

Roots of Change: Policy Direction for a Resilient Agri-food Industry in Lebanon

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About the author

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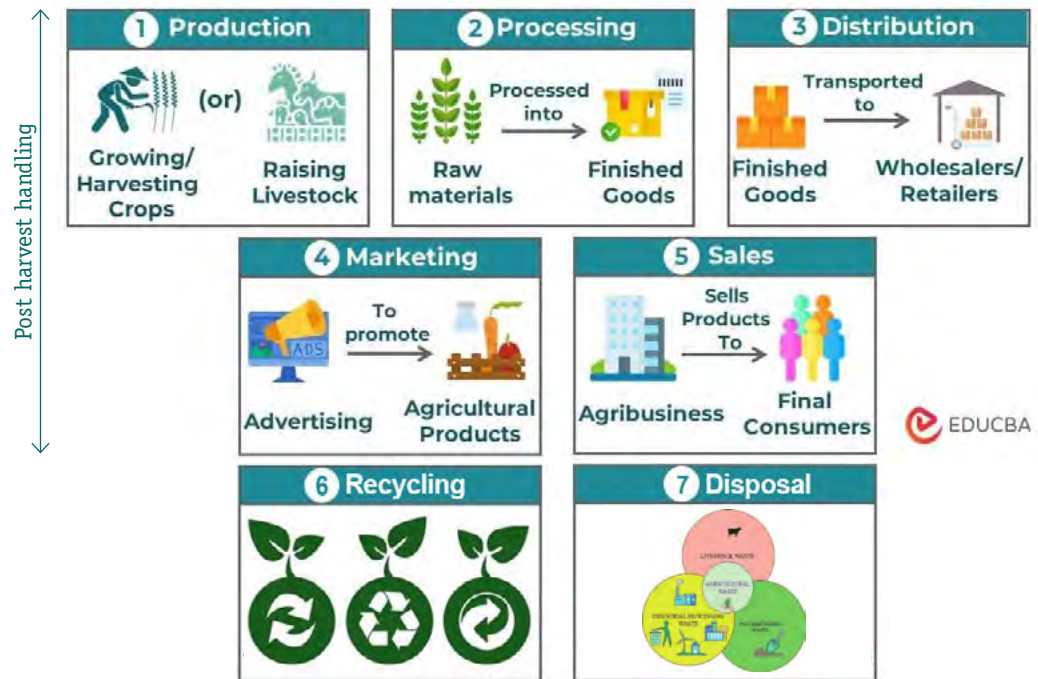
Introduction

The agri-food sector covers the full chain of activities involved in bringing food and agricultural products from the farm to the consumer. It includes agricultural production, post-harvest handling, food processing, packaging, distribution, marketing, retail, recycling, and disposal.

This sector is a key driver of economic growth and food security, linking farmers, industries, and consumers through an integrated value chain. It also plays an essential role in advancing innovation and sustainability, addressing challenges such as climate change, resource management, and the growing demand for safe, healthy, and environmentally responsible food.

In short, the agri-food sector represents the entire system that converts raw agricultural materials into finished food and beverage products, contributing significantly to employment, trade, and national development (Brennan, 2024).

Figure 1 Agri-Food Sector Chain Activities



Source: EDUCBA, 2025, Researchgate, 2025, and author

Globally, the agri-food sector is experiencing rapid expansion, fueled by population growth, rising GDP per capita, and lifestyle shifts that are increasing the demand for packaged food and beverages. The UN Food and Agriculture Organization (FAO) reports that in 2020 the combined agriculture plus food processing ('agrifood') sector in Lebanon contributed about 13% of GDP (9% from agriculture + 4% from food processing). Additionally, the global rise in the middle-class population with greater purchasing power is boosting demand for premium, high-quality packaged foods made with organic, natural, and clean ingredients, as well as locally produced items (FAO, 2025).

However, FAO representative in Lebanon Nora Ourabah Haddad stated that hunger remains a major global issue, with up to 720 million people affected in 2024, showing that the world is off track to end hunger by 2030. In Lebanon, around 20% of the population—about 1.24 million people—suffer from acute food insecurity. Despite some improvement, economic crises, political instability, climate impacts, and recent conflicts continue to threaten food security, and the country still needs strong international support to maintain progress (Al Jadeed, 2025).

Regional Overview

Asia represents a key growth region for packaged agri-food companies, with the sector to expand by 3.6% between 2016 and 2021 (IDAL, 2020). This growth reflects a combination of structural and demographic changes, including rising

incomes, urbanization, and evolving consumer preferences. The increasing demand for packaged and value-added food products demonstrates a shift toward convenience-oriented consumption patterns, particularly among the growing middle classes in countries like China, India, and Indonesia. Consequently, regional and international agri-food firms are intensifying their investments in food processing, packaging innovation, and supply chain infrastructure to capture emerging market opportunities.

In parallel, the Middle East and North Africa (MENA) region is experiencing a significant transformation in its agri-food sector. As Elirani (2020) observes, population growth, income expansion, and rapid urbanization are reshaping dietary habits, leading to greater demand for processed, packaged, and convenient foods. These shifts are occurring alongside broader policy objectives aimed at enhancing food security, improving sustainability, and reducing import dependency. Given the MENA region's historical reliance on imported food commodities, governments have recognized the strategic importance of investing in domestic agri-food production and innovation to strengthen resilience and self-sufficiency.

Countries such as Saudi Arabia, the United Arab Emirates, Qatar, and Egypt have adopted comprehensive strategies to modernize their agri-food systems through technological innovation, public-private partnerships, and foreign investment. These initiatives focus on developing local processing capabilities, encouraging agricultural research, and promoting sustainable practices, such as water-efficient farming and precision agriculture. Moreover, the integration of digital technologies and agri-tech solutions, including controlled-environment agriculture and data-driven supply chain management, reflects a growing emphasis on sustainability, efficiency, and competitiveness.

Overall, the transformation of the agri-food sector in both Asia and the MENA region underscores a broader global trend toward modernization and market integration. The convergence of consumer demand, policy reform, and technological innovation is not only reshaping production and distribution systems, but also positioning these regions as dynamic contributors to the global agri-food economy (Aboelsoud & Hashem, 2021).

Lebanon's Agrifood Sector

Challenges

Lebanon's agri-food industry is a vital pillar of its economy, contributing significantly to exports, employment, and rural livelihoods, and accounting for about 20% of the country's total economic output (World Bank, 2023). The sector benefits from the country's favorable climate, strategic geographic location, trade connections, fertile soil, and an agricultural and historical culinary heritage, which plays a major role in making the agri-food industry

in Lebanon a promising one. Some of the major agri-food industry products include fruits and vegetables, olive oil, wine, dairy, and confectionery.

Nevertheless, Lebanon's agri-food sector continues to face major challenges that undermine its growth and resilience. Despite strong agricultural potential, the industry struggles with outdated infrastructure, fragmented supply chains, limited access to financing, and insufficient modern technology (FAO, 2020). The biggest (and longest-lasting) adverse effect has been caused by the economic crisis, currency depreciation, and fuel shortages, which have sharply increased production costs, placing additional pressure on farmers and food producers.

Hage Boutros (2025) notes that the average annual inflation rate in Lebanon reached 45.24% in 2024, further compounding financial strain and operational difficulties across the sector. According to the Spring 2021 Lebanon Economic Monitor, the country's financial and economic crisis is one of the worst since the middle of the 1800s. The World Bank lowered Lebanon's income classification from 'upper-middle income' to 'lower-middle income' in only three years (Table 1).

Table 1 Lebanon's Economic Decline and World Bank Income Reclassification (2019–2022)

| Year | Nominal GDP (USD billions) | GDP per capita decrease (%) | Income classification |
|------|-------------------------------|--------------------------------|-------------------------------------|
| 2019 | 52 | 0% baseline | Upper-middle income |
| 2020 | 37.5 | 18.25% | Upper-middle income |
| 2021 | 23.1 | 36.5% | Upper-middle income |
| 2022 | - | - | Reclassified to lower-middle income |

Source: World Bank 2023, UN, EU

Regional instability and conflict in the past year have further disrupted trade routes, damaged agricultural lands—particularly in the border areas—and slowed the import and export of essential raw materials (Chahine, 2025). This has had a devastating impact on Lebanon's agricultural sector. Entire harvests have been left unattended as farmers were forced to flee or were unable to access their lands due to insecurity.

In many areas, orchards have suffered physical damage from shelling or neglect, while disruptions in the supply of feed, veterinary care, and transportation have severely hindered animal production. These disruptions have led to significant economic losses for farmers and rural communities that depend on agriculture for their livelihoods (Jaafar, 2024).

Furthermore, the war has also severely affected market systems. Export channels, particularly crucial for Lebanon's staple crops, such as potatoes, have been damaged or shut down entirely. The reduced access to regional and international markets left farmers with surplus produce and limited options

for income generation. This has not only harmed household economies, but also contributed to broader market volatility, including price fluctuations in postharvest handling activities and supply chain breakdowns.

The above mentioned market systems have been affected by the lack of comprehensive data or research on the long-term impact of the conflict on agriculture and food systems. There is a notable gap in understanding how Lebanon's agricultural sector can adapt to these challenges. Strategies for resilience, such as diversification, investment in climate-smart practices, or rebuilding infrastructure, are not being widely implemented, largely because policymakers and stakeholders lack the necessary information and coordination. As a result, the sustainability of Lebanon's agri-food systems remains highly uncertain, leaving the country vulnerable to further economic and food security shocks (Jaafar, 2024).

Another long-term challenge exerting considerable influence on the country's agri-food sector is the rapid pace of urbanization. The FAO report in 2024 noted that only about 11% of Lebanon's population now lives in rural areas, indicating a strong migration trend toward cities. One consequence of this urbanization is that, in 2023, more than 40% of Lebanese farmers were over 55 years old, while fewer than 15% were under 34 (UNESCWA, 2023). This demographic imbalance limits innovation and reduces the adoption of modern agricultural technologies (FEWS NET, 2024).

The expansion of urban spaces, particularly along the coast and around Beirut, has resulted in the conversion of fertile farmland into residential and commercial zones. The loss and fragmentation of agricultural land have weakened farming productivity and limited opportunities for large-scale operations (Cambridge University Press, 2021). Consequently, many farmers have turned to part-time or small-scale agriculture, while others have left the sector altogether in pursuit of more stable employment in urban areas.

Urbanization has also changed food consumption habits and increased demand for packaged and processed products. As living standards rise and lifestyles become more fast-paced, consumers are turning toward convenient and value-added food options. Lebanon's agri-food companies have responded by investing in food processing, packaging, and distribution.

However, domestic agricultural production continues to meet only a small portion of national food demand, estimated at roughly one-fifth, forcing Lebanon to rely heavily on imports (World Bank, 2023). This dependency exposes the country to external shocks and price fluctuations, challenges that have been intensified by the ongoing economic crisis (FAO, 2024).

Finally, development of the agri-food sector is further hindered by limited farmer familiarity with international quality and safety standards (such as ISO 9000 and 22000, as well as EU certification requirements), weak skills

development, and poor coordination between producers and manufacturers. This compliance gap limits their export capacity and integration into global markets.

These challenges place a great deal of strain on Lebanon's agri-food sector, endangering both its sustainability and the country's food security, especially when combined with the effects of climate change, water scarcity, and inadequate government support (FAO, 2024).

Opportunities

Lebanon's strategic geographic Mediterranean location, fertile valleys, and varied terrain allow for the cultivation of numerous high-value crops such as olives, grapes, citrus fruits, and nuts. Combined with a skilled workforce and a growing culture of innovation and entrepreneurship, these factors put the country in a strong position to produce both traditional and value-added agri-food products (FAO, 2024).

There is a growing interest by consumers in genuine products from the Mediterranean and Levantine regions that are organic, healthier, and environmentally friendly, creating a strong consumer appetite for authentic, high-quality Lebanese food products (World Bank, 2023). Lebanon, with its rich culinary heritage, diverse agricultural background, and skilled workforce, can appeal to investors interested in the agri-food industry, particularly as other sectors, such as banking and construction, are experiencing decline.

According to the Investment Development Authority of Lebanon (IDAL, 2020), the agri-food industry is a key pillar of the national industrial landscape, representing nearly 38% of total industrial output and exceeding USD 1.6 billion in value as of 2018. This has highlighted the sector's adaptability and significant export growth potential, particularly in Arab markets. Existing trade agreements with local and international partners, such as the Arab Gulf, Europe, and Africa, have also expanded market access and offered additional benefits to both exporters and investors (Trade.gov, 2023).

A key advantage for the Lebanese agri-food industry is post-harvest activities, which encompass all operations that take place immediately after crops are harvested, such as cleaning, sorting, grading, drying, storage, and transportation. Lebanese agri-food enterprises are heavily involved in maintaining product quality, reducing losses, and ensuring that food remains safe and nutritious as it moves along the supply chain.

Academically, there are a number of Lebanese universities which have incorporated programs on agriculture and agri-food, attracting a substantial number of students. In 2020, the Investment Development Authority of Lebanon (IDAL) reported that more than 30,000 students were enrolled in engineering and agri-food-related programs in 2018, ensuring a steady flow of talent capable of driving innovation, improving production efficiency, and

maintaining compliance with international food safety and quality standards. This combination of educational skill and post-harvest handling applications by the agri-food enterprises provides a strong comparative advantage for investors seeking efficient producers and knowledgeable labor.

Several public (Lebanese government) and private efforts such as the FAO, UNIDO, and ILO have been launched in recent years to enhance the sector's competitiveness (FAO, 2024; UNDP, 2023). These include the creation of agri-food innovation clusters such as Lebanon Agri-Food Cluster Innovation (Q00T), the expansion of contract farming models to strengthen links between farmers and markets, and the promotion of sustainable agricultural practices to mitigate the effects of climate change and resource depletion (Q00T, 2023; ILO, 2025).

Funding for small-scale farmers, and the constant need to satisfy global standards for food safety and quality, also open doors for focused partnerships and reforms aimed at improving value creation across the supply chain, upgrading operations, and reducing post-harvest losses (LCPS, 2023).

Despite being an ongoing challenge to agriculture, urbanization presents new opportunities for the sector, as urban markets stimulate investment in value-added production, food innovation, and export-oriented processing. Cities are also areas where work possibilities tend to be concentrated, therefore it is essential to recognize their economic and social importance. National strategies, such as the National Agriculture Strategy 2020–2025, seek to do this by promoting sustainable practices, strengthen rural-urban linkages, and encourage youth participation in agri-tech and innovation (Ministry of Agriculture, 2020).

Finally, the government of Lebanon has recognized the agri-food industry as a strategic national priority for economic diversification, job creation, and export development. Through a range of initiatives, it has established technical and financial support mechanisms to encourage private sector growth, improve productivity, and promote added value. These include tax incentives for agribusiness investments, technical training and capacity building programs, export facilitation services, and access to financial resources through development funds and donor-supported projects. Such measures reflect a clear governmental commitment to strengthening the agri-food ecosystem and to positioning Lebanon as a regional hub for agro-industrial innovation.

Recommendations

A panel discussion sponsored by the Friedrich Naumann Foundation (FNF) and facilitated by Lebanese Center for Policy Studies was held to develop recommendations to improve and modernize Lebanon's agri-food sector. Attendees from the various fields involved in the agri-food industry were hosted in the event, including from the ministries of agriculture and economy,

Lebanese University and the American University of Beirut, the Agri-Food Industry Association, NGOs, and entrepreneurs.

Several recommendations have been developed by the attendees that need to be taken into consideration in future endeavors on behalf of the public and private sectors. The discussion emphasized that Lebanon's agricultural system stands at a crossroads, with deep-rooted challenges, but also significant untapped potential. Years of political instability, economic crises, and the impact of regional conflicts have weakened the sector's competitiveness, yet it remains one of the few areas with the ability to generate inclusive growth, employment, and export revenues.

Participants agreed that a comprehensive reform strategy is needed which integrates agricultural production, post-harvesting activities, innovation and research organizations, governance and regulations, economic factors (such as exports, trade balance, and social impact), and public-private collaboration.

Agriculture Production

From the agricultural perspective, one of the primary recommendations centered on vertical farming and the broader integration of modern technologies in agriculture. This approach can help Lebanon overcome its limited arable land and water resources while increasing productivity and crop diversity. The proposal involves launching new pilot platforms and prototypes in collaboration with universities, such as the American University of Beirut (AUB), Order of Engineers, and the Ministry of Agriculture, which would test and demonstrate best practices in urban and peri-urban farming.

The introduction of a national strategy (2025–2030) dedicated to technological innovation in agriculture was also discussed as a crucial milestone. Such a program would not only enhance yields but also reduce import dependence, promote sustainability, and align Lebanon with global agri-tech trends.

Post-Harvest Activities

Post-harvest management was a critical recommendation that emerged from the discussion. A significant proportion of Lebanon's agricultural output is lost after harvest due to inadequate storage, poor packaging, and inefficient transportation systems. The development of cold chain infrastructure, improved warehousing, and the adoption of digital tracking systems can minimize post-harvest losses, preserve quality, and extend market reach both domestically and internationally. Encouraging the use of renewable energy solutions, such as solar-powered cold storage would also enhance cost efficiency and environmental sustainability in post-harvest operations.

Innovation and Research Organizations

The panel also highlighted the transformative potential of AI, precision farming, and technology transfer in agriculture. Artificial intelligence and precision farming can be used to optimize irrigation, detect crop diseases early, and predict weather patterns, thereby minimizing losses and maximizing yield efficiency. Also, establishing Technology Transfer Offices (TTOs) within universities would bridge the gap between academic research and commercial application. These offices could also coordinate with regional innovation hubs to promote digitalization in the agricultural supply chain. Moreover, the introduction of affordable laboratory testing services for smallholders would improve product quality and ensure compliance with both local and export market standards.

In this context, the limited availability and regulation of pesticides, which undermines both productivity and food safety, was raised as a related issue. Ensuring that safe, approved pesticides are accessible and properly monitored would protect both farmers and consumers. Academic institutions and the Order of Engineers should collaborate more closely with the Ministry of Agriculture to conduct applied research, develop updated agricultural programs, and organize regular audits and assessments by 2030 to monitor sectoral progress.

Governance and Regulations

From a governance perspective, decentralization was viewed as a fundamental step toward modernization and development of the sector. It was proposed that the Ministry of Agriculture establish regional agricultural authorities across provinces, each responsible for coordinating with farmers, processors, and local manufacturers. These authorities would act as local hubs for communication, data collection, and implementation of agricultural policies. Decentralization would not only reduce bureaucratic delays, but also enable region-specific solutions, particularly as Lebanon's agricultural landscape and climatic conditions vary widely from the Bekaa to the North and South.

The panel further highlighted the need to strengthen Lebanon's agricultural agenda through improved regulation, quality control, and farmer empowerment. Establishing clear agreements on product quality and ensuring compliance with food safety standards would increase consumer trust domestically and abroad. The reactivation of the Farmer Card (بطاقة المزارع) was considered essential to create a national registry of farmers, making it easier for the government and financial institutions to provide targeted support, subsidies, and training.

Contract farming was another vital recommendation that emerged from the discussions. It was seen as a mechanism to foster trust between producers and buyers by guaranteeing fair prices and stable supply chains. Such agreements could reduce farmers' vulnerability to price fluctuations and provide food industries with consistent raw material quality.

The establishment of model contract templates, monitored by local agricultural authorities, was recommended to ensure transparency and mutual respect. Participants also emphasized that contract farming could promote gender inclusion and youth participation by creating predictable income opportunities and reducing the risks associated with traditional farming models but requires legislation and government decrees to develop trust between the different parties.

Furthermore, urbanization in Lebanon presents both significant challenges and opportunities for the agri-food sector. On the one hand, it reduces available agricultural land, intensifies pressure on natural resources, and contributes to rural depopulation. On the other hand, it stimulates demand for diversified, processed, and value-added food products.

Integrating urban agriculture, rooftop farming, and other green infrastructure into city planning can help address land scarcity and food insecurity, while also creating employment opportunities, promoting sustainability, and strengthening connections between producers and consumers.

By combining technological innovation, improvements in post-harvest systems, and urban-integrated agricultural initiatives, Lebanon can adopt a holistic strategy to modernize its agri-food sector, enhance national food security, and support balanced, sustainable development across both rural and urban areas.

Economic Factors

The roundtable discussion outlined ambitious but achievable goals to rebalance Lebanon's trade structure. The target is to reach a more balanced import-export ratio through diversification, branding, and value-added production. Lebanon's agri-food exports, such as olive oil, wine, processed foods, and fresh produce, hold significant potential in Arab and European markets. However, this requires systematic branding under a national label of quality and origin.

To support this vision, IDAL should play a more dynamic role in attracting foreign direct investment, facilitating partnerships between local small and medium enterprises (SMEs) and international investors as well as creating agri-industrial zones to stimulate rural employment. IDAL's mandate should extend beyond financial facilitation to include strategic guidance, helping investors align with sustainability and circular economy goals.

Public and Private Enterprises

Participants also underscored the role of public-private partnerships (PPPs) as a necessary mechanism for infrastructure development and service delivery. PPPs can mobilize private capital to improve cold storage, logistics, and irrigation systems, while ensuring accountability through public oversight.

The private sector, in turn, should adopt more transparent and socially responsible business models, reinvesting profits into innovation and community development. Communication and trust between stakeholders, government agencies, private enterprises, NGOs, and farmer cooperatives were identified as prerequisites for sustainable progress.

Another key recommendation involved empowering agricultural cooperatives and SMEs. Cooperatives were recognized as crucial players in achieving economies of scale, improving bargaining power, and fostering inclusive growth in rural areas. SMEs, on the other hand, drive innovation and added value in the agri-food sector by developing niche products, such as organic, artisanal, and functional foods. Providing them with easier access to finance, technical support, and export facilitation could significantly boost the sector's overall competitiveness.

The role of NGOs and civil society was recognized as vital in complementing government efforts. NGOs can provide technical assistance, raise awareness on sustainable practices, and help farmers access funding opportunities. Their presence in rural areas enables them to identify needs and deliver practical solutions faster than central institutions.

However, the participants emphasized that NGOs should operate in coordination with public authorities to avoid duplication and ensure that their initiatives align with national priorities. They can also serve as mediators between international donors and local communities, channeling resources where they are most needed.

Finally, the overarching message from the LCPS panel was that the revitalization of Lebanon's agri-food sector depends on collaboration, transparency, and innovation. A joint roadmap should be created, clearly defining the responsibilities of each stakeholder—government, academia, order of engineers, private sector, and NGOs—while ensuring measurable milestones. Stronger communication and trust among all actors are essential to overcome the fragmentation that has long hindered progress.

By aligning investments, policy frameworks, and technological innovation, Lebanon can reposition its agri-food industry as a resilient, export-oriented, and sustainable driver of national economic growth. This transformation would not only secure food sovereignty, but also provide new employment opportunities, promote rural development, and strengthen Lebanon's role as a regional hub for high-quality agri-food production. In conclusion, the recommendations proposed by the panelists can turn Lebanon's current challenges into long-term opportunities for prosperity and growth.

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LCPS

About the Policy Brief

A Policy Brief is a short piece regularly published by LCPS that analyzes key political, economic, and social issues and provides policy recommendations to a wide audience of decision makers and the public at large.

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