

Apiculture Project

Beekeeping hives for production of 2.5 tons of honey per year



Executive summary

Beekeeping is potential sustainable livelihood activity, it does not capture the required attention as an alternative for income generating activity in Jordan, therefore, our proposal selected beekeeping as a sustainable source for income benefits for women in rural areas. The project aims for women capacity building production and providing the space where they can implement these activities, this projects opens job opportunity for sixteen women. Mafrq governorate will be the geographical area for implementing the project as we are targeting to rural Jordanians women as well as Syrian refugees' women to participate in the economy and generating income with a ratio of 70:30 for Jordanians versus Syrians. The main goal is to empower vulnerable women economically in the community and encourage them to be a major contributor in GDP growth and maintain their security and stability. The following table summarizes the project details:

Project name	Beekeeping Project
Location	Mafrq
Beneficiaries	Rural Jordanian Woman and Syrian Refugees women
Number of beneficiaries	16 women
Budget	JD
Duration	One year

Organizational Background and Capacity

Al-Maydan for community services was established in 2017, implementing several projects and providing several services for the community. Part of the major projects are rehabilitation of Salihiat Al-Abid School, Autism center establishment in Aqaba, Murad Al-Amal center for disabilities in Zarqa, and recently football playing area in Ghour for youth. Al-Maydan is performing a playing kid's area and community based organization rehabilitation in Ghour.

Situation Analysis

Mafraq governorate is the second largest governorate of Jordan, with total population of 580,000. The percentage of female is 48.45%. the urban to rural ration is 69.7%:30.3%. the percentage of women population within age group of 15 – 64 years old is 30.7%.

The total unemployment rate in Jordan is 18.2%, 33% among women, and only 38% of population is economically active making Jordan is the lowest labor market participation¹.

In Mafraq, the unemployment rate is 19.7% in 2017, the ratio of economically active population is 41.7% from which 33.5% are employed.

The geographical location of Mafraq being boarded by Syria from the north made it the largest host of Syrian refugees relevant to its total population. The total of number of Syrian refugees as per latest update in Jan. 2019 from UNHCR is 164,021, 24.4% from the total Syrian refugees in Jordan. From the total refugees, there are 52% are living in Mafraq out-of-camp from which 23.2% are female in the age group of 18 – 59 years old².

The high pressure of hosting communities is putting extra pressure on the limited resources and the limited job opportunities.

Beekeeping in Jordan

The consumption in Jordan of local honey is 200 grams per year per capita. Which is significantly low because of the relatively high price of local honey in comparison to the imported honey. The price range for local honey is 10 – 20 JD per kilogram, while for imported honey it can be found at 3 JD.

¹ Department of Statistics, Unemployment Statistics - Jordan, 2017

² <https://data2.unhcr.org/en/situations/syria/location/36>

between women and workforce. Adding to the problem the influx of Syrian refugees who are suffering from high rate of gender-based violence.

The beekeeping activity is important for rural communities to generate income, and it is significantly easy activity for women since it does not require any physical efforts. Once the project starts and women gain experience from the expert training sessions, it will immediately succeed and it will be easy to increase the number of hives.

Apiculture and honey production has great potential to grow in Jordan, due to the availability of nectar and pollen. This industry is still in the infancy stage. The project also has great benefits for the environment, not only in terms of pollination of the existing crop, but also for taking advantage for the unused resources of nectar and pollen. The project has net positive impact on biodiversity.

Due to the nature of honey, being non-perishable product, beekeeping project is a lucrative option for rural areas in terms of storing and transporting to the market.

Technical details of the project

The whole project is based on installing beehives for bee farms and train the beneficiaries on the process. The technical process is summarized in the following section, with the types of bees and products:

Bees types

The type of bees to be used is *Apis Mellifera Syriaca*, western hive-bee used for beekeeping in most region of world, and already used in Jordan. The habitat suitable for *Apis Mellifera* is grassland, deserts and wetlands as long as there is sufficient food, water and shelter. This type can live in wild plants and can survive the extreme temperature of summer when there is dearth of nectar.

Apis florea is a new bee species introduced to Jordan through Aqaba, but still researchers are studying the possibility of transferring this species from Aqaba to the rest of Jordan.

Machines and tools requirements

Beekeeping process is an easy process and does not require efforts, the bees do most of the work by themselves. The whole process consists of bee framing in bee hives, then extracting honey and other products from the beehives, packaging and labelling the products and then distributing and selling into the market.

Beekeeping modern method is in beehive which consists of bottom board which has two gates one gate for entrance and the other for exit. deep super and deep frames are the most important parts of the beehives, the deep super consists of 5-6 frames and each frame a wax sheet is held at vertical position, this is where bees start making the cells. Honey supers provided in many frames without cover. The inner cover is a wooden piece used for covering the super and contains many holes for ventilation and the top cover is a plain zinc sheet fitted on the inner cover with a slop to protect the hive from rain. In the middle, the queen extruder is installed, to block the queen from passing but allowing workers to pass.

The honey extractor is based on centrifugation process in a cylindrical tank where the centrifuge force throws the hooney away to the wall without causing damage to comb. Then honey is collected, filled in glass jars, labelled and distributed.

List of activities

The activities start with obtaining the governmental approvals for establishing the beekeeping project and for all types of constructions to be performed inside the land.

Land preparation start in parallel with the process of obtaining land approvals. The preparation activities include fencing, soil tests, surveys, layouts, and excavation work required.

Contracting with contractors for the complete building construction and for the machines and tools for the beekeeping. This is to include requesting proposals from different parties, then selecting the most appropriate proposal. Delivery and installation of all equipment, tools and furniture will be liaised with the building turnkey submission by the contractor.

Then recruiting process will start parallel with the machines delivery and installation. First announcing the job vacancies, screening candidates, interviews and then signing contracts with the selected candidates. After that and expert will be approached to handle the training process.

By the time the training process is completed the bee colonies will be migrated from the source to the farm and introduce the bees to the hive.

In the season of harvesting honey, combs from beehives will be collected to collect honey, then packing and labeling process will take place. During the complete process, marketing analysis will be conducts to select the areas of selling the products.

Outcomes, outputs and indicators

The main goal of the project is the resilience and empowerment of rural Jordanian women and Syrian women refugees by providing them with livelihood project for income generation. Therefore, the expected outcomes from the project is women participate in labor market – Women’s capacity and skills building in terms of business development are strengthened to allow them to participate in the economy.

To achieve the outcome is divided into several sub-outcomes and the activities, outputs and indicators are listed thereafter.

Outcome (a) creating livelihood project

Output (a.1) 100 bee hives are installed

Activities	Indicators	Means of verification
(a.1.1) Land preparation and building construction	- 60 m2 building ready - 500 m2 land prepared.	- BOQ and Scope of work - Photos for land pre and post - Contracts with contractors for building. - Progress reports for the complete process. - Invoices for materials and services
(a.1.2) Bees hives and machines installed	- 100 hives installed - 100 bees colony migrated - Machines installed and commissioned	- Contracts with bees colonies supplier - Contracts with bee hives supplier - Contracts with machines supplier - Progress report for installation and commissioning
(a.1.3) Job opportunities are created	- Number of applied candidates. - Number of interviews - Number of recruited employees	- Copy of job vacancy ad. - Interviewers report. - Recruitment contracts

Output (a.2) 16 women trained and gained the technical skills for beekeeping.

Activities	Indicators	Means of verification
(a.2.1) Training sessions for employees	- Number of candidates for trainers - number of interviews for trainers - number of trained employees - number of training sessions held	- Contract with trainer for the required days throughout the year. - Confirmed curricula for training - Photos for training sessions - Attendance sheet for employees

Monitoring and evaluation

The implementation and evaluation plan will be aligned with all the project's activities under the responsibility of the Program manager, project manager and project coordinator. They are responsible to ensure the quality of work, evaluation and immediate corrective actions according to the plan to reach the ultimate goal of the project. The major milestones of the project are set according to the list of activities and indicators of the project connected to the implementation time frame.

The implementing team role starts once the agreement is signed; by preparing the implementation plan and sharing it with the donor. The follow-up procedures include all administrative and executive activities of the project, the means of verifications for each activity, the time plan for sharing the monthly reports and quarterly reports.

The accountability of the project is ensured by accurately assigning responsibilities and delegating authorities after granting the approval from the program manager to determine the responsibility of each individual to achieve the goals.

Field visits will be conducted periodically to measure the percentage of completion of each activity through questionnaires, pre and post photos, and concentrated closed sessions with direct and indirect beneficiaries. Monthly and quarterly reports will be issued to show the percentage of completion and highlight the challenges facing the project and how to overcome them.

Training Program

An expert in apiculture will be responsible of the training program for the project. The training will be divided to theoretical and practical training. Employed women will be divided into two groups. Each training group requires five days theoretical training and three days for practical application. The total eight days of training will be distributed over three weeks. The training will consist major topics to include bee biology and pathology, bee keeping technology and equipments, hiving process, common practices in management, honey harvesting and pollination of crops.

Budget requirements

The total budget required for the project is 176,613 JD, this is for the complete preparation of site, turnkey submission for 60 m² building, 500 m² of land ready for installing the bees hives. The project will be located on 5 Donums land in Mafraq owned by the Association president, therefore the cost of land rental is zero. Complete machines and tools

designing, ordering, manufactured and delivery to site are included in the budget, bees colonies ordering and delivering to site and all the required consumables required for running the project successfully are included.

The project will be based on recruiting 16 women and two men, their salaries for the first 6 months of operation will be included in the budget of the project. Full time working hours are assumed for the factory manager, accountant, driver and guard. As for the agricultural engineering and marketing are required for four hours working only. Finally, for the operation and packaging the staff required in honey season are 11, and because the project is aiming sustainable income for women, then all the 11 staff will be appointed but the working hours will be divided throughout the week, therefore there will be rotation between beneficiaries, and the maximum number of women per day will be 2 for the non-season period. Training costs based on number of hours and number of groups is calculated and added.

The personnel responsible for executing the project from Maydan for community services are included, however the share for majority is limited to a certain percentage. The below table will provide the result-based budget:

1	<u>Start-up cost</u>	-	-	-
	Governmental approvals	Lumpsum		
	<u>Total</u>			
2	<u>Land</u>	-	-	-
	Land rental cost (Donated by Association President)	5 Donums	N/A	
	<u>Total</u>			
3	<u>Construction</u>	<u>Unit</u>	<u>JD/unit</u>	<u>total</u>
	Fence for the land	300 m	6	
	land preparation cost	500 m ²	12	
	60 m ² building (turnkey)	60 m ²	230	
	Umbrella above the bee hives	500 m ²	10	
	<u>Total</u>			
4	<u>Machines and equipments</u>	<u>one setup (JD)</u>	<u>no. of setups</u>	<u>cost (JD)</u>
	beehive setup (bottom board, 2 deep supers, 20 deep frame, 2 honey supers, 20 honey frames, Queen excluder, inner cover, Outer cover, and entrance reducer)	230	100	
	Frame feeder	10	100	

transportation of colonies - 1 kg package (8000 bees)		100	
Bees supplement feed 12 kg of sugar per hive		100	
Supplement (for certain diet or medication)	Lumpsum		
Sterilization and disinfection	Lumpsum		

Total

9	Packaging	unit cost	quantity /year	
	Glass jars with lid 0.5 kg		5000	
	Glass jar with lid 0.25 kg		1600	
	tin with lid for beewax		50	
	label (roll of 1000)		11000	
	boxes for distribution (60*70 carton)		100	

Total

10	Running cost	Cost/month	number of months	total
	Fuel		12	
	Electricity		12	
	water		12	
	stationary	Lumpsum		

Total

11	Labor requirements	No.	Monthly salary	Annual Salary
	Factory manager	1		
	Agricultural engineer (4 hours per day)	1		
	marketing and media (4 hours per day)	1		
	Accountant	1		
	operation	8		
	packaging and labelling	3		
	warehouse keeper	1		
	drivers (male) - Salary , car, and fuel	1		
	Guard (male)	1		

Total

18

12	Project personnel	Salary/mon	Donor share	months
	Project Manager		100%	12
	Program Director		20%	12
	Project coordinator		100%	12

Operation manager		20%	
Association President		50%	
Managing director		20%	

Total

		<u>Total annual cost</u>	
13	<u>Direct cost related to project</u>	-	-
	Monitoring and Evaluation	Lumpsum	
	transportation		100%

Total

14 **Overhead cost** 5% of the total budget

TOTAL BUDGET REQUIRED FOR THE PROJECT

Marketing plan

The marketing plan will be mainly dependent on creating a collaborative agreement with other women community-based organizations in all governorates of Jordan to sell the product. This will open cooperate channels between women community-based organizations and contribute in selling the products in different governorates. This will, on one side help in generating income to the project and on the other hand, providing healthy sweetener to as many consumers as possible.

Domestic consumers for table food and industries that use honey as food processing or preservative agent will be approached as well as linkage with honey shops.

The marketing plan will assure to increase social media presence to increase the brand awareness and product awareness as well.

Indirect beneficiaries

- Families of the beneficiaries are indirect beneficiaries due to the increase in household income.
- The local traders can benefit from the project since all the required machines and tools can be produced locally.
- Consumers of the product as honey is the best natural sweetener option.

Cross cutting themes

Beekeeping is a comprehensive rural development project in different aspects. Beside employing women and building their capacities, the cross-cutting themes integrated within this project are environmental sustainability and health.

Gender mainstreaming

Creating a project with 16 opportunities for women, and men are only required for the muscular activities. This highlights the importance of women in labor market as well as their ability to contribute in the success of several projects and programs, the project aims to contribute in eliminating of gender stereo types of rural areas.

Environmental sustainability

Bees are effective pollinator for the available crops in the area. Crop pollination facilitate high agricultural yield for farmers and increase the yields for seeds that develop new plants. Therefore, beekeeping is a contributor to local biodiversity, conserving forests and natural ecosystems.

Health

Honey is a natural sweetener option for children, adults and aging population. Therefore, instead of using processed sugar, they can have sugar intake through honey which improves their health status. Honey is used as medication for several diseases, remedy for allergies, has significant antibacterial quality, and can be used as dietary and fertility stimulant.

Honey can also be used as a natural preservative for dairy products instead of artificial ingredients which is overwhelming for consumers.

Potential integration with other sectors

Involvement of different commissions and associations are important for promoting the development of beekeeping project

- Jordanian Beekeeping association, to formalize the work, regulate and test the production.
- Ministry of Agriculture to provide legal frame work and guidelines.
- Jordan Food and Drug Administration to obtain approvals on the quality of product.
- Women Community-based organizations in all governorates for marketing and selling the products.

Sustainability factors of the project

- Selling the products in the market which are honey and royal jelly are crucial contributing in the sustainability of the project
- Complete report for the whole process for the success story of the project to encourage further development and extension of beekeeping.
- Ensure sustainability of project as livelihood, to have impact on the local environment, economy and culture since this livelihood project will open the opportunities for future generations and will encourage other organizations for such initiatives and encourage women to participate and generate income from similar projects.
- it promotes agricultural investments in the region to create livelihood projects and provide further job opportunities.
- Outputs from beekeeping can be used with further simple processing to produce value-added products like candles, cosmetics and floor polish, which result in employing more women.

Risks to successful implementation

There are few minor internal and external risks that may hinder successful implementation for the project. Externally, as the project requires obtaining approvals to kick off, external coordination with local suppliers for bees, machines and other project's requirements, any delays in the start-up and while progressing may cause lag time in establishment and implementation of the project.

The season for honey extraction is late September, any delay in the start-up will affect the quantity of honey harvested.

The project aims to recruit women in rural areas and refugees, and the risk in staffing the project with the required number of women lays in the fact that the community is not familiar with women employment. Women in labor market has limited social protection and do not have equal opportunities as men have, which are resulting manifold disadvantages and discrimination. this is creating an overall culture of not allowing women to work, consequently the risk of having enough candidates for the project is relatively high. In addition, there might be low interest from the community and beneficiaries to participate in the project.

As for the internal risk factors for the project, in the first place this lays in the starting date of the project, since honey extraction is seasonal, it is highly related to the time of starting the implementation. The quantity of honey is correlated with the time of bees' migration which is spring. The weather conditions are considered as risk for the honey production cycle, bees' fertility rates and bees' diseases.

As well as, due to the nature of land in Jordan, and flora species availability, the risk in not having enough of the natural source of nectar and pollen for the bees' dietary system in the area should be considered, which will result in using food supplements and syrups and may affect the quality and quantity of production.

The basic Assumptions for the success of the project are on top the political situation in Jordan will remain stable and the environmental conditions remain stable as well so that the bee cycle and honey extraction will not be effected.

Risk	Assumption / mitigation
Governmental approvals are delayed	The Project will assume the process will run as planned and no lag times will cause delay
Bees dying	The mitigation plan is to have preventive procedures in terms of sterilization, vaccination and training women for the best practices to follow.
Not having enough natural nectar and pollen for bees in the farm range	Bees species which will be used can cope with the nature of flora system in Jordan. The mitigation plan for this issue is the supply of supplement food that can provide the required nutrition by sugar syrup and added pollen.