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Review

The Role of Mechanization in Supporting Social Entrepreneurship in Agriculture: Economic and Social Perspectives

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Abstract: This paper explores the intersection between social entrepreneurship and the economics of mechanization in agriculture as a pathway toward inclusive and sustainable rural development. While mechanization has traditionally been understood as a technical and economic process aimed at improving productivity and efficiency, its integration within socially oriented business models reveals additional dimensions of empowerment, cooperation, and social inclusion. Drawing on theoretical insights and European case studies—including machinery rings in Germany and Austria, and social cooperatives in Italy—the study demonstrates how mechanization can serve as both an economic enabler and a social catalyst. By lowering entry barriers to technology and fostering collective ownership, social enterprises can democratize access to modern agricultural equipment, enhance competitiveness, and create employment opportunities for marginalized groups. The findings highlight that supportive institutional frameworks and targeted policy measures are essential for scaling such models. Mechanization, when guided by social entrepreneurship principles, thus becomes a strategic driver of sustainable rural transformation.

Keywords: *Social entrepreneurship; agricultural mechanization; rural development; cooperative models; inclusive innovation; sustainable agriculture.*

1. Introduction

Social entrepreneurship has gained increasing attention over the past two decades as a hybrid form of enterprise that combines social objectives with market-based strategies. Unlike traditional businesses that prioritize profit maximization or non-governmental organizations that primarily focus on social missions without generating profit, social enterprises seek to achieve a balance between economic sustainability and social impact [1-4]. They are particularly relevant in rural and agricultural contexts, where communities face challenges of unemployment, depopulation, and limited access to resources, but also possess strong social capital and traditions of cooperation [5-7].

At the same time, mechanization has long been recognized as a critical driver of agricultural modernization. By introducing machinery and technological solutions, farms are able to reduce labor intensity, increase efficiency, and improve the overall productivity of agricultural systems [8,9]. However, mechanization also carries significant economic implications. The purchase, maintenance, and depreciation of machinery require substantial investments, often beyond the reach of small-scale farmers [10-12]. This economic dimension of mechanization is central to the field of agricultural economics, where cost–benefit analysis, efficiency assessment, and sustainability of investments are essential [12-14].

The intersection of these two domains — social entrepreneurship and the economics of mechanization — presents a promising yet underexplored field of research. Social enterprises in agriculture are often founded to provide solutions to societal challenges such as rural poverty, environmental degradation, or the exclusion of vulnerable groups from economic activity [15,16]. Mechanization, if properly adapted to the needs of social enterprises, can serve as both an enabler of efficiency and a catalyst for social inclusion [17,18]. For example, cooperative machinery services or machinery rings allow groups of small farmers to access equipment that would otherwise be unaffordable [19,20]. Similarly, social enterprises may design business models around providing mechanization services to marginalized groups, thereby generating employment while addressing equity concerns [21].

The economics of mechanization offers an analytical framework for evaluating such initiatives. By applying concepts of investment analysis, cost-effectiveness, and economies of scale, it is possible to assess whether mechanization-based social enterprises can achieve both financial viability and social impact [17]. Furthermore, mechanization intersects with broader sustainability debates: energy use, environmental impacts of machinery, and the integration of digital technologies (such as precision agriculture and automation) raise questions about the compatibility of mechanization with the principles of socially responsible entrepreneurship [22,9].

In this paper, we aim to explore how mechanization can support the mission of social enterprises in agriculture and related sectors. The central argument is that mechanization should not be viewed solely as a technical or economic tool, but also as a social lever that enables inclusive and sustainable development. By connecting the literature on social entrepreneurship with the economics of mechanization, we intend to provide a conceptual framework for understanding the synergies between these two fields. The analysis also considers the main constraints and enabling factors influencing the integration of mechanization into social enterprise models, with particular attention to economic feasibility, institutional capacity, and policy support.

2. The economics of mechanization and social entrepreneurship theory

This paper is based on a qualitative and integrative research design, combining conceptual analysis, desk research, and comparative case study methods. The primary aim was to explore how mechanization can serve as an economic and social enabler within social enterprise models in agriculture and rural development. Given the interdisciplinary nature of the topic — which spans agricultural economics, rural sociology, and social innovation — the research employed a multi-method approach that integrates theoretical, empirical, and policy-oriented insights.

The study follows an exploratory analytical framework, designed to link two domains that have traditionally evolved in parallel: the economics of mechanization and social entrepreneurship theory. The methodological approach was guided by three core objectives:

1. To review and synthesize relevant academic and policy literature on social entrepreneurship and agricultural mechanization.
2. To conceptualize the dual role of mechanization — as both an economic efficiency driver and a social inclusion mechanism.
3. To identify and analyze representative European cases illustrating how social enterprises or cooperative organizations have integrated mechanization into their business models.

This framework follows the logic of thematic synthesis [23], where the integration of concepts and empirical evidence leads to the formulation of a new analytical perspective — in this case, "mechanization as a social innovation driver." The study does not aim to test hypotheses statistically but to build conceptual coherence and generate insights for further empirical research.

The literature base includes peer-reviewed scientific publications, policy reports, and institutional documents from the European Commission, FAO, OECD, and national agricultural ministries. Academic sources were identified through Scopus and Web of Science databases using combinations of keywords such as "social entrepreneurship," "agricultural mechanization," "cooperative models," "rural development," and "inclusive innovation." Only publications in

English from 2000 onwards were included to ensure contemporary relevance, while foundational works [1,2] were retained for theoretical grounding.

Policy documents were selected based on their relevance to EU and Western Balkan contexts, with emphasis on CAP strategic frameworks, rural development measures, and social economy legislation. Reports from the European Network for Rural Development (ENRD) and the Regional Cooperation Council (RCC) were also reviewed to ensure the inclusion of institutional and regional perspectives.

For the empirical component, a comparative case study method was applied [24]. Three sets of European examples were selected to illustrate diverse models of mechanization embedded in social entrepreneurship contexts:

- Machinery rings and cooperatives in Germany and Austria (representing collective efficiency and shared ownership models).
- Social cooperatives in Italy (demonstrating inclusive employment and mechanized production systems).
- Digital sharing platforms in Finland and Denmark (representing innovation-driven and technology-based approaches).

The cases were selected using purposive sampling, focusing on initiatives that (a) explicitly integrate mechanization in their operations, (b) exhibit features of social enterprise (social mission, participatory governance, reinvestment of profits), and (c) are documented through reliable institutional or academic sources.

Each case was analyzed according to three analytical dimensions:

- Economic efficiency and sustainability (e.g., cost-sharing, productivity gains, resource optimization).
- Social inclusion and empowerment (e.g., employment creation, gender and youth participation, cooperative engagement).
- Institutional and policy support (e.g., funding mechanisms, advisory systems, integration with CAP measures).

Findings from each case were synthesized to identify recurring success factors and policy enablers that facilitate the alignment of mechanization and social entrepreneurship goals.

The conceptual framework presented in Figure 1 was developed through iterative synthesis of the reviewed literature and case evidence. Following the principles of conceptual modeling [25], the framework integrates the economic and social dimensions of mechanization into a single model that explains how external policy, technological, and institutional contexts shape social enterprise outcomes.

This framework was validated through a comparative reading of existing theoretical models in agricultural innovation systems and social enterprise ecosystems [9,26,27]. Its purpose is to provide a theoretical structure for interpreting how mechanization can simultaneously drive efficiency, inclusion, and sustainability in rural economies.

3. Social entrepreneurship

Social entrepreneurship has evolved as a response to the limitations of traditional public and private sector approaches to social problems. It represents a form of entrepreneurship where social value creation takes precedence over profit maximization, but financial sustainability remains a crucial component [1,28]. Social entrepreneurs identify market failures and use business-oriented tools to address issues such as poverty, unemployment, and social exclusion [29-31].

The conceptualization of social entrepreneurship varies across regions and disciplines. In Europe, social entrepreneurship is often associated with the social economy, cooperatives, and collective ownership [5,32]. In contrast, in the United States it is more closely linked to innovation and individual initiative in addressing social challenges [32,33]. This duality reflects the diversity of institutional frameworks and cultural traditions shaping the understanding of social enterprise models.

Social enterprises can operate in different legal and organizational forms — cooperatives, associations, foundations, or hybrid organizations that combine elements of for-profit and non-profit entities [26]. What unites them is a focus on the so-called "triple bottom line" — achieving economic, social, and environmental sustainability simultaneously [34]. In agriculture, social enterprises often aim to promote rural employment, empower women and youth, introduce eco-friendly practices, and support short supply chains or local food networks [35-37].

Recent literature emphasizes that social entrepreneurship in rural and agricultural contexts plays a vital role in strengthening local resilience. By mobilizing local resources and fostering collective ownership, social enterprises contribute to community development and reduce vulnerability to external shocks [38]. Furthermore, new technologies, including mechanization and digital tools, are increasingly integrated into social enterprise business models, enabling efficiency and scalability [39].

Mechanization in agriculture refers to the use of machinery, equipment, and power sources to perform agricultural operations more efficiently. It has long been a cornerstone of productivity growth and modernization, particularly in developing economies transitioning from labor-intensive to capital-intensive agricultural systems [8,17]. Mechanization enhances farm efficiency through reduced drudgery, higher labor productivity, and improved timeliness of field operations, all of which directly affect profitability [9].

From an economic standpoint, the decision to invest in mechanization involves assessing costs, benefits, and expected returns. Key indicators include machinery utilization rates, fuel efficiency, maintenance costs, and depreciation schedules [12]. However, mechanization is often constrained by high capital costs and unequal access to credit, especially among smallholders. Consequently, ownership-based models are gradually being replaced or complemented by service-based mechanization systems, such as machinery-sharing cooperatives or custom-hiring centers [10,11]. These models allow farmers to pay per service rather than purchasing expensive equipment outright, improving cost efficiency and accessibility.

The literature also addresses the social and environmental implications of mechanization. While mechanization can displace manual labor, it also opens new employment opportunities in manufacturing, maintenance, and service provision. The integration of precision agriculture and digital monitoring technologies supports more sustainable and resource-efficient use of machinery [22,40,41]. Energy efficiency and the reduction of greenhouse gas emissions from mechanized systems are also emerging areas of concern within agricultural policy frameworks [9].

Economic studies highlight the importance of achieving optimal mechanization — a balance between technological capacity, farm size, and socio-economic conditions [19]. Over-mechanization can lead to inefficiencies and increased costs, while under-mechanization results in labor bottlenecks and low productivity. Thus, the economics of mechanization emphasizes the need for context-specific strategies aligned with farm structure, resource availability, and environmental constraints.

Although these two research areas — social entrepreneurship and mechanization — have evolved largely independently, recent studies point to their potential complementarity. Mechanization can enhance the economic viability of social enterprises by reducing operational costs and expanding the scope of services offered [10,11,42,43]. Conversely, social entrepreneurship can provide organizational and institutional mechanisms for inclusive access to mechanization, particularly for smallholders, women, and marginalized communities [9].

Shared machinery models, social cooperatives, and machinery rings exemplify how collective entrepreneurship can democratize access to technology and strengthen rural economies [17]. These models combine the economic efficiency of mechanization with the social objectives of empowerment and inclusion. Moreover, the growing emphasis on sustainability and circular economy principles in agriculture reinforces the idea that social enterprises can act as facilitators of responsible mechanization — promoting eco-friendly machinery use, recycling of components, and energy-efficient technologies [44,45].

Despite these promising intersections, there remains a lack of integrative research frameworks linking the economics of mechanization with social enterprise theory. This paper aims to fill that gap by conceptualizing mechanization not only as an economic factor but also as a social innovation

driver — capable of improving livelihoods, productivity, and sustainability outcomes simultaneously.

4. Mechanization as an economic and social enabler

Mechanization plays a dual role in social enterprises operating in agriculture and related sectors: it functions as both an economic enabler and a social catalyst. From the economic perspective, mechanization increases productivity, reduces costs, and enhances competitiveness. From the social perspective, it empowers marginalized groups, promotes inclusion, and strengthens community resilience. This duality reflects the hybrid nature of social entrepreneurship itself — blending profit-oriented mechanisms with social missions [5,26].

Social enterprises often operate under resource constraints, facing difficulties in accessing credit, skilled labor, and technology. Mechanization, when designed and managed inclusively, can alleviate these constraints by improving efficiency and generating additional income streams. For instance, shared machinery centers, cooperative ownership schemes, or pay-per-use service models allow social enterprises to provide mechanization access to smallholders and vulnerable groups who cannot afford individual ownership [17,42].

At the same time, mechanization contributes to achieving broader social goals:

- Reducing physical labor burdens, particularly for women and older workers.
- Creating new employment opportunities in machinery operation, maintenance, and service provision.
- Encouraging youth participation in modernized agriculture by introducing technology-driven business models.
- Strengthening rural social capital through shared ownership and collective management.

Thus, mechanization becomes a vehicle for empowerment, transforming not only production processes but also the social structures within which those processes take place.

From an economic standpoint, mechanization influences the financial sustainability of social enterprises in several ways. First, it enhances operational efficiency, allowing enterprises to deliver services or products at lower costs and with higher quality. Second, it contributes to revenue diversification, as mechanized services can generate steady income streams, especially when based on pay-per-use or subscription models [10,11]. Third, mechanization supports economies of scale by enabling social enterprises to expand their operations and serve a larger number of beneficiaries without proportionally increasing costs [12].

A cost-benefit approach can be used to evaluate the viability of mechanization investments within social enterprises. Key parameters include:

- Fixed costs (machinery purchase or leasing, infrastructure).
- Variable costs (fuel, maintenance, labor, spare parts).
- Revenue potential (services rendered, product value added).
- Social return on investment (SROI) — measuring non-financial outcomes such as employment generation, empowerment, or environmental improvements [46,47].

Moreover, mechanization supports sustainable intensification by improving resource-use efficiency. Precision technologies optimize input application (e.g., fertilizer or water), thereby reducing waste and environmental impact. When embedded in social enterprise models, these technologies can democratize access to innovation — ensuring that ecological benefits reach small-scale farmers rather than remaining concentrated among large agribusinesses [22,9].

Beyond economic performance, mechanization contributes to social inclusion and community development. Social enterprises often work with target groups that face systemic barriers to participation in the labor market — such as rural women, unemployed youth, or persons with disabilities. Mechanization can reduce dependence on physical strength, enabling wider participation in agricultural production [44,45].

Collective machinery ownership also fosters cooperation and mutual trust, reinforcing local social capital [38]. Machinery rings and service centers can become nodes of social innovation, where communities jointly manage assets, make collective decisions, and distribute benefits equitably. This

participatory approach aligns closely with the cooperative roots of European social enterprise traditions [2,26,37].

Mechanization further supports intergenerational continuity in agriculture. As young people increasingly leave rural areas in search of non-agricultural employment, technology-oriented mechanization projects implemented through social enterprises can make farming more attractive to the younger generation [35]. Mechanization thus acts not only as an economic input but as a cultural innovation that redefines the identity and aspirations of rural communities.

The conceptual framework developed in this paper integrates these economic and social dimensions into a single model (Figure 1).

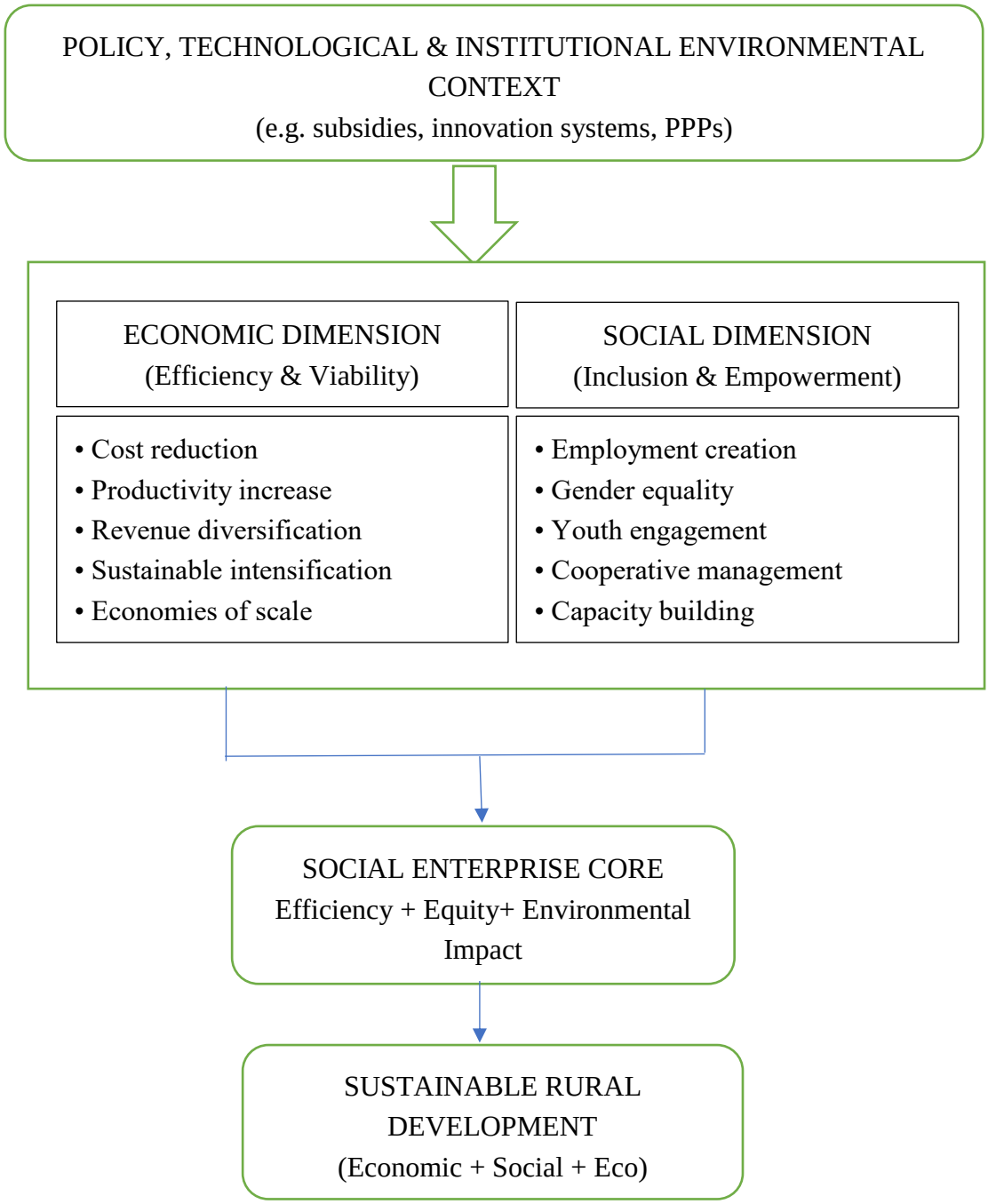

Figure 1. Conceptual framework of mechanization as an enabler of social entrepreneurship in agriculture.

This integrative view demonstrates that mechanization, when embedded in socially oriented business models, creates synergistic effects that strengthen both economic and social performance.

The balance between these two dimensions depends on contextual factors — access to finance, human capital, market conditions, and institutional support — which determine whether mechanization leads to inclusive development or deepens inequality.

5. Case examples: Mechanization and social entrepreneurship in Europe

5.1. Machinery rings and cooperative mechanization models

One of the most established forms of collective mechanization in Europe is the machinery ring (MR) model. Originating in Germany in the late 1950s and later expanding to Austria, the United Kingdom, Ireland, and Scandinavia, machinery rings are member-owned cooperatives that enable farmers to share machinery, labor, and technical services. Each member contributes machinery and equipment to a shared pool and, in return, gains access to others' machines when needed. The system optimizes the utilization of existing assets, reducing idle capacity and spreading fixed costs across multiple users [17,19].

In Germany, over 230 machinery rings currently serve more than 190,000 farmers, coordinating machinery use, logistics, and labor exchange through digital platforms. Many have evolved into socially-oriented enterprises, offering services to rural communities beyond agriculture — such as snow removal, biomass heating, or elder care in rural villages. Their cooperative structure and democratic governance make them natural examples of social entrepreneurship through mechanization. The rings not only improve economic efficiency but also strengthen social cohesion and inter-farm solidarity [17].

In Austria, machinery rings are supported by the Austrian Chamber of Agriculture, which integrates them into broader rural development policies. They have become key tools for addressing the challenges of small and fragmented farm structures typical of Alpine regions. By lowering entry barriers to mechanization, Austrian MRs contribute directly to rural resilience, reducing dependence on external contractors and promoting intergenerational continuity in family farming [48].

5.2. Social cooperatives and mechanization for inclusion in Italy

Italy provides another instructive example of the link between mechanization and social entrepreneurship. The Italian model of "Type B" social cooperatives, established under the Law 381/1991, aims to integrate disadvantaged people (e.g., persons with disabilities, long-term unemployed, migrants) into the workforce through productive activities [26].

In the agricultural sector, many of these cooperatives have invested in modern mechanization — tractors, small-scale harvesters, and processing machines — to make work more accessible to employees with physical limitations. Mechanization in this context is not only a productivity tool but also an instrument of social inclusion and dignity. For instance, Cooperativa Sociale Terra Felix in Campania uses semi-automated machinery for compost production and organic vegetable cultivation, enabling inclusive employment and circular economy practices.

Another case, Cooperativa Agricoltura Capodarco, near Rome, operates diversified activities in agriculture, agro-tourism, and bioenergy. Mechanization investments supported by EU Rural Development Programmes have allowed the cooperative to expand its services, employ socially excluded individuals, and introduce environmentally friendly technologies such as low-emission tractors and composting units. These cases illustrate how mechanization, when embedded in a social enterprise model, enhances both efficiency and equity.

5.3. Digital mechanization platforms and rural innovation in Northern Europe

In Finland and Denmark, the trend of digital mechanization sharing reflects a new generation of social entrepreneurship that blends technology with cooperation. Platforms such as "Tractorpool" and "FarmAR" allow small and medium farms to rent machinery and share services via mobile applications. Although often developed as private startups, several of these platforms have adopted social enterprise principles, reinvesting profits into rural innovation, training, or sustainability programs.

In Finland, the cooperative ProAgria Network integrates advisory services, machinery sharing, and knowledge exchange. Through digitalized scheduling systems, it connects farmers who need mechanization services with those who can provide them, creating a circular, peer-to-peer economy model. This approach reduces transaction costs, supports efficient resource allocation, and promotes a culture of collaboration — essential characteristics of social entrepreneurship [27].

Across these European cases, several common features emerge:

1. Collective ownership and democratic governance — All models rely on participatory structures, ensuring that benefits are shared among members rather than concentrated in private hands.
2. Economic efficiency and social inclusion combined — Mechanization reduces costs and increases competitiveness, while cooperative management creates social value and local solidarity.
3. Institutional and policy support — Successful examples are typically backed by strong institutional frameworks, including Chambers of Agriculture, rural development programs (CAP Pillar II), and social economy legislation.
4. Innovation and adaptability — Whether through digital platforms or multifunctional service provision, these enterprises continuously innovate to remain economically viable and socially relevant.

The European experience demonstrates that mechanization can serve as a foundation for social innovation when combined with cooperative principles, community engagement, and enabling policy environments. These models provide valuable lessons for countries like Serbia and other Western Balkan states, where small-scale farming and limited access to machinery remain significant barriers to inclusive rural development.

6. Policy perspectives

The successful integration of mechanization within social enterprise models depends heavily on supportive policy frameworks. While individual entrepreneurship and cooperative innovation play key roles, policy design ultimately determines the extent to which inclusive mechanization can scale and deliver social impact. Evidence from European experiences indicates that enabling environments are characterized by: (1) coherent strategies linking rural development and social economy; (2) targeted financial and institutional support; and (3) multi-level coordination among agricultural, social, and innovation policies [49,9].

In the European Union (EU), the Common Agricultural Policy (CAP) provides the primary framework for mechanization-related investment, particularly through Pillar II measures that fund farm modernization, cooperation, and knowledge transfer [50]. In recent programming periods, several member states have adapted these measures to include collective investments and community-based business models, directly supporting the emergence of social enterprises in rural areas. For example, Measure 9 ("Setting up of producer groups and organizations") and Measure 16 ("Cooperation") have been used to promote shared machinery services, innovation partnerships, and local social cooperatives [51]. These mechanisms align well with the principles of social entrepreneurship, as they combine competitiveness with collective benefit [26].

Additionally, the European Social Economy Action Plan (adopted in 2021) recognizes social enterprises as key actors in the green and digital transitions [49]. By linking the social economy to the European Green Deal and the Farm to Fork Strategy, EU policy increasingly views mechanization not only as a productivity tool but also as a means of achieving social and environmental goals [52]. Investments in low-emission tractors, renewable energy use in agriculture, and digital machinery management systems are now eligible under sustainability-oriented funding schemes, particularly within the European Agricultural Fund for Rural Development (EAFRD) and Horizon Europe programs [53].

For non-EU countries, including Serbia and the Western Balkans, these policy directions offer a clear roadmap. Serbia's key strategic documents, such as the Strategy for Agriculture and Rural Development 2022–2030 and the Green Agenda for the Western Balkans, emphasize digitalization,

sustainability, and social inclusion [54,55]. However, explicit linkages between mechanization policies and social entrepreneurship remain limited. Strengthening these connections would require:

- Introducing financial incentives (grants, soft loans, guarantees) for cooperatives and social enterprises investing in shared mechanization.
- Establishing rural innovation hubs and demonstration centers where mechanization solutions can be co-developed and tested with social enterprises.
- Incorporating social impact indicators—such as job creation, gender equality, or community engagement—into agricultural investment evaluations.
- Encouraging cross-sectoral coordination between ministries of agriculture, labor, and social policy to align objectives and resources.

Institutional capacity building is another critical priority. Many small and medium-sized farms and rural cooperatives lack the administrative and financial knowledge needed to design viable investment projects. National programs could therefore support advisory services, training, and technical assistance to strengthen local governance and ensure that mechanization contributes not only to efficiency but also to inclusion [9,17].

Finally, the promotion of socially responsible innovation—combining mechanization, digitalization, and circular economy principles—should become a core element of future rural development policy [44,45]. Encouraging renewable energy use in mechanized processes, recycling of materials, and community-based service models would align national strategies with the EU Green Deal and climate neutrality targets.

In summary, the European and Serbian policy landscapes provide fertile ground for advancing social entrepreneurship through mechanization. However, realizing this potential requires integrating social objectives into agricultural modernization policies, developing new financial instruments tailored to social enterprises, and fostering collaboration among actors traditionally separated by sectoral boundaries. By doing so, policymakers can transform mechanization from a capital-intensive input into a social innovation driver for inclusive and sustainable rural transformation.

7. Conclusions

The relationship between social entrepreneurship and mechanization in agriculture represents an important yet still underexplored dimension of sustainable rural development. This paper has demonstrated that mechanization, traditionally viewed through a purely economic and technical lens, can also function as a powerful social instrument when embedded in organizational models that prioritize inclusion, equity, and community well-being. By linking the economics of mechanization with the principles of social entrepreneurship, new possibilities emerge for achieving both productivity and social justice within agricultural systems.

The literature review and European case studies reveal that the most successful initiatives are those that integrate economic efficiency with social purpose. Mechanization can empower social enterprises to enhance operational performance, expand service delivery, and achieve long-term financial sustainability. However, its transformative potential lies in its ability to redistribute access to technology — enabling smallholders, women, and marginalized groups to participate in modernized, technology-driven agricultural activities. In this sense, mechanization is not merely a tool of efficiency, but a vehicle of empowerment.

European experiences, particularly those from Germany, Austria, and Italy, demonstrate that cooperative and collective models of mechanization can deliver significant socio-economic benefits. Machinery rings, social cooperatives, and digital sharing platforms show that when machinery ownership and use are organized democratically, they create not only economic value but also social cohesion, trust, and shared responsibility. These cases also highlight the importance of supportive institutional frameworks — agricultural chambers, rural development programs, and national or EU-level funding schemes — that provide the legal and financial conditions for such initiatives to thrive.

For countries with similar structural characteristics to those of Central and Eastern Europe, including Serbia and the Western Balkans, these models offer relevant lessons. The high fragmentation of farms, limited access to finance, and low mechanization rates represent structural barriers that social enterprises could help overcome. By adopting cooperative ownership, machinery sharing, and service-based models, rural communities can improve resource utilization while simultaneously fostering inclusion and employment. Furthermore, aligning national rural development measures with the EU Common Agricultural Policy (CAP) and Green Deal priorities — particularly those targeting social economy and digital transformation — could stimulate the emergence of socially driven mechanization initiatives.

At the conceptual level, this analysis contributes to broadening the understanding of both fields. For agricultural economists, it expands the economics of mechanization to include social impact indicators such as employment generation, empowerment, and community engagement. For scholars of social entrepreneurship, it introduces the technological and economic dimension as an enabler of scale and efficiency, essential for long-term sustainability. The intersection of these two areas therefore forms a promising interdisciplinary research domain — one that connects technological innovation with social value creation.

In conclusion, mechanization should not be treated as an isolated technological process, but as part of a holistic approach to sustainable and inclusive development. When guided by social entrepreneurship principles, mechanization becomes a bridge between economic rationality and human-centered progress. Future research should further explore empirical evidence from developing and transition economies, evaluate the social return on mechanization investments, and identify policies that can foster inclusive innovation ecosystems. Ultimately, integrating mechanization into the mission of social enterprises offers a pathway toward more equitable, efficient, and resilient rural societies.

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