MedBEESinessHubs) Project C_A.1.2_0035

OUTPUT 6.1 / ACTIVITY 6.1.1

“The Medbee economy concept in mainstream policies for rural development through the CAP”

MedBEESinessHubs – C_A.1.2_0035

WP6: WP6: Strategic dissemination and policy making O6.1 Policy document incorporating the Bee economy concept in European and national policies

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Introduction

The honey value chain engages large numbers of rural poor Lebanese households, who can participate in honey production since they can afford the initial low investment costs, honey comes online within one season, or two for the beekeepers who adopt transhumance, and beekeepers do not need to own or lease land for the bees.

Most of the beekeepers belong to the small scall beekeepers and professional beekeepers are few. Thus, most of the produced honey is sold unbranded and mainly directly to consumers.

Whereas professional beekeepers are the ones who sell branded honey. Recently, the branded honey production and sales have increased in volume and expanded access to national retail distribution networks and supermarkets.

The export of honey to high value Gulf Countries, United States and Canada is also increasing, especially after the conversion from exporting bulk to branded honey in Gulf Countries and ethnic& non ethnic markets in USA and Canada where the presence of Lebanese Diaspora exists strongly. This increase was boosted by the presence and the upgrade of laboratory tests that still need some improvement.

In addition to private brands, few beekeeper's cooperative has created their own collective brands.

Unfortunately, beekeepers and cooperative are steps ahead compared to the government. The lack of policies and the absence of a clear vision of the sector's future is decelerating this movement.

Current Government of Lebanon policies to promote higher product standards in the honey market should accelerate this movement in favor of branded honey which is able to incorporate quality control procedures in its production practices.

Consequently, a good lobbying to push further and accelerate the set of good policies and raise fund and strategic projects for the beekeeping sector, will help without any doubt to develop the sector and expand either production, sales and exports.

The Lebanese honeybee supply sector

Lebanon, which is considered a hotspot for biodiversity in the Mediterranean Basin (Médail & Quézel, 1997; Myers *et al.*, 2000), is characterized by the coexistence of plants with diverse biogeographical origins and a large number of narrow endemic taxa. It is considered a key area of geological activity and climatic changes and recognized as a melting-pot of human cultures. The combination of geological variation and altitude ranging from 0 to 3000 meters, along with strong climatic variation among different slopes, created a marked heterogeneity in the ecological forces acting on the evolution of plant differentiation. Its floristic richness is estimated at 2612 vascular plant taxa, of which 108 are endemic to Lebanon (Tohmé & Tohmé, 2004, 2011, 2014).

In this context, Lebanon is one of the countries in the world where bees can find natural sources of nectar all year long. As a result, Lebanon's honey is one of the best in the world. Honey production in Lebanon is predominantly mountain poly-floral honey, which means they feed on a variety of blossoms in the same space, which is also relatively uncommon and adds more health benefits to the honey. While orange blossom honey is produced in citrus groves, usually at lower altitudes along coastal zone in winter and spring. Mountain Honey is exported in small amounts to the Gulf region, but its quality can compete internationally. Total annual honey production vary between years since production is dependent on climatic changes, it stands at around 3800 tons in 2021, of which only 14 Tons is exported with an average sales price of 12.36 $/kg and varying from 1 to 23 $/kg. This makes Lebanese honey among the most expensive honeys in the world marketplace competing with other expensive honeys from New Zealand and the EU.

Médail, F., & Quézel, P. (1997). Hot-Spots Analysis for Conservation of Plant Biodiversity in the Mediterranean Basin. Annals of the Missouri Botanical Garden, 84, 112-127.

Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B., & Kent, J. (2000). Biodiversity hotspots for conservation priorities. Nature, 403, 853-858.

Tohmé, G., & Tohmé, H. (2004). Recherches sur le statut actuel des plantes endémiques du Liban. Archeology & History in Lebanon, 64-69.

Tohmé, G., & Tohmé, H. (2011). Nouvelles recherches sur la flore endémique et naturalisée du Liban. Lebanese Science Journal, 12, 133-141.

Tohmé, G., & Tohmé, H. (2014). Illustrated flora of Lebanon (2 ed.) CNRSL.

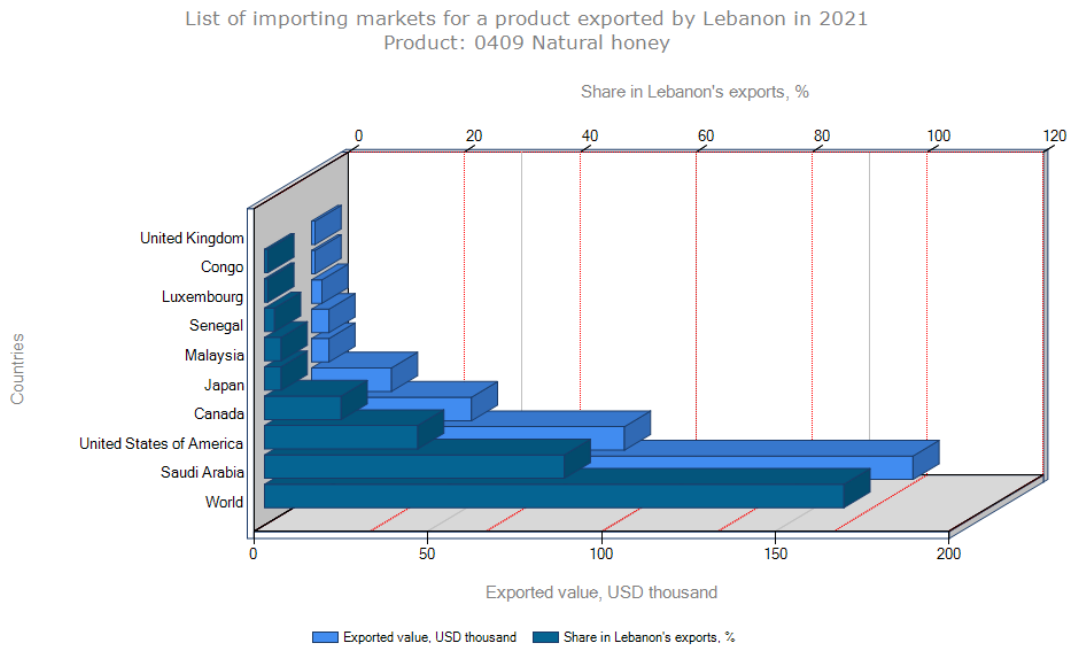

Figure 1 : List of importing markets of Lebanese Honey in 2021 *(Source: COMTRADE)*

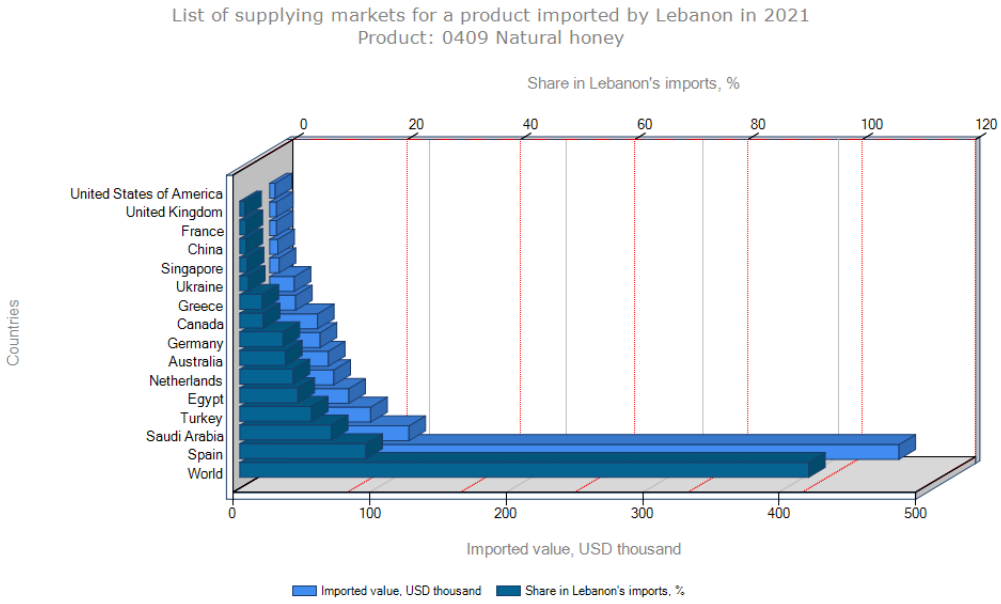

Figure 2 : List of supplying markets for Honey imported in Lebanon *(Source COMTRADE)*

As shown in the figure 1 the Lebanese honey is not exported to EU market due to some restrictions imposed by this market and related to the quality test required by this market. Luckily, after 10 years of restriction the Lebanese honey has successfully re-integrated the EU market. Despite this production, Lebanon imported in 2021, 92 tons of low-priced honey (Source: Trade map. www.trademap.org)

In addition, some initiatives were conducted by an active beekeeping cooperative in Mount Lebanon such as exporting an important quantity of swarm beehives to Qatar in 2019 but some diplomatic crisis between Lebanon and Qatar interrupt the flow of swarm in 2020 & 2021.

According to the Lebanese Ministry of Agriculture (MOA, 2020)., the number of beekeepers and beehives doubled in the last 10 years from the end of 2011 to 2021 (from 5,546 to 10,825 beekeepers & from 194,520 to 417,233 beehives. Beekeepers are distributed all over the Lebanese territory exception for two purely urban areas (Beirut & Tripoli). The distribution of beehives and beekeepers in the remaining 22 Lebanese' Caza shows a big difference in numbers between different areas. The Minieh – Daniyeh and Jbail Caza counted the highest number of beehives and covered respectively 19.44% & 12.86% of the national number of beehives. While, the highest number of beekeepers was observed in Hermel and Akkar which represent each approximatively 12% of the total number of national beekeeper number (Figure 3).

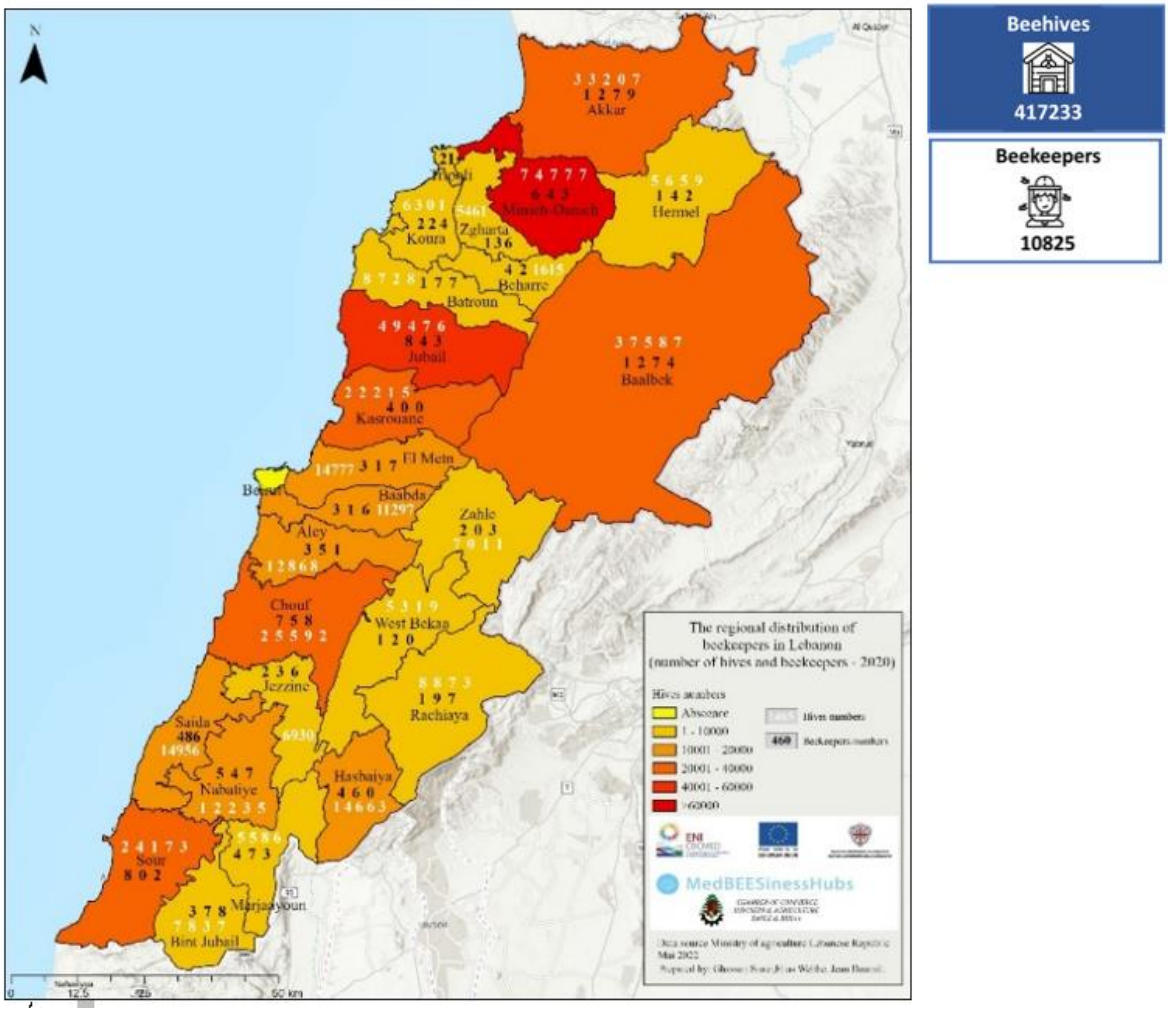

Figure 3: Distribution of beehives & beekeepers in Lebanon (Source: MOA 2020)

This sector therefore helps in increasing the income of a big number of families. Recently, Lebanon's shortage in U.S. dollar and the collapse of the Lebanese pound exacerbated challenges facing beekeepers who have to secure dollars from the black market to purchase their needed materials. For example, one kg of honey used to sell between 37,000 & 45,000 Lebanese pounds (25 to 30 dollars) prior to the dollar crisis, but the price stands in 2022 at 280,000 Lebanese pounds, or 10 dollars when calculated at the black-market rate. Domestic consumer considers the price in Lebanese pounds too high while beekeepers have already lost 15 to 20 dollars per kg in profit.

Actually, the price of honey is variable from 20 to 25 $/kg. Therefore, this economic crisis will affect negatively the evolution of the sector. On the other hand, a significant decline was reported by many beekeepers in the average annual yield of honey per colony from 1990 till now, which is a great challenge for beekeeping industry. This decline in honey yield per colony can be attributed to many factors, the most important of which are scarcity of bee forage due to the evolution of urbanization or the overgrazing by small ruminants mainly at high mountains and overstocking honeybee colonies above the carrying capacity of available forage area. As a result, beekeepers are subjected to low financial returns from their honeybee colonies.

In most cases, the success in beekeeping depends on the availability of sufficient bee forage in terms of both quality and quantity of nectar and pollen grains. In many areas of Lebanon, bees and beekeepers suffer from seasonal drought in the summer and cold weather in the winter, which causes a shortage of bee forage. These conditions drive many beekeepers to move their colonies from one area to another for the search of better nectar and/or pollen sources and to avoid severe weather conditions. However, this often leads to a concentration of a large number of bee colonies in limited areas, regardless of honeybee colony population density and the actual carrying capacity of the areas. In this regard, there is no directive to guide or determine the number of colonies to be placed per unit area, nor has it set out the minimum distances between two adjacent apiaries to minimize competition caused by the overlapping of foraging ranges and subsequent declines of productivity of colonies. As a result, overcrowding and resource completion are very intense. Honeybee density per square kilometer over Lebanon ranged from 9 to 206 beehives per km^2 (Figure 4).

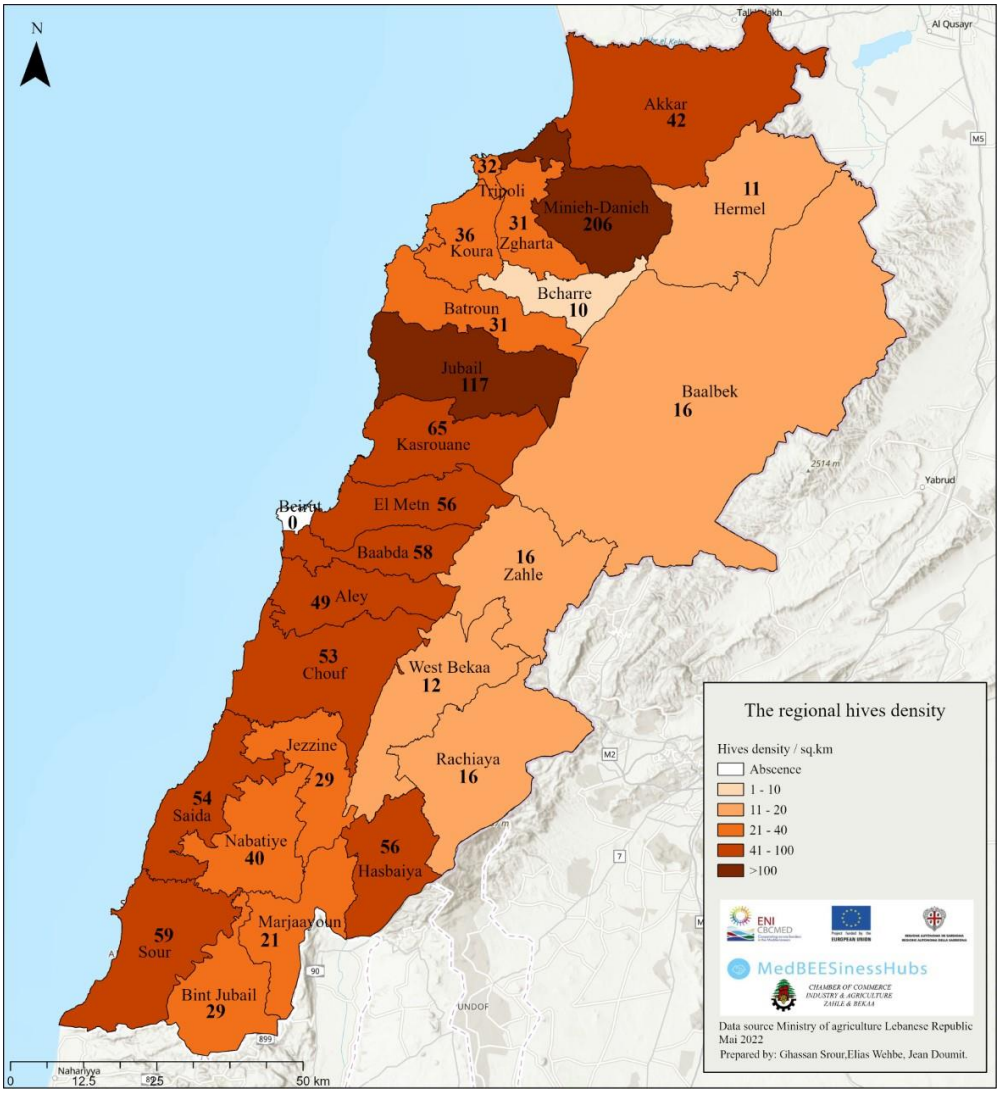

Figure 4 : The density of beehives per square kilometer in Lebanon

The average density in Lebanon today is 40.75 colonies per km². We observe however, large differences from one Caza to another: the highest density was recorded in Minnieh Danniyeh with 206 colonies per km², the lowest in Bcharre Caza with 10 colonies per km². Between these two extremes, the difference amounts to a factor of 196.

Honeybee hive density per square kilometer in Lebanon was extremely high and maybe comparable to the density in Korea and not comparable to any other countries (Table 1).

Table 1: Average beehive density (30 years mean value) of different regions of the world *(Source: Ghosh & Jung 2016)*

Region	Hive density (per km^2)	
	Agricultural Land	Land
Europe	7.31	1.56
Australia & NZ	0.17	0.09
Americas	0.80	0.25
USA	0.70	0.29
Asia	1.21	0.64
Africa	1.27	0.54
Republic of Korea	65.96	11.67
India	5.54	3.03

The Lebanese policy on honeybees

In order to protect the beekeeping sector in Lebanon, the Lebanese government in collaboration with sector' actors set some policies from on hand related to the honey trading and standard and from the other hand concerning the protection of melliferous plants essential for bee pasture.

- ***Honey product trading requirements:***

  This policy set rules and regulations related to the requirements needed for trading of Honey: 1. The obligation to test all types of imported and locally produced honey in order to analyze the residues of antibiotics and pesticides; 2. Exported honey should be subject to all laboratory tests that are adequate with the mandatory specifications imposed in the country of export; 3. Honey exported to Europe should be subject to laboratory tests related to the analysis of chemical residues, adequate with the European' mandatory specifications, and must be carried out in accredited and officially recognized laboratories. As mentioned above after 10 years of restriction Lebanese honey succeed to re-enter the European market by applying all rules and regulation where the main handicap for entering EU market was administrative and partially related to conformity of laboratory test. 4. Bee honey is excluded from mentioning the expiry date on the label, the production date in month and year should be mentioned, in condition that it cannot exceed five years.

- ***Lebanese standard for honey***

  As well The Lebanese Standards Institution (LIBNOR) set standard applicable for exported, imported and locally produced and consumed honey in Lebanon. This policy is divided into four parts; the first part presents some definition of different types of honey and general constitutions of the honey. The second part identifies components and properties of the honey (ex: Sugars, Humidity, Sucrose, Ph, HMF, …) and the allowed proportions of these components, additives allowed to be supplemented to the honey and sanitary requirements such as microbial standard limits (ex: Coliforms, Staphylococcus aureus, Bacillus, Yeasts…). The third part explains the sample collection procedure and methods requested to test the level of each component; while the last part specify packing, storage and transportation requirements for honey as well labeling' standards.

- ***Investment and export of Origanum syriacum and Salvia fruticose***

  This decision regulates in practice the cutting and wild collection of Oregano and sage in order to preserve the sustainability of these resources and consequently reserve Lebanese biodiversity and assure good pasture for bees due to their characteristics as melliferous plants. This decision includes the following: In the first and second articles, the cutting period is determined from early June until October, it is required to obtain a prior license from the Department of Forestry and Natural Resources in the Ministry of Agriculture, the harvest is allowed from the site for one time and it clarifies the conditions for cutting, including leaving one third of the flowering plant. In the third and fourth articles, the mechanisms for obtaining a license shall be specified such as: submitting the application, inspecting the target place, informing the municipality, the approval of the property owners, issuance of a transfer license, … In Article Five, the decision deals with export conditions and mechanisms. The article six, deals with monitoring mechanisms. In the remaining articles from 7 to 10, the decision refers to the procedures and pursuits when legal procedures are not applied in the investment process. As well, many initiatives were undertaken by private sector and/or financed by NGO during the last 20 years to expend the plantation of these two types of plants.

- ***Draft law organizing beekeeping sector in Lebanon***

  At national level a draft law was prepared by different Lebanese actor in the sector such as: beekeepers, Beekeeping cooperatives, associations & syndicates, representative from governmental authorities as well suppliers of equipment & still wait to be completed and approved by the Lebanese Parliament. It includes 19 articles aiming to organize the sector in Lebanon by:

- ***Article 1.*** Specify meanings of words and expressions useful in beekeeping sector and explain all terminology used in the sector of beekeeping in order to avoid any confusion or misunderstanding, mis-explanation or wrong interpretation;
- ***Article 2.*** This article underlines the importance of this economic insect; “Honeybee” which is considered as national treasure with environmental, economic and social components with special emphasize on its importance in agriculture as inter-pollinator for more

than 70% of plant species. Therefore, this article tress on the importance and the urgent need for protecting bees which is a national duty for several reasons, and above all for food security reasons;

- ***Article 3.*** Attributes the responsibilities for regulating and protecting the beekeeping sector and they falls on three parties in an integrated manner: the beekeepers themselves, the other farmers, and the official authorities represented by the Ministry of Agriculture, the Ministry of Labor and other relevant authorities. Beside responsibilities, this article defines the obligations of each party and its role in the process of protecting and developing the sector.
- ***Article 4***. Outline duties of beekeepers toward the Ministry of Agriculture and define the persons who can be considered beekeepers and how they have to cooperate in order to better organize the sector and protect the beekeepers and apiaries.
- ***Article 5.*** Describe Several conditions related to ownership, right of use, and the distance between the disintegrated and neighboring properties on the site of the apiary and the measures that should be taken according to the nature and topography of the site. The application of such conditions will lead to reduce conflicts between beekeepers and reduce as well the density of beehives per km^2 and consequently increase productivity.
- ***Article 6.*** Outline principles and technical and legal conditions that the beekeeper and other people must abide by and work on applying swarm production, raising of queens, and the transfer of beehives.
- ***Article 7.*** Identify professional competencies to be mastered by the beekeeper (beekeepers) and the procedures for training them. These competencies include: Basic information, Products types, specifications and quality, diseases, related legislations, apiary management to produce correctly all beehive products, to train with specialists as much as possible. Theses trainings can lead to produce high quality products and open new opportunities to export Lebanese honey and honeybee hive's products.
- ***Article 8.*** This article details the necessary treatment measures and procedures to protect apiaries from any epidemic and pest situation while attributing role and responsibilities on

local and governmental authorities, beekeepers and experts in order to avoid any epidemic.

- ***Article 9.*** Set conditions, procedures and standards and quarantine conditions that should be taken into account in the process of imported queens, swarm and bee packages. This article as well, stresses on the importance of generating a policy to work scientifically on breeding the local *Apis mellifera syriaca.*
- ***Article 10.*** Establish conditions and veterinary standards for the export of queens, swarms and bee packages bees with a special emphasize on disease free material.
- ***Article 11.*** Clarifies rules and conditions for importing bee wax with all related documents.
- ***Article 12.*** Identifies technical and standard specifications for bee wax manufactured and marketed in the domestic market.
- ***Article 13.*** Explicates conditions and specifications for production and marketing of honey. This article denies the possibilities of labeling a honey as of controlled origin without the permission of the responsible institutions. It clarifies as well the labeling rules and conditions.
- ***Article 14.*** Make clear the conditions and specifications for production, packaging, labeling and marketing of pollen, Royal Jelly & Propolis and their consumption's ways.
- ***Article 15.*** Discuss measures to achieve interests of farmers & beekeepers and lay the foundations of cooperation between the two parties. This article stresses on the importance of reducing the use of pesticides to the minimum when needed out of flowering seasons.
- ***Article 16.*** Debate measures to preserve vegetation cover in forested areas and to ensure the preservation of Bee pastures. As well, the article underlines the importance of respecting rules and condition of wild collection concerning aromatic plants and stresses on organizing the grazing according to the related rules and legislations.
- ***Article 17.*** Treat beehive 'theft, Criminal penalties and financial compensations.

- ***Article 18 & 19.*** Explain administrative issues related to the fact that the authorities, each within its jurisdiction, shall implement the provisions of this Law, and it shall come into force from the date of its publication in the official journal.

The MedBEESinessHubs project – lessons learnt & good practices.

The main objective of MedBEESinessHubs project is to protect the bees, by adopting a new approach relying on the notion bee economy, thereby positioning individual incomes with the necessity to protect the bees and preserving biodiversity as a source of economic wellbeing in rural areas.

Within the vision of the MedBEESinesHubs project, a series of activities were conducted to achieve the project's objectives. These practices and activities are mentioned below herein after.

A Value chain analyses was conducted at national level and covered all aspects of the beekeeping sector; production, diseases, problems, natural resources, needed trainings, support and subsidies marketing, export & import, competition, policies and legislations, strength, weakness, opportunities and threats.

The study results were presented to beekeeping stakeholders in the country and problems and potential solutions were discussed through a special innovative and efficient methodology; "The Structured Democratic Dialogue". Through this methodology, the stakeholders concluded that the milestone of the road map to find solutions for the sector problems and for the development of Beekeeping at national level is the setting of good reliable policies that should be signed by the parliament. As well, stakeholders concluded that Clustering beekeepers and beekeepers' cooperation is the key to success. In these clusters, groups, cooperatives, syndicates they can cooperate and exchange expertise and knowledge for better practices. Working on consumers knowledge to enhance the honey culture was also one of the recommendations to boost the sector and the marketing of beehive products and to improve the bee economy concept. This work on consumer knowledge could be more efficient through the introduction of the bee eco-routes and the bee tourism concept, thus the work is in progress to design few Ecobees-routes in the country.

Another puzzle of the large image was present through some trainings focusing on diversifying the beehive products their interest in the therapy and their processing into high value products, such as cosmetics, sweets, chocolate bar, candies.... This step was followed by microfinancing step within which 15 MSMEs were supported to implement and execute activities that help in realizing

this objective of spreading the concept of bee-economy through bee tourism and processing high value products.

Business management and organization, networking, marketing linkages and marketing tools were also training subjects that were highly appreciated by beekeepers and stakeholders who are willing to go further with the concept of bee-economy.

More networking between the Mediterranean countries is requested to internationalize beekeeping policies, knowledge and expertise beside exchanging products.

Further Policies Suggestions

Further policies could be suggested hereby with the aim of providing ideas and thoughts within the vision and the concept of the bee economy proposed by the MedBEESinessHubs Project.

Set a policy plan in order to provide high level training programs for beekeepers in order to establish the concept of Integrated Beekeeping Practices (IBP) that helps beekeepers to produce high quality diversified products while establishing the concept of traceability to increase trust and ease marketing issues.

- Beekeepers could be clustered in several Lebanese regions to form a group of Beekeepers who are willing to follow Integrated Beekeeping Practices. A Specific Quality Management System (QMS) will be prepared by an expert for each cluster in each region.
- This QMS will provide beekeepers with all needed information concerning the integrated management of their apiaries in order to be certified and produce certified products that could be commercialized accordingly under a collective brand with a clear traceability system.
- Beekeepers will be trained accordingly by experts in order to understand better the IBP system and all related technical issues regarding the management of the apiaries.
- Beekeepers will be followed-up by beekeeping expert almost continuously to make sure that all beekeepers are managing their apiaries as they should according to the system.

Set a policy plan in order to provide high level training programs for farmers in order to establish the concept of Good Agricultural Practices that respect the environment and reduce the use of pesticides to the minimum.

- Farmers as well will be trained and followed up by agricultural experts in order to adopt good agricultural practices especially in fruit trees orchards and citrus orchards.
- Organize and conduct common training sessions for farmers and beekeepers in order to establish a healthy professional relationship defining common interests.

Set a policy plan in order to introduce an educational program for young students in school to show them the importance of the bees and the beekeeping sector with the hope of influencing their parents.

- Set a policy within which the Ministry of education and the ministry of agriculture coordinate to establish and conduct special educational program for young student with special stress on environment, beekeeping and its social, environmental and economic importance, the importance of honey and other beehive products for their health.
- Advice schools' administration to organize and conduct field visits for students to apiaries and other honey, beeswax and processing centers.

Set a policy to provide subsidies for Beekeepers and beekeepers cooperatives to organize honey festivals in their villages and regions to boost beehive products marketing.

- Work on setting policies that encourage beekeepers' cooperatives, cluster of beekeepers, orders of beekeepers, syndicates, union of cooperatives and villages by providing subsidies to organize Honey festivals.