parts, free repair guides, a five-year warranty, and community support. Users can also take their phones to any repair shop without restrictions. In 2023 100,107 Fairphones were sold, in Germany, France and Netherlands. *MIWA*[55] start-up in Czech Republic having set up a reusable cup system that encourage returns. These reusable cups connect with specially designed capsules that are optimised for packing, shipping, and retail display. Each capsule contains a chip that provides detailed information about the product, including its type, expiration date, source, nutritional content, and even recipes, all accessible online.

Re-use: business models that prioritise extending product lifespans through repair and remanufacturing are increasingly becoming popular. For example, community-driven initiatives, such as Repair Cafés bring together volunteers to help repair various items, promoting hands-on repair in local settings. Organisations like *Cyclup* in Brussels[56] focus on the collection, repair, reuse, and recycling of items like textiles and electronics. Similarly, *Roetz-Bikes*, a Netherlands-based startup, focuses on remanufacturing bicycles, reusing 70% of original materials.[57] Milan's *Lab Barona*, the city's first repair café in Milan, offers repair, recycling and upcycling services to extend product use further[58] *DiFoLD*[59] is another innovative example, producing Origami Bottle, a small collapsible bottle for humans. Their drinkware and foodware aim to replace single-use packaging with reusable, space-saving alternatives. Lastly, *BatiTerre*[60] is a Belgian cooperative focusing on circular

[54] https://www.fairphone.com/nl
[55] https://www.miwa.eu/
[56] https://cpasbxl.brussels/?p=91
[57] https://roetz-bikes.com/
[58] https://www.villaggiobarona.it/servizio/lab-barona-repair-cafe-milano2035/
[59] https://difold.com/?srsltid=AfmBOorfbpn2pkPPelapFHMqF50Fq5prBKTESvBNTGTezVxM-qetBxmZ
[60] https://batiterre.be/

construction, specialising in the recovery and reuse of construction materials through selective dismantling

Recycling and sorting: Business models that provide services for waste collection, sorting, and processing. For example, *Atelier Riforma*[61] promotes the utilisation of post- and pre-consumer textile waste as a secondary raw material, with the objective of extending the lifespan of garments. Leveraging the use of AI-based solution that functions as a B2B-type digital marketplace, it allows for cataloguing and digitalising textile waste in an automatic way. *Sociallgreen*[62] is a Greek tech startup that develops a concept for a new recycling approach for smart cities. Sociallgreen's approach integrates game logic and social network theories to enable a unique physical recycling game. Another start-up focusing on recycling is *ECO BTP Environnement*[63]. The company has moved towards the sorting of building waste, in order to promote recycling. Another interesting example is the Estonian start-up, Wastelocker[64], which provides a personalised approached for informed and efficient in house waste management. By using AI, it provides waste mapping technology that improves waste collection and management efficiency. This tool monitors waste types and volumes in containers to optimise sorting and reduce unnecessary truck routes, enhancing logistics and waste separation.

Local production and consumption: business models that are focusing on relocating production closer to consumers. As an example, emerging alternative food networks are initiatives done by social entities promoting higher level of proximity between places and actors of production and consumption.[65] The *French associations AMAP* (Associations pour le Maintien de agriculture Paysanne)[66] connect consumers directly with food producers to provide access to fresh, seasonal produce while ensuring a stable income for the producers. This is achieved through contractual agreements between consumers and producers, resulting in regular deliveries of fresh, locally grown products. AMAP focuses on local production to encourage direct interactions between producers and consumers, minimizing the disconnect often created by intermediaries. *Infarm*[67] builds and distributes efficient vertical farms throughout cities. Infarm is a berlin-based start-up combining efficient vertical farms with IoT technologies and Machine Learning, to offer an alternative food system that is resilient, transparent, and affordable. The company distributes its smart modular farms throughout the urban environment to grow fresh produce for the city's inhabitants. *Deliveristo*[68] is a B2B Foodtech marketplace and delivery platform which allows chefs and restaurant owners to digitally organise their orders directly from farmers and distributors. A local consumption initiative is *La ruche qui dit oui*[69], which connects consumers and proximity producers.

Recovery: business models that are centered on recovering waste. For example, the Belgian cooperative *Coopeos* converts local wood waste into efficient fuel for heating schools and public buildings. Since its inception in 2015, Coopeos has established 19 wood-fuel furnaces, replacing one million liters of oil annually with wood waste. *Foodcloud* an Irish start-up[70] linking business with surplus of food to charities and community groups tackling food waste and hunger. Specialising in food waste valorisation, the start-up *Hubcycle*[71] aims at repurposing plant-based waste from industries to create raw materials

[61] https://atelier-riforma.it/
[62] http://sociallgreen.com/#/mobileapp
[63] http://www.ecobtp-envt.fr
[64] https://www.wastelocker.com/
[65] Benedetti, Araldi (2024). Spatial Proximity in 'local' Alternative Food Networks: a case study of AMAP in France.
[66] https://www.ess-europe.eu/fr/bonnepratique/association-pour-le-maintien-dune-agriculture-paysanne
[67] https://www.infarm.com/
[68] https://www.deliveristo.com/
[69] https://laruchequiditoui.be/fr-BE
[70] https://food.cloud/about
[71] https://www.hubcycled.com/

for food and personal care products. In particular, by converting food by-products into new ingredients to reduce waste in the food production chain.

Sharing and collaborative economy: business models facilitating peer-to-peer exchanges, often through digital platforms, promoting resource pooling which can lead to environmental benefits by decreasing the need for manufactured goods. For example, *Fairmondo*[72], a German cooperative marketplace, promotes sustainable products by charging lower commissions for vendors of fair and sustainable goods. Similarly, the *Mobility Factory*[73], a car-sharing platform founded in 2018 by three cooperatives, supports electric car-sharing initiatives across several European countries. The *RREUSE* network represents social enterprises active in the circular economy. Overall, RREUSE represents 850 social enterprises handling 1 million tonnes of goods and materials annually in textiles, furniture and electronics, construction materials, food distribution and composting. RREUSE members also encourage citizen engagement in the circular economy through awareness-raising campaigns on sustainable lifestyles, educational events on lowering consumption levels, and workshops on repair and upcycling.[74]

Impact Investing: A growing number of companies are focused on supporting businesses and initiatives with a positive social or environmental impact through impact investing. These include firms such as *leonardo, Wequity, uPledge, and eevie*.

3.2.4. Startups focusing on proximity

When considering the digital transition within proximity economy, the picture is even more diverse, depending on the sub-industry in which they operate. Taking into account the short value chain aspect of the proximity economy, digital tools, such as platform and mobile apps are used to narrow the gap between producers and users, for example in tourism and retail, while more advanced technologies appears to be in sectors such as energy, agri-food ecosystems.

Collecting data on startup creation provides insight into the novel business models being generated related to the proximity industrial ecosystem. Given the ecosystem's heterogeneity in business types and models, the team focused on a specific subdomain of the proximity economy, trying to shed light on one key dimension of proximity, namely local production and consumption, including urban farming, and short value chains. This targeted approach aimed at gathering additional insights on the number of active companies, their focus areas and private investments channelled, highlighting trends and key technologies in use. Rather than offering a comprehensive overview of the entire proximity ecosystem, the analysis seeks to capture interesting dynamics within this specific subdomain.

The analysis of startup generation has been compiled through a database encompassing Crunchbase and Net Zero Insights[75] data. Key words were identified to capture the short value chain and local production and consumption dimension. In particular, the team performed a search using the following keywords "locavore", "short value chain", "local consumption", "farm-to-table", "farm to table", "producer to consumer", "producer-to-consumer", "local food system" and "local value chain"

The keyword search revealed a total number 68 (out of which 48 funded after 2010) companies funded of European companies active within the specific subdomain. Concerning the aggregated annual creation of startup companies, the figure below shows that over the years there has been a growing number of companies active in this domain.

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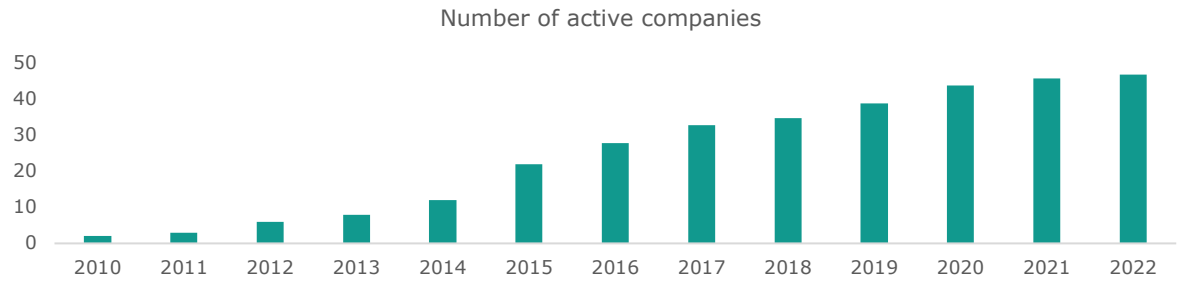
[72] https://geo.coop/articles/fairmondo-cooperatively-owned-online-marketplace
[73] https://themobilityfactory.coop/
[74] OECD, 2022, Policy brief on making the most of the social economy's contribution to the circular economy, https://www.oecd-ilibrary.org/docserver/e9eea313-en.pdf?expires=1660833787&id=id&accname=guest&checksum=33DE17BE65E80D6C81FAD540EFE82E64.
[75] www.crunchbase.com and https://netzeroinsights.com/

Figure 9: Number of active startups focusing on local consumption, production and short value chains

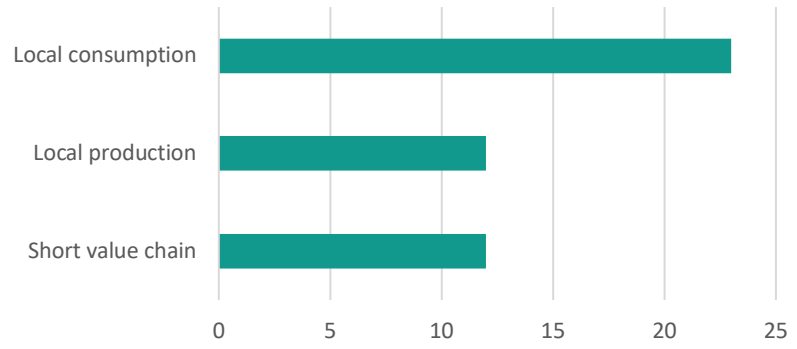


Source: Technopolis Group 2024 based on Crunchbase

Many of the start-ups captured by the analysis showed a strong focus on **agriculture, in particular agri-tech and farming**, with 34 start-ups dedicated to these topics, highlighting the relevance of food production, farming innovation, and agricultural technology when it comes to short value chains and local production and consumption. Several start-ups' focus was also on **food and beverages** (23 start-ups), encompassing related fields such as food processing, organic food, and niche markets like craft beer. Additionally, **e-commerce, marketplaces, and retail** collectively appeared 21 times, indicating the importance of online platforms and retail spaces within the ecosystem. For startups centered on **local consumption services**, the primary focus was on delivery (including food delivery), grocery, and other local services, which featured 10 times overall. There is also notable activity in **supply chain management and logistics**, with 7 startups in this sub-domains, while **manufacturing** was mentioned by 6 startups. When it comes to digital technologies, the Internet of Things (IoT) and related tools are core to the business models of five startups, with **Artificial Intelligence and Machine Learning** mentioned by three startups. Additionally, **green and clean technologies and sustainability**, considered the main focus of 5 start-ups, suggesting a growing commitment to sustainable practices. Other areas, such tourism (3 entries), and healthcare and pharmaceutical (1 entry) also featured but with less frequency, showcasing a more specialised focus.

A clustering exercise was performed in order to group start-ups into three main categories, local consumption, local production (mostly represented by urban farming) and short value chains. The figure below shows the distribution of start-up as of 2010, in terms of local consumption (23 companies), local production (12 companies), short value chain (12 companies).

Figure 10: Distribution of start-up concerning local consumption and production and short value chains



Source: Technopolis Group 2024 based on Crunchbase

Concerning the first grouping, a brief overview of startups focusing their business model on **incentivising the consumption of local products or services** is presented below.

Box 2: Startups focusing on local products and services

Local marketplaces: *Cortilia*[76] is a grocery delivery company that connects consumers directly with local farmers, creating a sustainable model that supports the local economy. By aggregating farmers in virtual markets, Cortilia ensures that fresh produce is delivered swiftly, guaranteeing quality while minimizing waste. La *Ruche qui dit Oui*[77] similarly emphasises direct consumer-to-producer connections, offering an online platform where customers can collectively order from nearby farmers. This "online food co-op" enables consumers to form communities, or "hives," that trigger an order when a set quantity is reached, directly supporting local farmers and promoting sustainable practices. *Foodscovery*[78], an online market for regional and artisanal products, enables customers to order local specialties, directly sourced from small farmers, fishermen, and producers with deep ties to local traditions.

Farm-to-Table: *Groots*[79] is a urban farming company based in Spain, operating one of the first large-scale vertical farms in the region. By using highly controlled environments, Groots maximizes productivity—up to 40 times more productive than traditional agriculture per square meter—and reduces water use by 90%, with no need for pesticides. *InstaGreen*[80], another urban farming solution, grows fresh vegetables and herbs within city centers using hydroponic systems. These urban farms provide chefs and consumers with the freshest produce while reducing food miles and enhancing sustainability. *FreshStuff*[81], a German startup, connects regional food producers directly with conscious consumers through a mobile app that incorporates marketing, payment, and direct communication. *Luraki*[82]'s platform, which helps consumers discover and purchase local produce, uses mobile technology to streamline communication between farmers and customers, creating a community-centric approach that prioritizes local sourcing.*BAPBAP*, a Paris-based craft brewery, specialises in the production and sale of local beers, with an emphasis on authenticity and community connection. *Mylla*[83], a digital farm-to-table marketplace, serves as a platform where individuals and businesses can buy and sell food directly from producers, helping farmers reach a wider audience and promoting the farm-to-table movement. *CrowdFarming*[84] is redefining the food supply chain by creating a direct connection between consumers and producers, allowing consumers to support farmers directly. This model enhances transparency and promotes a closer relationship between producers and end customers, encouraging local agriculture and reducing intermediaries.

Supply chain and logistics: *FreshIndex*[85] has developed an automated, cloud-based solution that tracks food storage conditions from farm to fork. The technology aggregates complex data to provide real-time shelf-life indicators, helping wholesalers and retailers ensure quality, transparency, and cost efficiency throughout the food supply chain. *Local Food Nodes* [86]also focuses on food transparency, providing a digital platform where local producers can connect directly with consumers. This system supports local agriculture by allowing customers to order directly from farmers and collect their food on-site.

[76] www.cortilia.it
[77] www.laruchequiditoui.fr/
[78] https://www.fooddiscoveryapp.com/
[79] https://www.groots.eco/?lang=en
[80] https://instagreen.eu/
[81] https://freshstuff.io/en/home
[82] https://www.bapbap.paris/
[83] https://mylla.se/
[84] https://www.crowdfarming.com/en
[85] https://freshindex.eu/
[86] https://localfoodnodes.org/en

Fashion and retail: *Choose*[87] is an online marketplace focused on daily private sales for fashion and lifestyle brands, promoting brands with strong environmental and ethical commitments.

Technology and software solutions: *Venios GmbH* [88]specialises in software solutions for the energy sector. Their Venios Energy Platform (VEP) leverages big data and GIS technology to provide real-time analysis of electrical systems, allowing for efficient energy management and planning.

Tourism and event management: *Green Fashion Tours* [89]offers sustainable fashion-focused tours throughout Berlin, educating participants on the social and environmental impacts of the fashion industry. By leading tours through eco-friendly fashion spots and upcycling design hubs, Green Fashion Tours promotes ethical consumption and showcases innovative, sustainable business models. *Why Not Us*[90], an event management company, specialises in organizing local festivals and corporate events, using its platform to connect communities and promote local production. *Green Habitat*[91] takes a different approach by promoting sustainable travel and farm-to-table dining experiences in collaboration with hotels. Their platform enables travelers to enjoy local, sustainably sourced food during their stay, blending tourism with environmental responsibility. This concept not only supports local food systems but also aligns with the growing demand for eco-conscious travel options.

Concerning startups focusing on **local production**, an overview of the results is provided in the text below.

Box 3: Startups focusing on local production

Vertical farming and indoor agriculture: *Infarm*[92] focuses on urban agriculture by designing efficient vertical farms that integrate IoT and Machine Learning technology, allowing for resilient, transparent, and affordable local food production. By distributing smart modular farms throughout urban centers, Infarm brings fresh produce directly to city dwellers, reducing the environmental impact of long supply chains. Similarly, *Agricool* [93]redefines urban farming by transforming recycled shipping containers into high-yield urban farms. *SweGreen*[94], a leading AgTech company based in Sweden, has developed an InStore vertical farming system that enables hyper-local production within supermarkets, hotels, and restaurants. Their AI-driven Farming as a Service (FaaS) model uses advanced cloud-based monitoring and automation, creating a circular, sustainable system that provides fresh greens directly to consumers with minimal resource use. *Agripolis*[95], an urban farming pioneer, takes a similar approach by designing and operating rooftop farms that allow for fresh vegetable and fruit production right in the heart of urban environments. These rooftop installations support local food production while transforming unused city spaces into productive agricultural areas.

Technology-enhanced farming Platforms: *Hexagro*[96] introduces modular vertical gardens equipped with IoT software to create an urban farming platform accessible to anyone. This modular system enables users to grow healthy food locally, supported by a digital farming community. Hexagro's platform is part of a broader movement to decentralise food production, making it possible for individuals to participate in urban

[87] https://www.appchoose.io/
[88] https://venios.de/en/
[89] https://cosh.eco/en/cosh-services
[90] https://why-not.us/
[91] https://www.greenhabitat.at/
[92] https://www.infarm.com/
[93] https://www.crunchbase.com/organization/agricool
[94] https://www.swegreen.com/
[95] https://agripolis.eu/
[96] https://www.hexagro.io/

agriculture. *Véritable*[97] offers another innovative solution in urban farming, allowing consumers to cultivate herbs, edible flowers, and vegetables right in their kitchens. Their indoor vegetable gardens make urban farming accessible to city dwellers, adding freshness and flavour to home-cooked meals. *Urban Cuisine* [98]provides interconnected indoor gardens designed to grow fruits, vegetables, and herbs indoors, bridging agriculture and home design. This indoor farming system encourages fresh produce cultivation in urban homes and workplaces, reducing the carbon footprint associated with traditional supply chains. Meanwhile, *vGreens*[99] has developed automated, software-driven indoor vertical farms that enable sustainable fruit production year-round. By reducing CO_2 emissions by up to 90% and eliminating the need for pesticides, vGreens' technology-driven farms provide a sustainable alternative to conventional farming, addressing both food availability and environmental impact.

Innovative urban agriculture models: *Agricoltura 2.0*[100] represents another forward-thinking approach, incorporating hydroponic and aquaponic systems for soilless indoor cultivation. By using vertical towers and multi-tiered shelving, ImpattoZero's system maximises urban space and minimises water use. The closed-loop design, where fish waste fertilises plants and plants purify water, highlights their commitment to resource efficiency and sustainable agriculture practices.

Environmental and sustainable agriculture solutions: *Eatour*[101] is an agro-production company dedicated to sustainability and fighting climate change. Through a combination of training programs, agro services, and urban farming solutions, Eatour promotes agricultural practices that align with environmental stewardship. Their initiatives emphasise climate resilience and sustainable food systems, addressing the need for agricultural practices that support both human and planetary health.

Manufacturing and sustainable production: *Make ICI*[102] provides factory and workshop space for artists, artisans, and entrepreneurs, fostering local production and skill development. *The Industry*[103], another company in sustainable manufacturing, produces large-scale industrial 3D printed parts from recycled and bio-based materials. Their services offer fast, eco-friendly production methods that contribute to reducing carbon emissions.

Concerning startups focusing on **short-value chain**, an overview of the results is provided in the text below.

Box 4: Startups focusing on short value chains

B2B and digital marketplaces: In the B2B space, the *Foodtech*[104] marketplace streamlines the ordering process for chefs and restaurant owners in the hospitality industry (Ho.Re.Ca.), enabling them to connect with farmers and suppliers directly. This digital platform helps restaurants to access fresh, locally sourced ingredients more easily, reducing their dependency on traditional distribution channels and supporting sustainable sourcing practices. *AgriVector*[105] also brings innovative solutions to the marketplace by connecting farmers directly with retailers and service providers. This platform allows farmers to create their own digital presence, where they can showcase their produce, set prices, and negotiate directly with buyers. By democratizing the fresh produce trade, AgriVector reduces the number of intermediaries and empowers farmers

[97] https://www.veritable-potager.fr/en/
[98] https://urbancuisine.io/en-en
[99] https://v-greens.com/
[100] https://www.agricoltura2punto0.it/
[101] https://www.eatour.it/
[102] https://makeici.org/
[103] https://the-industry.se/
[104] https://te-food.com/
[105] https://agrivector.ro/acasa

to retain more profits, while also offering transparency to buyers who prefer locally grown produce.

Sustainable and innovative food delivery: *Culinaries*[106] provides gourmet food delivery services, delivering artisanal products like locally bred meats, cheeses, and freshly caught seafood directly from producers to consumers. By sourcing directly from regional producers. *Markta*[107], another food delivery platform, focuses on sustainability by delivering regional products packaged with eco-friendly materials like sheep's wool insulation, preserving freshness while minimising environmental impact.

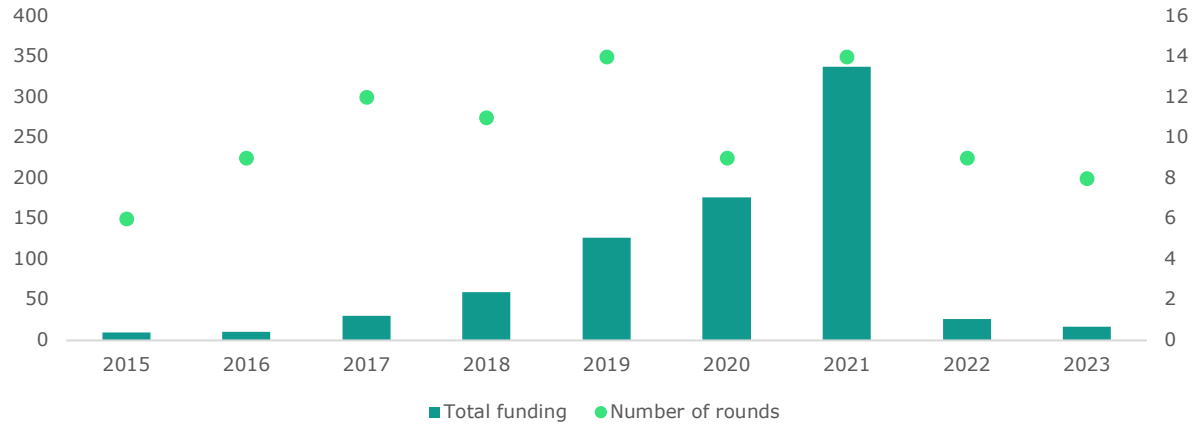
Alternative proteins and sustainable agriculture solutions: *Invers*[108] is pioneering the production of insect proteins for animal feed, establishing a comprehensive production model that creates a sustainable alternative protein source for the agricultural sector. *Adopt Me* [109]adds a unique twist to the agricultural sector by allowing users to adopt an olive tree, promoting sustainable practices and supporting a short supply chain.

Sustainable packaging and materials: *Bio-lutions* [110]offers an innovative solution for sustainable packaging and disposable tableware by utilising agricultural residues. By creating eco-friendly packaging materials from local agricultural by-products, BIO-LUTIONS minimises the need for plastic and cellulose-based products, promoting sustainability in everyday use. Their model supports local economies, reduces reliance on international transport, and provides a more sustainable alternative to conventional packaging, making a significant impact on reducing waste in the food industry.

3.2.5. Private investments into proximity startups

The Figure below illustrates venture capital investments in young companies focused on business models related to local consumption and short value chains, for the period 2015 to 2023. Over this period, there was a global increase in both the number of funding rounds and the total volume of funding. Investment activity reached a peak in 2021, with a total of EUR 337 m invested. However, a noticeable downturn followed in 2022 and 2023.

Figure 11: Venture capital funding into proximity young companies (founded after 2000)



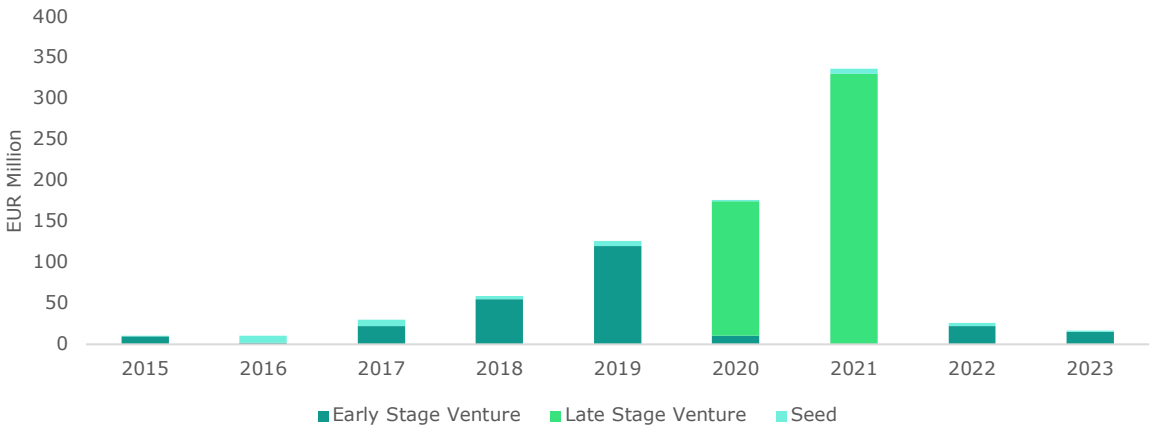
Source: Technopolis Group 2024 based on Crunchbase

[106] https://culinaries.fr/
[107] https://www.markta.at/
[108] https://invers-groupe.fr/en/
[109] https://www.adoptmeitaly.it/
[110] https://www.bio-lutions.com/

An analysis of the different funding stages highlights distinct market trends, with late-stage funding rounds serving as the primary drivers of the notable peaks in 2020 and 2021. These surges were largely driven by three significant funding rounds by Infarm, which secured a total of EUR 164 m in 2020 and EUR 291 m in 2021.

When looking at early venture capital and seed funding, both the number of funding rounds and the volume of funding increased from 2015 to 2019, followed by a decreased from 2020 onwards. In contrast, early venture capital and seed funding show a different pattern. Both the number of funding rounds and the total funding volume increased steadily from 2015 to 2019 but declined from 2020 onward.

Figure 12: Venture capital investments stages into proximity young companies



Source: Technopolis Group 2024 based on Crunchbase

Notable young companies included in the Crunchbase and NetZero Insights dataset offer further insights into the sector:

- **Agripolis** is an urban farming company that designs, builds, and operates rooftop gardens in cities to produce fresh vegetables and fruits. Founded in 2015,Agripolis has raised a total of EUR 37 million through four funding rounds, from Pre-seed (2015) to Series B (2018).
- **Cortilia** is a grocery delivery company specializing in products sourced directly from local farmers. To date, it has raised EUR 59 million across seven funding rounds.

3.3. Skills demand for the green transition

Achieving the green transition is a significant skills challenge for social enterprises. This challenge arises from a gap between the skills needed to implement sustainable practices and the skills currently possessed by the workforce, including social entrepreneurs and employees[111].

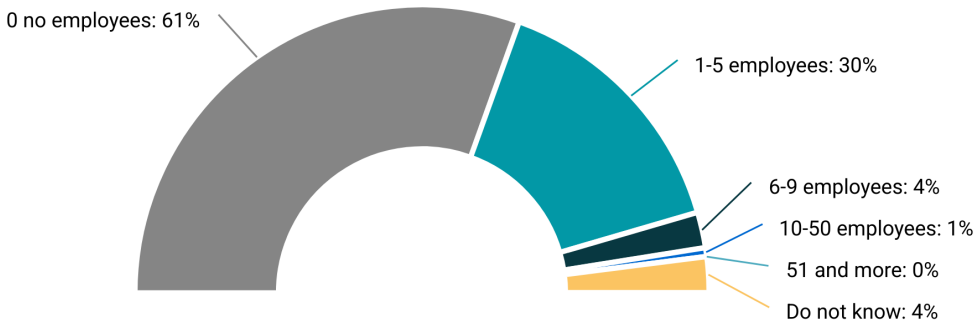
Skills shortages for social economy organisations are pertinent in specific green skills crucial for certain value chains[112]. This indicates a need for targeted training and upskilling programmes to equip the workforce with these in-demand skills. The shortages often impact industries central to the green transition, such as renewable energy, circular economy initiatives, sustainable agriculture, and eco-friendly construction. In the renewable energy sector, for instance, social economy organisations face challenges in sourcing skilled professionals for specific energy-efficient technologies and maintenance.

[111] European Commission (2022). Transition Pathway for the Proximity and Social Economy Ecosystem https://single-market-economy.ec.europa.eu/sectors/proximity-and-social-economy/transition-pathway_en
[112] Ibid

Similarly, in the textiles industries, organisations require expertise in sustainable material development, waste management, and innovative recycling technologies, which are often in short supply. Agricultural cooperatives aiming to implement sustainable farming practices encounter gaps in skills related to organic farming, precision agriculture, and biodiversity preservation. In construction, the need for professionals with expertise in green building materials, energy-efficient designs, and retrofitting for sustainability is growing rapidly. Social entrepreneurs themselves often require training in technical and operational skills to effectively develop and manage new green activities. This includes understanding new technologies, implementing sustainable business models, and measuring environmental impact.

The **Eurobarometer 2024 indicates that organisations in the PSE industrial ecosystem employed in general 2.7 full time employees in green jobs some or all of their time**[113] **which is very close to values in 2021**. 61% indicated that they do not employ any professionals in green jobs and 30% of the companies have 1-5 employees only. In addition, the EMI Survey 2024 found that **19% of social economy organisations created new positions or job titles dedicated to environmental sustainability** over the past five years.

Figure 13: Number of full time employees that work in green jobs some or all of the time in the PSE ecosystem in the EU27 in 2024



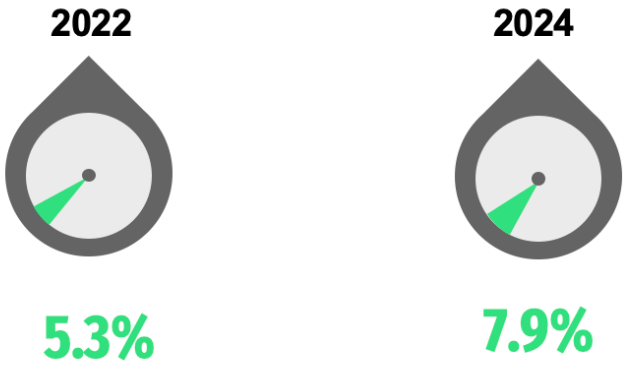
Source: Eurobarometer 2024

To further examine the supply of skilled professionals relevant to the green transition in the social economy, data from LinkedIn has been employed. LinkedIn, being the largest professional networking platform, offers rich information such as profile summaries, job titles, job descriptions, and fields of study, which can aid in identifying professionals with skills pertinent to the green transition. Green transition skills have been defined as "*the knowledge, abilities, values and attitudes needed to live in, develop and support a sustainable and resource-efficient society*". Green skills are related to environmental protection, environmental services, resource efficiency, biodiversity, low carbon technologies, renewable energy, the circular economy, waste management, management of food waste, and clean production technologies and business models related skills.

The share of professionals registered on LinkedIn and employed in the PSE industrial ecosystem (including non-profit organisations and civil and social economy organisations as defined on the platform) with skills relevant to the green transition reached 7.9% in 2024, showing an increase from 2022 (see Figure below). This growth reflects the evolving demands in the ecosystem and also indicates a growing recognition of the importance of green skills among both individuals and organisations.

[113] Eurobarometer survey 2024

Figure 14: Share of professionals in PSE with skills relevant for the green transition in the EU27



Source: Technopolis Group based on LinkedIn

4. Digital transition

4.1. The role of proximity and social economy in the digital transition

The proximity and social economy has been recognised as an important ecosystem for the digital transition, particularly in advancing digital inclusion and uptake of digital technologies to achieve the goals outlined in the European 2030 Digital Compass[114] and the Social Economy Action Plan[115]. As part of this effort, strengthening the digital capabilities of SMEs within the social economy has been acknowledged as a key need.[116] The contribution of the social economy is widely recognised in accelerating a fair and inclusive green and digital transition of the European economy, with organisations often being locally rooted, boosting local development, strategic autonomy, and resilience.[117]

The role of the ecosystem is to amplify the impact of digital transition efforts, by supporting their members, users and stakeholders driving the digital social innovation.[118] In particular, the proximity and social ecosystem can promote the development of digital solutions, tailored to social, societal and environmental challenges by fostering knowledge transfer and cooperation among entities.[119] When it comes to the proximity economy, digital technologies, such as mobile apps and platforms, support proximity organisations to connect producers directly with consumers, reducing intermediaries and optimising supply chains. For example, in the tourism and retail ecosystems, digital tools help shortening the distance between producers and users, while in energy and agri-food ecosystem, advanced technologies enable more efficient and sustainable resource management.

The social economy also plays a crucial role in fostering community engagement via digital platforms. For instance, local exchange trading systems operating via open-source digital platform bring citizens together, engaging them in alternative economic activities. As an example, the Local Alternative Unit, called TEM is a local exchange trading system popular in Magnesia, Greece.[120] In this context, digital platform cooperatives, which are worker-controlled digital labour platforms, exemplify how digital technologies can be aligned with social economy principles, member's ownership and democratic governance. Furthermore, digital platforms have also the potential to enhance the capacity of the social economy to adapt by providing access to digital skills training of workers and disadvantage people also in remote areas. Additionally, they facilitate proximity economy to connect around communal projects and offer better engagement models.[121]

Social enterprises and cooperatives play a pivotal role in fostering equity during the digital transition by driving inclusive innovation[122]. The social economy can advocate for policies that support its digital transformation, including funding for digital

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[114] European Commission (2021). Communication 2030 Digital Compass - the European way for the Digital Decade: skills, infrastructures, business and public services.
[115] European Commission (2021). Communication on Building an economy that works for people: an action plan for the social economy.
[116] European Commission (2021). Scenarios towards co-creation of a transition pathway for a more resilient, sustainable and digital Proximity and Social Economy industrial ecosystem, SWD(2021) 982 final.
[117] Social Economy Europe (SEE) (2022). Towards a Council Recommendation on developing social economy framework conditions, Social Economy Europe contribution to the EC call for evidence Brussels, 29 September 2022.
[118] European Commission (2021). Communication on Building an economy that works for people: an action plan for the social economy.
[119] OECD (2022). "Policy Brief on Making the most of the Social Economy's Contribution to the Circular Economy", *OECD Local Economic and Employment Development (LEED) Papers*, p. 22. Available at: https://www.oecd.org/en/publications/policy-brief-on-making-the-most-of-the-social-economy-s-contribution-to-the-circular-economy_e9eea313-en.html
[120] For more info: https://www.tem-magnisia.gr/
[121] European Commission (2021). SWD, Scenarios towards co-creation of a transition pathway for a more resilient, sustainable and digital Proximity and Social Economy industrial ecosystem.
[122] World Economic Forum (2025). Unlocking the Social Economy: Towards Equity in the Green and Digital Transitions

innovation projects, skills development programmes, promoting a fair and inclusive digital economy[123]. They work to ensure that the benefits of digital technologies are accessible to all, especially marginalised and underserved communities. These organisations focus on enhancing affordability and accessibility, making digital tools and services more available to people who might otherwise be excluded from the digital economy. Moreover, social enterprises and cooperatives contribute to job creation, particularly by providing training and employment opportunities in digital sectors for those from disadvantaged backgrounds. By emphasising community-based solutions and impact investing, they empower local communities to take control of their own digital transformation. These initiatives not only support economic inclusion but also promote social good, ensuring that the digital transition benefits a broad spectrum of society and contributes to long-term sustainable development. The social economy can call for regulations ensuring that policies are in place to prevent monopolies, protect data privacy, and ensure transparency and accountability. Such regulations would ensure that small, community-driven organisations are not left behind in the digital revolution and can access the same opportunities as larger enterprises.

The social economy is one of the arenas where concerns about the ethical implications of Artificial Intelligence and potential negative consequences, such as reduced human control, can be discussed. According to the latest report of the World Economic Forum[124], in Europe, artificial intelligence plays a significant role in social innovation, predominantly focusing on sustainability. Many innovators are concentrating on environmental solutions, supported by the European legislative framework, such as the European Green Deal[125]. This framework, combined with well-developed innovation ecosystems, enables social innovators to adopt cutting-edge technologies such as AI to drive environmental impact. For example, Belgian-based BeeOdiversity[126] leverages AI for pollution monitoring, using bees as "natural drones" to collect data on environmental pollutants.

Nonetheless, it has to be highlighted that the proximity economy, which includes businesses and organisations that deliver goods and services within a local or community-oriented framework, thrives on the importance of physical presence and human connections. **While digital technologies undoubtedly provide valuable tools for efficiency and communication, the core strength of the proximity economy lies in its ability to foster direct, in-person interactions** that build trust, strengthen community ties, and promote local engagement.

4.2. Industrial efforts in transitioning towards digital

4.2.1. Uptake of digital technologies

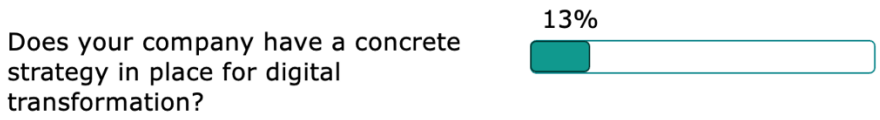
In the proximity and social economy ecosystem, a very low share notably 13% of social economy organisations have a concrete strategy in place for digital transformation as found by the EMI Enterprise Survey in 2024. Nonetheless, digital technologies offer opportunities for the ecosystem when it comes to reducing transaction

[123] European Commission (2020). New Technologies and Digitisation: Opportunities and Challenges for the Social Economy and Social Enterprises. By Gagliardi D., Psarra F., Wintjes R., Trendafili K., Pineda Mendoza J., Haaland K., Turkeli S., Giotitsas C., Pazaitis A., Niglia F., Cox D.
[124] World Economic Forum (2024). AI for impact: the role of artificial intelligence in social innovation, white paper. Available at: https://www.weforum.org/publications/ai-for-impact-artificial-intelligence-in-social-innovation/
[125] European Commission (2019). Communication on the European Green Deal, COM(2019)640 final, Available at : https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en
[126] https://beeodiversity.com/en/

costs, increasing enterprises' customer reach, creating new opportunities for networking and collaboration, foster community engagement and allow new forms of crowdsourcing.[127]

The PSE is dominated rather by mainstream, also basic digital technologies than the development or adoption of advanced digital technologies. **In many cases, the digital needs of social economy organisations are simple, often focusing on user-oriented (such as interfaces, etc.) tools, or internal digital use (e.g. data analysis, collaborative tools, etc.)**.[128] However there are frontrunners that are leveraging digital solutions such as platform technologies, as well as more advanced technologies such as cloud and artificial intelligence.

Figure 22 Digital transformation strategy



Source: EMI Enterprise Survey 2024

Regarding technological adoption, the EMI enterprise survey revealed an increase in the uptake of cloud, artificial intelligence, and big data technologies (see Table below). However, technology adoption remains very low across all technologies. Many organisations in the social economy continue to operate with limited digital infrastructure and rely on traditional methods, which may restrict their ability to innovate or scale. Barriers such as a lack of financial resources, insufficient technical expertise, and limited awareness of technological benefits contribute to this low adoption rate. Social economy organisations within the sector often face unique challenges. For example, often they serve marginalised or underserved communities and they need to balance social goals with financial sustainability.

Table 1 Share of companies in the social economy industrial ecosystem that indicated to having adopted advanced digital technologies

Digital Technologies	***Share of adoption (2023)***	***Share of adoption (2024)***
Cloud	13%	40%
Artificial Intelligence	3%	15%
Internet of Things	7%	7%
Big Data	3%	6%
Augmented and Virtual Reality	1%	0%
Blockchain	2%	2%
Robotics	1%	4%

Source: EMI Survey 2024

The actual uptake of advanced digital technical solutions varies significantly depending on the segment in which organisations operate. Different sectors within the social economy (eg. health, public sector, construction and housing, energy, food cooperatives) have distinct operational needs, challenges, and levels of technological readiness, all of which influence the adoption of digital tools. Moreover, social enterprises in remote or rural areas often face limited access to high-quality digital connectivity, which

[127] Gagliardi D., Psarra F., Wintjes R., Trendafili K., Pineda Mendoza J., Haaland K., Turkeli S., Giotitsas C., Pazaitis A., Niglia F., (2020). New Technologies and Digitisation: Opportunities and Challenges for the Social Economy and Social Enterprises. European Commission, Executive Agency for SMEs, DOI: 10.2826/767888.
[128] Social Tech Academy, A framework to promote the digital jobs and skills in social economy.

creates a digital divide. Many social economy organisations, particularly small ones, struggle to afford and access appropriate and affordable digital infrastructure, including hardware, software, and maintenance services[129].

Social economy organisations may adopt digital technologies within different operational functions, either with the objective of innovating on an organisational level (e.g., by an internal (re)organisation or the integration of operations), or in order to create new social initiatives.[130]

Digital platforms are one of the common paths for digital transformation in the social economy, which are recognised as transformative tools enabling networking, collaboration, community engagement, and efficient service delivery. An example is Fairbnb.coop[131], a cooperative-based alternative to mainstream vacation rental platforms, also mentioned later. Fairbnb.coop is an ethical platform that connects travellers with local hosts while ensuring that a portion of the rental income is redirected to community-driven social projects. Platforms enable collaboration that is essential for the successful digitalisation of the social economy with user involvement critical for ensuring effective engagement. The proximity and social economy plays a crucial role in promoting new models of decision making, with platform acting as enablers of innovative governance approaches, for example decentralised ownership models. According to a study by the Social Good Accelerator, 43% of social organisations report using platform technologies for e-learning, 35% for crowdfunding, crowdsourcing, crowd mapping.[132]

Artificial Intelligence (AI) has seen a significant surge in adoption within the PSE ecosystem (15% of organisations surveyed mentioning its use), mirroring a broader trend across various industries. This increased use is largely driven by the widespread availability and integration of AI-powered tools like ChatGPT, OpenAI, and similar platforms. These tools have opened new opportunities for social economy organisations to enhance their services, optimise operations, and foster greater community engagement. That said, the use of AI remains relatively limited, primarily confined to social economy startups with an AI focus (as discussed in the next chapter) and to social innovations that specifically leverage AI technologies.

The Internet of Things (IoT) is one of the advanced digital technologies more broadly used in the proximity and social economy, although its adoption has not shown significant recent growth. Social economy organisations have embraced IoT to enhance their operations and promote sustainability. For example, IoT devices such as smart meters and sensors are widely employed to monitor and optimise energy consumption in community centers, cooperatives, and shared spaces, leading to reduced costs and lower carbon footprints. The use of IoT is particularly prominent in sectors such as health and social care, agri-food, and retail, where it plays a key role in driving efficiency and innovation. IoT can transform how social support is provided to disadvantageous groups, as well as enhancing education and training efforts. For instance, IoT applications are used by social economy entities in health care. These IoT applications for independent living of elderly people through automated driving wheelchairs, wearable sensors.[133] Concerning community engagement, solutions range from open source platform providing free sharing of knowledge. For example Waag's Commons Lab emphasises co-creation and

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[129] European Commission (2022). Transition Pathway for the Proximity and Social Economy Ecosystem https://single-market-economy.ec.europa.eu/sectors/proximity-and-social-economy/transition-pathway_en

[130] Gagliardi D., Psarra F., Wintjes R., Trendafili K., Pineda Mendoza J., Haaland K., Turkeli S., Giotitsas C., Pazaitis A., Niglia F., (2020). New Technologies and Digitisation: Opportunities and Challenges for the Social Economy and Social Enterprises. European Commission, Executive Agency for SMEs, DOI: 10.2826/767888.

[131] https://fairbnb.coop/

[132] Social Good Accelerator (2019). The cooperation between social utility and technology organisations in Europe. Issues, impacts, obstacles and catalysts. European study part 1 – 2019. https://socialgoodaccelerator.eu/wp-content/uploads/2019/11/Exec-sum-En-BD-corr.pdf.

[133] European Commission (2024). Benchmarking the socio-economic performance of the EU social economy, improving the socio-economic knowledge of the proximity and social economy ecosystem. Available at: https://op.europa.eu/en/publication-detail/-/publication/8aa2a5cb-74a7-11ef-a8ba-01aa75ed71a1/language-en

educational initiatives, based on the principle of open-source, and therefore promoting knowledge exchange and collaboration.[134]

Digital technologies are **supporting new models of energy production, distribution, transport sharing**. A notable example in the energy sector consists of renewable energy communities using integrated advanced technologies, such as blockchain to manage distributed share ownership in renewable energy plants and utilities. [135]

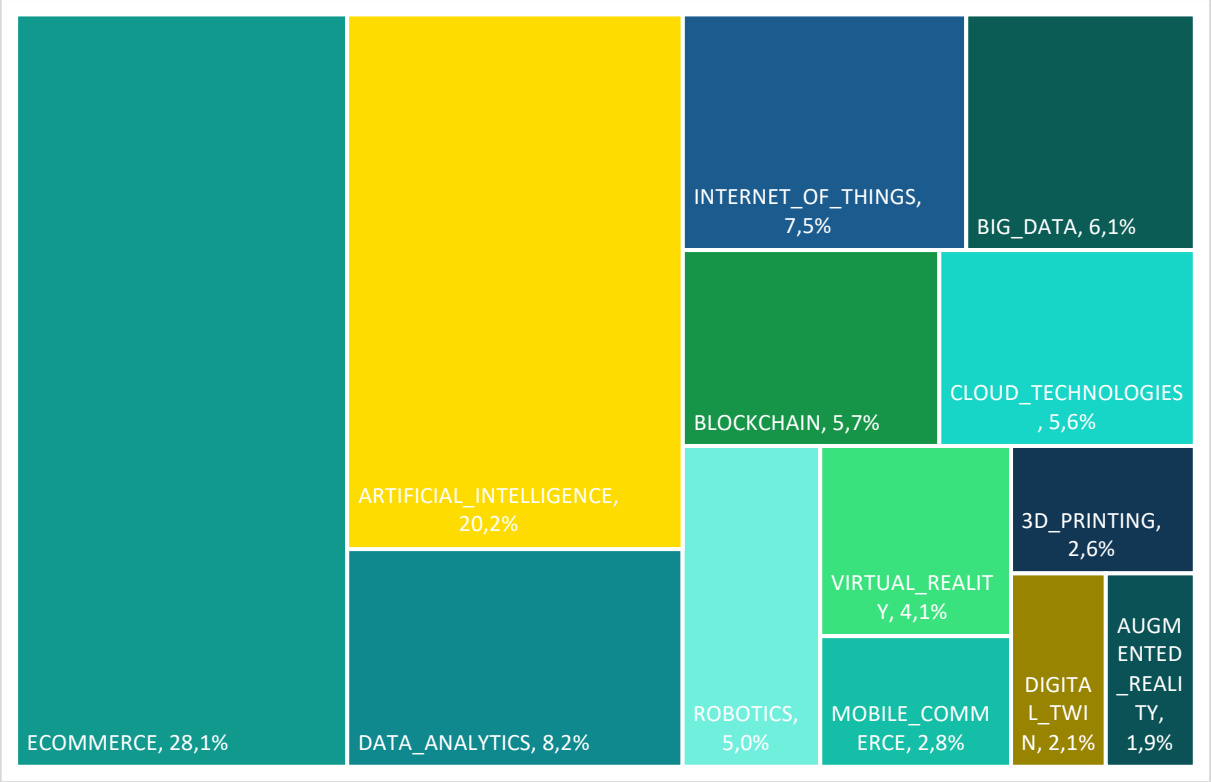
4.2.2. Social economy organisations with an online presence

An analysis of web-crawled data from social economy organisations provided valuable insights into the online presence of the social economy ecosystem and its connection to the broader digital transition. **The review identified active websites for 72 085 European social economy organisations, representing approximately 3% of all social economy entities in the European Union.**

Regarding the digital transition, it is only **4.2% of these websites that referenced the use of any advanced digital technology** in the focus of the report.

In the realm of the social economy entities in Europe, the adoption of digital technologies varies significantly. Regarding digital technologies, the most commonly referenced topics were **online platforms/e-commerce/mobile application (28%), artificial intelligence (20%), data analytics (8%), Internet of Things (7.5%) and big data (6%).** Interestingly, the use of artificial intelligence appears to be more prevalent compared to other technologies.

Figure 15: Overview of the most recurrent topics in social economy organisations



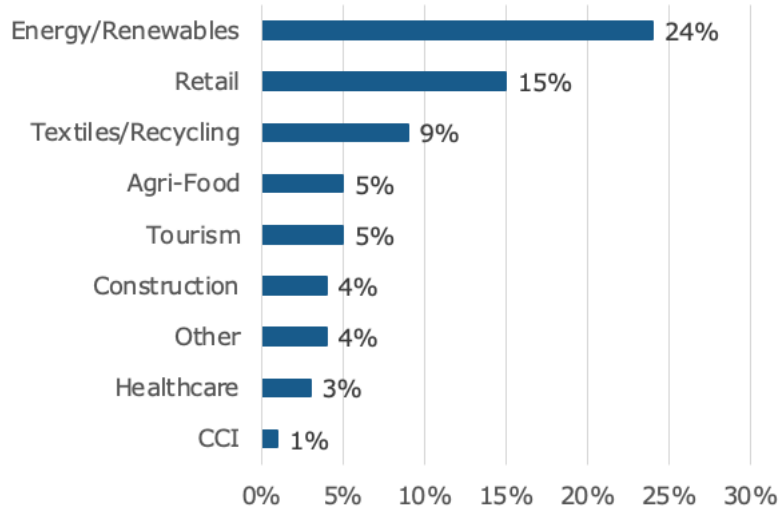
Source: Technopolis Group 2024 based on glass.AI search

[134] Available at: https://waag.org/en/lab/commons-lab/
[135] H2020 COMPILE project (2019). Best practice guide, available at: https://www.rescoop.eu/uploads/rescoop/downloads/D4.1.1_Best_Practice_Guide.pdf

When it comes to mentions of digital technologies, an interesting trend emerges: energy cooperatives and social economy entities operating in the renewable energy sector are the most frequent to reference digital technologies on their websites (24%). This is likely due to their reliance on digital tools for monitoring energy production, optimising energy distribution, managing smart grids, and engaging with members and stakeholders through interactive platforms. The renewable energy sector's focus on digital technologies underscores the critical role such tools play in enabling efficient, transparent, and scalable operations, particularly in the context of the green transition and the increasing adoption of sustainable practices.

Following closely behind, the retail sector also prominently references digital technologies, driven naturally by the strong connection to online platforms and e-commerce. For retail-oriented social economy organisations, digital tools facilitate a range of functions, including product sales, inventory management, customer engagement, and marketing. These technologies also help organisations connect with wider audiences, enabling them to expand their reach and deliver greater social impact.

Figure 16: Share of social economy organisations that refer to digital transition technologies and actions on their website



Source: Technopolis Group 2024 based on glass.AI search

4.2.3. Social and proximity economy startups that use digital technologies

Social economy startups are leveraging digital technologies to amplify their impact and streamline operations, reflecting also the intersection of social innovation and digital advancement. Nonetheless, **the proportion of social startups with a digital focus has remained stable, with a share around 28–29%** as shown by the analysis of Crunchbase and Net Zero Insights data. This figure is consistent with findings from the previous review conducted in 2023. This stability suggests that while digital technologies are integral to many social economy initiatives, the overall composition of digitally focused social startups has not experienced any surge in recent years.

The digital technologies most frequently found are still online platforms (which include online marketplaces) and mobile applications, followed by analytical software. Advanced technologies included in the analysis are used by far fewer social entrepreneurs.

The following examples showcase how **social and proximity economy organisations are leveraging digital technologies.**

Online platforms/digital cooperative platforms as tools to enhance social and proximity enterprises' costumer reach and community engagement. Solutions range from open source platform providing free sharing of knowledge, the *Waag's Commons Lab*[136] emphasises co-creation and educational initiatives, based on the principle of open-source, and therefore promoting knowledge exchange and collaboration. Similarly, the *Libre Space Foundation*[137] a Greek not-for profit foundation, aims at creating open source space technologies, by designing, developing and delivering space related projects. While, the *Local Alternative Unit*[138,] called TEM, is a local exchange trading system popular in Magnesia, Greece. In this context, digital platform cooperatives, which are worker-controlled digital labour platforms, exemplify how digital technologies can be aligned with social economy principles, member's ownership and democratic governance. The *Open Food Network*[139] is a not-for-profit organization focusing on building tools to create a food system that is local and transparent, by using open-source software to manage online farmer markets and free resources for farmers, producers and community food enterprises. *Citibility*[140] is online platform supporting childcare services enabling cooperation between kindergartens, families, businesses and institutions. *Medlytic*[141] is an insight platform that support healthcare professionals to test new technologies before the launch. Lifesigy[142] is a platform that gamify knowledge sharing and information to make users learn and assimilate information. *CoopCycle*[143] is a federation of bike delivery with a democratic governance structure. When it comes to tourism, *Fairbnb.coop*[144]is a platform reinvesting half of the commission in community projects in the host area.

Artificial Intelligence as a tool to improving efficiency and effectiveness of the social and proximity economy. As an example, the *Social Tech Lab*[145] is not-for profit organisation designing future social tech concepts for companies to generate human-centred experience and sustainable social impact with AI products and services. While, *AI Common*[146] is a collective effort to enable universal access to benefits of AI. It aims at building an equitable, accessible, ethical and decentralised collaboration framework for AI based problems-solving for all. *Tucuvi*[147]is a digital health startup with the objective of making health care efficient and accessible. It provides a virtual care platform based on a AI voice-based virtual nurse that accompanies and monitors the health status of patients. *Kaitikai*[148] uses AI to make internet a safer place for kids by analysis conversations on social networks. While, *Academy Het Dorp*[149], supports people with disabilities to be able to organise their own lives with the use of technology.

Blockchain as a tool to enhance transparency and collaboration enabling decentralised decision making. The *Community Coin Eindhoven* initiated by the Possible Today Foundation, this project aims to digitalise an analogue practice to strengthen civil society initiatives and the Eindhoven community. The digital Community Coin creates a system to reward and incentivize civil initiatives, allowing community members to participate in various social projects and earn coins for their contributions. *IOTA*[150] is a non-profit foundation focused on developing next generation protocols for the connected world. It has built a community with the objective to delivering sustainable next generation blockchain and a standardised 'ledger

[136] https://waag.org/en/lab/commons-lab/
[137] https://libre.space
[138] https://www.tem-magnisia.gr/
[139] https://openfoodnetwork.org
[140] https://citybility.net
[141] https://medlytic.no/en/medlytic-insight-platform-for-health/
[142] https://lifesify.com/?lang=en
[143] https://coopcycle.org
[144] https://fairbnb.coop
[145] https://www.socialtechlab.eu/index.html
[146] https://ai-commons.org
[147] https://www.tucuvi.com/
[148] www.kaitiaki.it
[149] https://www.academyhetdorp.nl/
[150] https://www.iota.org

of everything' keeping the interest of the broader society in mind. *CarbonABLE*[151] platform develops nature-backed financial assets for carbon removal projects. It launched several collection of non-fungible tokens to boost financial support for environmental projects that represent plots of lands in natural areas capable of storing and absorbing greenhouse gases. Additionally, *Ositrade*[152] is an online marketplace for professional users. Permissioned access with payment of a subscription plus a per m-tonne transaction fee charged to the buyer. By securely connecting all links of a supply chain without a trusted third party, Ositrade redistributes added value and responsibilities to the players and simplifies admin processes. Blockchain guaranties ask & bids are binding, and secures transaction terms as soon as they are booked.

IoT as a tool to enhance efficient local production. As an example, *Infarm*[153] combines efficient vertical farms with IoT technologies and Machine Learning, to offer an alternative food system that is resilient, transparent, and affordable. The company distributes its smart modular farms throughout the urban environment to grow fresh produce for the city's inhabitants. Another example is *Hexagro*[154] is the first urban farming platform offering modular hardware, IoT automation software and a community of growers to decentralise food production and allow anyone to grow and access healthy food. *BIOTRAQ*[155] developed an IoT platform that calculates perishables products' quality in real-time to guarantee safety and prevent waste. Another startup deploying IoT is *Orthoponics*[156], which offers sustainable and smart urban farming solutions that let everyone to easily grow their own food.

4.3. Digital skills

Advancing digital technology skills is critical for the proximity and social economy to remain competitive, resilient, and impactful in an increasingly digitalised world. While the proximity and social economy emphasise local engagement and human-centric services, the integration of digital skills can unlock significant opportunities to enhance their operations, expand their reach, and address modern challenges more effectively. In addition, social economy organisations also need to ensure that their digital services are accessible to all, regardless of people's access to technology.

A review of literature shows that related studies consistently highlight a deficit in digital skills across the social economy, particularly among small and micro-enterprises. This skills gap spans from basic IT proficiency to more advanced data management and analysis capabilities, hindering their ability to effectively adopt and utilise digital tools[157].

There is a significant shortage of workers with the necessary digital skills to support the digital transformation of the social economy[158]. Social economy organisations are finding it difficult to recruit and retain workers with the necessary skills, which is hindering their ability to adopt and utilise digital technologies[159]. Social economy organisations often operate with limited resources, which can make it difficult to invest in digital technologies and training. They may struggle to afford the necessary hardware, software, and internet access, as well as the costs associated with training staff and maintaining digital systems.

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[151] https://www.carbonable.io
[152] https://www.digitalfoodlab.com/en/foodtech-database/ositrade
[153] https://www.infarm.com
[154] https://www.hexagro.io/?srsltid=AfmBOoojfUtClXY3iCubTCFnF7Rm3NGQIGjwYQmCYuvMQQV8h_RKlmWo
[155] https://biotraq.fr
[156] https://www.digitalfoodlab.com/en/foodtech-database/orthoponics
[157] European Commission (2022). Transition Pathway for the Proximity and Social Economy Ecosystem https://single-market-economy.ec.europa.eu/sectors/proximity-and-social-economy/transition-pathway_en
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[159] Diesis Network (2023). Diesis Article Series, Future Skills for social economy in Europe, https://www.diesis.coop/wp-content/uploads/2023/12/Article-December-2023-Skills-1.pdf

This can create a barrier to digital adoption and hinder their ability to compete with larger, more well-resourced organisations.

There are significant disparities in the level of digital maturity among social economy organisations[160]. Some organisations are embracing digital technologies and innovating rapidly, while others are lagging behind, lacking the necessary skills, resources, and infrastructure. These disparities can create a fragmented ecosystem and hinder collaboration and knowledge sharing.

To further examine the supply of skilled professionals relevant to the digital transition in the social economy, data from LinkedIn has been employed. As in the case of the green transition, the data includes non-profit organisations and civic and social organisations.

The share of professionals registered on LinkedIn and employed within the social economy ecosystem with advanced digital skills reached 6% in 2024, marking an increase compared to 2022 (see Figure below). This growth highlights a positive trend in the adoption of digital skills among professionals in the sector, pointing out the ongoing efforts to integrate digital technologies into the ecosystem. However, it is important to recognise that this figure does not fully capture the realities of the social economy. Many social economy organisations are characterised by a workforce that is either underrepresented or absent from online professional platforms such as LinkedIn. Employees may prioritise face-to-face interactions over online networking, or they may lack access to digital tools and platforms altogether.

Figure 17: Share of professionals in PSE with skills relevant for the digital transition in the EU27

Source: Technopolis Group based on LinkedIn

More concretely, the digital skills most sought after in the social economy include **data management and analytical skills and digital marketing skills**, reflecting the sector's growing need to adapt to technological advancements and enhance its operational and outreach capabilities. This is also reflected by other related studies that highlighted the need for digital content management, data literacy, communication and collaboration using digital technologies[161].

[160] Ibid

[161] B-Wise (2024). Blueprint for skills strategies in social economy, available https://www.bwiseproject.eu/

Appendix A: References

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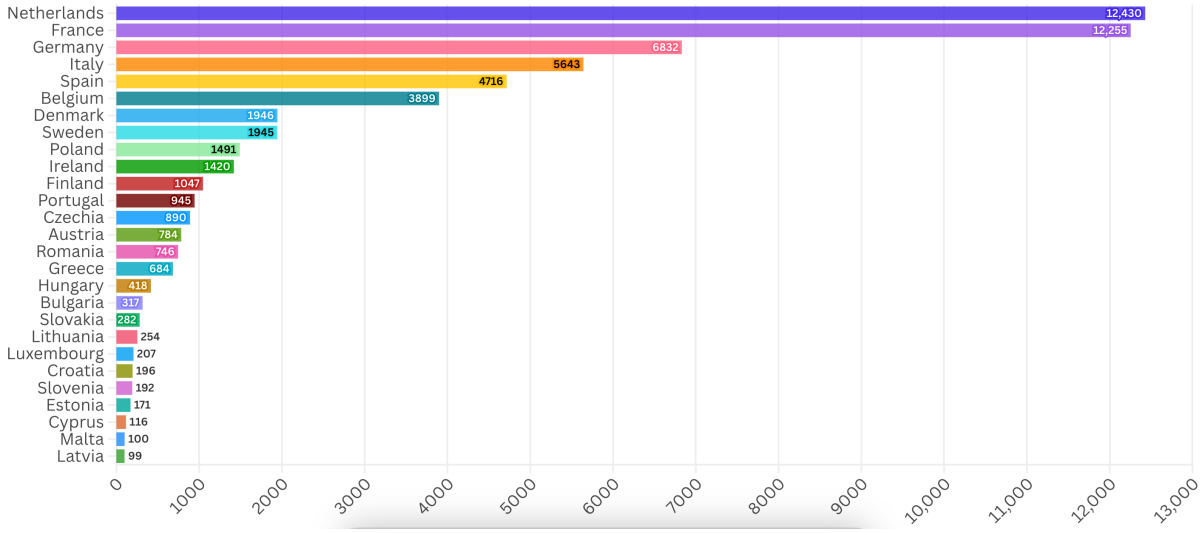
Appendix B: Methodology

The analysis included the scraping of websites of 60 025 social economy organisations and text mining their content in the period of July-August 2024.

In terms of country distribution, most of the social economy entities found online were based in France (23%), followed by the Netherlands (19%), Germany (11%), Italy (9%), Spain (8%), Belgium (6%), as shown by the Figure below.

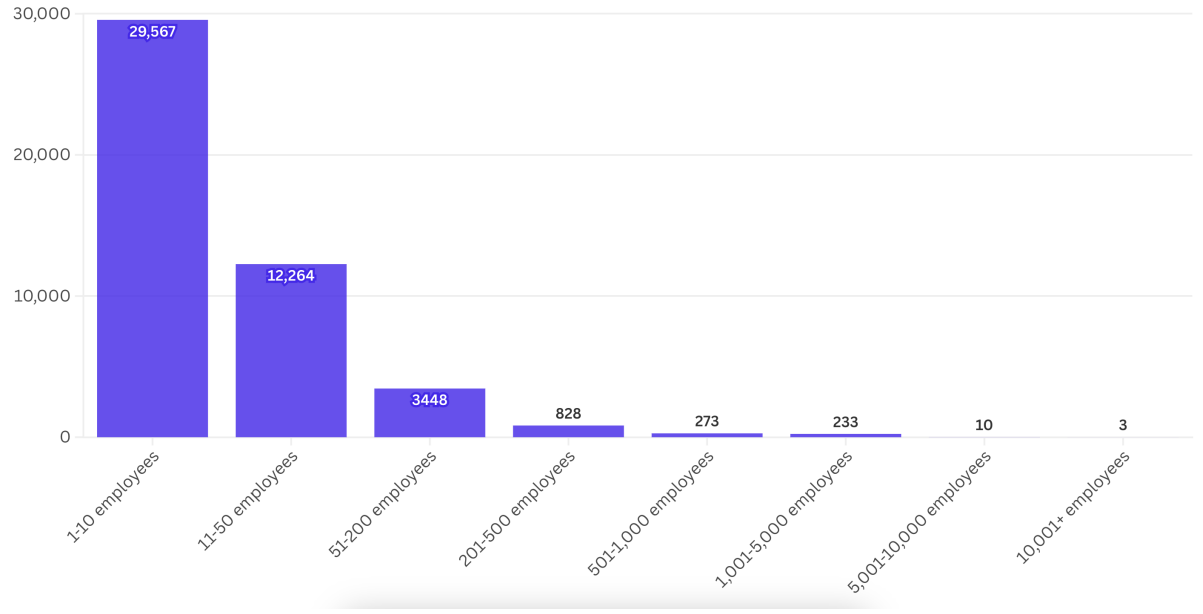
Figure 18: Overview of social economy entities by EU Member State



Source: Technopolis Group 2024 based on glass.AI search

Regarding organisation size, more than half of the entities mapped are micro-enterprises (1-10 employees), around 25% are small enterprises (11-50 employees), and around 10% have 51-249 employees, as shown in the Figure below.

Figure 19: Size of social economy organisations captured



Source: Technopolis Group 2024 based on glass.AI search

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