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MedSNAIL

# Overview on local agriculture and food heritage: Case of West Bekaa and Shouf in Lebanon

DESK REVIEW

Prepared and submitted by the Environmental and Sustainable Development Unit (ESDU) at the American University of Beirut under the project "Sustainable Networks for Agro-food Innovation Leading in the Mediterranean - MedSNAIL"

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## 1. Introduction

Lebanon's exceptional location at the crossroad of Africa, Europe and Asia, in addition to its singular morphology has contributed to making it a hub of botanic diversity. Locals gush over their country's cultural marvels, from its deep culinary traditions to the surprisingly varied topography. Lebanon has been host to many genetic species of wheat, barley, lentils, where their cultivation dates back more than 5000 years. Other local agricultural species include olives, figs, grapes, pomegranate and carob. Food made from these plants lie at the basis of culinary traditions transmitted between the generations (Zurayk, 2008). Aiming at fostering the valorisation and development of small-scale traditional agro-food value chains, combining enhancement of market potentialities and socio-economic sustainability, MedSnail is a 3 years project funded by the EU under the ENI CBC Med Program and jointly implemented by seven Mediterranean partners including the American University of Beirut represented by the Environment and Sustainable Development Unit (ESDU) and the Department of Landscape Design and Ecosystem Management (LDEM). For that, a desk review was conducted to have a better overview of the Lebanese agricultural and food systems, better promote these local food systems, raise awareness on responsible consumption and identify window opportunities for the small-scale producers in the Shouf and West Bekaa to create business services hubs, animated by local leaders trained on MedSNAIL principles and procedures. With the burden of the Syrian crisis and with many challenges facing the agro-food sector in Lebanon, the West Bekaa was traditionally the least frequented area for agro businesses. However, the area has significant potential, due to its rich culinary heritage and its vegetation and agricultural landscape, and has recently been the subject of increased interest from donors, investors and tourists alike. The agro-food sector in West Bekaa is largely seen as a spring or summer option. This is affecting employment in the sector, as operators still perceive it as an alternative source of revenue in addition to their full-time occupation, since they are not able to work in this sector throughout the year; therefore the need to emphasis promotion of sustainable rural development policies (LEADERS Report, 2017). On the other side, Shouf has always been home for the know-how linked to traditional food processing especially promoted by the geographical and topographical features that promoted the raising of sheep and goats, especially in areas

where rain fall is insufficient for productive farming (Zurayk, 2008). Thus, the Shouf area represents typical cases of diversified and authentic agriculture and food systems that need continuous conservation and promotion.

## 2. Lebanon Overview

### 2.1. Geographical location and climate

Lebanon is a Mediterranean country covering an area of 10,452 $km^2$. The country stretches from north to south along the eastern shores of the Mediterranean Sea having a coastline of 225 km. The country is bordered by Syria in the North and East, and Palestine in the south. Lebanon is divided into 8 administrative regions also called “Mohafaza”: Beirut, Mount Lebanon, North Lebanon, Akkar, South Lebanon, Nabatieh, Bekaa and Baalback-Hermel.

The geomorphology of Lebanon is characterized by complex topography the narrow coastal strips are surrounded by two mountain chains. Consequently, Lebanon can be divided into four topographic areas (shown in figure 1):

1. The narrow coastal plains that run parallel to the sea along the country with frequent urban sprawl.
2. The Mount Lebanon chain also stretching from north to south and having the highest peak in “Kornet El Sawda” reaching 3,088m above sea level.
3. The Anti-Lebanon chain is located on the eastern side of the country and forming birders with Syria. The chain includes the second highest crest of the country in Mount Hermon reaching 2,820m above sea level.
4. The Bekaa plain separated between the two mountain chains reaching up to 900m above sea level in west and central Bekaa and less than 600m above sea level in the northeast Bekaa. The plain is characterized by dominant agricultural activities.

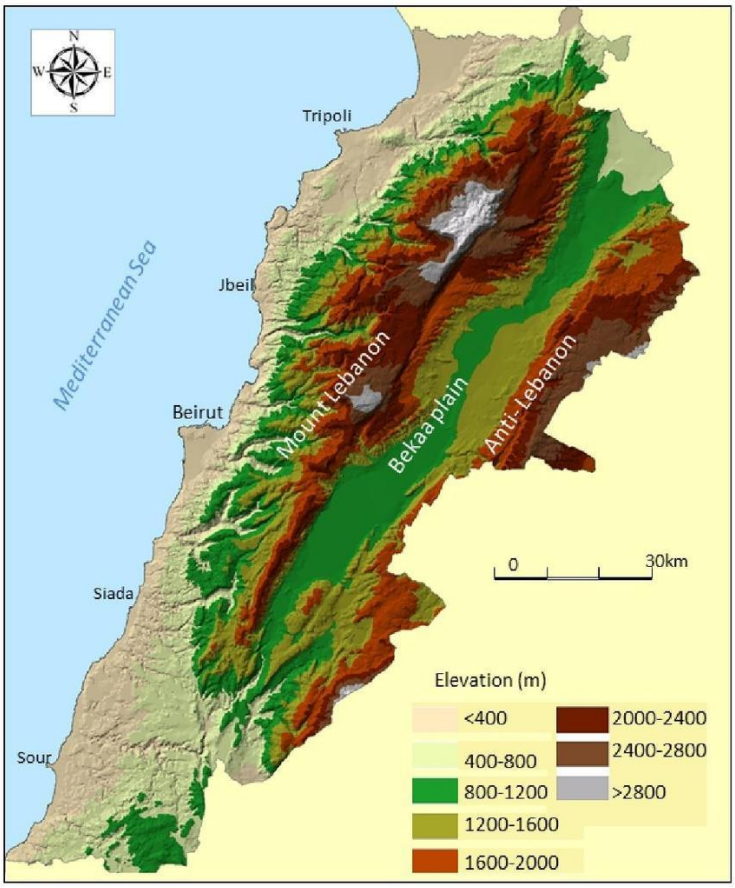


*Figure 1. Topographic units of Lebanon (Source: 5, Council for Development and Reconstruction, 2005)*

The climate in Lebanon varies from typical Mediterranean in the coastal areas and the mid ranges of Mount Lebanon, to mountain Mediterranean on the highest slopes. The climate becomes semi-arid to arid in-land and on the north-eastern plains of the Bekaa. Most of the precipitations occur from November until March with snow covering the highest peaks during this time. The mean annual rainfall vary from one area to the other, reaching 700 and 1 000 mm in coastal areas, up to 1 600 mm in mountainous areas. In the Bekaa, rainfall varies between 200 mm in the northeast part and 800 mm in the southern part while it can reach up to 1,000 mm in the Anti-Lebanon specifically in Mount Hermon.

Lebanon has a significant historical background mostly shaped by its land, mountainous terrain, proximity to the sea, and strategic location at a crossroads of the world. The Lebanese culture has substantially been imprinted by, political, economic, social and religious movements that originated or crossed through the region.

## 2.2. Economic Overview

Lebanon has one of the most diversified economies in the region based on growth from real estate, construction and tourism sectors (WBG, 2017). Although not among the largest contributors to the national production, the agriculture sector plays an important and steady role in the national economy (MoA, 2015); for instance, latest figures showed that in 2016, agriculture contributed approximately 3% of the GDP (Consultation & Research Institute, 2019).

## 2.3. Agriculture production systems

### 2.3.1. Overview of the Agricultural sector in Lebanon

The geographical location of Lebanon as a Mediterranean country and its topography allow for the cultivation of a wide variety of agriculture crops. The topographical features of the country divide it into five agro-climatic zones:

1. The coastal strip where citrus and horticulture crops are mostly grown.
2. On the low altitudes of Mount Lebanon, olive, grape and other Mediterranean crops are predominating.
3. The middle altitudes where temperate fruit orchards are planted.
4. West and central Bekaa predominantly including field crops, grapes and fruit orchards.
5. Northern Bekaa where rain-fed cereals or fruit trees and few irrigated crops can mostly be found (MoE/URC/GEF, 2012).

Lebanon has the highest proportion of agricultural lands in the region with agriculture forming 64.3% of its lands (IDAL, 2017). Almost, one third of the Lebanese territory is arable where most fertile areas can be found along the coastal strip and Bekaa valley. The majority of agricultural lands are found in the northern Bekaa specifically in Baalbek-Hermel (25% of the agricultural lands) followed by both central and west Bekaa (18% of agricultural lands) and the coastal plains of Akkar (16% of the agricultural lands). Figure 2 shows the distribution of the agricultural lands and exploitation per Mohafaza.

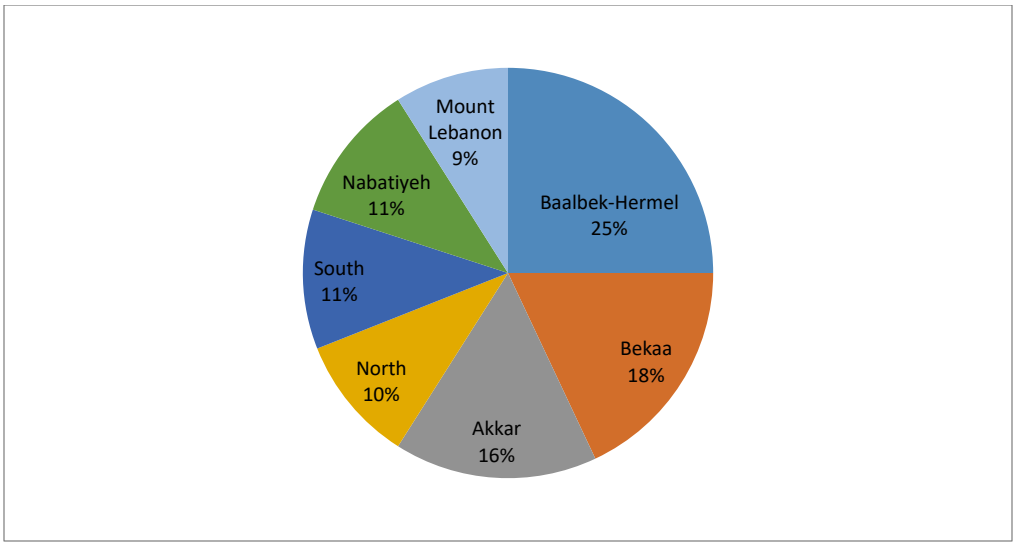


*Figure 2. Distribution of the agricultural lands and exploitation per Mohafaza (%) (Source: MoA/FAO/Italian Cooperation, 2012)*

### 2.3.2. Crop Production

According to the Agricultural Census 2010, the total agriculture land area is estimated at 332,000 ha, from which 230,983 ha are cultivated (MoA, 2015). Approximately half of the agriculture surface is irrigated; mainly composed of vegetables and fruit trees while other crops such as olive tree, tobacco, cereals and legumes are rain-fed. Only 2% of the agriculture is protected under greenhouses (MoA, 2017). Vegetables namely potatoes, tomatoes, cucumbers and lemon from the majority of crops produced. Fruits are the second largest category including mainly apples, oranges and grapes (IDAL, 2017).

Data series for crop production can be extracted from FAOSTAT; the chart in figure 3 was retrieved for the year 2017 and shows the production in tonnes for the main agricultural crops in Lebanon.

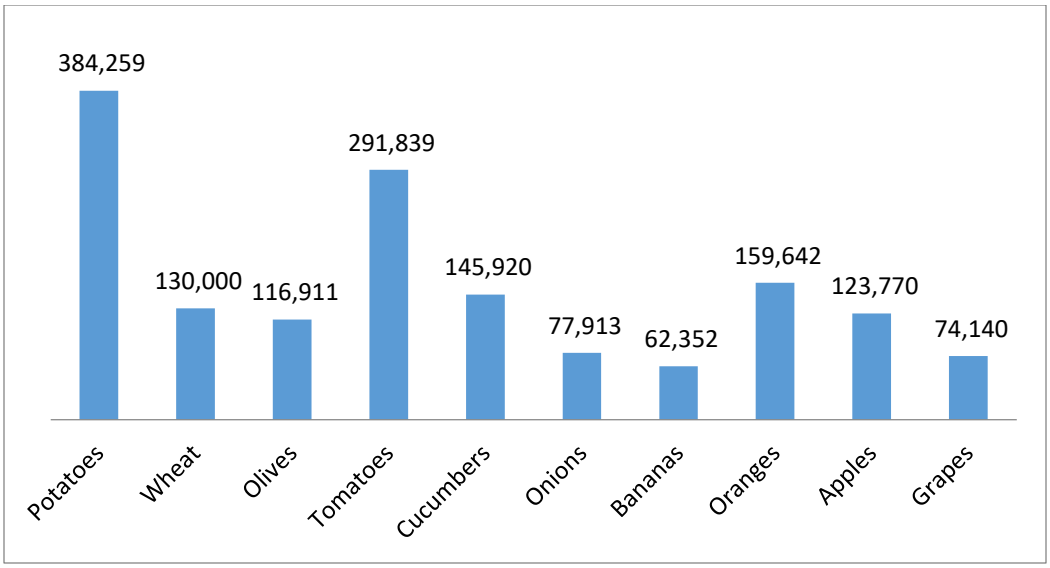


*Figure 3. Production of the main agricultural crops in Lebanon (in tonnes) for the year 2017 (Sources: FAOSTAT)*

The highest value for crop production is attributed to fruit and vegetables (44% and 29% respectively) followed by olives, legumes and cereals (8%, 2% and 6% respectively). In terms of area coverage, fruit trees occupy approximately 31% of the total cultivated area, followed by 20% for cereals, 23% for olive tree and 17% for vegetables. Industrial crops are mainly composed of tobacco, forage and other small crops and cover only 9% of the total cultivated area which constitutes a very low crop production value (MoA, 2012).

Lebanon farming system is characterized by the predominance of traditional cropping patterns with very fragmented agricultural holdings. This prevents the economic scaling up of agricultural production in the country and restricts marketing capacities. 85% of the land management is carried out through individual management and a very small proportion is carried by enterprises or cooperatives (12% and 3%, respectively). Another issue faced by agriculture, is the land tenure in remote rural areas where most the lands are communal or publicly owned by the municipalities, which prevents investments (MoA, 2012).

### 2.3.3. Animal production

Livestock activity is important and constitutes 10% of the agricultural activities practiced in Lebanon. Main livestock species in Lebanon include cattle and small ruminants (both sheep and goats). The local Sheep breed is the “Awasi” breed while goat breeds include the “Baladi” or

"Jabali" (local goat) and the Chami goat breeds (Jaber et al., 2004). The number of small ruminants has considerably fluctuated over the years. Sheep are mainly located in Baalback-Hermel district (38%), followed by Central and West Bekaa (34%). Goat herds are mainly located in Baalback-Hermel district as well (26%) followed by Central and West Bekaa (25%). Some herders raise both sheep and goat together and are mainly located in the Bekaa region. More than 70% of these herds are less than 50 heads. Small ruminant production in Lebanon relies on pasture and traditional pastoral systems. Goats are raised in extensive pastoral systems with semi- sedentary and vertical transhumant systems, while sheep herds are managed under nomadic and semi-nomadic systems with horizontal transhumance. Small ruminants mainly feed on native pastures, woodland species, and crop residues. Other types of herds such as cattle are raised in farms (MoA, 2010).

The Syrian crisis in 2010 had considerable impacts on the health of local small ruminants due to the influx of large numbers of unvaccinated animals which crossed the borders with the Syrian refugees (FAO, 2014).

When it comes to small ruminants, goat and sheep milk is subject to seasonality; it extends from April to July for sheep and May to November for goats. 60% of livestock farmers depend on dairy production for their livelihood (LACTIMED report, 2014). The majority of small ruminant's milk production is sold by the herders as fresh milk either to manufacturers for processing or directly to consumers. Only a small portion of the remaining part consumed by the herders is processed into dairy products (mainly as Labneh, Kishk or local cheeses such as Shanklish). Most dairy units in Lebanon are traditional and managed by families or cooperatives. There is also good number of small-scale dairy processing units scattered all over the Bekaa Valley; these are run by families or cooperatives and provide livelihoods for families in the region.

### 2.3.4. Vulnerability to climate change

According to the National Communication Report to the UNFCCC, the crops that are of economic importance include potato, tomato, apple, cherry, grapevine, banana and wheat. These are also considered highly vulnerable to climate change including extreme drought,

increase in temperatures, humidity and reduced water availability for irrigation and thus increasing the risk of food insecurity in the country. Curtail measure should be undertaken to increase production under unpredictable climate conditions while sustaining the viability of the agriculture sector and supporting the livelihood of rural populations (MoE/UNDP/GEF, 2016).

In 2012 the Ministry of Environment (MoE) led the development of the "Technology Needs Assessment Report for the Agricultural sector in Lebanon" which was developed in partnership with the United Nations Environment Programme (UNEP) and the UNEP-Risoe Centre (URC) in collaboration with the Regional Centre ENDA and the United Nations Development Program (UNDP). The report aimed at proposing technologies for adaptation to climate change for vulnerable crops (potato, tomato, apple, cherry, banana, olive, grape and wheat) and production systems (such as open field or protected crops, irrigated or rain-fed crops) (MoE/URC/GEF, 2012).

### 2.3.5. Agro-food Processing

The agro-food industry sector is the largest contributor to the Lebanese industry adding approximately 27% of value for the sector; it represents 8.2% of industrial enterprises in Lebanon, and constitutes more than 26% of the total industrial input. Thus, agro-food industry plays a fundamental role in the Lebanese economy and primary provides livelihoods to many Lebanese families (the sector employs 23% of the industrial labour force) (Darwish, 2008).

The agro-food industry in Lebanon is composed of large industrial companies with high investment opportunities and large production capacities on one hand, and family-based, small medium enterprises (SMEs) or cooperatives with limited resources and small production capacities on the other hand. Nevertheless, the majority of the food industry includes artisanal producers operating as family businesses or cooperatives and including less than 100 workers (MoI, 2010).

Main agro-food products include among others: jams, bakery products, olive oil, pickles, vinegar, processed fruits and vegetables, confectionery, alcoholic and non-alcoholic beverages, etc.

## 2.4. Food systems in Lebanon

### 2.4.1. The Lebanese diet

Situated between the east and the west, Lebanon is a culinary and cultural crossroads located at the crossways of Greece, Turkey, Syria, and Palestine. Hence, the Lebanese cuisine has been the centre of the Mediterranean diet (MD). “The Mediterranean diet (MD) has been widely used to describe the dietary pattern that dominated in olive tree growing areas of the Mediterranean coastline” (Naja et al., 2011). The MD is characterised by “high intake of extra virgin (cold pressed) olive oil, vegetables including leafy green vegetables, fruits, cereals, nuts and pulses/legumes, moderate intakes of fish and other meat, dairy products and red wine, and low intakes of eggs and sweets” (Davis et al., 2011). Meanwhile, the Lebanese diet has a unique dietary pattern, inspired by the MD that contributed into creating its positive culinary reputation.

*Figure 4 :Traditional Lebanese breakfast*

*Figure 5: Seasoned wild edible plants Centaurea hyalolepis*

Lebanon, a country historically ruled by different foreign powers, was influenced by European cuisines with the exotic ingredients of the orient. From 1516 to 1918, the Ottoman Turks controlled Lebanon and introduced a variety of foods that have become staples including olive oil, fresh bread, baklava (a sweet pastry dessert), laban (homemade yogurt), stuffed vegetables, and a variety of nuts. Then, after the Ottomans were defeated in World War I (1914–1918), France took control of Lebanon until 1946, when the country won its independence. During this time, the French introduced some of their most widely eaten foods especially pastries and jams (Sheehan, 1997).

The Lebanese themselves have also helped to bring foods of other cultures into their diet: the Lebanese were traders and they have journeyed in the Middle East, carrying with them food that would not spoil, such as rice and dates. These foods slowly became part of the Lebanese diet (Sheehan, 1997).

*Figure 6: Freekeh with lamb*

Consequently, the Lebanese diet became the essence of the Mediterranean diet. It includes an abundance of vegetarian and wheat-based dishes, such as cooked “Bourghul” (cracked wheat) and “Freekeh” (roasted green wheat). “Grains, seeds, and nuts are also important part of the staple Lebanese diet. Grains are made into savoury stews and are very much part of weekly meal menus. Seeds and nuts are common in Lebanese recipes” (Massaad, 2011). The tastiness of the Lebanese dishes comes from the use of a variety of spices and fresh herbs such as turmeric, cinnamon, cumin, mint, garlic, thyme, and coriander instead of heavy sauces. Moreover, the principle source of fat is the olive oil; Lebanese dishes include a generous amount of olive oil, garlic and pomegranate molasses. Dairy products are consumed on a daily basis: yoghurt is also consumed with various dishes, in sauces and salads, plain and in the form of “Labneh”. “Labneh” is the strained yoghurt with spreadable like texture and often considered as part of the breakfast. Cheeses are mostly fresh and white such as “Baladi Cheese” (white cheese) or dry and salty cheese such as “Shanklish”. Besides, vegetables are widely consumed in the cuisine including eggplant, beans, parsley, okra, zucchini, vine leaves. Additionally, poultry is consumed more than red meat, that it is usually lamb.

An important highlight of the Lebanese diet is the “Mezze”. “Mezze” comes from the Persian word “to taste”. Today it means an array of small, hot and cold, dishes served on a table (Perdew, 2015). In other words, it is the combination of different appetizers. Lebanese common mezze includes “Hummus” (chickpea dip), “Kebbeh” (mixture of ground meat, cracked wheat and spices), and “Tabbouleh” (parsley and cracked wheat salad) etc...

Lebanese diet is also distinguished by its variability among the seasons and the use of a mixture of ingredients coming from the different Lebanese regions each having special recipes reflecting its own history and culture. With the recent emphasis on the health benefits of Mediterranean cuisine, people across the world are discovering and embracing authentic Lebanese food. The awareness of this ancient cuisine has also inspired professional chefs and restaurateurs across the world to feature exciting Lebanese items on their menus.

### 2.4.2. Traditional FS

Traditional food system reflects culture, history and lifestyle. It is generally linked to people living in rural areas; however, in Lebanon, the current’s food system extends to domestically produced and imported food and involves many actors at different stages of the food supply chain. Since the early 1960’s, the literature describes the Lebanese diet as having a positive impact on the health by including many typical items of the Mediterranean Middle Eastern diet. The Lebanese traditional food system includes an “abundance of plant food (e.g., fruit, vegetables, breads, other forms of cereals, potatoes, legumes, nuts and seeds); minimally processed fresh fruit as the typical daily dessert with sweets containing concentrated sugars or honey consumed a few times per week; olive oil as the principle source of fat, replacing other oils, butter and margarines; dairy products (e.g., mainly cheese and yogurt) consumed daily in low to moderate amounts; wild edible plants used in many of the traditional dishes; fish, poultry and red meat consumed in low amounts; and wine consumed in low to moderate amounts” (Hwalla and Khoury, 2008).

People have found a way to value seasonal crops and preserve them for ulterior use when they are out of season. Similarly, the Lebanese preserve their highly perishable food and prepare what they call “*Mouneh”*.

According to Massaad (2011), “Mouneh is a Lebanese slang word coming from the Arabic word “Mana” which means to preserve food. Mouneh is a living Lebanese tradition refined through the generations by culture and creativity. And what makes the Lebanese Mouneh specifically so special is the rich mixture and inheritance of civilizations that affected Lebanon and its surroundings.”

*Figure 7: Mouneh prepared by Khayrat Bekaina women cooperative in the West Bekaa: pickled green beans, stuffed eggplants “makdous”, hot sauce and mixed vegetables pickle*

Traditional mouneh are the building blocks of the Lebanese culinary heritage; where typically villagers used to preserve their own local crops and foods. The practice of making preserves – drying, salting, pickling – is traditionally associated with the seasons (end of summer/ beginning of autumn) and regions due to produce’s availability.

The world of globalization has been threatening culinary heritage and exposing many of the traditional food to extinction (Trichopoulou et al., 2006). In Lebanon, not everything is in danger; however, the traditional food system requires understanding of the production process, the climate as well as crop and animal availability. Details of ingredients, seasoning and cooking procedures all constitute inseparable components of the Lebanese dietary traditions.

### 2.4.3. Food trends and initiatives

Lebanon is becoming a highly urbanized Mediterranean country. According to the Mediterranean diet index, “Lebanon has become host to four different dietary patterns:

- the Western: diet characterized by a high consumption of pizzas and pies, soda drinks, fast food sandwiches and sweets;

- the Prudent: diet consisting mostly of low fat milk and dairy products, whole bread, and breakfast cereals;
- the fish and alcohol characterized by a high consumption of fish and alcohol, popular among fishermen,
- Traditional Lebanese pattern including high intakes of fruits, vegetables, legumes and olives" (Naja et al., 2015).

*Figure 8: Kishk making at Rashaya's women cooperative*

Thus, shifting consumption patterns are having significant implications on the food system and public health nutrition. Lebanon is at an increased risk of adopting the westernized dietary pattern characterized by increased energy-dense diets that are low in fibre, fruit and vegetables, and high in fats and sugars and this is not restricted to urban areas. Rural regions in the country recorded consumption of wholegrain cereals, legumes, olive oil and fish reported as "less frequent" compared to the consumption of refined cereals, liquid sweets, fats and oils and dairy products.

Moreover, there's a constantly increasing access to a variety of fresh and processed foods that are now obtainable on a daily basis due to the progress in food production in the Mediterranean region. Currently, consumers have developed various food trends that as a reflection of their current economic situation:

1. Mass Grocery Retail (MGR) sector

Lebanon's MGR sector comprises mainly supermarkets and hypermarkets. According to a marketing research, the supermarket accounted for 88% of sector sales in 2017 and is likely to continue dominating the sector sales. Projections suggest that supermarkets will be influencing food consumption trends for the upcoming years (BLOMINVEST, 2017).

2. Dining-out trends

The high demand on Lebanese cuisine started after the end of the 90's where the returning expatriates and the tourists, especially from the Arab countries, dined out in Lebanon as part of a social event. The restaurants market developed quickly in Lebanon not because of the Lebanese consumer's purchasing power but because Lebanese people like to go out in places where they can meet people and enjoy good food.

*Figure 9: Lebanese "mezze" is rich with vegetarian and dairy dishes*

3. Restaurants Sector in Lebanon

For a relatively small country like Lebanon, the number of total restaurants in Lebanon is 1125, of which around 55% are international restaurants serving international meals. According to the AFC Consultants International, there's a trend for an increase demand in restaurants' choices, thus, the continuous opening of new concepts including a variety of ethnic foods, from Japanese cuisine to western restaurants.

4. Food tourism

According to the Daily Star, Beirut was the only Middle Eastern city to make the list of “The Best International Cities for Food” in 2017. And, in a survey conducted by Travel and Leisure, readers chose Beirut as the number one destination for the food-oriented traveller.

5. Food Trails

Food trails aim to create a touristic destination focused on food tourism and to increase and diversify the income of small farmers, food producers, local guides, and bed and breakfast operations integrated to the food trail through the development of touristic packages centred on agricultural, pastoral and food processing activities as well as traditional cuisine. Food trails and rural tourism have been gaining popularity in Lebanon; domestic tourism is increasing especially since the beginning of the Syrian crisis which resulted in significant decrease in international tourists.

*Figure 10: Chef Gail Arnold visiting Darb el Karam food trail (summer 2018)*

6. Farmers’ market

Farmers’ markets like for example: *Souk El Tayeb, Badaro’s Farmers Market, Souk Aal Souk*, etc. aim at promoting healthy traditional food from local farmers and small producers originating

from different Lebanese areas. They intend to build and strengthen linkages between urban residents and rural producers by offering urban dwellers access to healthy traditional food; and the small producers a channel to market their local produce.

*Figure 11: Souk aal Souk – Farmers' Market promoting local food in AUB*

7. Guest Houses and Tables d'hôtes

Guesthouses have become a trend linked to food trails and rural tourism. For example, L'Hôte Libanais is a family of carefully selected guesthouses and boutique hotels that enable travellers to experience the capital and Lebanese villages in an authentic way. Another successful example is *"Beit"* which means Home. *"Beit*" is the latest step in the *Souk El Tayeb* journey that began in 2004 with the founding of a weekly farmers' market in the heart of Beirut, bringing rural produce to the urban environment, as a way of uniting communities and supporting small-scale agriculture. In addition, "*Darb el Karam"* (the trail of generosity), Lebanese food heritage trail is a network of food producers who host visitors on their tables d'hôte and prepare local specialties using their own mouneh and harvests. There are six tables d'hôte and four B&Bs adhered to the trail which have developed seasonal menus highlighting typical dishes from their villages. A family restaurant and a traditional ice cream maker also form part of the trail.

8. Non-Governmental Organizations

In a country where social issues go unnoticed and unresolved, it is no strange fact that several NGO's have been founded to address some of the most important social concerns. Numerous NGOs with different aims started the work in the agro-food sector. Some highlighted the need for feeding programs, others like The Food Heritage Foundation established community kitchens in rural areas where Lebanese and Syrian women come together to produce healthy meals traditional to both cultures. In parallel, NGO's like Slow Food Lebanon and Taste Lebanon presented descriptive information on the local culinary heritage, and other NGO's like Food Blessed, Disco Soup and Lebanese Food Bank aimed at increasing knowledge on responsible consumption and decrease of food waste in different ways.

### 2.4.4. Food policies

**Lebanon's Food Sector Policies**

Food policy is mainly supported by a variety of programs related to economic and agricultural sectors. There are several regulatory programs to guide the production and distribution of food and consequently, food policy implementation. "Food policy is the collection of decisions made by governments – individually, bilaterally, multilaterally, and globally – that affect the production, distribution, and consumption of food" (IFPRI, 2015). The regulation of food policy relies on food security which entails a balance between supply and demand. "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (World Food Summit, 1996).

The approach to food policy has changed where it is no longer limited only to food crises and price shocks, but also to fluctuations in globalizations, trade liberalization and industrial food systems together with food security. It has also widened its focus to address various forms of malnutrition (Maxwell and Slater, 2003). More specifically, as part of the Sustainable Development Goals including sustainable diet concept, there is major attention given to the interaction between food systems and agriculture, health, sociocultural, environmental, and socioeconomic considerations (Johnston et al., 2014).

The several regulatory programs and food policies have been adapted to the changes that occurred locally and regionally. Food policies in Lebanon are mainly linked to the Ministry of agriculture. Agricultural policies were primarily divided between financial support and regulations. Concerning the financial support, the main beneficiaries are olive oil and apple producers who solely benefit from direct payments. Despite this support, apple farmers are affected by import competition and weak export and were insisting on a governmental intervention. On the other hand, fruit and vegetable producers are not offered any income support. Moreover, during pest outbreak, the Lebanese government offers some inputs subsidies including certified plant seeds for some strategic crops (wheat and olives).

As for regulations, several policy mechanisms were adopted to secure food accessibility for the Lebanese population. These regulations include price ceilings and control of commercial profits along with social protection programs for vulnerable households. Price ceilings imposed by the Lebanese government are mainly maintained by the Lebanese Government on two food items: Arabic bread and chicken. However, as it is the case with several regulations, the enforcement of this regulation seems to be weak where vendors manipulate the items' weights. As for the control of commercial profits, in 2010, the Ministry of Economy & Trade (MoET) has declared the reinforcement of a policy controlling the percentage of commercial profits. The MoET has been following up through regular inspection visits and reporting violations to the court system (Ministry of Economy and Trade, 2017).

Food policy mechanisms also focused on the financial situation of the Lebanese community especially after the Syrian crisis. Hence, several programs and funds were established to provide financial assistance including food purchases. The Emergency National Poverty Targeting Program supported vulnerable Lebanese and Syrian communities in Lebanon. The National Social Security Fund (NSSF) supports poorer Lebanese through allowance and medical insurance; however, it has been noted that this fund is not well managed as it is politically abused.

Furthermore, there are several food assistance programs for refugees in Lebanon such as the programs supported by UNRWA and WFP who deliver food aid and cash assistance to Palestinian and Syrian refugees respectively (Kukrety and Al Hamal, 2016).

In addition, the Lebanese government has attempted to enhance public health nutrition through several initiatives targeting the Lebanese consumers' food education and health. Lebanon has addressed some public health concerns related to nutritional deficiencies by adopting some measures. A specific law obliged the fortification of salt to minimize iron deficiency among the Lebanese population (Akik et al., 2016). For the aim of preventing micronutrient deficiency, a national flour fortification program was also proposed but it was not agreed to and had no legislation (FAO, 2007). As an attempt to improve public health nutrition, there were several governmental adjustments and orders to address food safety. Food safety was a responsibility divided across several ministries and institutions (Ghaida et al., 2014; Abebe et al., 2017). This required coordination between ministries (MoA, MoI, MoPH, and MoET) was again hindered by different authority objectives accompanied by weak implementation.

The MoA has put a National Plan of Action for Nutrition but failed to adopt it. The Ministry of Education and Higher Education (MEHE) in collaboration with American University of Beirut (AUB) has launched a Nutrition Education program for Overweight and Obesity and was able to intervene. Moreover, AUB has also developed 'The Food-Based Dietary Guideline (FBDG) Manual for Promoting Healthy Eating in the Lebanese Adult Population' in 2013 in collaboration with the Lebanese National Council for Scientific Research (CNRS), with reference to dietary recommendations from the United States Department of Agriculture. The Ministry of Public Health (MoPH) has adopted this FBDG but not through a formal law (FAO, 2018).

**Lebanon's Agricultural Sector Policies**

Given that the overall situation in Lebanon is governed by political parties, this has severely affected the nature of work and the ability to invest in any of the available resources. As previously presented, Lebanon's policy framework is disjointed. This disorganization is represented in the variety of public institutions and ministries that are in charge of agriculture and food policy. Despite it being a major sector in Lebanon, agriculture has been vastly

neglected by the Lebanese government. Exceptionally, the government still gives attention to some programs that target strategic products, such as wheat.

The agricultural sector has been vastly affected by Lebanon's policy environment where laws that were adopted fell short of effective implementation. Organic production is an example where it suffers from the absence of both, national legislation and legal infrastructure to support it. Due to this situation, some independent and non-governmental certifying bodies took the initiative to perform organic certification (Sebaaly, 2011; Naspetti et al., 2016). In 2012, and as an attempt to enhance the organization within the organic farming sector, the MoA announced the establishment of the National Register of Organic Agriculture (FAO, 2018). The MoA also adopted the Ministry of Agriculture Strategy 2015–9. The Lebanese ministry of agriculture, with some donor support, has put an effort to improve agricultural policy making it more strategic. Yet, these efforts were complicated by political considerations and interferences.

**Lebanon's Trade Sector Policies**

As for the trade policy, which has been traditionally liberal, it has shifted from the focus on imports costs to selecting higher-value agricultural exports as a source of profit. There are policies which promote food access accompanied with permanent measures to control prices and secure financial support for food purchase. As mentioned previously, isolated policies have been also adopted related to food safety and public health nutrition. However, the problem remains with lack of coordination between ministries and the weak ineffective implementation negatively affecting policy measures.

This table outlines the various public bodies in Lebanon which are directly involved in management and policy setting of food and nutrition security in the country (ESCWA, 2016).

| **Public Bodies** |
| --- |
| **1. Ministries** |
| **A. Ministry of Agriculture-MoA** |

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|---|
| The General Directorate of Cooperatives |
| Directorate of Animal Resources |
| Directorate of Plant Resources. |
| Directorate of Natural Resources and Rural Development. |
| Directorate of Research and Coordination. |
| **B. Ministry of Economy and Trade - MoET** |
| Directorate General of Cereals and Beetroot (DGCB) |
| The Consumer Protection Directorate (CPD) |
| **C. Ministry of Finance** |
| Regie Libanaise des Tabaces et Tombaces |
| Credit Interest Rates |
| Directorate General of Customs |
| **D. Ministry of Social Affairs - MoSA** |
| Directorate General of Social Development |
| Directorate General of Social Services |
| The National Poverty Targeting Programme |
| **E. Ministry of Public Works and Transport** |
| Directorate General of Urban Planning (DGUP) |
| **F. Ministry of Environment - MoEv** |
| **G. Ministry of Energy and Water - MoEW** |
| General Directorate of Hydraulic and Electric Resources |
| General Directorate of Exploitation |
| **H. Ministry of Public HealthMoPH** |
| General Directorate of Preventative Health |
| General Directorate of Medical Care |
| **2. Public Institutions** |
| a. The Green Plan |
| b. Investment Development Authority of Lebanon-IDAL |

| |
|---|
| c. Lebanese Standards Institute (LIBNOR) |
| d. Lebanese Agricultural Research Institute - LARI |
| e. National Authority of the Litani River - LRA |
| f. National Employment Office - NEO |
| g. National Social Security Fund - NSSF |
| h. Council for Development and Reconstruction - CDR |
| i. Public Authority for Consumer Markets- PACM |

### 2.5. Challenges facing the Lebanese agro-food sector

"There are around 1,400 agro-food companies constituting the largest share of total industrial firms in Lebanon. More than 45% of the agro-food factories are engaged in the production of dairy, confectionary, dried fruits and nuts, baked goods, olive oil and wine" (IDAL, 2017). However, this sector is facing many challenges that alter its progress.

**The effect of the Syrian Crisis**

In the last registration update conducted by UNHCR, the total number of Syrian refugees in Lebanon reached 986,942 person of concern grouped under a total of 226,373 households (UNHCR, 2018). Hosting around 1 million refugees, spread in the areas where some of the most marginalised and vulnerable Lebanese communities reside, like in Akkar and Bekaa, have increased instability and accumulated an economic burden of 7.5 billion USD (FAO, 2015). The impact of the Syrian crisis on the agro-food sector in Lebanon can be summarized in few points:

- Reports found that competition between Lebanese workers and Syrian workers is high, as Syrians work for lower salaries, longer hours and without social security benefits;
- The loss of overland and export routes to the Gulf countries through Syria, severely impacted the agriculture sector (UNHCR, 2017);
- Farmers are struggling to compete with cheaper products from Syria (UNHCR, 2017);

- Food availability is in danger due to an increased demand for food, in addition to the increase in prices for basic commodities in Lebanon, affecting food access for host communities;
- Stability of supply: Increasing food prices and the unstable security situation of the country are factors negatively affecting the stability of food supply.

However, prior to the Syria Crisis, the agriculture sector in Lebanon was already facing major challenges. Many constraints resulted in the sector's low performance and struggle to expand:

**High production cost:** Around 70% of the total farm holders have an area of less than one hectare, and cultivate less than 20% of the total cropping area; thus, the majority of land holdings in Lebanon are small and fragmented, resulting in low productivity and low incomes for farmers.

**Lack of access to agricultural inputs:** Farmers are increasingly abandoning their livestock as they are unable to cope with the escalating feed prices and decreasing prices of their animals and animal products. All this escalated with the lack of irrigation networks, agricultural roads, marketing outlets for agricultural and agro-processed products.

**Unfavourable international trade agreements:** "It has been increasingly challenging for Lebanese exports to access foreign markets as most countries are applying progressively more stringent standards and specifications on imports" (CCIB,2017)[1]. Numerous types of violation were detected by the Food and Drug Administration (FDA) which caused exports to be denied access to USA, such as labelling, misbranding and administrative infringements.

**Monopoly of traders:** Since Lebanon bid by the open economy and trade policy, it has been leading to more competition and more control over the agro-food sector. Due to availability of substitutes and political instability in the country, food cartels are taking advantage of the situation by setting their prices in the market (MoE, 2003).

**Food Safety Issues:** The presence of unacceptable levels of pesticide residues, toxic levels of bacteria, or the use of unsafe colour additives, resulted in difficulty of access to export markets.

[1] https://www.ccib.org.lb/uploads/5b447b6d402a6.pdf

Therefore, enforcing compliance with internationally accepted health and safety standards is a must for the sector's sustainability.

# 3. Case-study areas: the West Bekaa and Shouf

## 3.1. The West Bekaa

### 3.1.1. Geography, climate and agricultural systems (food farming systems) including major crops and animal breeds

The Bekaa Mohafaza or governorate comprises three districts including, Central Bekaa, West Bekaa and Rashaya. The West Bekaa is situated between 33°44' – 33°37' latitude North and 35°41' – 35°49' longitude East. The district can be associated with two morphological units: the eastern slopes of Mount Lebanon and the eastern planes of the valley. The district is situated at an altitude ranging between 800 and 1,000 m above sea level. West Bekaa is one of the smallest districts accounting for 32 % of the Bekaa governorate. It is the second most populated district having a population of 129,540 (25% of the population in the Bekaa) (IDAL, 2017). The area like many regions in Lebanon has been impacted by the Syrian crisis; according to the UNHCR data of 2018, the number of refugees was 62,324 (UNHCR, 2018).

The Litany River encompasses the West Bekaa in its middle forming the Qaroun Lake, an artificial reservoir originally made for hydropower, domestic use and irrigation (Hassan et al., 2019). The West Bekaa is found on sub-humid bioclimatic zone (Safi et al., 1999) and characterized by a typical Mediterranean climate with seasonal precipitations (mainly occurring between November to April) followed by a dry period (May to September). Mean annual rainfall varies between 700 and 1000 mm per year. Main landscape dominating the area includes natural vegetation and agricultural fields (Hassan et al., 2019).

Like most Lebanese regions, the area has a very rich biodiversity comprising several types of ecosystems forming home for a diversity of animal and plant species. Forests and other wooded lands in this area include mostly mixtures of conifer and hardwood trees such as, *Quercus* sp. *Pinus* sp. These forests are known for their multi-functionality for providing goods and services including non-wood forest products such as aromatic and medicinal plants (used in the preparation of many traditional meals), honey production, pine nuts, etc. Thus, they play a key

role in the socio-economic development and the welfare of these rural communities. The West Bekaa is also known for having one of the most important wetlands of the country in “Ammiq” village which is declared as a Ramsar Conservation site by the UNESCO World heritage (MoE/GEF/UNEP/Elard, 2015).

The district is one of the most agriculture intensive regions where both land farming and animal farming are practiced. Agriculture activities in West Bekaa are diverse thanks to the abundance of water and its fertile soil. In addition, agro-food production is one of the most important sector providing major economic activities for locals.

The main activities in the region include crop production, animal farming and apiculture:

1. Crop production

- Fruit trees: Fruits constitute an important sub-sector in Lebanon in terms of production, socio-economic impact and rural development. Main fruit trees planted in the Bekaa in general and West Bekaa in particular:
    - Grapes with main varieties of grapes such as Vitamouni and Halawani (also known as Baytamouny and Tfeifihi respectively). Grapes are one the most important agricultural crops as they are considered to be high value products in both domestic and export markets. Moreover, the region is witnessing an increase in wine production; the area is considered to have all the optimal geographic, climatic, demographic and economic characteristics for the development of this sector (Antoun, 2014).
    - Other fruit trees planted in the region include apples, pears, peaches, cherries, plums, apricots, almonds (Choueiri, 2001).
- Legumes and vegetables:
    - Tomato is classified as the second vegetable crop planted in Lebanon. The majority of tomatoes are planted in open fields; in the West Bekaa most of tomatoes are grown by small-scale farmers (having less than 0.1ha). Most of the planted tomatoes are used for local consumption and to a lesser extend for agro-food processing (Aw-Hassan et al., 2018).

- Other vegetables include eggplants, cucumbers, zucchini, squash, watermelons, melons, bell peppers, beans, cabbages, cauliflowers, carrots and lettuce (Chalak and Sabra, 2007).

Dried fruits and vegetables are a nascent sector in Lebanon and their production is still limited to small women cooperatives which produce a diversity of dried fruits and vegetables. In the West Bekaa, mainly table grapes are dried (ESDU, 2019).

- Field crops include: cereals such as wheat, barley and freekeh. Freekeh is roasted green wheat, an ancient staple derived from Levantine and North African cuisines and still very popular in many countries of the eastern Mediterranean Basin. Freekeh is recognized internationally for having superior health benefits. It is produced locally by individual farmers or organizations such as agro-food cooperatives (mostly women coops).

*Figure 12: Braided dry onions*

*Figure 13: Awassi sheep flock*

2. <u>Animal farming</u>

- The Bekaa valley in general has the largest number of livestock. The Central and West Bekaa include the second largest number of small ruminants (34% of sheep and 25% of goats in Lebanon). Some herders raise both sheep and goat together in extensive systems feeding on native pastures, woodland species, and crop residues. The main species of sheep is “Awassi” and for goats both “Jabali” and Shami”. Cattle farms are also

spread across the valley and include mainly herds of the Holstein species (Asmar, 2011) ranging from micro herds of 2-3 heads up to commercial farms of hundreds of cows.

Dairy production is a key player in the agro-industrial sector. Goat and sheep milk is subject to seasonality; it extends from April to July for sheep and May to November for goats. Most dairy units are traditional and managed by families or cooperatives. There is also good number of small-scale dairy processing units scattered all over the Bekaa Valley in general; these are run by families or cooperatives and provide livelihoods for families in the region. The West Bekaa in particular is currently witnessing an increase in this sector and is home for the largest herds.

- Beekeeping is a common activity in Lebanon in general and the Bekaa in particular. Honey production plays an important role in rural development, decrease of poverty and the valorisation of natural resources. Small-scale beekeepers are the largest category and constitute more than 70% of beekeepers (Hamadeh, 2016).

### 3.1.2. Communities of the West Bekaa and their food culture

As it is the case with the beautiful nature of Lebanon's cultural diversity, the various Lebanese villages have special distinctive characteristics. When speaking about cultural diversity, the Bekaa governorate holds a special place. Besides all the interesting historical places and religious monuments, the inhabitants of this area are distinguished by their food production skills. The arable and fertile land of the Bekaa region has allowed villages to invest in agricultural practices suitable to their soil quality and altitude. Hence, the combination of food production skills and agricultural practices has created a special food culture. The West Bekaa has slightly been affected by the nutrition transition which occurred on the country level. Inhabitants were able to not only preserve authentic food, but also introduce their special dishes to several Lebanese villages. The West Bekaa traditional food dishes rely largely on vegetables and legumes. They have also managed to preserve the usage of edible wild plants and herbs (*Qors Anneh, Akkoub, Derdar, Meshheh*…) in their traditional dishes. Moreover, they introduce healthy versions of traditional desserts using regionally produced sweetening substitutes (Grape Molasses, Grape Syrup, Apple Molasses, honey...). Therefore, the West Bekaa has remarkably

been able to sustain the authenticity of its traditional food culture and even develop healthier recipes while maintaining the originality of the practices.

*Figure 14: Wild edible plants collection during spring*

### 3.1.3. Main food initiatives, projects and research implemented in the West Bekaa

Several development projects have been implemented in the West Bekaa district. The area provides great opportunities for the development of both the agriculture and the agro-food sectors. The area is also considered as an important summer vacation destination and provides diverse ecotourism options for both locals and foreigners.

When it comes to interventions, several local and international associations have implemented projects related to agriculture and ago-food processing. Many vocational training programs have been provided to farmers, women and youth focusing on important agricultural value chains, traditional products and eco-tourism. Moreover, following the Syrian crisis during the last years, projects have also been focusing on the integration of Syrian refugees in livelihood projects and vocational trainings. Some of the significant projects previously implemented in the West Bekaa include:

- USAID through the Lebanese Industry Value Chain Development (LIVCD) project; Darb El Karam or the Trail of Generosity is the first food Network connecting the villages of West

Bekaa and Higher Shouf promoting traditional food and agriculture heritage of the area. Darb el Karam was established in 2015 through the collaboration between the Environment and Sustainable Development Unit (ESDU) at the American University of Beirut (AUB), the Food Heritage Foundation (FHF) and the Shouf Biosphere Reserve (SBR) with support of USAID. The network aims to highlight the seasonality and locality of foods and crops, the traditional processing methods and most importantly, the generosity of the hosts[2].

- USAID through their program "Building Alliance for Local Advancement, Development, and Investment" (BALADI) aimed at encouraging municipalities with the support of NGOs to implement community projects. In the West Bekaa, a project implemented by Caritas Lebanon, supported the women cooperative of the Khiara village in the implementation of an agro processing centre, offering food processing equipment to the cooperative[3].
- WFP in collaboration with local organizations has been implementing livelihood projects including both Lebanese host communities and Syrian refugees. In 2019, ESDU in collaboration with the Cooperation without Borders (CWB), implemented the "Climate-Smart Livelihoods Initiatives and Market Access Tailoring" (CLIMAT) project, a one-year Food for Training (FFT) project funded by the German Cooperation through the World Food Program (WFP). CLIMAT aimed to sustainably improve the skills, capacities and livelihood opportunities of vulnerable Lebanese and Syrian refugees in West Bekaa. The project focused on three main value chains (VC) including, small ruminant production in which Comprehensive trainings were provided to herders and a pasture and grazing management demonstration plot was established aiming at promoting climate-smart practices. Moreover, ESDU provided a series of comprehensive trainings related to dairy production in its selected villages in the Bekaa valley and established a dairy unit within the premises of "Khayrat Bekaena COOP". In terms of alternative and climate-smart agricultural crop production, ESDU has established a demonstration plot in West Bekaa to encourage eco-friendly approaches including agroecology, organic production and

[2] https://food-heritage.org/establishing-a-food-trail-in-higher-shouf-and-west-bekaa/
[3] http://caritas.org.lb/project/development

sustainable agriculture and promote climate smart practices for local agricultural crops. Freekeh, an ancient wheat species and recognized internationally for having superior health benefits was included in the value chains targeted. Finally, for the agro-food processing, substantial work has been done on promoting sun drying techniques of local fruits and vegetables[4].

*Figure 15: The climate-smart agricultural plot established by ESDU in the West Bekaa: a learning place for local farmers*

- Mercy Corps through the implementation of the 'Fostering Resilience by Strengthening Abilities (FORSA) project consisted expanding economic opportunities for both Lebanese and Syrians. The project funded by the Dutch Ministry of Foreign Affairs was implemented in several Lebanese regions including in the West Bekaa from December 2016 until November 2019. The main objective was to provide trainings on agriculture and supporting small businesses[5]. Moreover, in 2014, Mercy Corps has conducted a study on small ruminant value chain in the Bekaa valley, under the project entitled Protect and Provide Livelihood in Lebanon (PPLL). The study funded by the European Union, aimed at helping small and medium producers protect their livelihoods in the face of the Syrian crisis. The report concluded that there is a crucial need for the protection of small producers who still have the knowhow on traditional technics for the making of local cheese and yogurt.

[4] https://www.aub.edu.lb/fafs/news/Pages/2018_CLIMAT-Workshop.aspx
[5] https://aidstream.org/who-is-using/GB-SC-SC030289/5526#

- The European Union through the Centre for the Promotion of Imports from developing countries (CBI) has conducted a value chain assessment for fresh fruits and vegetables in Lebanon. The assessment included among other a section on table grapes in Lebanon which are considered to be one the most important agricultural crops in Lebanon and the Bekaa in particular as they are considered to be high value products. The largest production of grapes is found in the Bekaa including several villages of the West Bekaa. Several traditional products are made from grapes including vinegar, grape molasses, dried grapes (raisins) etc.
- The Shouf Biosphere Reserve (SBR) extends until the West Bekaa region thus, the Reserve plays a major role in the protection of the cultural heritage of the area. Some of the most relevant projects include:
    - Through the M6 partnership, as part of the MAVA Foundation's 2016-2022 strategy, the SBR in collaboration with the society for the protection of Nature in Lebanon (SPNL) are implementing a project aiming at building ecologic and socio-economic resilience of the Shouf Mountain and West Bekaa Landscape through the conservation of Mediterranean Cultural Landscapes[6].
    - The Ammiq wetland extending over 100 ha, is one of the last significant wetland in Lebanon. The site includes the remnant of once extensive marshes and lakes that once covers the Bekaa valley. Ammiq wetland is an important spot for biodiversity forming a wintering area for migratory water birds. "Tawlit Ammiq" eco-restaurant was funded by the Swiss Agency for Development and Cooperation (SDC) implemented by the SBR. The building is a bed and breakfast receiving visitors of the SBR and aiming to promote local products. It also includes an eco-restaurant and offers meeting rooms for workshops and conferences[7].
- The Lebanon Mountain Trail (LMT) passes through the West Bekaa more specifically through Aitanit village in which a guesthouse was established in 2008; the Municipality

[6] https://www.spnl.org/building-the-ecologic-and-socio-economic-resilience-of-the-shouf-mountain-and-west-Bekaa-landscape/
[7] http://shoufcedar.org/wp/wp-content/uploads/2017/07/ammiq.

have thus included the LMT as part of their masterplan for the village. The LMT closely works with the local community for the maintenance of the trail and the protection of the cultural heritage of the village. The guesthouse offers a variety of traditional homemade dishes to the visitors.

- UNDP Sustainable Land Management of the Qaroun Catchment, which mainly aims to foster sustainable land management. The project worked on setting up a multi-sector planning platform to balance competing environmental, social and economic factors playing a major role in the development of the district. Thus, the project aimed at reducing conflicting land-uses and improving the sustainability of land management so as to maintain the flow of vital ecosystem services, sustain the livelihoods of the protect the value of the land (UNDP/GEF/MoE, 2014). Within the framework of this project, several local NGOs were subcontracted by the UNDP to implement specific initiatives related to the project. In 2019, the Lebanon Reforestation Initiative (LRI) worked on improving small ruminant value chain[8].
- In 2014, a study was conducted on wine grapes entitled "Wine industry in the Bekaa Valley, Lebanon food-processing industry as a basis for community dynamics and local socio-economic development". The first part of the study tackled socio-economic developmental situation in the Bekaa Valley focusing on the agriculture sector. Then the study focused on the growing sector of the wine industry and the community organization surrounding the vine tree and the wine industry in the Bekaa Valley.

## 3.2. The Shouf

### 3.2.1. Geography, climate and agricultural systems (food farming systems) including major crops and animal breeds

The Shouf district is one of the six districts located in Mount Lebanon Governorate. It extends from the Awali River in the south to Naameh/Haret Al-Naameh in the north of the Damour River, and from the Mediterranean Sea in the west to the Barouk mountains in the east (Al Masri and Abla, 2017). It is the largest district with an area of 495 $km^2$ which is for 25% of the

[8] https://lri-lb.org/project-details/6

governorate and includes more than 80 villages. Nevertheless, the Shouf district is one of the least populated districts having a population of not more than 204,743 which accounts for only 11% of Mount Lebanon population. Also, the district includes a high rate of deprived population (approximately 32%) compared to other districts (IDAL, 2017).

The Shouf area is found between sub-humid, humid and per-humid bioclimatic levels (Safi and Abi Said, 1999). The Shouf like most Lebanese regions is characterized by a typical Mediterranean climate having four distinct seasons; the warmest month is August and the coldest is January. Precipitations are seasonal (mainly occurring between November to April) followed by a dry period (May to September). Mean annual rainfall varies between more than 900 mm per year. Snow fall also occurs in the highest elevations (Abu-Izzeddine, 2012).

The landscape is composed of a mixture of rural and natural areas with some agricultural fields. The Shouf Nature Reserve has been established since 1996. In 2005 the UNESCO declared the Shouf Biosphere Reserve (SBR) which is currently the largest nature reserve of the country (accounting for 5% of Lebanon's' surface area). The Shouf area is known to have a very rich biodiversity; the area is home for one of the largest cedar (*C. libani*) forests of the country (30% of the Lebanese cedar forests in the country). Moreover, the Shouf area includes a wide variety of flora (more than 520 species) from which many are medicinal and aromatic. The reserve includes a big number of threatened species mostly endemic to Lebanon and the region. Moreover, the reserve forms one of the last remaining locations in Lebanon in which large mammals are found[9].

The Shouf area is an important touristic destination; both the coastal area and the mountains attract local and foreign tourists and provide a variety of touristic activities.

Agriculture in Shouf is practiced to some extend in the coastal parts and the mountainous upper Shouf area. Most of the people living within or near the SBR rely on agricultural activities for their livelihoods. The climatic diversity of the region allows for the production of a variety of crops. In addition, the agro-food industry is also important in the region.

Most common agricultural crops include:

1. Crop production

[9] www.iucn.org/news/protected-areas/201804/wonders-shouf-biosphere-reserve%C2%A0lebanon

- Fruit trees:
    - Olive trees in Mount Lebanon are mainly grown in the Shouf district forming 50% of the cultivated area in mountainous Shouf (MoA and UNEP, 1996). Most of the olive cultivations are highly fragmented and grown in small farmlands; more than 55% of olive growers are small-scale farmers having orchards of 0.5ha or less. The Olive oil value chain in Lebanon faces many challenges associated with its high cost of production, land fragmentation, and high competitiveness (ACTED, 2018).
    - Other fruit trees include apple trees, peach trees, cherry trees and grapes covering 38% of the area.
- Vegetables:
    - Vegetable crops are also important in the region accounting for 12% of crop production and mainly including Jabali tomatoes, broad beans, cauliflower and cabbage. Field crops are absent due to the topography of the region which is more of terraced mountains.

*Figure 16: A lady from the Chouf preparing dry figs, the traditional way*

2. Animal farming

- There are several small cattle farms scattered in the Shouf, most notably Holstein; Awassi Sheep are present in smaller numbers, and Jabali and Shami goats constitute the largest number of animals raised. Lastly, there is a big number of chicken farms in the area, and many households raise Baladi chicken in their gardens or backyards (Asmar, 2011).
- Honey production is also important in the Shouf area specifically in the SBR. There are more than 3,000 beehives registered in the villages surrounding the SBR. These produce considerable amount of honey (approximately 5kg more than similar beehives – in other regions).

3. Rural products

- Many traditional rural products can be found in the Shouf area. The presence of the SBR has had a very positive impact on the economic value of these products. Main products found in the SBR other than honey include, oregano with pine nuts, and rose and almond jams (El Jisr et al., 2015).

### 3.2.2. Communities of the Shouf and their food culture

Shouf is characterized by its cultural diversity, natural landscapes (cedar), water resources, fertile land, its heritage and the quality of life, which together constitute an essential factor in the tourist attractiveness of Lebanon. According to Massaad (2011), in her book "Mouneh", the Shouf region has the best food tradition of homemade preserves. Only in the Shouf you can find the best cedar honey "*Asal al 'Arz*". This type of honey is exclusively made in the Barouk cedar reserve in the heart of Shouf. Cedar honey is produced by the Lebanese bee strain and it is the only type of bee to withstand the variation in climate and temperature fluctuation found on high altitudes in Lebanese mountains (Rami Zurayk, 2008). Massaad attributed the Shouf's attachment to mouneh to its closely knit Druze community: "The Druze there, they are very much into nature and preserving their culture." In the villages around her house in the Shouf, food blogger Accad said there were still mills where someone could pay around 33 cents per

kilo to have thyme or sumac ground into spices, and community presses where in the fall, farmers unload crates of olives to be pressed into oil.

*Figure 17: Spring menu served at a table d'hôte in the Chouf (Darb el Karam food trail)*

Another star product that originated from the Shouf and Bekaa region is the *"Sirdeleh"* or *"Ambarees"* as known in the West Bekaa. The two names stands for the fermented raw goats' milk product that originate in dry, mountainous regions where local baladi or shami goats are the main gazing animals. Sirdeleh is made in special clay vessel with drainage hole where milk fermentation takes about 14-20 days at 20-25 ℃ (Zurayk, 2008). The Shouf region is also famous for its unique production of molasses: grape, carob and pomegranate. Lebanese villages mainly relied on molasses as a generic sweetener and it was a communal activity welcomed with festivities where everybody in the village get together and prepare the molasses under the direction of the eldest women (Zurayk, 2008). The combination of the culture and food specialties has put the Shouf on the map of eco and rural tourism due to its diverse activities and sightseeing.

*Figure 18: Sirdeleh jar full with labneh*

### 3.2.3. Main food initiatives, projects and research implemented in the Shouf

Several development projects have been implemented in the Shouf district. The area has a great potential for protection of the socio-cultural heritage and the development of communities. The area is as well considered as an important summer destination and provides diverse ecotourism options for both locals and foreigners.

The presence of the SBR in the region has supported the implementation of several projects related to agriculture and ago-food processing in addition to eco-tourism. Many vocational training programs have been provided to local farmers, women and youth focusing on sustainable agriculture, traditional products making, eco-tourism and others. Several local and international associations have also been involved in development of the region. With the Syrian crisis, projects have been integrating Syrian refugees in livelihood projects and vocational trainings. It is important to note that all development activities related to agriculture and food processing in Shouf, mainly occur under the patronage of the SBR. Some of the significant projects previously implemented in the Shouf area include:

- Since its implementation, the SBR has been involved in the development of the Shouf area especially within the Municipalities part of the reserve [10];
    - The M6 project is a three years project aiming at Building the ecologic and socio-economic resilience of the Shouf Mountain Landscape by restoring and strengthening the socio-cultural fabric which sustains its biodiversity and cultural values. The project is being implemented with several partners including the Society for the Protection of Nature in Lebanon (SPNL), MAVA Foundation, Italian Agency for Development Cooperation and ENPI CBCMed.
    - MEET Mediterranean Experience of Eco Tourism was a project funded by the EU was implemented in Lebanon among other Mediterranean countries to develop an eco-tourism model for Mediterranean Protected Areas (PAs).
    - The HELAND Promoting Mediterranean Heritage Tourism project aiming to promote socio-economic sustainable development through innovative technological actions for Mediterranean tourism-heritage and landscapes protection clusters.
    - The biosphere reserve has also supported their local communities, by providing training and marketing outlets for their food products. The SBR has created a rural products brand promoting traditional products such as Cedar Honey, Oregano with Pine nuts, and Rose and Almond Jam.
- The USAID LIVCD project (mentioned in the west Bekaa section) which established the Darb El Karam or the Trail of Generosity in 2015 as the first food network connecting the villages of West Bekaa and Higher Shouf and promoting traditional food and agriculture heritage of the area. Darb el Karam was established through the collaboration between ESDU at AUB, the FHF and the SBR with support of USAID[11].
- The LMT also passes through the Shouf region specifically through section 19 (El Barouk - Maaser El Shouf) which is part of the Shouf nature Reserve. Section 20 (Maaser El Shouf – Niha) also passes across the highest cultivated sites of the Shouf region at the foot of the mountain summits and includes historical and religious sites that can be

[10] http://shoufcedar.org/
[11] https://food-heritage.org/establishing-a-food-trail-in-higher-shouf-and-west-bekaa/

visited. The areas surrounding these sections include a number of guesthouses offering wide a variety of traditional homemade dishes to the visitors[12].

- In 2012, the Makhzoumi Foundation contributed to the establishment of an olive press in the town of Deir al-Qamar in Shouf in collaboration with the municipality. The project aimed to contribute to the economic development of villages and towns across Lebanon. The project was funded by the State of Italy[13].
- Eco Khalleh is an agroecology/organic agriculture training/educational centre Located in the town of Baaqlin. The centre displays best practices and appropriate technologies that are optimal for agriculture in Mediterranean mountain ecosystems[14].
- Farmville is a farmhouse located in the village of Barouk. The site offers an authentic farming lifestyle experience and agro tourism activities where visitors choose their fresh organic products, from fruits, vegetables, eggs etc.[15].
- The Economic and Social Fund for Development (ESFD) has also implemented projects funded by the EU in West Bekaa and Shouf region; (1) Conduct extension programs to farmers working in the Cherry and Apple value chains. (2) Provide equipment and supplies for beekeepers, through the agricultural cooperative in Mristi village in Shouf [16].

## 4. Conclusion

Through this MedSnail project we wish to highlight the history and origins of food products and traditional dishes and focus on the cultural and emotional ties that people hold to the West Bekaa and Shouf areas.

The areas of the West Bekaa and Shouf represent typical cases of diversified and authentic agriculture and food systems that are well embedded and preserved in their respective societies. Most of the inhabitants of these areas still rely on traditional agriculture and food processing practices and are tightly attached to their land and traditions. The areas are also

[12] https://www.lebanontrail.org/
[13] https://makhzoumi-foundation.org/
[14] https://www.facebook.com/ecokhalleh/
[15] https://www.lebtivity.com/event/snowshoeing-barouk-with-wild-explorers
[16] http://www.esfd.cdr.gov.lb/uploads/local/general/projects_list_local-development.pdf

known for having unique biodiversity, natural features and landscapes which also form important component of their heritage.

Small producers in these areas often struggle to maintain their productions due to the lack of resources and market access; hence valorising these products can help in creating opportunities to small producers and thus contribute in the conservation of local traditional practices while protecting native biodiversity and natural resources, preserving local agriculture varieties and traditional food recipes and of course contributing to the livelihoods of the rural communities in both areas.

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