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National policy on sustainable food systems and livelihoods in rural areas

- Policy recommendations -

Kosovo

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Executive Summary

This policy recommendation document has been prepared within the framework of the regional initiative *Farm to Fork Academy for Green Western Balkans – Our Shared European Future*, which supports the transition toward sustainable food systems in alignment with the European Union’s Green Deal and the objectives of the Common Agricultural Policy (CAP). The initiative aims to strengthen national and regional capacities in the Western Balkans to analyze and improve agri-food value chains through participatory and evidence-based policymaking that promotes economic competitiveness, social inclusion, and environmental sustainability.

In Kosovo, this document specifically addresses the vegetable and dairy value chains, as they represent two of the most dynamic and strategically important sectors of the country’s agricultural economy. Both sectors are critical not only for food security and rural livelihoods but also for generating employment, contributing to export potential, and advancing Kosovo’s alignment with EU agricultural and food system standards. The focus on vegetables and dairy reflects their potential for growth, value addition, and increased integration into regional and European markets, while also highlighting the systemic challenges that must be addressed.

The vegetable sector in Kosovo benefits from favorable agro-climatic conditions, strong traditions of production, and growing domestic demand. However, it continues to face constraints such as fragmented land holdings, limited access to modern technologies, weak market linkages, and climate-related vulnerabilities. Similarly, the dairy sector has a strong presence in rural areas and serves as a vital source of income for small and medium-scale farmers. Yet, it is challenged by issues of productivity, quality assurance, certification, and fair access to markets. Both sectors are further affected by structural problems such as inadequate infrastructure, insufficient extension services, and limited farmer organization and cooperation.

To address these issues, the analysis applies the FAO’s ten principles of Sustainable Food Value Chain Development (SFVCD), with particular attention to the first phase—*Measuring Performance*. Data collection, expert consultations, and farmer workshops have been used to examine the economic, social, and environmental dimensions of sustainability across the vegetable and dairy value chains. This participatory approach ensures that the recommendations are rooted in the realities of producers while also aligning with broader national policy priorities and the EU accession process.

Policy recommendations for the vegetable and dairy value chains include improving systems for monitoring farmers’ incomes and production data, supporting inclusive participation of women and youth, strengthening producer cooperatives and associations, and promoting environmentally sustainable practices such as efficient water management and climate-smart agriculture. Key actions involve fostering value addition and certification, enhancing food safety and quality standards, facilitating access to finance and markets, and investing in capacity-building for small producers to increase competitiveness.

The findings are intended to guide policymakers, civil society actors, and sector stakeholders in designing interventions that improve value creation, enhance rural livelihoods, and build resilience to socio-economic and environmental challenges. By focusing on vegetables and dairy, this document provides a practical example of how evidence-based policymaking can strengthen Kosovo’s food system and serve as a model for improving other value chains in the future, fully aligned with the country’s path toward EU integration and sustainable development.

I. Introduction

This policy recommendation document has been prepared within the framework of the regional initiative Farm to Fork Academy for Green Western Balkans – Our Shared European Future, which supports the alignment of Western Balkan countries with the European Union’s Green Deal and the objectives of the Common Agricultural Policy (CAP). The overarching aim of the initiative is to strengthen the capacity of national stakeholders to design evidence-based policies for sustainable food systems, through participatory processes and the application of internationally recognized methodologies.

In line with this aim, the present document focuses specifically on the vegetable and dairy value chains in Kosovo. While earlier stages of the project explored a range of agricultural value chains of strategic importance, this document narrows its scope to vegetables and dairy as practical case studies for applying the FAO’s Developing Sustainable Food Value Chains: Guiding Principles. Particular emphasis is placed on the Measuring Performances phase, which assesses economic, social, and environmental sustainability dimensions.

The vegetable and dairy sectors are among the most important pillars of Kosovo’s agri-food economy. Vegetables represent one of the strongest production branches with potential for domestic market growth and regional export, while dairy farming remains a cornerstone of rural livelihoods, contributing to both household food security and income generation. These sectors have strong potential for sustainable growth, particularly when supported by modernization, quality assurance, and improved integration into markets. However, they also face persistent challenges—ranging from fragmented land holdings, climate-related vulnerabilities, and outdated production practices to limited access to modern technologies, inadequate infrastructure, weak farmer organization, and insufficient market integration. Addressing these challenges requires an integrated approach that strengthens structural capacities, promotes fair market opportunities, and leverages policy instruments aligned with EU standards.

The analysis presented in this document is based on a combination of national expert inputs, stakeholder consultations, farmer workshops, and review of secondary data sources. It applies the FAO framework to assess the sustainability of the vegetable and dairy value chains and to identify policy entry points for enhancing their performance. Though the document focuses on these two sectors, the approach and methodology are intended to inform broader national strategies for sustainable food chain development and to provide a replicable model for other value chains in the future.

In doing so, this document contributes to ongoing efforts in Kosovo to strengthen food system resilience, support rural livelihoods, and accelerate the transition toward sustainable, competitive, and inclusive agricultural practices in line with European integration priorities.

The document is structured to guide the reader through a logical progression from context to analysis and actionable policy recommendations. Following the introduction with background and objectives, the methodology section outlines the application of the FAO framework and the participatory processes used during stakeholder engagement. The next part presents an overview of the national agri-food value chain context with a specific emphasis on vegetables and dairy. This is followed by a detailed analysis of the three sustainability dimensions—economic, social, and environmental. The final section provides targeted policy recommendations for strengthening

the resilience, competitiveness, and sustainability of the vegetable and dairy value chains. Key findings and highlights are summarized to underline their relevance for broader national food system strategies and Kosovo's EU integration pathway.

II. Methodology

This policy recommendation integrates the FAO's Ten Principles of Sustainable Food Value Chain Development (SFVCD), as outlined in the FAO manual "Developing Sustainable Food Value Chains – Guiding Principles" (FAO, 2014). These principles serve as a structured framework to analyse and guide the development of sustainable food value chains in the Western Balkans, while being adapted to the specific national context of Kosovo.

In this document, the framework is applied to the vegetable and dairy value chains, which represent two of the most important sectors for Kosovo's agri-food economy, rural livelihoods, and food security. Recognizing the uniqueness of each food value chain, the FAO framework divides the ten interrelated principles into three progressive and iterative phases:

- **Measuring Performance** (Principles 1–3):
 - ⇒ *Economic Sustainability* (profitability and long-term viability for all stakeholders)
 - ⇒ *Social Sustainability* (equity, inclusivity, and social acceptability)
 - ⇒ *Environmental Sustainability* (resource protection and minimal ecological harm)
- **Understanding Performance** (Principles 4–6):
 - ⇒ *Root cause analysis of underperformance*
 - ⇒ *Stakeholder behaviour and governance*
 - ⇒ *Alignment with end-market demands*
- **Improving Performance** (Principles 7–10):
 - ⇒ *Strategic planning and upgrading*
 - ⇒ *Scalability*
 - ⇒ *Inclusive stakeholder engagement across sectors*

For the current policy phase in Kosovo, the methodology focuses primarily on **Phase I: Measuring Performance**, reflecting the country's current level of policy readiness within the Western Balkans context. In line with the FAO's Sustainable Food Value Chain Development (SFVCD) framework, this phase emphasizes the first three principles, which assess value chain performance through the lens of the *triple bottom line*: economic, social, and environmental sustainability (FAO, 2014).

These dimensions follow a natural sequence of priority. From an **economic** perspective, the vegetable and dairy value chains must ensure sustained or improved profitability for farmers, processors, and other stakeholders; otherwise, they lack short-term viability. On the **social** dimension, the chains must promote inclusiveness, equitable value distribution, and safe working conditions, while also ensuring active participation of youth and women—factors that are essential for medium-term sustainability. From an **environmental** standpoint, both sectors must increase productivity and competitiveness without depleting natural resources, particularly water and soil fertility, while promoting climate-smart agricultural practices as a requirement for long-term sustainability. While these three aspects are analyzed separately for clarity, in practice they are interdependent, with trade-offs often needed to meet evolving market demands and regulatory standards. Increasingly, strong social and environmental performance is not only a legal requirement but also a competitive advantage, enabling better access to EU markets and strengthening the differentiation of Kosovo's agricultural products.

This focus aligns with Kosovo's ongoing EU accession process and with recent agricultural policy developments at both the EU and regional levels, including the **EU Common Agricultural Policy Strategic Plan (2023–2027)** and the objectives of the **Farm to Fork Academy for Green Western Balkans initiative**. Building on these frameworks, Kosovo has already taken important steps toward mapping and analyzing its key agri-food sectors. Within the framework of the *Farm to Fork Academy* project, the vegetable and dairy value chains have been identified as priority sectors for advancing the green transition in agriculture and for strengthening the position of small and medium producers within the market.

To support this process, a participatory methodology was applied through **five consultative workshops** with farmers, producer groups, and other stakeholders across Kosovo between September and November 2024, engaging **over 100 participants**. These discussions gathered valuable insights on challenges, opportunities, and practical solutions for improving sustainability, ensuring fairer trade practices, and enhancing access to domestic, regional, and EU markets. A **SWOT analysis** was developed for both the vegetable and dairy value chains, complemented by solutions and recommendations that reflect the realities of Kosovo's producers. The consultative process confirmed that strengthening these sectors is not only essential for economic growth and rural development but also a key step toward aligning Kosovo's agricultural system with EU sustainability standards and policies.

In this document, to support the development of national policies for sustainable food chains within the *Farm to Fork Academy* project, a structured multi-step process was implemented, grounded in the FAO's "Measuring Performances" phase of sustainable food value chain development and the guidelines provided by the regional expert (Stipešević, 2025). The three sustainability pillars—economic, social, and environmental—are considered both individually and in overlap, acknowledging necessary trade-offs and synergies. Their integrated application ensures compliance with evolving market standards and promotes value creation through improved social and environmental performance. Several steps were taken into consideration and applied (Stipešević, 2025).

First, the national expert team in Kosovo reviewed the outcomes of the *National Farmer's Position in Value Chains* report (2024) and the findings from the vegetable and dairy stakeholder workshops, highlighting economic, social, and environmental impacts using a color-coded method. Each impact area was then evaluated for its level of sustainability using defined criteria and scored on a 1 to 3 scale (1 – minimum score: the element decreases sustainability; 2 – medium score: the element neither harms nor supports sustainability; 3 – maximum score: the element contributes positively to sustainability). Where information was insufficient, experts consulted additional data sources and identified opportunities for improvement, often based on existing SWOT analyses and the insights generated from the participatory workshops with farmers and producer groups.

These evaluations informed the restructuring of key elements into Kosovo-specific policy proposals, with a focus on economic viability (e.g., improving competitiveness of vegetable and dairy products), social inclusion (e.g., increasing participation of women and youth in both sectors), and environmental protection (e.g., promoting efficient resource use and climate-smart agricultural practices). The final assessments also addressed broader EU *Farm to Fork* strategy priorities, including biodiversity protection, climate adaptation, food security, and affordability of agricultural products for consumers. The process concluded with aligning recommendations to Kosovo's existing agricultural and rural development strategies, while also identifying areas where regulatory or institutional adjustments could support stronger value chain integration and sustainability.

In line with the project's overall scope and to demonstrate the applicability of the methodology, this policy recommendation document focuses specifically on the **vegetable and dairy value chains in Kosovo**, using them as representative examples to explore key sustainability challenges and policy solutions. This targeted approach allows for deeper, context-specific analysis and ensures that the findings are directly relevant to Kosovo's producers, while at the same time offering a methodological framework that can be replicated or adapted for other value chains in future national strategies.

This methodological focus lays the groundwork for the development of Kosovo's food chain development strategies, offering a baseline framework for policy recommendations and enabling the gradual integration of more advanced SFVCD principles from Phases 2 and 3 in the coming years.

III. National food value chain analysis

The vegetable and dairy value chains prioritized in this policy document were identified through a comprehensive selection process based on background research on Kosovo's agricultural sector, alignment with national development priorities, and consultations with farmers and other stakeholders during participatory workshops (2024). This targeted focus ensures that the policy recommendations are grounded in sectoral relevance and stakeholder priorities, forming a strong basis for developing sustainable food value chain strategies that align with both national goals and EU policy frameworks.

Vegetable production and dairy farming hold significant economic and social importance in Kosovo. Vegetables represent one of the most dynamic subsectors of agriculture, supplying both domestic demand and offering opportunities for regional export. Dairy farming, on the other hand, is a cornerstone of rural livelihoods, contributing to household food security, income generation, and employment in rural areas. Both sectors are particularly important in Kosovo's rural and peri-urban regions, where agricultural activities are the primary source of livelihood and where inclusive growth is essential to reducing migration and rural depopulation. The **Kosovo Agriculture and Rural Development Program (ARDP 2021–2027)** recognizes the potential of vegetables and dairy and identifies them as priority sectors for support, modernization, and sustainable growth.

Data on vegetable and dairy production vary, but both sectors remain dominated by smallholder farmers. Vegetable farms are typically fragmented, often operating on small plots with limited mechanization, while dairy production is characterized by small family farms with a few cows, often integrated into mixed farming systems. Only a small share of producers can be classified as medium or commercial-scale farms. This structure creates challenges in achieving economies of scale, ensuring consistent quality, and meeting market standards—especially those required for export.

Vegetable production in Kosovo has grown steadily in recent years, with annual outputs fluctuating due to climate variability and limited access to modern irrigation. Greenhouse production is expanding, but productivity levels remain below EU averages. The dairy sector has also shown growth, yet challenges persist in terms of milk quality, hygiene standards, and veterinary support. Seasonal fluctuations in milk supply, combined with high input costs, further constrain competitiveness.

Organic production in vegetables and dairy is still at an early stage but represents an opportunity for sustainable growth. Interest in certification and environmentally friendly production methods is increasing, especially among younger farmers and cooperatives. Expanding organic production could position Kosovo as a supplier of niche products for regional and EU markets, aligning with the *Farm to Fork* strategy's sustainability goals.

Despite their potential, both the vegetable and dairy sectors face structural trade imbalances. Kosovo continues to import large volumes of dairy products and vegetables to meet domestic demand, despite having suitable production conditions. This points to untapped opportunities to strengthen domestic production, processing, and competitiveness in order to reduce import dependence and increase value addition within the country.

The vegetable and dairy value chains in Kosovo begin with input supply, including seeds, fertilizers, animal feed, veterinary medicines, and equipment. Much of this input supply is imported, increasing costs for small farmers. The primary production stage involves smallholder farmers who cultivate vegetables in open fields or greenhouses, and dairy farmers who maintain small herds for milk production. Productivity in both cases is heavily influenced by climate conditions, water availability, land fragmentation, and access to veterinary and advisory services.

The post-harvest and processing stage differs between the two chains. In vegetables, this includes harvesting, grading, storage, and packaging, where limited cold storage and collection points create bottlenecks. In dairy, post-production involves milk collection, cooling, processing into cheese, yogurt, or other products, and packaging. Small-scale producers often sell raw milk to local processors or directly to consumers, while larger dairies integrate collection and processing facilities.

The marketing and distribution stage remains a challenge. Vegetable producers often sell directly in local markets, fairs, and through informal channels, with only a few able to access supermarkets or regional buyers. Dairy producers face similar challenges, with the market dominated by a small number of larger processors, while smaller producers struggle with quality standards and stable market access. Exports of vegetables and dairy remain limited, concentrated in niche or seasonal products.

Support services—including government subsidies, extension services, training, certification schemes, and farmer associations—play a crucial cross-cutting role. While subsidies exist for both vegetables and dairy, challenges remain in targeting, transparency, and effectiveness. Strengthening producer organizations and cooperatives is particularly important to improve bargaining power, access to finance, and collective investment in storage, processing, and marketing.

Finally, end consumers in Kosovo purchase vegetables and dairy products mainly for household consumption. Demand for fresh, local, and higher-quality products is increasing, especially in urban areas, while affordability remains a central concern. At the same time, the growing interest in healthy diets and sustainable products offers new opportunities for producers who can meet these evolving preferences.

Vegetable and dairy production in Kosovo is supported through a range of government measures aimed at strengthening agricultural competitiveness and improving farmer livelihoods. Farmers engaged in vegetable cultivation are eligible for direct payments per hectare of cultivated land, with higher support for strategic crops such as peppers, tomatoes, and potatoes. Additional incentives are available for investments in greenhouses, irrigation systems, and cold storage facilities, recognizing the importance of technology and infrastructure in increasing productivity and reducing post-harvest losses.

In the dairy sector, farmers benefit from subsidies provided per liter of milk delivered to licensed collection centers or processing facilities. These payments are tied to quality standards, with higher subsidies allocated for milk that meets hygiene and fat content requirements. Support is also available for herd improvement through artificial insemination programs, as well as for investments in modern barns, milking equipment, and milk cooling tanks. To further encourage sustainable practices, farmers adopting good animal welfare standards and environmental measures—such as manure management systems—can access additional incentives.

Given their **economic significance, environmental potential, and social relevance** in rural communities, the vegetable and dairy value chains have been selected as the strategic focus of this policy document. Their inclusion enables a targeted analysis of the challenges faced by farmers, especially at the production and market-integration levels, and provides a solid foundation for policy recommendations aimed at improving sustainability, strengthening domestic production, reducing import dependency, and enhancing the resilience of rural livelihoods in Kosovo.

National policy context

The findings and analysis presented in the following section provide a valuable contribution to the development of sustainable vegetable and dairy value chains in Kosovo. They reinforce the national policy framework in line with the European Commission's *Farm to Fork Strategy* and establish the basis for actionable recommendations.

Kosovo's national policy framework for agriculture is anchored in the Law on Agriculture and Rural Development (2003, amended 2016), which sets the foundation for agricultural and rural development planning. The current key strategic document is the Agriculture and Rural Development Program (ARDP) 2021–2027, which is highly aligned with the objectives of the EU's *Common Agricultural Policy (CAP)*. The ARDP focuses on three strategic priorities:

- Improving the competitiveness and sustainability of agricultural holdings, particularly through modernization, consolidation of farms, and stronger integration into value chains.
- Promoting environmentally sustainable practices that support climate change mitigation and adaptation, improve natural resource management, and protect biodiversity.
- Fostering sustainable rural development, with a focus on increasing employment opportunities, empowering women and youth, and reducing poverty in rural areas.

A cross-cutting priority of the ARDP is the modernization and digitalization of the agricultural sector, including knowledge transfer, innovation, and advisory services to farmers and stakeholders. This reflects Kosovo's need to accelerate the adoption of modern technologies in vegetable and dairy production, improve efficiency, and align with EU standards.

These strategic priorities are further detailed through specific objectives closely aligned with the nine priorities of the EU CAP. The first priority focuses on enhancing competitiveness and ensuring fairer income opportunities for farmers, including those in vegetable and dairy value chains. The second emphasizes environmentally responsible farming practices, such as efficient water use in vegetable production and improved waste management in dairy farming. The third priority is dedicated to sustainable rural development, addressing food safety, public health, consumer expectations, and animal welfare, while also attracting young farmers into the sector and strengthening rural communities.

Together, these national policy directions form a coherent framework that supports the sustainable development of Kosovo's vegetable and dairy value chains, while also advancing the country's progress toward EU integration.

Strategic goals	Specific objectives
Improving the competitiveness and income sustainability of agricultural holdings	SO1 – to ensure sustainable income for agricultural holdings, contributing to national food security, with a focus on vegetable and dairy producers; SO2 – to strengthen market orientation and increase competitiveness through modernization, research, technology transfer, and digitalization; SO3 – to improve the position of farmers in vegetable and dairy value chains by supporting producer organizations, cooperatives, and fair-trade practices;
Promoting environmental practices that contribute to climate change mitigation and adaptation	SO4 – to strengthen resilience of agriculture to climate change by promoting climate-smart practices in vegetable and dairy production, including water efficiency and improved manure management; SO5 – to encourage sustainable development and efficient management of natural resources such as soil, water, and air, particularly in intensive vegetable cultivation and livestock farming; SO6 – to protect biodiversity, enhance ecosystem services, and preserve traditional landscapes in rural areas where vegetable and dairy farming are concentrated;
Ensuring sustainable rural development	SO7 – to attract and retain young farmers in vegetable and dairy sectors, and to support business creation and entrepreneurship in rural areas; SO8 – to promote employment, social inclusion, and local economic growth in rural areas, with a focus on agro-processing, value addition, and sustainable forestry as complementary activities; SO9 – to strengthen agriculture’s response to societal demands on food safety, nutritional quality, sustainability, reduction of food waste, and animal welfare standards in both dairy and vegetable production;

The ARDP 2021–2027 emphasizes the need for increased investment in research, innovation, and advisory services to strengthen the adaptive capacity of farmers and provide effective technical support for sustainable production. However, the SWOT analysis of the sector highlights several key weaknesses: advisory services remain limited in both coverage and specialization, while training opportunities for sustainable and climate-smart practices in vegetable and dairy production are insufficient. The impacts of climate change—such as droughts, water shortages, and animal health risks—are identified as major threats, alongside structural constraints such as land fragmentation, high input costs, and limited access to regional and EU markets.

In parallel, the Instrument for Pre-Accession Assistance in Rural Development (IPARD III) 2021–2027 sets out complementary objectives that are directly relevant for Kosovo’s vegetable and dairy value chains. These include enhancing the viability and competitiveness of farms, modernizing food processing capacities, and supporting investments that raise quality and safety standards. Another key objective is to restore, preserve, and enhance ecosystems linked to agricultural activities, ensuring that intensive vegetable production and dairy farming adopt environmentally friendly and resource-efficient practices.

The program also emphasizes balanced territorial development across rural areas, which is particularly important given the concentration of dairy farming in smallholder systems and vegetable production in peri-urban zones.

A cross-cutting priority of IPARD III is the transfer of knowledge and innovation in agriculture, forestry, and rural development, fostering continuous adaptation and modernization. Horizontally, the program prioritizes support for initiatives led by women and young farmers, active agricultural holdings, environmentally beneficial activities, innovations in technology and business models, job creation, collective investments, rural diversification (including mountainous areas), rural tourism, and cultural heritage preservation. It also highlights the importance of strengthening human capital and entrepreneurial skills in rural communities, which is critical for the long-term competitiveness and sustainability of Kosovo's vegetable and dairy value chains.

IV. Analysis of performance (economic, social, environmental)

The detailed report on the national farmer's position in value chains (Kosovo, 2025), together with other secondary sources, provided the basis for a structured analytical assessment of the **vegetable and dairy value chains** through the three sustainability dimensions—economic, social, and environmental.

Economic impact – short-term sustainability

Producers in the vegetable and dairy value chains face a wide range of economic and structural challenges that directly affect their short-term viability. Farmers report low and unstable purchase prices, which do not adequately cover production costs. This situation is further aggravated by the increasing costs of inputs, such as animal feed, seeds, fertilizers, energy, transport, packaging, and veterinary services.

Market access remains limited. Many vegetable growers depend on local markets and roadside sales, while dairy farmers often sell raw milk directly to small processors or collection points with little bargaining power. The absence of well-developed storage, processing, and distribution infrastructure restricts opportunities to reach larger domestic retailers and export markets.

Additional pressure comes from import competition, where cheaper and often lower-quality dairy and vegetable products from the region and beyond enter the market, undercutting local producers. Labour shortages and rising labour costs present another significant challenge, particularly for seasonal vegetable farming and livestock care.

Access to affordable financing is restricted due to high collateral requirements and unfavourable credit conditions, which prevent farmers from making necessary investments in modernization.

Much of the existing infrastructure and equipment, particularly in small-scale dairy farms and vegetable greenhouses, is outdated and inefficient.

Moreover, the level of professional and fully market-oriented farmers is low, as many agricultural households engage in vegetable cultivation and dairy farming primarily for supplemental income, operating on small and fragmented plots or with low-yield livestock.

Sustainability assessment (short-term): Partially sustainable.

Economic sustainability in the vegetable and dairy value chains is fragile. Without targeted policy interventions to stabilize prices, improve market access, and increase investment opportunities, many farmers will continue to operate under conditions that make profitability uncertain. Some will maintain production as a survival or supplementary activity, but not as a competitive or growth-oriented business.

Social impact – medium-term sustainability

The vegetable and dairy sectors in Kosovo face a number of social challenges that influence medium-term sustainability. Limited inclusiveness and participation are evident, particularly for women, youth, and marginalized rural communities. While women play a significant role in small-scale vegetable farming and dairy care, they often lack access to decision-making, land ownership, training, and finance. Similarly, young farmers frequently face barriers in entering the sector due to limited start-up capital and inheritance constraints.

Labour conditions are generally informal, with many family members contributing unpaid or underpaid work. Seasonal labour shortages, particularly during peak vegetable production or harvest periods, can further compromise productivity. Social infrastructure, such as access to training, extension services, and cooperative networks, remains insufficient. Producer associations and cooperatives exist but often lack the organizational capacity to effectively support farmers in collective marketing, training, or advocacy.

Sustainability assessment (medium-term): Partially sustainable.

Social sustainability is at risk unless interventions promote inclusiveness, equitable access to resources, and capacity building. Enhancing participation of women and youth, strengthening cooperatives, and improving training and advisory services are essential to ensure medium-term resilience and fair value distribution along the value chains.

Environmental impact – long-term sustainability

Environmental challenges in vegetable and dairy production are critical for long-term sustainability. Resource use efficiency is limited: water management in vegetable production is

often suboptimal, and soil degradation due to overuse of fertilizers and insufficient crop rotation poses risks. In dairy farming, manure management is frequently inadequate, and the disposal of waste products can affect local ecosystems.

Climate change impacts—including droughts, extreme temperatures, and irregular rainfall—threaten both vegetable yields and livestock productivity. Additionally, loss of biodiversity and limited adoption of environmentally friendly practices, such as organic farming or agroecological methods, further constrain environmental sustainability.

Support services addressing these issues exist but are limited in scope. Extension services, training on climate-smart agriculture, and incentives for sustainable practices are insufficient to achieve wide adoption. Moreover, market mechanisms that reward environmental stewardship, such as premiums for organic or certified sustainable products, are not yet fully developed.

Sustainability assessment (long-term): Partially sustainable.

Environmental sustainability requires targeted policies to promote climate-smart and resource-efficient practices, encourage organic and certified production, and protect soil, water, and biodiversity. Without these interventions, the vegetable and dairy sectors risk declining productivity and ecosystem degradation, undermining long-term viability.

Sustainability Dimension	Assessment Focus	Score	Rationale
Economic	Short-term sustainability: profitability, market access, input costs, investment, and finance	☐ Partially sustainable	Low and unstable prices, rising input costs, limited market access, import competition, small-scale and fragmented farms, restricted access to finance and investment; production often supplemental income.
Social	Medium-term sustainability: inclusiveness, labour conditions, training, participation, cooperatives	☐ Partially sustainable	Limited participation of women and youth, informal labor, insufficient advisory and training services, weak producer organizations; social resilience depends on capacity building and inclusiveness measures.

Sustainability Dimension	Assessment Focus	Score	Rationale
Environmental	Long-term sustainability: resource efficiency, climate change adaptation, biodiversity, organic practices	☐ Partially sustainable	Inefficient water and soil management, poor manure handling, low adoption of climate-smart and organic practices, vulnerability to climate change; adoption of sustainable practices limited.

V. National policy recommendations for sustainable food chains

The vegetable and dairy value chains in Kosovo play an important role in advancing sustainable food systems, closely aligning with the objectives of the EU “Farm to Fork” strategy.

First, to mitigate environmental impacts, adopting agro-ecological practices is essential. For vegetables, this includes crop diversification, integrated pest management, reduced use of chemical fertilizers and pesticides, organic farming, and efficient water management. For dairy, promoting sustainable pasture management, rotational grazing, and reducing the carbon footprint of feed and livestock practices are key. These measures also contribute to soil conservation, biodiversity preservation, and overall ecosystem health.

Second, integrating agroforestry and on-farm tree planting can enhance local microclimates, protect water resources, and support sustainable livestock and crop production. Public awareness campaigns can further educate farmers and communities about the importance of environmental stewardship, encouraging responsible production practices.

Third, both vegetable and dairy sectors are highly vulnerable to climate change, including extreme weather events, shifting rainfall patterns, and heat stress. Building resilience requires climate-smart agricultural practices, adaptive technologies, improved irrigation and storage infrastructure, and targeted farmer training programs to maintain productivity and reduce losses.

Fourth, these value chains can enhance nutrition and public health. Vegetables provide essential vitamins and minerals, while dairy products are a critical source of protein and calcium, particularly in rural areas where access to diverse foods may be limited. Strengthening food safety standards, supporting local production, and promoting healthy diets can improve food security and equitable access to nutritious foods.

Finally, to promote economic fairness and affordability, challenges such as price volatility, limited market access, and unequal profit distribution must be addressed. Establishing fair pricing mechanisms, improving market transparency, supporting cooperatives, and strengthening smallholder producer networks can increase income stability, ensure consumer affordability, and generate fair returns for producers.

Through these targeted interventions, Kosovo's vegetable and dairy value chains can become concrete and scalable examples of sustainable, inclusive, and resilient agri-food systems, supporting rural livelihoods, environmental conservation, and public health.

Framework Improvement Policy Recommendations for the Vegetable and Dairy Value Chains in Kosovo

The vegetable and dairy value chains in Kosovo have significant potential to contribute to sustainable rural development, environmental conservation, and resilient food systems. Realizing this potential requires targeted policy interventions that address existing gaps and enhance overall performance and sustainability across production, processing, and marketing stages. The following framework recommendations are proposed to guide national and local stakeholders in strengthening economic viability, promoting social inclusion, and ensuring environmental protection.

Economic sustainability (short-term viability)

- Introduce a standardized income tracking tool for farmers and value chain actors: track yields, input costs (seeds, fertilizers, livestock feed, veterinary care), and sales (raw vs. processed products).
- Map income distribution along the value chains: identify the share of final retail prices captured by farmers, aggregators, processors, and retailers.
- Establish key performance indicators such as short- and mid-term income growth of farmers, cost of production per kg of vegetables or liter of milk compared with market prices.
- Monitor market access improvements by tracking the number of new buyers (local, regional, international), product certifications (organic, geographic origin, traceability), and diversification of products (e.g., cheese varieties, yogurt, processed vegetable products).
- Conduct cost-benefit analyses of branding initiatives, value-added processing (e.g., pickled vegetables, vegetable juices, artisanal cheeses), or packaging innovations to increase market competitiveness.

Social sustainability (mid-term viability)

- Conduct surveys to capture key social and labor data: income from vegetable and dairy production, family labor contributions, seasonal work variability, and workforce demographics.
- Track social indicators such as the proportion of value retained by primary producers, household income stability or improvement, and participation of youth and women in farming, cooperatives, or leadership roles.
- Monitor social acceptability, labor conditions, and food safety standards across production and processing stages.
- Assess the impact of cooperatives and farmers' organizations on income differentials, transparency in pricing, and inclusiveness in decision-making.
- Monitor education and skills levels, access to agricultural extension services, digital literacy, and participation in training programs.

Environmental sustainability (long-term viability)

- Introduce and regularly update baseline environmental indicators: soil fertility, water use efficiency, pesticide residues, livestock environmental footprint, biodiversity (crop pollinators, pasture species diversity), and waste management practices.
- Promote sustainable practices: organic vegetable production, rotational cropping, efficient irrigation, pasture management, rotational grazing, and agroforestry models that integrate nutrient- and pollinator-rich plant species.
- Link environmental performance to market incentives such as eco-certifications, green branding, or premium pricing for sustainably produced vegetables and dairy products.

VI. Conclusion

The vegetable and dairy value chains in Kosovo involve a diverse set of actors, including farmers, input suppliers, processors, traders, and retailers, each contributing to the flow of products from farm to market. These sectors are critical for rural livelihoods, providing income opportunities in both fertile lowlands and less agriculturally productive hilly or mountainous areas. Beyond the primary products—fresh vegetables, milk, and dairy derivatives—there is significant potential for diversification and value addition, including processed vegetables, cheeses, yogurt, and other dairy-based products.

Despite their potential, the vegetable and dairy value chains face several constraints, including limited productivity, weak market linkages, unfair competition practices, lack of access to quality inputs, and gaps in regulatory and certification frameworks. Strengthening these chains through improved infrastructure, farmer cooperatives, quality assurance, and market transparency can enhance incomes, improve nutrition, support rural development, and promote environmental sustainability.

Applying a structured sustainability framework to these value chains enables a more evidence-based, inclusive, and impact-oriented approach to agricultural development. Such a framework supports informed decision-making for policymakers, development partners, producer organizations, and private sector actors by identifying specific economic, social, and environmental gaps and proposing actionable recommendations. Enhancing income tracking, increasing participation of marginalized groups, and monitoring environmental performance not only improves resilience of farmers and producers but also strengthens the long-term viability of the entire value chain.

The use of key performance indicators, standardized monitoring tools, and adaptive management practices ensures that progress can be measured consistently over time and interventions can be targeted effectively. While the proposed framework has been tailored to Kosovo's vegetable and dairy sectors, its structure and indicators are broadly applicable across other agricultural value chains. By adapting specific metrics to the unique dynamics of each value chain, stakeholders can systematically identify gaps, track improvements, and design interventions that are both context-relevant and impact-driven, supporting sustainable, inclusive, and resilient rural development in Kosovo.