An analysis of the fresh fruit and vegetable food systems in Lebanon - on the right path towards Food Sovereignty?

Mada Association

A study conducted by Fanny Kaikati

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I. Acknowledgment

This research was supported by the Catholic Agency for Overseas Development (CAFOD) and implemented through Mada Association by Fanny Kaikati - Lead Researcher.

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II. Disclaimer

The study reflects data collected from various sources and any errors should not tarnish the reputations of these persons.

Any opinions expressed by stakeholders do not necessarily reflect the views of CAFOD and Mada.

Throughout programming, Mada promotes **agroecology** as a science and a social movement, and uses 'agroecology' as the appropriate term for ecologically-sound, culturally-appropriate, socially just agricultural practices. However, the term 'sustainable' is used throughout this document for lack of a more accurate term, as it is the most widely used term to encompass non-conventional practices. We acknowledge and understand that it might not always be the most accurate term to refer to the practices and approaches we seek to promote.

Similarly, the term 'alternative' is used to describe a food system that is opposed to and/or different from the conventional food system.

III. Introduction

1. Background

Lebanon's economy has relied on extraction, exploitation, and expatriation to create waves of growth – bubbles, more accurately – shielded from collapse by successive combinations of foreign aid and conflict, routinely externalizing its contradictions. What the World Bank has described as a Ponzi Scheme extends well beyond finance and deeply into a system that has fostered wealthy nationals but no national wealth.

As the downward spiral of political, social and economic collapse persists, the country's ability to feed its population is increasingly strained. In 2023, Lebanon became the sixth worst food crisis in the world for share of population that is food insecure[1]. Compounded crises undermine livelihoods, exacerbate vulnerabilities, and expose structural inequalities. As the illusion of stabilization propagates – something the World Bank has described a 'façade of normalization of crisis conditions'[2], the reality is that although there has been deceleration in the reduction of economic activity, the economy is in ongoing downfall, with no recovery plan on the horizon, and only ad-hoc management decisions that are neither equitable nor comprehensive.

Despite having the highest proportion of arable land in the Arab world, the Lebanese Agriculture Sector suffers from chronic underdevelopment. Its analysis reveals structural weaknesses, poor and exclusionary performance of markets, and intersectional inequalities, including labour exploitation and discrimination based on gender and nationality. Several factors emerge at the roots of this dysfunction, including a history of production geared towards export, deep-seated inequalities among men and women, reliance on exploitative, cheap foreign labour, and the control of input supply by global corporations and monopolies of local suppliers. In a time of multidimensional crisis, this has resulted in **farming communities unable to ensure their decent livelihoods and meet food demand**.

Lebanon is highly dependent on import of foodstuffs, and has largely abandoned protectionism. Farmers contend with global markets and are stripped of their margins by landlords, input suppliers, middlemen, wholesalers, among other value chain actors. Public policy maintains farmers' marginalization through informalization of their vocation, liberalization of trade, privatization of services, and exclusion from representation, showing a clear bias towards dominant market actors. This is aggravated by limited and fragile association and collaboration between farmers themselves, isolating them individually from their collective capacity. Their exploitation seeps into their employment of agricultural workers, mostly Syrians, who are worse off still. The land, in turn, is stripped bare of rock, soil, and forest, suffocated with concrete, asphalt, and waste, and injected with imported seed, chemical, and labour. Smallholder farmers employ modern methods and approaches developed for industrial agriculture, pitting their crop – often a cash crop destined for urban niche markets or export – against the environment in which it is cultivated. They abandon indigenous knowledge of ecosystem services in favour of suppliers' self-serving advice and traditional conservation practices in favour of labour-intensive landscaping. Yield is extracted from the land and little returns to it in the process. Farmers deepen their dependence on the market of imported, industrial inputs and migrant, exploited workers.

The impact on Lebanon's workforce cannot be understated. Lebanon is said to be suffering a brain-drain through an exodus of highly skilled workers and their young families, but the demobilization of its youth, particularly in the peripheries, is just as troubling. It is expected that these men and women

[1] Lebanon: children facing crisis hunger levels to rise by 14% in 2023 unless urgent action taken – Save the Children 2023
[2] World Bank 2023 - Lebanon: Normalization of Crisis is No Road to Stabilization

would emigrate and supply their families with remittances for local consumption. But with exit routes shrinking, the export of the young-and-able seems an unlikely prospect for most and frustration is running high, contributing to a rise in crime risking, in the right circumstances, their utilization in civil conflict.

Food reaches consumers mainly through medium to large scale supermarkets. As such, consumers – especially in urban settings, are largely disconnected from producers, and various actors exist between them, including middlemen and wholesalers. There is a growing trend among higher-income consumers to purchase local, sustainably-produced products, but these remain a minority, with the majority, especially in urban settings[3], still relying on mass-produced foodstuff, of which a large part is imported. Among lower-income communities, purchasing power due to hyperinflation and currency devaluation has dramatically decreased. Diets have shifted to cheaper and less nutritious food, leading to malnutrition, and a higher incidence of obesity.

Lebanon now finds itself at both a precipice and a crossroads. A precipice, as the country falls deeper and deeper into poverty and food insecurity. At a crossroads, because Lebanon will either continue to resort only to foreign aid, which can curb the effects of the crisis but not solve its root causes in the long term, and on privatization, which in a country with a weak public sector, can be extremely dangerous, or Lebanon will start to rethink its food system, and change.

To address rising food insecurity and poverty among farming communities, with funding from both CAFOD and other donors, Mada has been committed to supporting a **farmer-led transition**, supported by community-led initiatives, as a counterproposition to the drive to further 'commercialize' agriculture and expand its dependence on international markets and foreign aid alike.

According to the Nyéléni 2007 Declaration, **Food Sovereignty** is 'the right of peoples to healthy and culturally appropriate food produced through socially just, ecologically sound and sustainable methods, and their collective right to define their own policies, strategies and systems for food production, distribution and consumption'. Similarly, according to the Food and Agriculture Organization (FAO) of the United Nations, the concept of Food Sovereignty developed as a response to the crises facing the world's farmers, and was therefore 'developed through the experience and analysis of the people on which the world's food supply still depends: small scale food producers themselves. It is not a new idea, but rather it recognizes all the dimensions of a healthy, ethical and just food system. Food Sovereignty is thus a more holistic system than Food Security.'

While this definition varies slightly among scholars and organizations, all agree that Food Sovereignty as a concept goes beyond food security, and is about control of resources and right to self-determination. Mada adopts the Nyéléni definition and views Food Sovereignty as the ultimate goal, with agroecology being one of its main pillars – both as social movement and as a science.

The entire food system has been tackled by Mada through its various projects: **inputs; farming/cultivation; processing; marketing/storage/transportation; markets/points of sale; consumers**. In line with the principles of Food Sovereignty[4], Mada seeks to ensure a food system that is socially, culturally, environmentally, and economically just, namely:

- Society and Culture: producers have a right to manage and control their resources; consumers have a right to nutritious, culturally-appropriate food; local, cultural norms must be respected.
- Economy: all actors in the food system have a right to fair prices; producers and workers alike deserve decent livelihoods; all consumers need to be able to access/afford foodstuff.

[3] The urban population in Lebanon represents 89% of the total population (World Bank)
[4] As defined by the first International Food Sovereignty Forum (Declaration of Nyéléni in Mali in 2007)

- Environment: all activities along the food cycle must respect the natural environment, minimize any externalities and preserve natural resources.

2. Purpose and importance of the research

Today, in Lebanon, there is a growing trend towards an 'alternative' food system, with an increased focus on sustainability. This shift is driven by various factors, including:

- The economic crisis, which inevitably led producers and consumers alike to change their behaviours (e.g., reduction in chemical use; decrease in wasteful consumption patterns).
- A heightened awareness and a rising movement, globally and nationally, towards responsible production and consumption. This movement emphasizes the importance of respecting the environment and improving human life and conditions. In Lebanon, this has manifested in a growing number of agri-food initiatives that promote alternative models at various levels.

However, despite these changes, the trend towards an alternative food system remains limited, and does not engage and involve all cohorts of society. A preliminary analysis reveals that:

- The majority of producers shifting to ecologically-sound practices end up catering to niche markets accessible to a small portion of the population, or exporting their products abroad.
- While a consumer-base for these products is growing, it remains a very small minority with the means required to purchase these products. There is an observable increase in middle-income consumers of sustainable products, but with the economic crisis, their ability to ensure these products are predominant in their diets is very limited.
- At the production level, partly due to a lack of cooperation among producers and markets/points of sale, gaps are not identified and overproduction of specific foodstuffs is common, especially during certain seasons, leading to significant food waste.
- While significant efforts are made to minimize environmental impacts, there is less focus on ensuring decent work for workers and producers. This leads to ecological products being produced, stored, transported or sold by underpaid, often exploited individuals.

As such, Mada undertook this research that **analyses the various levels of the food cycle in Lebanon** with focus on actors and activities that are beginning to follow the principles of Food Sovereignty. The purpose is the identification of **bottlenecks/challenges and opportunities** to ensure economic, social/cultural and environmental justice in line with the principles of Food Sovereignty.

How effectively is the alternative and sustainable food system movement in Lebanon advancing on the path towards Food Sovereignty? Specifically, how well does it produce ecologically sound, culturally appropriate, nutritious food that is accessible to all while ensuring farming communities control their resources and have decent livelihoods and agri-food workers enjoy their rights? And, what are the main gaps, bottlenecks and opportunities? Which principles of Food Sovereignty are being applied or striven towards, and at what levels, and by whom?

3. Methodology

As Mada mainly works on **fresh fruits and vegetables**, this limited research concentrates on these crops, covering all levels of the food system on a national scale, except for the points of sale level, which focuses on Great Beirut.

An in-depth **literary review** was conducted, which identified the following gaps in information:

- **Lack of Methodological Tools:** There is no universally applicable method to assess Food Sovereignty due to its dynamic and context-dependent nature. While various value chain

analyses offer tools for studying the food system, they cannot be directly replicated for this study as they are tailored to different issues and contexts.

- **Insufficient Data on Actors and Activities:** There is a notable lack of data on the fruit and vegetable food system, especially concerning the post-harvest stages and end consumers. Most available studies are outdated, with the last national agricultural census dating back to 2010 and reports from before the 2019 crisis being inadequate in addressing recent changes.
- **Limited Assessment of Food Sovereignty Integration:** Available studies on fruit and vegetable systems largely ignore Food Sovereignty principles, focusing instead on promoting exports and high-value sectors. Additionally, while there are scattered accounts of Food Sovereignty initiatives, there is limited documentation on how these principles are integrated across the broader food system, particularly beyond farmers and community-led initiatives.

Therefore, a **primary data collection phase** was carried out in May and June 2024, consisting of:

- **Interviews with Key Informants:** This included in-depth semi-structured interviews with 9 key informants (Table 1). Additionally, informal discussions were held with 12 other stakeholders (5 agricultural engineers; 3 farmers; 4 managers of points of sale).
- **Participation in Awareness Event:** In June 2024, Mada held an event featuring discussions with farmers and experts on the economic viability and environmental benefits of agroecology.
- **Questionnaire:** An online questionnaire was filled with 17 points of sale in Greater Beirut that specialize in selling locally produced, sustainable fruits and vegetables. To complement the market analysis, visits were made to points of sale, which included discussions with business owners or sales managers and observations of products and type of clientele.

Table 1: List of Key Informants

Level in the food system	Role/position	Geographic coverage	Name
Pre-harvest	Producer of natural fertilizer, CEO of Cedar Environmental	National scale	Ziad Abichaker
	Technical expert in agroecology, native tree producer, President of the Lebanon Reforestation Initiative (LRI)	National scale, focus Chouf region	Khaled Sleem
	Technical director of the Plant Nursery Association in Lebanon, apple producer, consultant in fruit production	National scale	Charbel Hobeika
	Farmer adopting agroecological practices	Serjbel, Chouf	Rjeily Bou Rjeily
Post-harvest	Manager of the community-based project Beit Jedde. *Mouneh* and jam production and sales	Mtein, Metn	Nohad Touma
	Manager of the cooperative of cooperatives Namlieh. *Mouneh* production and sales	National network, PoS in Beirut	Oumaya Raydan
Markets	Manager and founder of the organic shop Chitabi3i, integrated production of fresh produce	Farm in Ras Baalbek, PoS in Jal el Dib	Dona Rita Nassour & Elias Naoum
Supporters	Agroecology advocate and activist, technical advisor and vegetable producer	National scale	Amani Dagher
	Head of programs at Lebanese Observatory for Workers & Employees Rights	National scale	Diana Kazzaz

An **analytical framework** was developed, with a matrix of 13 indicators to evaluate Food Sovereignty principles across societal and cultural, economic, and environmental dimensions (see Appendix 1). The assessment of actors and activities within the 'alternative' food system was thus conducted.

The primary limitations of the study include:

- **Challenges in data quantification** due to the lack of reliable, up-to-date statistics or census, making it impossible to conduct an exhaustive mapping of actors or measure the recent evolution of macro indicators. Consequently, the study relied on observations from Key Informants who provided a broad sectoral vision and qualitative trend analysis.
- **Limited information on consumer trends**, as the study framework did not allow for a robust quantitative survey nor engagement with major distributors and retailers of organic products. Consumer attitudes towards locally and sustainably produced healthy food were analysed through points of sale in Greater Beirut, a region that concentrates 60% of the total population.
- **Lack of consensus on many topics**, identified through literary reviews, interviews, and questionnaire responses, necessitated a cautious analysis of statements, contextualizing them based on the backgrounds of the informants.

IV. An alternative fruit and vegetable food system: actors and dynamics

An alternative food system encompasses all actors and activities involved in producing and consuming food in a socially, culturally, environmentally, and economically just manner. While several value chain analyses have been conducted in the conventional fruit and vegetable sector (Mada 2018, CBI 2018, ICARDA and Caritas 2018, WES 2017, USAID 2014), research on alternative actors and activities is limited and often focuses on specific regions or levels of the food system[5]. This section provides overall insight of **direct productive actors** in the alternative fruit and vegetable food system, covering every stage of the value adding process, from inputs to markets.

1. Pre-harvest level

Input producers and providers

Inputs compatible with Food Sovereignty principles focus on **localization of production**, the use of **natural components**, respect of the natural environment and ecosystems, **accessibility and affordability** of products, and preservation of **local biodiversity and cultural heritage** of seeds and species. Moreover, the **direct sale** of inputs to farmers, as well as their direct production by the farmers themselves, allow to reduce the number of intermediaries in the production cycle.

Heirloom seeds and seedlings: Over recent years, the issue of seed sovereignty has gained importance, driven by grassroot and community-based initiatives that raise awareness among farmers about preserving and sharing local heirloom seeds, and teach seed extraction and reproduction. Despite the prevalence of imported hybrid seeds in the Lebanese market, there are a few sources for local heirloom seeds:

- **Small Farmers**: Traditionally, farmers extracted and reproduced their own seeds, a practice now diminished due to imports of hybrid seeds. However, some still produce peasant legume

[5] For example, mappings have been done of alternative market initiatives (Jibal, 2021) and of socially and environmentally responsible actors in the food system (FTL & AFD, 2023).

seeds[6] on a small scale, often exchanging them with other farmers or selling them in bulk at low prices. While traditional varieties of seasonal crops are rare, some farmers still have heirloom seeds for these crops such as *banadoura jabaliyé* (mountain tomatoes) or *meqté* (Armenian cucumbers). This knowledge is primarily held by older farmers and has not been passed on to younger generations. In the fruit sector, seed extraction is minimal[7] and fruit trees are mostly produced at the nursery level.

- **Small local Businesses**: Some small agricultural shops sell heirloom seeds in bulk, produced locally by small farmers, but diversity and availability are limited. An exception is the start-up Gherzat Kheir in the Chouf and Metn regions, which specializes in local heirloom seeds and offers varieties like *Batikh el Adlouni* (type of watermelon) and *Khiar el Kahale* (type of cucumber) in its online catalogue.
- **Non-Profit Organizations**: Several organizations have invested in seed sovereignty and maintain their own seed banks and sales catalogues for farmers. The research center ICARDA, focused on cereal crops, is one example. Buzuruna Juzuruna, a collective of farmers and volunteers founded in 2015, promotes heirloom seeds from both local and global crops. It operates a seed bank in Saadnayel (Bekaa) and distributes and sells vegetable seeds. Other organizations such as SOILS and Seed in a Box focus on awareness, technical support, and/or seed distribution, but they do not commercialize seeds themselves.
- **Imported Heirloom Seeds**: Farmers can also purchase heirloom seeds from specialized international websites, though this option is expensive and does not offer local varieties.

Generally, farmers do not grow their own seeds and buy seedlings from professional nurseries or other farmers. Very few professional nurseries specializing in heirloom seedlings were identified. Some agricultural traders have integrated vegetable seedling production and have specialized sections to meet the needs of niche markets. These seedlings are expensive and inaccessible to most farmers.

Fruit trees: Localizing fruit tree production presents challenges, as it requires technical expertise and propagative materials (e.g., rootstocks, seeds, greenhouses) that small farmers typically lack. Professional nurseries, such as those in the Lebanese Plant Nursery Association, comprising 12 nurseries responsible for 85% of the country's tree plant production[8], play a crucial role. The remaining production is handled by scattered nurseries, while agricultural traders either import seedlings or purchase them from local sources.

Local nurseries either produce free varieties of certified plants or qualified plants[9] that have undergone local diagnostics to certify they are free from major pests and diseases. These plants can be either native or introduced varieties. Local varieties can be found in some large conventional nurseries or in specialized nurseries, like the company Native Nurseries[10] which produces traditional forest tree and fruit tree species (figs, grapes). There is a common belief among Lebanese farmers that imported plants are of better quality than local plants, but this idea is often mistaken: "*The prevention of diseases in tree plants starts at the sourcing level and includes the preventive measures taken at the nursery level. Imported certified plants are not always disease-free. For example, when we imported grape plants from Greece, they introduced a disease not found in Lebanon. I advise producers to purchase locally*

[6] Common examples of crops with seeds extracted and reproduced are *fasouliah aarida* (local beans), *laqtin* (pumpkin), *ara* (local zucchini).
[7] According to Charbel Hobeika, it doesn't represent more than 0,5% of the total production of fruit trees, trees, because the majority of fruit tree varieties are propagated by grafting and not through seeds plantation.
[8] According to Charbel Hobeika
[9] Lebanon did not sign the agreements regarding property rights of plants. Nurseries cannot import propagative material to produce certified plants unless they are free varieties. Some local tree plant varieties are qualified but are not certified due to the heavy institutional processes.
[10] https://native.com.lb/

produced qualified plants, whose sanitary status is well known, rather than imported certified plants", says Charbel Hobeika, Technical Advisor of the Lebanese Plant Nursery Association.

Natural fertilizers: The use of fertilizers has evolved rapidly in recent years. Many farmers (still not a majority) have turned away from chemical fertilizers and are using more animal-based or plant-based fertilizers (Table 2). There is more openness to trying new types of fertilizers: "*What is new is that farmers agree to combine food waste and animal manure whereas before, they only wanted to use animal manure*", says Ziad Abi Chaker, environmentalist expert and natural fertilizer producer. While practices have evolved partially due to the work of NGOs promoting sustainable agriculture, the main incentive remains financial: with the 2019 economic breakdown, many farmers were unable to purchase imported chemical fertilizers and had to find cheaper options available locally. This shift has particularly benefited cattle producers, with the increase in demand for cow manure. "*The crisis has created new opportunities, leading many new players to enter the fertilizer market. Notably, the informal sector has expanded with shepherds now selling their manure and proposing added services like packaging and delivery*," notes Ziad Abi Chaker.

While Lebanon is a net importer of fertilizers, imports have decreased since the 2019 crisis, and profit margins have reduced[11]. This has benefited the local production of natural fertilizers, although there is no available data to quantify this. There is potential to further localize the production of natural fertilizers, given the existing demand and availability of organic and animal waste. However, to scale up production, private companies and cooperatives need support to invest in processing units.

Table 2: Types of natural fertilizers and providers

Types of fertilizers	Providers	Comments
Unsterilized animal manure	Informal sector: Cattle farmers, poultry farmers, horse stables, shepherds	Cheapest type of fertilizer, but risky due to the presence of weed seeds and diseases which increases production costs for farmers and quality issues related to animal rearing.
Sterilized animal manure	Intermediate producers in charge of fermentation (e.g., GreenCo in Terbol, Bekaa)	Fermentation can be done on-farm by farmers or by companies that collect and ferment untreated manure before selling it.
Local natural fertilizer, mix of organic and animal waste	Private company Cedar Environmental, start-ups (e.g., Garbalizer)	Requires processing equipment. Very few players produce at a medium scale[12].
Compost	Companies or initiatives producing small-scale (e.g., Compost Baladi, Vermi Liban)	Compost can be done at home at small scale or can be brought from professionals.
Green manure	Seed companies selling green manure seeds	Takes at least one agricultural season to produce effects
Imported natural fertilizer	Local agricultural traders selling products from international companies	Up to 3 times more expensive than local natural fertilizers. The main importing countries are the Netherlands, Italy, Romania, Turkey and Vietnam[13].

[11] Resellers nowadays sell 25 kilo bags for $8 instead of $10 before the 2019 crisis (interview Ziad Abi Chaker)
[12] Cedar Environmental is Lebanon's largest natural fertilizer producer, serving 400 farmers and producing up to 6 tons daily.
[13] In 2019 according to the Lebanese Customs Database.

Effective soil management and fertilization are crucial. However, the wide range of fertilizer types and the significant price variations can be misleading for farmers. As a result, many take misinformed decisions, going for the cheapest option or following recommendations from agricultural companies. To address this issue, continuous technical support and demonstrations are essential.

Biopesticides and natural treatments: Some biopesticides are produced locally, but they are generally basic (e.g., nettle manure, eucalyptus oil) and produced in small quantities for personal use. More sophisticated biopesticides are imported due to a lack of technical capacity locally (e.g., organic bacteria). Mechanical treatments against insects, such as pheromone traps and mating disruption products, are also imported as the market is too small to produce them locally.

Traders offering imported biopesticides and mechanical treatments are often the same companies that import chemical pesticides. They are motivated by market opportunities and do not offer fair pricing for farmers. No local producers commercializing biopesticides have been identified, which presents an opportunity for development in this area. However, biopesticides are not a cure-all and must be complemented by other good agricultural practices. As the agroecology expert Khaled Sleem notes, "*Biopesticides can be used sparingly as preventive measures, but the primary way to prevent diseases and harmful insects is to diversify production and alternate species. For example, planting basil alongside tomatoes can help manage Tuta absoluta*".

Tools and equipment: Almost all agricultural tools available on the Lebanese market are imported, with only very simple tools and consumables produced locally (e.g., wheelbarrows, hive boxes, plastic crates). There is a niche market for low-tech tools[14], but no structured channel exists for their importation. Some actors have started introducing low-tech tools on a small scale, adapted to the Lebanese context, like the company The Green Van which imports a few tools such as wire weeders. Local production of such tools is feasible for simple designs that do not require specialized machinery and that can be custom-made by ironworkers or carpenters. However, more sophisticated components, like the wire of wire weeders, must be produced by specialized industries not available in Lebanon.

Farmers

Agricultural practices compatible with the principles of Food Sovereignty are numerous and diverse actors define them in different ways: regenerative farming, agroecology, organic farming, integrated farming, responsible farming, etc. It is difficult to quantify the number of farms adopting these practices since the last agricultural census conducted in 2010 only reviewed the types of crops, not the practices. To date, there is no farm registry in Lebanon as the agricultural sector is excluded from Lebanese labor law and public agricultural institutions are not conducting data collection. Some NGOs map farms or cooperatives adopting alternative practices, but these are usually project-driven and done at a very localized or sectorial level. They are rarely published, which leads to duplications.

A distinction must be made between certified organic farms and those practicing sustainable methods without adhering to a regulatory framework. In Lebanon, organic certification is mainly issued by the company CCPB[15]. The organic certificate is often seen as a prerequisite for accessing local and export niche markets rather than a guarantee of quality. "*Organic certification doesn't work in a country where the law is not applicable in general. With organic certificates, consumers and producers are not*

[14] Low-tech tools involve a return to mechanical methods while prioritizing reduced physical strain. They meet a practical need, aim to be accessible to a wide audience, and promote sustainability through repairability and local production.
[15] CCPB is an Italian company certifying organic products across the world, with a branch in the Middle-East.

connected to one another, and this doesn't allow building trust. It is also very expensive so small producers cannot afford it," notes Khaled Sleem.

However, alternative initiatives exist. For instance, a mapping of agroecological producers is gradually developing under the guidance of the Agroecology Coalition in Lebanon (ACL) [16], and discussions are underway to establish the Participatory Guarantee System (PGS), a third-party certification system that aims to rebuild trust and revive connections between producers and consumers. There is consensus that sustainable and environmentally friendly practices are gradually developing. "*Before, there was only monoculture in the Bekaa. There is growing awareness that diversification is important, but changes are shy and small-scale. In 2010, we could hardly find one farmer in five villages interested in sustainable agriculture. Now it is easier, and there is a progressive switch mainly thanks to the work of NGOs*." notes Khaled Sleem. However, changes in practices are limited. Experts are cautious: "*There is no systemic change. Farmers still spray insects. They are just shifting from spraying chemicals to natural products, while agroecology is much more than that. It is a completely different way of viewing the production mode*," says Georges Najem, founder of The Green Van.

Since 2019, more people cultivate land for personal use or for a secondary income. This is particularly true for those who lost their pensions or jobs in cities and strive to make use of their land. While the phenomenon remains limited, there is also a new generation of individuals returning to the land, keen to produce "differently", more sustainably, respecting the health of consumers and the environment.

2. Post-harvest level

Post-harvest service providers

Cold Storage: Building and maintaining cold storage rooms necessitates collective solutions as it is too expensive for individual farmers. This is particularly true for the fruit sector due to the high perishability and seasonality of fruits. Typically, cold storage units are privately owned by large agricultural companies and wholesale market owners, and prices are not for small farmers. However, exceptions exist, such as the cooperative of Nabi Osman in North Bekaa and the municipality of Ehmej in the district of Jbeil, which provide cold storage services for farmers at cost price.

Sorting and Packaging: For the local market, sorting and packaging services are not very relevant. Small alternative farms do not invest in these services because they operate on too small a scale to resort to professional sorting units. They generally sell their fruits and vegetables in standardized plastic crates. Packaging becomes more relevant for high-end products that are either exported or sold in specialized organic shops or supermarkets. High-end consumers expect products to be calibrated and in perfect shape. For instance, the leading organic company Biomass sells packed fresh products in local supermarkets and puts efforts in using cardboard or paper packaging instead of plastic[17].

Transportation: Producers adopting alternative practices generally operate on a small scale and handle the storing and transportation of products themselves. Transportation costs are a major concern for all producers, who are constantly seeking informal solutions to reduce expenses and save time. No collective transportation services for small producers have been identified. They generally transport products themselves using vehicles that are not always suitable. When not transporting products themselves, they rely on relatives or acquaintances making the same trip or make informal deals with

[16] ACL is composed of experts, researchers, farmers, educators, food activists, and organizations working on agroecology.
[17] Half of Biomass' packaging is paper/cardboard, the rest being plastic : https://www.freshplaza.com/north-america/article/9565949/biomass-controls-95-of-the-lebanese-organic-fresh-produce/

collective van drivers. Carpooling sometimes occurs when several farmers from the same area need to reach the same selling point, but there are no structured or systematic mechanisms.

Transporting goods that need to be kept at low temperatures presents additional challenges. "*We cannot afford to buy a refrigerated vehicle, so we organize the transport of our fresh products from Ras Baalbek to Jal el Dib at 4 a.m. to avoid the heat. We also have a deal with a dairy product producer who has a refrigerated vehicle, but he doesn't make the trip to Beirut as often as we need*," says Elias Naaoum, farmer and owner of an organic shop.

Processors

Processors add value to the primary products by transforming them in ready-to-eat, processed food. In the Lebanese context, fresh fruits and vegetables are traditionally transformed into *mouneh*[18], which allows to preserve a seasonal harvest, and therefore to consume it throughout the year. Other types of transformed products have been introduced in the food system, such as jams, soups, dried fruits such as apple chips, juices, fruit-based alcohols such as cider and liquors, fruit sorbet, etc. Processors putting efforts in Food Sovereignty principles include:

- **Small to medium size registered companies** that process locally produced fruits and vegetables and which primarily target the local market. The apple sector is particularly represented as there is a surplus of apple production in Lebanon and the processing sector allows the use of apples that do not meet the standardized sales criteria. This is notably the case of the juice producer Le Pré and the cider producer WATA.
- **Certified organic businesses** focusing on high-value products, such as molasses or vinegars. Although they ensure sustainable production methods, these businesses cater mainly to high-end markets (local and export).
- **Small informal businesses** such as artisanal *mouneh* producers, that process their own production of fruits and vegetables, usually at the household level, and sell it mainly in local shops or in local events. Since the onset of the 2019 crisis, there is a multiplication of informal mouneh shops and family-based initiatives in rural areas.
- **Cooperatives** in food transformation ensuring a fair compensation for producers and workers. Rural women are over-represented in this sector and it is an opportunity for their economic empowerment since they face significant discrimination in the broader farming sector. Lebanon has 125 registered women's cooperatives producing traditional food products[19]. Notable examples include Nejmet el Soboh in Rachaya, part of the Fair Trade Lebanon network, and the Namlieh network cooperatives, which follow a charter of conduct: "*We treat our producers fairly by not lowering prices, as we understand the value of their work and the challenges, they face in covering costs. We don't impose prices; producers set them based on their own costs, which vary depending on the provider and the region*", says Oumaya Raydan, manager of the Namlieh cooperative.
- **Community-based projects** focusing on food transformation to economically empower communities and valorise regional products. These non-profit initiatives rely on volunteers and donations. A notable example is Beit Jeddé in Mtein, Metn, a volunteer-led project which supports nine women jam producers by adapting original recipes and facilitating sales.

[18] Mouneh is an Arabic term meaning « provision ». It refers to an old food tradition in rural Lebanon involving the annual processing of fruits, vegetables, herbs, flowers, and animal products.
[19] UN Women (2023) Women in the agro-food sector in Lebanon: A review of the legislative framework.

3. Market level

Distributors, wholesalers (BtoB)

An alternative, just food system is characterized by a shorter cycle with fewer intermediaries. Farmers and processors operate on a smaller scale, enabling them to sell their products directly to points of sale or end consumers. However, this approach is time-consuming and poses challenges when there is a surplus of production. Lebanon has seven privately-owned wholesale markets, with no distinction made between conventionally and sustainably-produced fruits and vegetables. Product origins are often unknown due to intermediate storage units and bulk purchasing from traders.

Alternative farmers face the same challenges as conventional farmers, selling their products at low prices, sometimes at loss. "*I do my best to sell directly to regular clients and through farmers' markets but sometimes I have too much production, like it happened last year with the fasouliah harvest. Then I have to sell the surplus in the Medina Riadiyeh wholesale market so it doesn't go to waste*", says the agroecological farmer Rjeily Bou Rjeily for Serjbel, Chouf region.

The leading distributor of sustainable food is the company Biomass, which commands about 95% of the Lebanon's organic market[20]. Biomass operates a hybrid model, functioning as both a grower and distributor of certified organic fruits and vegetables. Their products are available at 250 retail points across Lebanon, including supermarkets and greengrocers. However, their distribution practices have faced criticism due to low purchase prices for producers and high retail prices for consumers.

In an alternative food system, the issue of connecting producers and points of sale constantly arises. This has various organisations to explore the concept of a cooperative wholesale market for agroecological producers[21], but it has not yet been tested.

Points of sale (BtoC)

When it comes to points of sale, it is important to differentiate between rural and urban areas. In rural areas, consumers often produce fruits and vegetables, or purchase directly from farms or greengrocers. Urban consumers are more disconnected from producers and rely mostly on retailers.

In Greater Beirut, fruits and vegetables, produced locally through sustainable practices, can be found in a wide range of points of sale (Table 3) including:

- **Big Retailers**: Supermarkets, big greengrocers, and online providers often feature organic sections. The majority of the fruits and vegetables in these sections are supplied by Biomass, the leading company in the organic sector, ensuring a stable supply in sufficient quantities.
- **Specialized Organic Shops**: These stores are located in areas with medium to high living standards. They focus on marketing, customer service, and maintaining high-quality standards. Some shops source directly from producers, while others have their own integrated production of fruits and vegetables in order to control the quality standards.
- **Small Grocery Shops**: Some engage in direct sales from producers they personally know, often within their family circles. This practice varies seasonally and typically involves surplus production. These transactions are informal, lacking labelling and quality standards oversight.

[20] El Hage J (2024), Biomass controls 95% of the Lebanese organic fresh produce, *Fresh Plaza*, 19 July 2024 (see here)
[21] This idea originated from the local NGO Jibal.

- **Farmers' Markets**: Three weekly farmers' markets facilitate direct sales from producers to consumers. While not necessarily certified organic, these markets have an internal vetting system to ensure the fruits and vegetables are healthy and produced in a sustainable way.
- **Alternative Market Initiatives**: These aim to make quality food accessible to a broader range of consumers. Although they sell small volumes, they test new models, such as basket systems, solidarity grocery systems, and market cooperatives[22]. These focus on direct sales from producers and seek to revive links between producers and consumers.

Table 3: Mapping of points of sale for healthy sustainable fruits and vegetables in Greater Beirut

Type	Name	Location	Sourcing
Big retailers with organic sections	Spinneys	8 branches in Greater Beirut	Through intermediaries
	Carrefour	3 branches in Greater Beirut	
	Al Khodarje	Beirut, Ashrafiyeh	
	Toters fresh	Online application	
	Noknok	Online application	
Specialized organic shops	A New Earth	Beirut, Ashrafiyeh	Directly from producers
	Shi Tabi3i	Jal el Dib	Integrated production & directly from producers
	Beit el Soha	Beirut, Ashrafiyeh	Integrated production
	Bio District	Beirut, Manara	Directly from producers
	Le Marché Bio	Beirut, Badaro	Directly from producers
	La Vie Claire	Beirut, Ashrafiyeh	Integrated production
	Beyond Organic	Beirut, Gemmayze	Integrated production
Farmers' markets	Souk el Tayeb	Beirut, Mar Mikhael	Directly from producers
	Badaro Urban Farmers	Beirut, Badaro	
	Souk el Mawsam (Nation Station)	Beirut, Ashrafiyeh	
Alternative markets	Dikken el Mazraa	Beirut, Mazraa	Directly from producers
	Basket system Buzuruna Juzuruna	Beirut, Mar Mikhael	Integrated production

* *The mapping covers the points of sale visited as part of the study, and does not claim to be exhaustive. Small, mostly informal grocery shops were also visited across Greater Beirut.*

Consumers

Responses to the point-of-sale survey, interviews with managers of organic shops and available reports on consumer habits[23] reveal that there are contradictory trends among consumers, which reflect the growing inequalities within the population. On the one hand, there is an increasing concern for healthy food. Consumers are becoming more aware of the risks associated with pesticides and wastewater, and they are more interested in the quality of products. The steady growth of the organic market over the past decade is an illustration of this trend. "*We have a lot of young consumers who are into health*

[22] Saade A et al (2021) Exploring alternative food initiatives in Lebanon. Jibal.
[23] Mallah Boustani N (2023) Food determinants and motivation factors impact on consumer behaviour in Lebanon.

and sports. The new generation is being more conscious about health and is more holistic in its approach to food, " says Donna Rita Nassour, manager of an organic shop. "*Since the COVID-19 pandemic, I noticed that consumers are more concerned about the origin and the quality of products, especially young parents*," notes Nohad Touma, manager of a mouneh and homemade jam initiative.

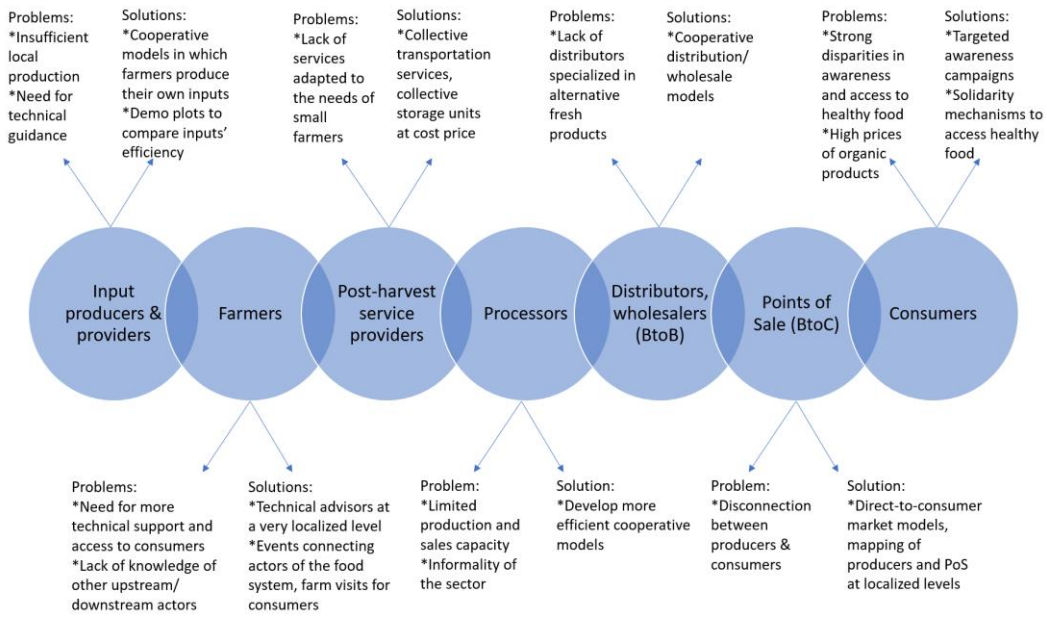
However, all data collected indicates that the vast majority of consumers primarily seek low prices, and for good reason: with the 2019 economic crisis, food prices drastically increased and consumers' purchasing power declined. The average price of a basket of fruits and vegetables has remained more stable compared to other processed or imported food items. Nevertheless, its price has still significantly increased in local currency, and studies on food security are clear: many households have reduced the diversity of their diets, with refugee populations being particularly affected[24].

Another finding is the low interest among consumers in the environmental and human aspects of production – one of the consequences of the disconnection between producers and consumers. "*With the price dumping practiced by wholesale markets, consumers are accustomed to very low prices for fruits and vegetables, without considering that this leads to unfair acts towards farmers and workers*," says Amani Dagher, activist and agroecology expert. The consumer approach is the blind spot of most agricultural projects, yet consumption habits are at the heart of the dynamics of the food system.

V. On the right path towards Food Sovereignty?

While the previous section highlighted the diversity of actors and dynamics within the alternative fruit and vegetable food system, this section offers an analysis of the implementation of Food Sovereignty principles, guided by a matrix of indicators (Appendix 1). The analysis examines societal, cultural, environmental, and economic dimensions.

Figure 1: Actors in the alternative food system, issues identified and potential solutions



[24] According to WFP, in 2022, 37% of the total population in Lebanon (2 million people) were estimated to be in an acute food insecurity situation, with disparities between the Lebanese population (33%) and the refugee population (46%). Between October 2019 and December 2022, food prices increased 21-fold in local currency.

1. Society and Culture

Indicator 1.1 - Food production and consumption follow local cultural norms

At the production level, farmers are generally cultivating fruits and vegetables that are well-suited to traditional Lebanese cuisine. Significant efforts are being made to safeguard and reproduce endemic heirloom seeds and tree roots, supported by the development of community-led networks and specialized start-ups. Farmers are more and more aware of the importance of local biodiversity and seed sovereignty. Additionally, there is a strong tradition of fruit and vegetable processing, known as *mouneh* production, which thrives within a dynamic and innovative agrifood sector that continually adapts recipes and introduces new products.

At the market level, the availability of local food has increased, largely as a result of the economic crisis and the shift away from costly imported goods. However, consumer attitudes remain contradictory; while many take pride in local cuisine and products, there persists a belief that imported goods are of higher quality, coupled with a growing inclination towards international cuisine and fast food.

Indicator 1.2 - Workers' rights are respected and their contributions are recognized and valued

Since its adoption in 1946, the Lebanese labor law has excluded the agricultural sector, leaving the agricultural workforce - comprising both workers and farmers - without a legal framework to protect their rights. As a result, practices such as wage dumping, racial and gender discrimination, and exploitation are prevalent, even among actors in the alternative food system. Positive models are rare exceptions[25] and respect for the workforce depends on the individual values and ethics of employers rather than established standards. "*How can we talk about decent work if there is no legal framework?*" questions Dania Kazzaz from the Lebanese Observatory for Workers & Employees Rights. "*We are now in a system of modern slavery. When you have the 'shawish' in refugee camps taking groups of workers to farmers and collecting the money while retaining a percentage, this is slavery*."

In the agri-food sector, there are several initiatives and spaces, particularly women's cooperatives, that offer dignified working environments, but such practices remain far from the norm. At the consumer level, the human aspect of food production is largely overlooked; consumers prioritize food quality and price without consideration for who produced it. While a certain degree of environmental consciousness is flourishing, the same cannot be said about the social and human-rights aspects of the food system. If the figure of the Lebanese farmer has its place in the collective consciousness, the agricultural worker remains largely disregarded and undervalued.

Indicator 1.3 - Farming and culinary knowledge is available and there are systems in place to transfer it to the next generations

At the farming level, technical knowledge is mainly transferred by CSOs and committed agricultural engineers. They play a crucial role in reintroducing traditional farming practices, such as safeguarding and reviving knowledge about seed reproduction. However, the transfer of farming knowledge no

[25] Buzuruna Juzuruna is a positive example of agricultural project that builds a community around the farm and in which each worker is recognized for his/her contribution.

longer takes place at the level of public institutions or the family. Educational institutions, including technical schools and universities, are largely failing in their role, due to outdated curricula and declining resources. Alternative production models are largely absent of the academic program, with the exception of a few new Master's degree courses in private universities[26]. However, there are promising initiatives[27] to build interest among agricultural students in these subjects.

Pathways for transferring food knowledge and traditional culinary techniques - such as *tesleeq* (foraging for wild plants) and *mouneh* making - primarily exist within families and at the community level, often facilitated by women who have greater food-related knowledge. Unfortunately, younger generations are becoming less interested in these practices, which raises the concern that they may gradually fade. To counter this trend, community-based initiatives like Beit Jedde in Mtein and Coara in Kfar Qatra are working to revive interest among younger generations and preserve cultural heritage.

Indicator 1.4 - Food production from farm to table is controlled and regulated by the community

Public control entities are currently dysfunctional, and agricultural strategic plans are not being effectively implemented. Legal amendments and decrees intended to regulate the sector often have political, sectarian, and financial motives that fail to benefit society as a whole. Meanwhile, private control entities, such as organic certification bodies and testing laboratories, remain largely inaccessible to small farmers and are not trusted by the majority of consumers. Although alternative control entities (e.g., functional cooperatives, agroecology and fair-trade networks, the Participatory Guarantee System) offer promising pathways for improvement, they are still too dispersed and insufficiently structured to create a significant impact. Consequently, trust in product quality throughout the production chain relies heavily on interpersonal relationships; consumers tend to place more confidence in individuals than in institutions regarding food quality. Farmers often depend on personal connections to source their inputs, particularly seeds, seedlings, and fruit trees, which poses a significant limitation to scaling up alternative agricultural practices.

Indicator 1.5 - Consumers have sufficient access to healthy, nutritious and culturally appropriate food

There has been a noticeable increase in points of sale for healthy, nutritious, and culturally appropriate food, particularly in the Greater Beirut region (see Table 3). However, in rural areas, there is a lack of selling points for such products. There are some examples of rural farmers' markets[28] but they are NGO-led, which poses the question of their sustainability beyond funding. Rural consumers can only access these products if they have direct connections with producers or if they grow their own fruits and vegetables in their gardens. In general, there is a lack of connections between producers and markets which creates contradictory patterns: points of sale offering quality fruits and vegetables often struggle to source sufficient products, while farmers producing these goods face challenges in accessing markets. This situation hinders the potential for a more integrated food system.

2. Environment

[26] The American University of Beirut has Master degrees in organic production and sustainable practices.
[27] Some teachers propose specialized modules on alternative production methods and sometimes form partnerships with NGOs. For example, the Lebanese Permaculture Association SOILS organized several introductory sessions to agroecology at the Lebanese University.
[28] Examples of rural farmers' markets include the market in Halba organized by Mada Association and those in the villages of Maaser Chouf, Ain Zhalta, and Barouk, facilitated by the Chouf Reserve.

Indicator 2.1 - Food production practices preserve the natural ecosystem for future generations

There is an increasing number of input providers focusing on locally produced natural inputs (Table 2) and farmers shifting to sustainable modes of production. Some alternative farming practices are developing, such as using animal manure instead of chemical fertilizers. However, this shift is often opportunistic and driven primarily by rising chemical fertilizer prices, rather than a genuine commitment to sustainability. Another example is the growing emphasis on using fruit and vegetable waste after harvest, leading to more composting initiatives. However, these efforts should not distract agricultural stakeholders from the main goal of improving harvesting and post-harvesting practices to maximize production quality and reduce substandard produce. Significant work is still needed to establish comprehensive agroecological systems.

Indicator 2.2 - Natural resources and land needed for farming are sufficiently available and accessible

At the level of input producers, there is ample biomass available, but the means to collect and transform this biomass into natural fertilizers are often lacking, despite the potential for increased local production. Moreover, there are not enough producers of local heirloom seeds to meet the growing demand. Although Lebanon has abundant water and arable land, access to these resources is uneven. Farmers who own their land and have their own water sources have a significant advantage, which allows them to develop long-term strategies, particularly for irrigation and pumping systems. On the contrary, farmers who do not own their land face severe challenges due to rising land rental prices, exacerbated by post-crisis price rebalancing.

Indicator 2.3 - There is knowledge and capability to manage water, soils and other natural resources, allowing resilience to climate change effects.

There are many competent local experts and researchers and numerous NGO-led projects working to improve resource management and mitigate the effects of climate change. However, there is a disconnection between researchers and farmers, resulting in a lack of knowledge transfer, as studies are not adequately shared with those working in the field. Additionally, there are not enough skilled experts and technicians to meet the needs at the national level, and university curricula are outdated, failing to include considerations of climate change. Scaling up sustainable solutions is also hindered by limited access to funding and loans, making it difficult for agricultural stakeholders to adopt alternative technologies such as solar energy or biomass energy systems.

Indicator 2.4 - Control systems and policies are in place to ensure equitable access to natural resources and to regulate its use.

There is an insufficient legal framework governing access to natural resources in Lebanon, and existing policies are poorly implemented. Control over these resources is primarily exercised at the community level, as demonstrated by the 2022 protests in Ain Zhalta and Nabeh el-Safa against mismanagement of water resources. Several local NGOs, are actively involved in advocacy and awareness campaigns targeting local, regional and national authorities, through policy papers, round-table discussions, and events. However, given the current political deadlock, reform is extremely challenging and advocacy efforts are often turned to the international community and donors, instead of authorities and government, to impact their strategies and funding streams. Moreover, given the current socio-economic situation, often communities are being pushed into the misuse of natural resources (e.g., tree cutting for heating), which in times of crisis, are challenging to regulate, especially since

alternatives are not present. At the municipal and regional level, there are efforts to work with authorities on access and regulation of natural resources, including water, forests, among others. While local authorities, and especially municipalities, lack the funds to enforce policies, civil society and international actors often provide the funds required (e.g., rehabilitation of irrigation canals, reforestation, etc.). There is a pressing need for more structured and coordinated advocacy efforts at the CSO level to effectively address these issues, and also of alternatives given the dire economic situation and political vacuum which hinders advocacy efforts.

3. Economy

Indicator 3.1 - Seed and food production is localized, dependency on imports is reduced

In the alternative food system, most fresh produce is intended for local consumption. There is a growing trend towards increasing the production of natural inputs, such as seeds and natural fertilizers; however, this still falls short of meeting local demand, making imports essential. Since 2019, there has been a rise in small farms and agrifood start-ups in response to the economic crisis and the COVID-19 pandemic, prompting people to make better use of their land for extra income or self-consumption. On a larger scale, it is estimated that 80% of food consumed in Lebanon is imported, although the percentage for fruits and vegetables is lower. The lack of public regulations on imports and exports creates significant volatility in the food market, making it difficult to track the commercial balance. It is worth noting that the value of fruit and vegetable production increased between 2021 and 2022, driven by short-term factors such as the gradual adjustment of farm gate prices following currency devaluation and temporary market opportunities[29].

Indicator 3.2 - Trading practices are fair and activities throughout the food cycle are profitable enough to maintain long-term success

The selling prices of fruits and vegetables in wholesale markets are very low, especially for vegetables, as fruits have better export opportunities. Small farmers find it hard to compete with these prices, even with direct sales. Although prices have adjusted somewhat since the currency devaluation, fruits and vegetables still remain below pre-crisis levels in dollars, leading to lower income for producers. In the alternative food system, the value chain is streamlined because many small-scale producers handle both production and sales, which allows for a fairer distribution of profits. However, the lack of specialized services like transportation and storage limits their ability to grow. While initiatives like cooperatives and farmers' markets aim to ensure fair pay for producers, many struggle to remain sustainable without external financial support. The main challenge is a volatile consumer base, affected by declines in purchasing power and ongoing health and security crises. Although markets for sustainably produced food can be created, their success relies on stable consumer demand, making long-term planning difficult.

Indicator 3.3 – Farmers and workers have a fair retribution which ensures decent livelihoods

Agricultural workers and small farmers in Lebanon do not receive fair salaries or incomes. Despite a gradual rebalancing in daily wages in dollars and farm gate prices following the economic devaluation, remuneration remains far below what is needed for a dignified life. Since this sector is not covered by labor law, workers and farmers lack access to the welfare system and basic health care. Agroecological

[29] CREAL (2023) Lebanese agriculture 2022 in figures, Analysis and Forecast

farmer Rjeili Bou Rjeili explains, "*My farming activity doesn't provide enough income to pay for my children's education or health care insurance; I rely on my military pension for that. If I didn't own the land or have the benefits from my time in the military, I wouldn't be able to make a decent living from farming*."

The absence of agricultural workers' unions leaves these workers unprotected in terms of their economic and legal rights. With no established minimum daily wage, compensation is set informally, leading to significant abuses and discrimination, particularly against vulnerable groups like Syrian women and children. As Diana Kazzaz notes, "*Agricultural workers lobby for themselves to negotiate working hours and daily rates, relying on word of mouth at the community level. While this shows they can find leverage, it is far from organized or institutionalized*."

Box 1: Remuneration Gaps and Discriminatory Practices for Unskilled Workers

There are significant wage disparities between Lebanese and Syrian workers, with Lebanese workers earning two to three times more[30]. Gender-based wage gaps are also prevalent, with women earning about half as much as men due to misconceptions regarding their physical strength and effectiveness[31].

According to a survey conducted by the ILO in 2013[32], the daily wages of unskilled workers in the Bekaa region varied as follows: $20 to $25 for Lebanese men, $10 to $15 for Syrian men, $7 for Syrian women, and $4 for Syrian children. While daily wages dropped significantly after the 2019 crisis, there has been a gradual rebalancing, with prices returning to pre-crisis levels over time.

Extreme cases of abuse are frequently documented. Wage disparities also vary depending on the region and the demographics. In mountainous areas, there tends to be a smaller workforce, resulting in higher daily rates compared to the Bekaa Valley, which has a much greater concentration of workers.

Indicator 3.4 - Food prices are fair and accessible to all consumers

A fair price allows producers to earn a profit while remaining accessible to a broad range of consumers. Few alternative producers achieve this balance: many small producers are forced to align their prices with the wholesale market due to limited access to alternative markets, while those selling to organic intermediaries or in organic sections of large supermarkets are also constrained to sell at very low prices. Only farmers' markets, specialized ethical shops, and a few alternative sales initiatives enable producers to sell at fair prices. Therefore, price setting varies greatly from one situation to another.

In alternative markets, fruits and vegetables are often unaffordable for many consumers. In urban areas, these products are found only in specific locations (Table 3 – Mapping of Points of Sale) and tend to be very expensive—certified organic products can be two to three times the cost of conventional ones—except for a few subsidized initiatives that cannot meet overall demand. In rural areas, prices are usually more affordable through direct sales; however, not all consumers have easy access to farms or know where to find quality products. Ultimately, accessibility is influenced by

[30] Hassan K (2024) The agricultural sector does justice to Syrian workers: producers, not criminals, *Al Modon*, 20 May 2024.
[31] UN Women (2023) Women in the agro-food sector in Lebanon: A review of the legislative framework.
[32] ILO, 2013. Assessment of the Impact of Syrian Refugees in Lebanon and their Employment profile.

consumers' budget priorities. In Lebanon, fruits and vegetables are among the least expensive food items, and consumers play a crucial role in determining fair prices. According to Amani Dagher, "*There is a low consumer valuation of fruits and vegetables compared to other food items, leading to a reluctance to pay more, which is one of the reasons that keeps prices low and often unfair for producers*."

4. SWOT analysis of the alternative fruit and vegetable food system

STRENGTHS	**WEAKNESSES**
- Availability of **sufficient productive resources** (arable land, biomass, water) and diverse climate. - **Affordability** of fruits and vegetables compared to other foodstuffs; diversity in production all year round. - Existence of **alternative models** of production and markets, which serve as examples for other actors. - Presence of **competent local experts**, aware of Food Sovereignty issues. - Strong promotion of **food-related knowledge** and traditional eating habits among the population.	- **Insufficient public strategies and regulations**, coupled with **weak control mechanisms** for resource use and food production; - **Exploitation of the workforce**, a lack of legal framework that fosters unfair competition and discriminatory practices. - **Inadequate infrastructure and services** leading to limited economies of scale. - **Increased economic inequalities** among producers and consumers in accessing resources, markets, and nutritious food. - **Lack of connections** between all actors of the food system. - **Low trust** in public and private mechanisms that ensure product quality. - **Low consumer valuation of fruits and vegetables** compared to other food items.
OPPORTUNITIES	**THREATS**
- **Multiplication of small-scale actors** at all levels of the alternative food system that could be scaled up (producers of natural inputs, small farms switching to agroecology, agrifood initiatives, points of sale for organic products, farmers' markets). - **Growing momentum** among communities and international development actors for Food Sovereignty; development of activist networks and alliances. - **Renewed/emerging awareness** on the importance of preserving local biodiversity and adopting sustainable practices. - **Dynamic and innovative agrifood sector**, supported by the private sector and development actors.	- **Deterioration of the economic context**, persistent lack of access to finance, declining living standards, free-riding behaviours on the rise. - **Deterioration of the security and social context**, worsening tensions between Lebanese populations and refugee populations. - **Regression of the education system** and **lack of access** to education. - **Uncontrolled urbanization**: threatens cultivated land and contributes to the abandonment of rural areas. - **Climate change**: vulnerability to extreme weather events impacting crop yields and production cycles.

VI. Recommendations

The recommendations outlined in this section have significant potential for impactful change. Specifically designed for CSOs in the development sector, these recommendations can play a vital role in maintaining the alternative fruit and vegetable food system on the right path towards Food Sovereignty.

Figure 2: Recommendations for greater Food Sovereignty

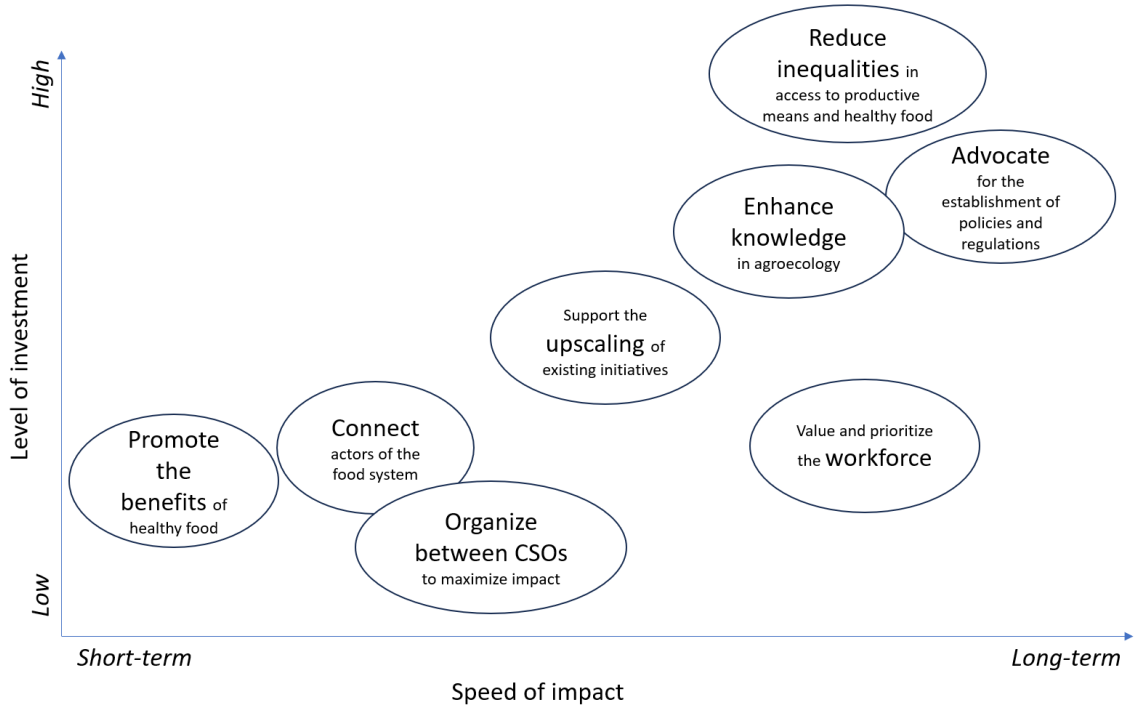


Figure 2 above illustrates recommendations based on their speed of impact and required level of investment. Typically, actions that produce short-term results and require low investment are easily implementable. In contrast, recommendations aiming at long-term impacts and necessitating high levels of investment demand more strategic planning and ongoing funding efforts.

1. **Advocate for the establishment of policies and regulations:** This is essential for fostering significant change in the agricultural sector. As economist Kanj Hamade emphasizes, "*alternative forms of production do not upscale unless there are institutions that support this from the policy perspective*."[33] Therefore, effective advocacy is crucial; development policies cannot succeed without strong institutional backing. It is imperative that all CSOs and activist networks promoting greater Food Sovereignty work together in their advocacy efforts, as collective action will yield greater leverage. Key advocacy initiatives should include the inclusion of the agricultural sector in Lebanese labor law to secure rights for agricultural workers and farmers, as well as the promotion of Food Sovereignty principles at the institutional level. This includes proposing incentives for local production and structuring commercial policies, such as customs regulations, to facilitate effective production strategies.

[33] Hamade K (2019) Lebanon's Agriculture: Dynamics of Contraction in the Absence of Public Vision and Policies. ANND.

2. **Enhance knowledge in agroecology:** Building technical skills at all stages of production - before, during, and after harvest - is crucial for improving Food Sovereignty. This should involve everyone in the workforce, including workers, technicians, and agricultural engineers. Emphasizing agroecological practices is essential, it is important to recognize that change takes time. Leveraging the success of model farms can inspire other farmers. Additionally, supporting demonstration plots will showcase the effectiveness of agroecological practices and highlight their economic benefits. Collaboration with universities is necessary to raise awareness among students about agroecology, fostering a new generation of agricultural professionals equipped with the knowledge and skills to promote sustainable practices.

3. **Support the upscaling of existing initiatives and activities:** This effort requires collaboration among diverse stakeholders, including private sector actors, to establish a stronger support network. Successful upscaling can be achieved by connecting these initiatives, increasing their visibility, and offering tailored technical support – as opposed to individual initiatives that duplicate each other. Furthermore, facilitating access to financing and providing assistance with fundraising can empower these initiatives to grow and make a greater impact.

4. **Value and prioritize the workforce:** This can be achieved by emphasizing the human dimension within the food system through events that connect producers and consumers, such as farmers' markets and farm visits, as well as through targeted communication and educational campaigns. All agricultural projects should include components addressing fair wages and fair treatment to ensure that abusive practices are not supported, even indirectly. Additionally, it is essential to shed light on discriminatory and exploitative behaviours faced by vulnerable workers, particularly women and non-Lebanese individuals. By advocating for the rights and dignity of all workers, we can foster a more equitable agricultural ecosystem that benefits everyone involved.

5. **Contribute to reducing inequalities among producers and consumers:** The most vulnerable farmers and consumers need additional support in order not to be excluded from the alternative food system. For producers, while the primary focus should remain on technical support, it is important to acknowledge the limited access to finance and the need for material support. Establishing funding agreements tied to the implementation of sustainable practices can provide valuable assistance without falling into the traps of welfare dependency. For vulnerable consumers, promoting solidarity mechanisms and supporting alternative markets can facilitate access to healthy food. In the current crisis context, it is essential to build bridges between development and humanitarian work to create a more inclusive and resilient food system.

6. **Connect actors of the food system:** Focused mappings of actors at localized levels, such as mapping natural input providers, can help ensure that stakeholders are aware of each other. Many points of sale face challenges in identifying sustainable producers, and many synergies can be found in pooling resources for transportation, storage, and more. However, the first crucial step is establishing connections between these actors. Investing in events that bring people together and building networks within the alternative food system can significantly enhance collaboration. Additionally, promoting direct-to-consumer models can revive and strengthen the linkages between producers and consumers.

7. **Promote the benefits of healthy fruits and vegetables produced in a sustainable way:** It is important to better understand consumer trends through comprehensive data collection and observation. Based on these insights, tailored awareness campaigns can be planned to

effectively reach different demographics. Efforts should focus on building a positive image of healthy fruits and vegetables, emphasizing their benefits. Advocacy at various levels, including schools, youth organizations, and municipalities, can help instil these values from a young age, ensuring a broader and more lasting impact on consumer behaviour.

8. **Organize between CSOs to maximize impact:** Sharing information and connecting is key for Food Sovereignty. By joining forces and actively participating in existing networks, CSOs can enhance their advocacy efforts, conduct more comprehensive research, and improve mapping initiatives. Sharing resources is vital, especially in the face of decreasing funds. Additionally, working in consortiums is necessary to accomplish larger-scale projects, ensuring a more significant and sustained impact.

Box 2 – Recommendations for further research

This study provided a general overview of the alternative food system but could not address certain aspects in detail. Future research opportunities could explore several interesting topics, including:

In-Depth Study of Natural Fertilizers: Compile and analyse observations from various farmers, NGOs and private companies on the effectiveness of different types of natural fertilizers, such as compost, green manure, animal and plant-based fertilizers, and animal manure. Comparative price tables and detailed supplier mappings would also benefit producers adopting sustainable practices.

Study on Agricultural Workers: Highlight the different types of actors and practices, working conditions, remuneration, and inequalities. Such a study would provide a better understanding of who produces our food, how they organize and how they coexist with other agricultural actors. Such a study must encompass the social tensions and conflict dimension, as one of the roots of the current situation and dynamics.

Consumer Survey: Understand what determines food choices and identify potential levers to encourage the consumption of healthy and nutritious food. This survey should combine statistical and qualitative research. It is recommended to start at a very localized level to ensure a representative sample of consumers and a thorough understanding of the context.

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Appendix 1: Indicators assessing the level of implementation of Food Sovereignty Principles

Dimensions	Ref	Indicators	Description
Society & Culture	1.1	Food production and consumption follows local cultural norms	The choice of seeds and crops, farming and food processing practices as well as eating habits correspond to local and cultural norms.
	1.2	Workers' rights are respected and their contributions are recognized and valued	There is no labor exploitation at any stage of the food system. Workers' contributions are respected and valued by other actors of the food system and society in general, regardless of their gender, nationality or social status.
	1.3	Farming and culinary knowledge is available and there are systems in place to transfer it to the next generations	Actors of the food system have knowledge in terms of food production (seed reproduction, farming practices, product processing, food safety regulations) and food consumption (traditional culinary technics, awareness of the importance of nutritional food and healthy diets). There are pathways and systems in place to transfer this knowledge (from the elderly to the younger generations, through educational programs or activities, etc). There are no major foreign/fast food trends impacting local behavior and shifting culinary patterns.
	1.4	Food production from farm to table is controlled and regulated by the community	Food production is efficiently controlled and regulated by policy makers (agricultural strategic plans, food control entities) and by community members (functional cooperatives and networks). There are collective entities or spaces are in place to investigate food production, food security, and health.
	1.5	Consumers have sufficient access to healthy, national and culturally appropriate food	Available food stuff is diverse, healthy and compatible with local diets and habits.
Environment	2.1	Food production practices preserve the natural ecosystem (biodiversity and ecosystem services)	Farming, food processing and trading practices preserve the natural ecosystem by using natural resources in a reasonable way, by limiting waste and other negative externalities, by reasoning the use of fossil energies, etc.
	2.2	Natural resources and land needed for farming are sufficiently available and accessible	Farmers have access to cultivable land, clean water nutritious soil, and other natural resources (wildlife, biomass, etc). There is an equitable share of these resources between actors of the food system.
	2.3	There is knowledge and capability to manage water, soils and other natural resources,	Actors of the food system have the necessary knowledge, finance and workforce to ensure a good management of water (efficient irrigation networks, optimized use of water), soils (natural fertilization technics, crop rotation) and other

		allowing resilience to climate change effects.	natural resources (wildlife, biomass). They are resilient to climate change effects (increased climatic variations, peaks of rain and droughts).
	2.4	Control systems and policies are in place to ensure equitable access to natural resources and to regulate its use.	There are public policies and community regulation systems to ensure equitable access to natural resources and land and to regulate its use.
Economy	3.1	Inputs and food production is localized, dependency on imports is reduced	There are local seed production systems and input and farming equipment producers. There are enough local food producers to maintain adequate production for the consumers. The import-export balance is balanced.
	3.2	Trading practices are fair and activities throughout the food cycle are profitable enough to maintain long-term success	There is an equitable share of the profit margin at all stages of the food system. Producers are fairly remunerated for their work and traders do not abuse their position to monopolize profits. Food markets are profitable enough to maintain long-term success.
	3.3	Workers have a fair retribution which ensures decent livelihoods	Workers, and in particular vulnerable workers (such as refugees, women and youth), have a fair retribution which allows them to live decently and to access primary goods.
	3.4	Food prices are fair and accessible to all consumers, while also ensuring fair returns to producers and fair wages to workers	Food stuff is accessible all over the territory and at a fair price, despite inflation and market variations. All consumers, including vulnerable populations, are able to access food stuff, while producers and agricultural workers are also able to generate profit and have decent livelihoods