



Beekeeping Value Chain

A Market Study with Potential COVID-19 Impact Analysis

Supporting Resilient Livelihoods and Food Security in Yemen:
A Joint Programme

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List of Acronyms

ADRA	Adventist Development and Relief Agency
BDS	Business Development Services
CCI	Chamber of Commerce & Industry
EOF	Economic Opportunities Fund
ERRY	Enhanced Rural Resilience in Yemen
EU	European Union
FAO	Food and Agriculture Organization
GIZ	Gesellschaft für Internationale Zusammenarbeit
HACCP	Hazard Analysis and Critical Control Point System
ICRC	International Committee of the Red Cross
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IDP	Internally Displaced Person
INGO	International Non–Government Organization
ISO	International Organization for Standardization
MAI	Ministry of Agriculture and Irrigation
MFI	Microfinance Institution
MSME	Micro, Small and Medium Enterprise
NGO	Non–Government Organization
SFD	Social Fund for Development
SME	Small and Medium Enterprise
SMEPS	Small and Micro Enterprise Promotion Service
SWOT	Strengths, Weaknesses, Opportunities, Threats
UAE	United Arab of Emirates
UN	United Nations
UNDP	United Nations Development Programme
USA	United States of America
USD	United States Dollar
VC	Value Chain
YBA	Yemeni Beekeepers Alliance
YER	Yemeni Riyal
YHS	Yemeni Honey Standards
YSMO	Yemen Standardization, Metrology & Quality Control Organization

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SUMMARY

Honey has been a source of income for hundreds of thousands of people across Yemen. Honey goes into the main dish of many Yemeni meals and contributes to food security in the country. This value chain study looks at the market actors in eight districts in Abyan, Hajjah, Hodeidah, Lahj, and Taiz. The study objectives were to identify the current challenges and opportunities among the value chain actors in these targeted locations. The study is to inform ERRY II programming and assist in identifying areas for improving the value chain. Data were collected via surveys, focus group discussions, and key informant interviews. A separate executive summary report describes the study methodology and sampling strategy.

There are prospects to make honey business in Yemen more resilient. A million Sidr trees need to replace the cut ones to improve bee pastures. Unfortunately, the Yemen crisis did not only make firewood business a livelihood opportunity but also reduced the amount of honey that can be produced and therefore caused the loss of thousands of jobs and potential exports. In addition, the study found that not only that bees are affected by climate change when rain falls off-season, but they also have to avoid toxic pesticides.

Huge profits are made by those exporting honey to Gulf countries. Yemeni honey has a favourable consumer preference among these rich countries, and their demand continues to be high. However, due to lack of regulations, some traders mix Kashmiri honey with Yemeni honey to increase profit, which is about to ruin the reputation of all Yemeni honey. This becomes very important as there are no local specialized honey centres or laboratories that can assure quality before exporting. Yemen Standardization, Metrology and Quality Control Organization (YSMO), the quality regulators in Yemen, need resources to develop such certification and quality measures to save the reputation of Yemeni honey.

Knowledge sharing among value chain actors is a significant challenge for such a high speciality product. Actors who trust one another make exceptional profits, while those who are not in the loop may lose their income. Beekeepers

are not part of organized associations and may never know why their production is low or where to seek help. While many beekeepers would like to expand, they are not targeted by financial institutions to access capital, rather targeted by exporters who capture most of the profits. Consumers who demand quality honey have to trust retailers' words as no quality brand exists in the market. According to one exporter, "I myself have to know the beekeeper to know the quality. I had to send samples to Saudi Arabia and the USA to test them before I ship." Only four labs exist in Yemen, and they are not good enough for honey testing according to an exporter.

Yemeni honey is famous for its quality traits. The local demand for honey is high, even though most local consumption is imported. Regulators are interested to support the honey value chain. Value chain actors make a decent income that can support their household needs. Just like every other business in Yemen, transportation and security measures are increasing the cost. A honey beekeeper indicated, "we used to move to Hadhramout to capture their pastures in the season, now it takes a couple of days to reach there, my bees won't last until I arrive".

Supporting youth and women who have experienced working in beekeeping with several beehives can be valuable development effort. With an investment of less than USD 600, the money can be returned in one season. This has to be linked to community knowledge exchange and access to vets and supplies within pasture rich areas. Beekeeper associations need to contribute to quality assurance, linkages with wholesalers and Microfinance Institutions (MFIs), and value chain development.

Production is done in a very traditional manner and lacks basic tools and equipment. Retailers spend on their distribution outlets to build trust with consumers who purchase unbranded speciality products. The unbranded product suffers unequal margins with the potential of lost reputation. Producers are the key actors to production and yet have the least business development methods of production, storage, linkages and distribution.

INTRODUCTION

The Yemeni honey is one of the most valuable and promising economic sectors, and the Yemeni government considers it as one of the five strategic Yemeni economic sectors since 2003 due to its high revenues and profits for the beekeepers and the overall Yemeni economy. The honey sector is the smallest sub-sector, but being the most successful in terms of growth. It boomed between 2000 and 2005. Total annual honey production stands at around 1,580 tons, of which 840 tons is exported. Of 1,540 tons of honey consumed domestically, 800 tons are imported.

There are around 100,000 Yemeni householders who are pursuing beekeeping and depend on it as their sole livelihood, and currently there is a remarkable trend among the Yemeni youth to become beekeepers and work in the beekeeping trade, which shows potential returns in just a few months of the Sidr honey season (from October to December). There is potential for further employment opportunities for rural youths in the honey sector if productivity is increased through the introduction of efficient technology, such as modern beehives, expanded bee pastures, improved prospects to obtain loans from MFIs and banks for start-up and expansion of business, and addressing other bottlenecks identified in this study. Increased export in high niche markets is a clear opportunity given the overall good reputation of Yemeni honey, but requires reinforcement of national quality specifications complying with international standards.

Yemeni honey is one of the most well-known and expensive honey in the world, as good as Manuka honey of New Zealand if not better in medicine properties, as declared by different laboratories and universities in the US and Europe. Sidr honey from the region (UAE) fetched the highest price ever for one kilogram; USD 500 in the Amazon market and in Gulf markets. Therefore, beekeeping is indeed a primary income for many Yemeni families and a brand name for Yemen for its high quality, value and revenues. There are more than 1,200,000 bee colonies in Yemen, and the average number of beehives owned per beekeeper is 16. The secret of the high quality of Yemeni honey is that it – like the Yemenis themselves – is so pure, raw and unprocessed and does not undergo any type of chemical or physical treatment. Honey

from bees that feed on the Sidr tree's nectar has anti-bacterial properties that inhibit infectious diseases, especially when compared to other types of honey (Saudi Journal of Biological Sciences).

Experiments have proved that lack of beehives around crops led to decreased yield due to dropping of flowers not pollinated by honey bees. Such experiments recommend renting five beehives for each hectare. The return in increased yield from putting beehives around some crops is 14 times higher than the return from the beehives themselves in terms of honey and wax production.

There are different types of Yemeni honey, depending on which plants/trees the Yemeni bees feed on and their locations in Yemen:

- Sidr Honey: Yemeni bees feed on Sidr trees (*Ziziphus Spina-Christi*) that are grown in Wadi Daw'an – Hadramout governorate, Al-Osaimat Valley – Amran governorate, Wadi Gardan – Shabwah governorate, Hodeidah governorate, Al-Jamemah area – Hajjah governorate, Bani Qais area – Hajjah governorate. Sidr honey fetches YER 25,000 – 35,000 (USD 50 – 70) /kilo.
- Salam Honey: Yemeni bees feed on Salam trees (*Acacia* trees) that grow in Hodeidah governorate. Salam honey fetches YER 20,000 – 25,000 (USD 40 – 50) /kilo.
- Sumor Honey: Yemeni bees feed on Sumor trees (another type of *Acacia* trees) that are grown in Hadramout governorate. Sumor honey fetches sum YER 8,000 (USD 16) /kilo.
- Mara'ei Honey: Yemeni bees feed on different flowers of different floral plants in coastal plains, mountains and valleys. Mara'ei honey fetches YER 3,000 – 5,000 (USD 6 – 10) /kilo.
- Sawrab Honey: Yemeni bees feed on Al-Sawrab plants that are grown in the mountains of Sana'a, Dhamar, Hajjah, Ibb, and Taiz.
- Sal Honey: Yemeni bees feed on the cactus plants grown in mountainous governorates.
- Dhuba Honey: the Yemeni bees feed on Dhuba trees (a type of *Acacia* trees with white flowers) that are grown in the mountainous governorates.

The following table shows the beehive numbers and production (kg) of the targeted governorates.

Table 1. Beehives Statistics in Targeted Locations

Governorate	Parameter	2014	2015	2016	2017	2018
Hodeidah	Beehive Numbers	132,986	129,739	121,955	118,296	94,637
	Production (kg)	318,965	307,156	280,497	272,082	258,478
Taiz	Beehive Numbers	50,136	48,912	46,956	47,050	42,345
	Production (kg)	97,342	93,738	84,521	84,944	80,697
Hajjah	Beehive Numbers	49,833	48,616	47,644	48,597	48,597
	Production (kg)	85,196	82,042	77,660	79,990	79,990
Lahj	Beehive Numbers	81,536	79,545	77,159	77,931	76,372
	Production (kg)	125,635	120,984	117,351	118,525	113,784
Abyan	Beehive Numbers	232,120	226,453	219,659	219,879	215,481
	Production (kg)	348,212	335,320	325,095	326,070	316,288

Most beehives owned by the Yemeni beekeepers are traditional and, therefore, the productivity per beehive is still very low from 1.9 kg – 2.0 kg/beehive. It is noted that starting from 2015 to 2016 and 2017, productivity declined due to the war and the crisis, which led to make it very expensive to feed the honey bees and move the beehives to pastures during the 3 seasons of honey along the year with the increase of sugar and fuel prices.

Regarding the pasture of honey bees, there is shortage in area of pasture for an increasing number of new beekeepers and new beehives and their colonies, but according to the latest census the exact potential area for beekeeping is not known but is considerable and would include:

- Most of the 22.6 million hectares rangeland (40% of total);
- 0.5 million hectares of forests and thickets (3% of total);
- 1.88 million hectares of arable land (1.75% of total); and
- 2 million hectares of marginal land (1.8% of total).

The overall trend in the international market is an increasing demand for organic honey. Most of the honey produced in Yemen is organic, but unfortunately, there is no internationally recognized standard, traceability and food safety certification system in place which otherwise would have allowed

Yemen to export throughout the world. The most important importers of Yemeni honey are the neighboring Arab countries. Noteworthy, the Economic Opportunities Fund¹ (EOF) has supported YSMO to prepare Yemeni Honey Standards (YHS) to create a brand to promote the standard in Yemen and outside.

Market Information Flow Analysis

Market information is transferred mainly in between the value chain actors. Past experience and networking seem to be the main sources of information. 41% learn from their competitors, and 27% learn from their suppliers. Only exporters seem to learn from the internet. The study did not detect any significant engagement of Nongovernmental Organisations (NGOs) or Business Development Services (BDS) providers in the targeted districts.

Information asymmetry and lack of proper valuation of honey quality put many market actors at a disadvantage. Beekeepers who are not aware of market information and quality requirements usually sell their honey at a low price (up to 50% less) because they come under the mercy of the buyer. The beekeeper may harvest combs that contain Sidr honey (higher grade) with combs that contain Mara'ei honey (lower grade), which leads to reduced margins.

¹ Economic Opportunities Fund was established in 2010 and closed upon the crisis in 2015. Retrieved from <https://operations.ifad.org/documents/654016/d29a7149-31d6-40f8-8261-9d4310061721>

If beekeepers do not reach a deal with their buyers, they won't be able to find a market for their honey, and this puts them at a disadvantage. The lack of quality control measures leaves premium prices to certain producers who have strong networks with exporters and traders. Others fall victims to lower prices or poor quality products. There are examples of disadvantaged producers having to sell at half the market price for specific honey quality.

Yemen Honey Sector

The honey value chain is marked by long-term cooperation, close coordination, and mutual credit flow between the chain actors. The chain actors are highly specialized, and all are Small and Medium Enterprises (SMEs). There is a sophisticated quality grading system that is consistently applied from beekeeper to final consumer. The system is perceived through frequent practices and long experience which enables actors to identify the quality grade of any honey, especially the most expensive qualities that are vulnerable to be mixed with lower grade honey, but there is a need to codify quality standards. Most chain actors are more or less aware of quality indicators, and where the quality grading system goes with clear price incentives. Nevertheless, chain actors express deep concern about the integrity of Yemeni honey and consumer confidence.

Despite the appreciation of high-quality grades of Yemeni honey in local, regional and international markets, there must be more interventions to consolidate and encourage the SMEs to provide the necessary inputs for best practices of keeping tools and instruments, in addition to post-harvest equipment. There are very few providers for those tools and equipment to be sold to beekeepers, traders and exporters. Most beekeepers do not get access to them and primarily follow traditional beekeeping practices. There is lack of marketing skills making availability of equipment known to value chain actors and lack of awareness among actors about the importance of using improved equipment to increase productivity and quality. The following tools, instruments and equipment are examples:

- Modern beehives: Kenyan or Hadhrami modified beehives are produced in Hadhramout locally and this craft needs to be transferred to other beekeeping governor-

ates to be easily reached by the beekeepers. Existing carpentry workshops in other honey-producing areas could be trained to produce modern beehives. The advantage of using a modern beehive is immense; a traditional beehive produces around 1–3 kilos of honey per season, while the modern beehive produces around 4–6 kilos. The cost of a modern beehive is approximately YER 12,000¹ (USD 24) as against YER 2,000 (USD 4) for the traditional beehive.

- Extracting machines are important for separating honey from wax and are more useful for the modern beehives that have frames of wax and honey. Those extractors are imported and come in many types like manual extractors and electric extractors.
- Pressing wax and combs machine: this machine is pressing the wax and combs after obtaining the honey from them to extract remaining honey inside the combs and wax after honey harvesting. This machine extracts 750 grams from 1 kilo of waste of honey combs/wax. This technology will save much money for Yemeni beekeepers from waste after honey harvesting.
- Sucrose measurement device: this device is for measuring the sucrose content of honey. It should be less than 5% to be eligible to be exported, particularly Sidr and Salam honey.
- Moisture measurement device: to measure the moisture content in any tested honey samples. Moisture should be less than 17% to be eligible to be exported.

Beekeepers in the Yemeni honey chain need to get more training courses and awareness about the beekeeping best practices pre and post-harvest of honey, theoretically and practically. Topics of such training should include use of modern beehives, controlling bee pests and diseases, breeding bee queens, honey storage, non-honey products, financial administration for apiaries and honey projects, labelling and packaging; creating a brand, customer service and effective sales and marketing, including through social media.

Another important thing is that with increased numbers of Yemeni beekeepers – reaching to 100,000 beekeepers – the government, international non-governmental organisations (INGOs), NGOs should plant Sidr and Salam trees every year and implement nurseries for this purpose in most of Sidr and

¹ USD = 500 YER

Salam environmental areas. Otherwise, the Yemeni honey production will suffer lack of pasture that leads to decrease of productivity of each beehive and results in threatening the livelihoods for hundreds of thousands of rural Yemeni people.

The traders and exporters are much more knowledgeable than beekeepers about the honey quality and grades; they just need to be aware of the Yemeni honey standards to able

to get their honey certified from YSMO and eligible to be exported to the high value markets. The most recent honey specifications were issued by YSMO in mid-2019 and are not yet known by all actors of the honey value chain. YSMO is also in need of technical support for better compliance with international standards (United States' and European quality standards) as applied for Yemeni honey. The cost for certification and quality brand/trademark is approximately YER 100,000 (USD 200).

Value Chain Map

Honey is perfectly conservable, and speed throughout the chain is not an issue; therefore, lead times in the chain are long. Beekeepers require 40 days from placing the beehives and extracting to selling the honey. Traders often purchase in bulk and will release to market over a period of time. The price of Sidr honey falls slightly during its season and increases during the rest of the year.

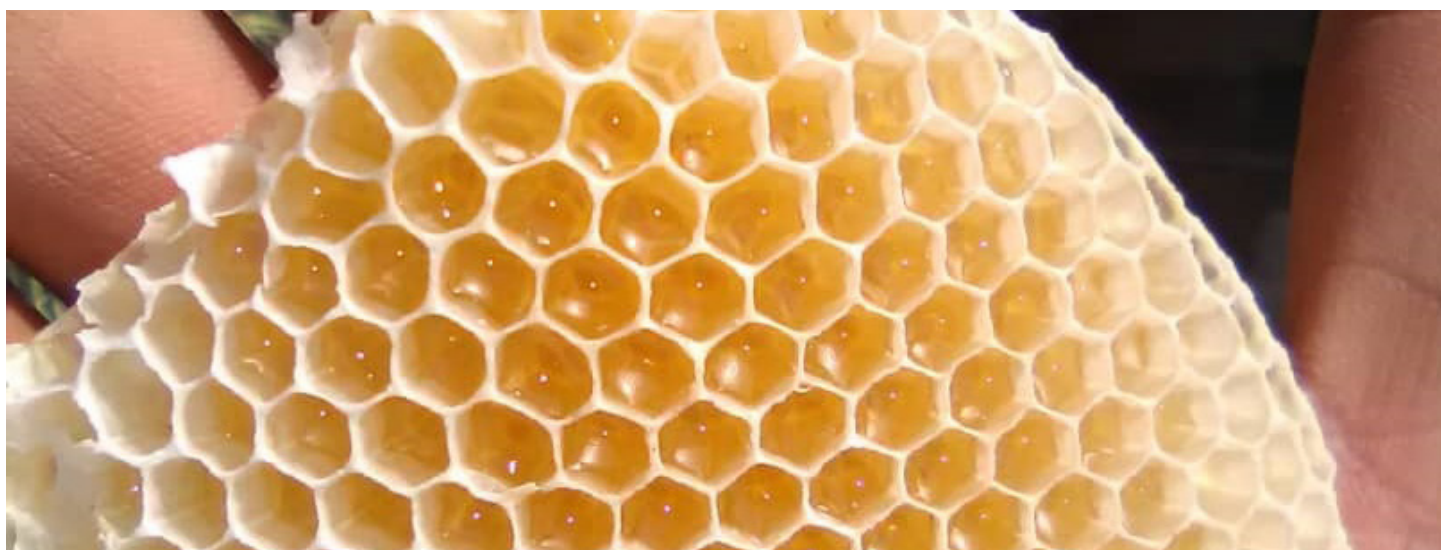
Honey is a specialized business activity; most actors are focused on honey with few other income-generating activities. Honey producers have other business lines, but their main income is derived from honey. Retailers are not specialized in honey, but they also sell oils, perfumes and henna, etc.

Beekeepers fetch the highest share of added value in the honey chain, an average of 69%. Wholesalers appropriate only a small portion of added value, an average of 4%. Exporters and some retailers receive an average of 27% of the added value in the chain. Some exporters build direct rela-

tionships with beekeepers and capture over 100% returns. It can be more if they reach to premium clients.

All honey chain actors can be classified as SMEs. The wholesaler is the dominant actor in the honey chain. The business relations in the honey sector are on average five years; they seem to have remained stable since the "boom" in the sector. There are credit flows between buyer and seller, especially between beekeepers, wholesalers and exporters. In other cases, a beekeeper may be employed by a trader to manage the wholesaler or exporter's beehives; there is close coordination on product quality and volumes. Wholesaler and exporter regularly visit beekeepers to check up on production and quality.

The value chain support services are inactive and need to be supported and developed to speed up the development of the value chain, and this effort needs organized workshops to increase the awareness of the honey chain actors about the importance supporting chain's actors.

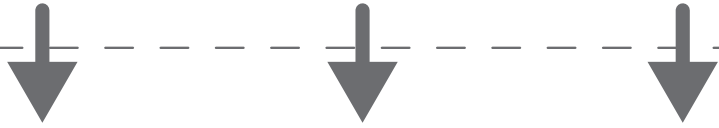


Beekeeping and Honey Value Chain Map

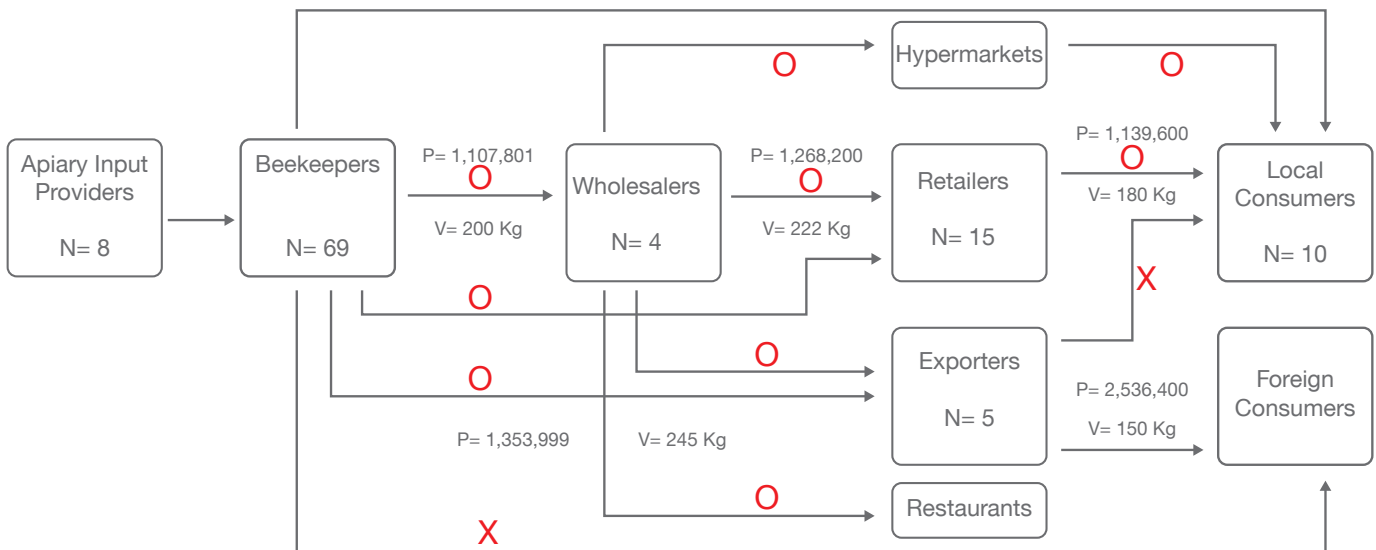
Symbol Key:
 Critical Issue !
 Major Disruption X
 Partial Disruption O

Market Environment:

Institutions, Rules, Norms and Trends

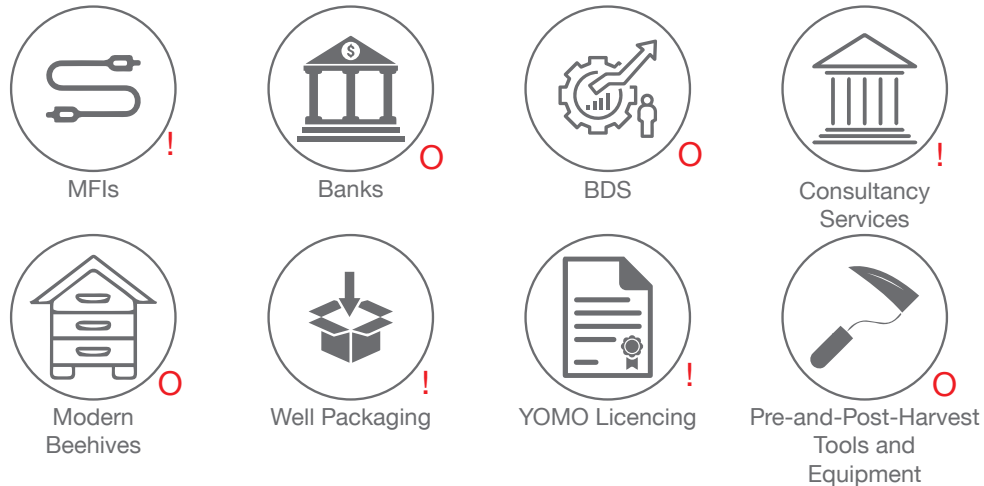


Market Actors and Their Linkages



*P= Price (All price amounts are in YER), USD = 500 YER

Key Infrastructure, Inputs and Market Support Services



Value Chain Actors

Beekeeping and Honey Input Providers

They provide the beekeepers with all related beekeeping and honey harvesting products and tools. There are very few Yemeni traders who are specialized in this business, so there are many beekeepers who cannot get access to their products and services.

Beekeepers

There are around 100,000 Yemeni beekeepers, and this number is increasing yearly due to expected lucrative profits of beekeeping as a craft. However, the increased number of beekeepers has not been matched by increased area of bee pastures, such as plantation of Sidr or Salam trees, which has led to decreasing honey productivity and dwindling profits.

- Most Yemeni beekeepers tend to get knowledge and solving of beekeeping problems by asking each other. Consultancy services in this regard are missing and not paid.
- Another way to get solutions to their problems is through groups of WhatsApp. Also, beekeepers are using it for marketing their honey. This way is indeed active and effective especially if the group has skilled beekeepers and experts who are, some of them, from Arabic countries like Saudi Arabia and Lebanon.
- The Yemeni beekeepers lack training in non-honey products, how to produce them, and how to market well. These are products such as royal jelly, propolis and pollinated queen bees. This kind of production requires that Yemeni beekeepers use modern beehives.
- Yemeni beekeepers sell their honey directly to wholesalers, exporters, retailers, or occasionally to the end consumers, but the best relationship is with exporters because this relationship was built on trust over many years with a premium paid to the beekeeper.
- Yemeni beekeepers are mostly not organized, but there are around ten honey producer associations established by the Economic Opportunities Fund (EOF), some of them still active. The Yemeni Beekeepers Alliance (YBA) was established around 2015 that lacks frequent and

periodic meetings for its members to discuss the problems of Yemeni beekeepers and offer solutions.

- Under traditional production system, the yield is 4.45 kg per beehive annually¹, with revenue of – in case the beekeeper has 100 beehives – YER 5,560,000 (USD 11,120).
- The investment for a traditional apiary of 100 beehives is around YER 5,000,000 (USD 10,000), the beekeeper gets YER 7,460,000 (USD 14,920), and the value of all beehives with bees at the end of the year is YER 30,000 (USD 60) per beehive, so the value of 100 beehives is YER 3,000,000 (USD 6,000), the total revenue is YER 7,460,000 (USD 14,920) + YER 3,000,000 (USD 6,000) = YER 10,460,000 (USD 20,920), so the net incremental return before tax is YER 5,460,000 (USD 10,920).
- In addition, the beekeeper gets 30 – 40 beehives worth of new bees as swarms (through the propagating months) is 30 x YER 30,000 (USD 60) = YER 900,000 (USD 1,800) that to be added to the profit = YER 5,460,000 (USD 10,920) + YER 900,000 (USD 1,800) = YER 6,360,000 (USD 12,720).
- The profit share (from the Sidr season) that the Yemeni beekeeper gets is around 33%.

Wholesalers

They buy honey from the beekeepers in large quantities (in plastic containers of 5 or 7 kg). The lead time is around four months because the beekeepers trust the wholesalers after many years of dealing with each other.

The wholesaler sells that honey – as different types of Yemeni honey – mostly to exporters, consumers/customers and to some restaurants in the most conventional way in plastic containers. They used to store honey for a long time, especially the traditional traders who are usually gathering in local markets in towns. They think that honey, when it remains for a long time in their stores, gets better and becomes more concentrated and very useful, so its price should rise. Wholesalers are very specialized in honey chain and are dominating the Yemeni honey chain. The profit shares (from all honey seasons) that the wholesaler gets is around 17%.

1 Figures are sourced from the financial review of the Economic Opportunities Programme funded by IFAD 2012–2015 as revised for recent years.

Exporters

Most of Yemeni exporters are located in Sana'a and have their branches in other Yemeni governorates, and some of them have branches in Arabic countries. They are very organized and have sensory skills to test all honey types, especially the most expensive one (Sidr Honey) and know what is 100% pure and what is mixed with Kashmiri honey. They are not fully specialized on honey export but also have other business lines of products that are sold along with the honey, such as dates, beauty products, local medicine, and medical herbs and oils. Around 840 tons of honey are exported annually. Most Yemeni honey is exported without certification because the vast majority is exported to Gulf countries.

Exporters also play a role as retailers. They sell all Yemeni honey types even in small quantities like 1, 1/2 or 1/4 kg. They sell their honey in quality jars with good labels of their companies/shops; jars in dark PET1 materials and labels with all information according to international standards. The profit share (from the Sidr season) that the exporter gets is around 34%.

Retailers

They are shops that sell all Yemeni honey types in addition to other product lines: local health products, beauty products, oils and dates, but their sales are less than the exporters' big shops. There are also Yemeni shops that sell food items and include honey to be sold. They are not specialized in the honey chain, and they buy from beekeepers directly and sell to their customers, and some of them also buy from wholesalers. The profit share that the retailer gets is around 16%.

Table 2. Profit Distribution per VC Actors

Net Margins	YER ¹	%
Beekeeper	2,461,800 (USD 4,923.6)	33%
Wholesaler	1,268,200 (USD 2,536.4)	17%
Exporter	2,536,400 (USD 5,072.8)	34%
Retailer	1,193,600 (USD 2,387.2)	16%
Total	7,460,000 (USD 14,920)	100%

Market Environment

Institutions

The institutions among the beekeeping and honey value chain actors – honey associations, the Alliance, related government departments and honey companies – need to be activated, efficient and effective to enhance the performance of the actors toward more productive businesses, trade and sector. The government role is virtually non-existent. Honey associations do not exist in the governorates covered by the survey.

Rules and Norms

The Ministry of Agriculture and Irrigation through the Department of Beekeeping and Honey Production has issued the rules and norms that organize and regulate the beekeeping craft in Yemen to avoid any potential conflicts between the beekeepers, especially between mobile beekeepers and the

pasture owners. Beekeepers need more awareness of these rules and norms.

Trends

The most preferred Yemeni honey in the local, regional and international markets, as supported by views of exporters, traders and prevailing market price, is Yemeni Sidr honey due to its aroma, taste and flavour, in addition to the nutritional and medical benefits². Unfortunately, there is not yet any quality certification of Sidr honey put into practice. The other preferred Yemeni honey types are Salam, Sumor and Mara'ei.

1 Based on analysis of equivalent quantities on average pricing.

2 Medical benefits can be identified as an added value in marketing Yemeni honey as has been done in case of Manuka honey from New Zealand.

Key Infrastructure Inputs and Market Support Services

MFIs

The microfinance industry in Yemen is getting wider and better, but with modest and shy progress since 2006. There are many success stories from the MFIs in different sectors of SMEs like solar energy systems, groceries, new technologies for fruits and vegetable farming and raising livestock. The first MFI that has given loans for purchasing beehives is Al-Amal Microfinance Bank for beekeepers from Otomah district, Dhamar governorate in 2014, and the loans were successfully returned to Al-Amal Bank. Currently, there is a potential to link the MFIs with beekeepers and other actors in the honey value chain to get loans that will expand their businesses as long as beekeeping is a lucrative business that enables beekeepers to pay the instalments to any MFI. The number of clients of the best MFI in Yemen does not exceed 33,000 clients, and most of them are farmers and SMEs.

BDS

The business development service is essential to scale up the Yemeni honey value chain into organized institutions. The BDS market is still unknown to SMEs/actors who are working in the honey value chain, especially on workforce development and business development aspects in administration, finance, public relations, sales, innovation, creativity and marketing. Branding, marketing and packaging businesses are by and large not reaching the honey chain actors.

Consultancy Services

It is rare that beekeepers and investors pay consultancy services fees for any trainer or expert in beekeeping and honey production, such as asking for a feasibility study to establish an apiary or the solutions to treat pests and diseases of bees, etc. It seems that the beekeeping and honey production trainers and experts do not show, present or market themselves and their services with suitable fees. This culture should be presented to the Yemeni beekeepers and others in the value chain who used to get critical consultancy services for free.

Transportation

Transportation is considered very important to facilitate carrying the beehives from one pasture to another, but currently, because of rising fuel prices, the cost of transportation differs from one area to another and leads to an increase of a beekeeper's investment cost. This kind of service is still limited and not organized well into specialized companies that may help beekeepers to get the most competitive quotations/offers to move with their beehives; therefore, it is crucial to encourage investors and ease transportation.

Competitiveness

Competitiveness is what distinguishes any value chain, and the competition in the Yemeni honey value chain is very intense due to the rewards from the end users/consumers locally and regionally for the high quality, branding, packaging and labelling, in addition to the added value to many natural and herbal products that Yemeni honey enters in its composition.

97% of the interviewees persist that quality is the most important thing that makes their honey different and distinguished from competitors' honey, and the quality can be measured by the sensory persons/traders/beekeepers, but there is no national specification for the Yemeni honey, and the YSMO just issued the general specifications for any honey especially the imported honey, so the Yemeni honey does not get its value and superiority diminished. Around 800 tons of honey is imported annually.

24% of the interviewees said that reasonable price of their honey would compete well against the high price of other competitors. The price of honey really may play a vital role in marketing Yemeni honey, particularly in competition with imported honey like Kashmiri honey and the black forest honey. 6% of the interviewees see that availability of Yemeni honey, especially during honey off-seasons, is important for situating its reputation among other competitors.

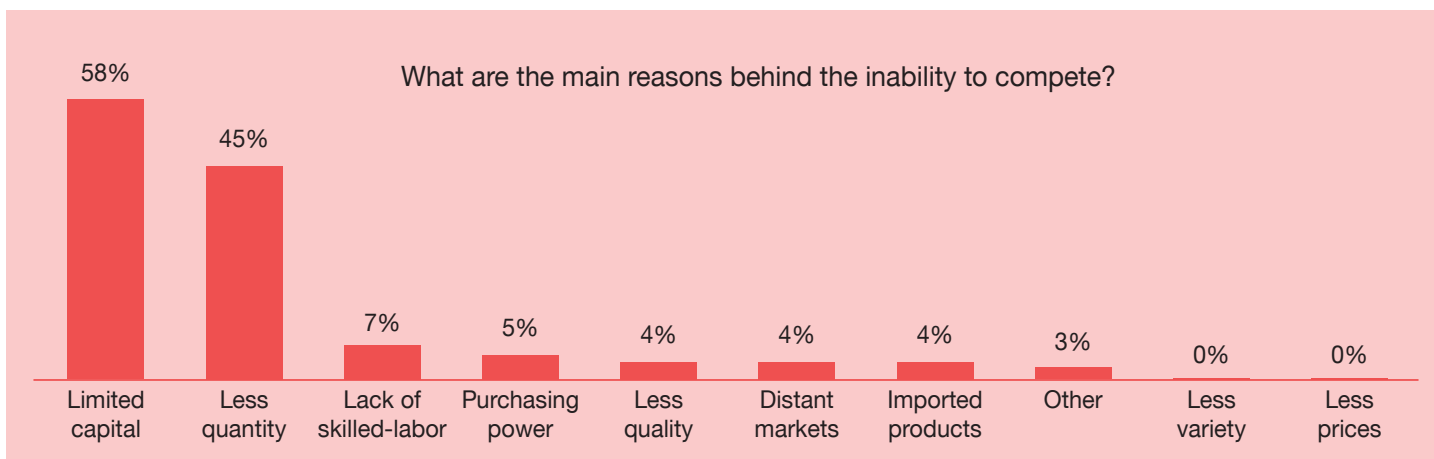


Over 70% of the producers and retailers said they are unable to meet the demand of their current or potential customers. Less than 33% of wholesalers and exporters are unable to meet their demand. Wholesalers and exporters are the price setters as they increase the prices when quantities are limited. 64% of those cannot meet their customers' demand because of the lack of supply from beekeepers, or their production is low (for the beekeepers themselves). 9% said the prices of Yemeni honey, especially in honey off-season are

very high, so they cannot purchase it. 3% said that the poor quality of some of Yemeni honey makes them unable to purchase it, because that honey may be mixed with Kashmiri honey or another type of Yemeni honey like Mara'ei honey. Others said that lack of liquidity to buy Yemeni honey prevents them from providing it to their customers.

Others also said that some years turn out to be bad (failure in creating Sidr and Salam flowers, or dropping of flowers, or falling rain on the flowers), so the production of that year tends to be low and leads to huge losses in beekeepers' businesses and results in significantly increased price of Yemeni honey.

71% of the interviewees declared they are not able to compete with other businesses selling similar goods. 58% stated that limited capital is the main reason why they are unable to compete, and 45% saw the limited quantities produced/traded in their business as the main reason.



91% of the interviewees said they would be able to compete if they receive suitable training. This indicates the importance of building capacities for the Yemeni honey value chain's actors, whether in the production phase, processing phase or in marketing and selling phase. The following training courses are suggested by the interviewees:

- Effective sales and marketing, including through social media
- Beekeeping best practices
- Project management

- Breeding bee queens
- Use of modern beehives
- Controlling bee pests and diseases
- Customer care
- Financial administration for the apiaries and honey projects
- Use of modern pre and post-harvest tools and equipment
- Labelling and packaging; creating a brand
- Storing Yemeni honey
- Producing non-honey products

Employment

Yemeni honey actors' seasonal employees range from 1–3 (50%), while 48% of interviewees said that they do not need employees during the peak seasons of honey. Only 1% said that they have 4–10 employees in the honey season, and another 1% have 10–20 employees during the honey season.

59% of the interviewees said they have 1–3 permanent employees, while 41% said they do not need any employees for their honey business. 58% of interviewees said that none of their employees have completed any vocational training. 47% said that they have trained 1–3 apprentices.

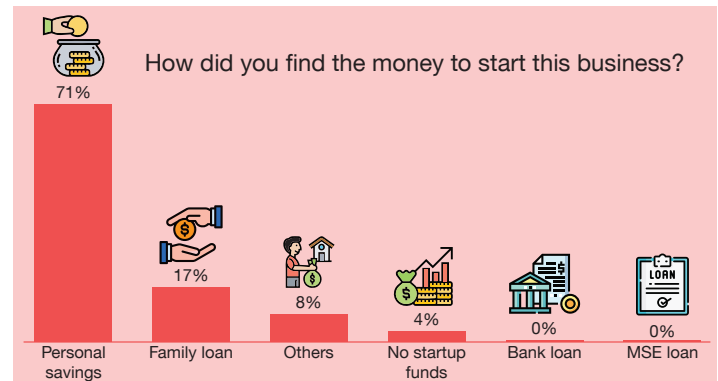
Financing

The financing of Yemeni honey value chain is very important to analyze in order to build this vital economic sector and encourage the actors of the honey value chain to strengthen their roles in the chain. The following charts and analysis present the importance of this subject to the whole chain.

71% of the interviewees found the money to start business from their “personal savings”, and this very important feedback highlights how to support Yemeni honey actors (bee-

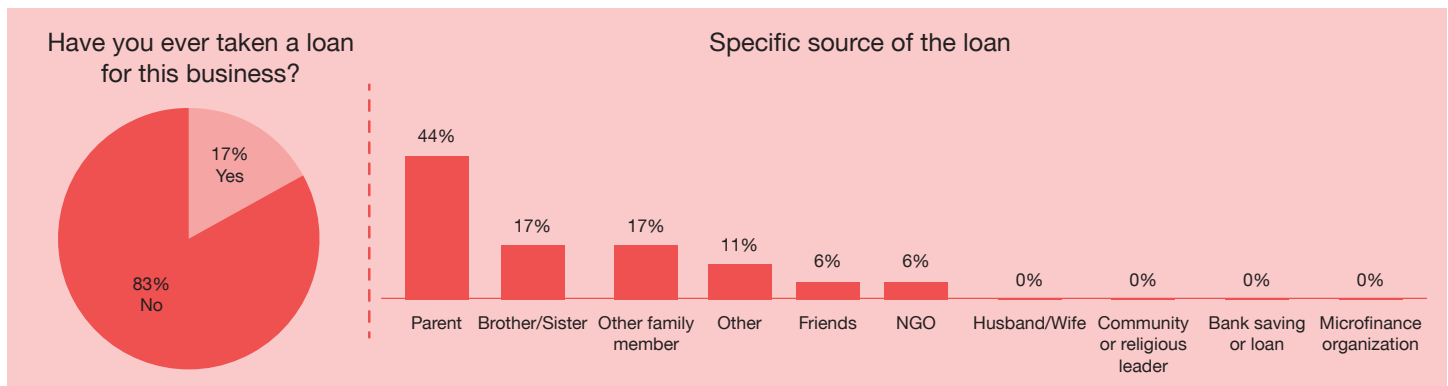
keepers or traders) to manage their savings with MFIs or other suitable financial institutions. This high percentage indicates the high returns of honey business, but MFIs can play a good role to fund businesses, whether in the production phase (beekeepers) or in the trade phase (wholesalers, exporters and retailers) to expand their business.

It is noticed that 17% of the interviewees could start a business by taking a loan from their family, and this reflects the strong family bonds in Yemen. MFIs are very much absent in supporting the Yemeni honey value chain and its actors, despite the assured returns of this business, so MFIs need to be woken up to look with robust focus into this important economic sector.



83% of the interviewees said they have never taken a loan for honey business. 17% of interviewees who said they took a loan for honey business, took in average ranges from YER 70,000 to 1,500,000 (USD 140 – 3,000).

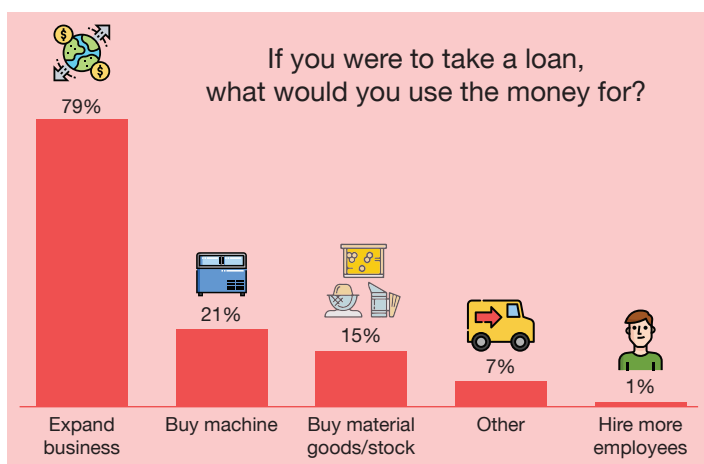
44% of the interviewees said they took loan from their parents. 17% said they took loan from their brother/sister, 17% from other family members, 11% from other family members, 6% from their friends, 6% said they took loan from an NGO.



79% of respondents said they would expand their business if they were to take a loan; this reveals that they are confident of the returns of their business that has potential if it is expanded. Business expansion for beekeepers would mean purchase of more bees and beehives, for other value chain actors would include buying higher quantities for resale. 21% of them said they would use a loan to buy a machine to harvest the honey (beekeepers), or a machine for making wax for the beehives, or a machine to extract honey from remaining wax, or a machine for packaging honey into attractive jars (traders). 15% said they could buy material goods (beekeepers) or stock (traders). 1% said they would hire more employees.

they apply to get loans, and how effectively the beneficiaries would manage their loans in order to pay them back to the MFIs in the due time.

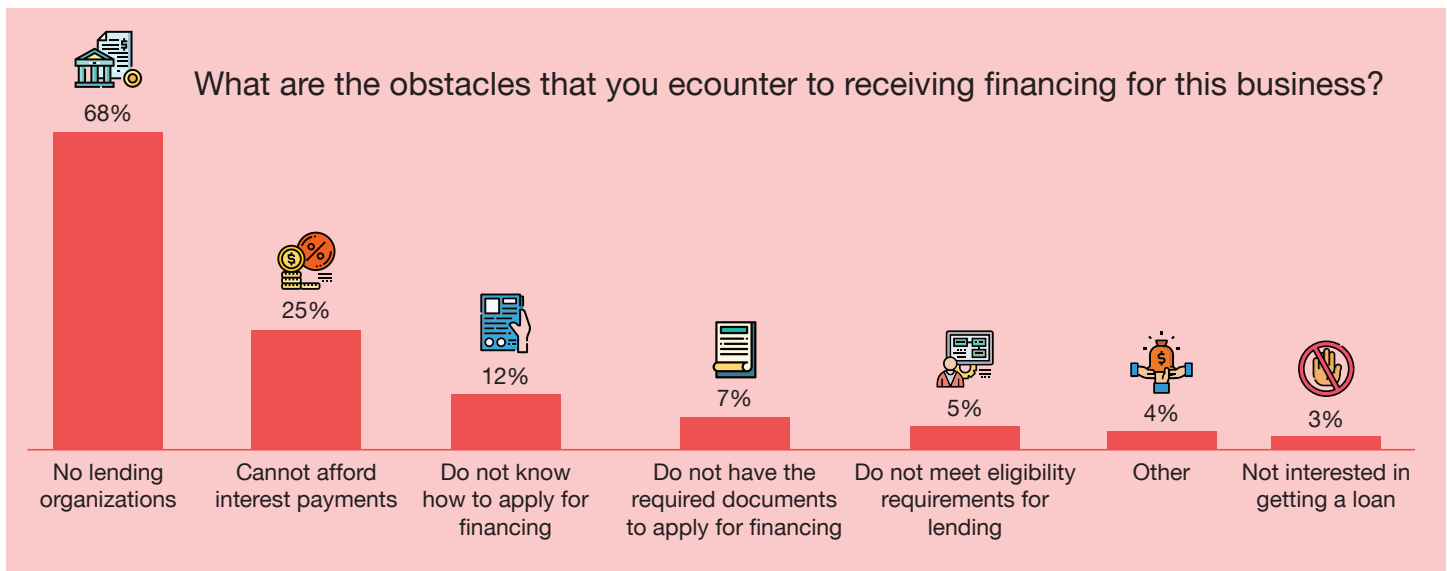
There is a clear conservatism or misunderstanding or negative attitude or religious belief that working in beekeeping or honey production or honey trade must be very clean from any interest fees or cheating that would lead to ruining the honey business, so all honey business money should be from a clean source. MFIs should be aware of this perspective when they plan to penetrate the Yemeni honey sector especially the vast majority of them (beekeepers) whose education level is low.



93% of the interviewees declared they need a loan. However, the chart below shows the obstacles that interviewees encounter in receiving funds for honey business as follows:

- 68% claim there are no lending organisations: this is proof that MFIs’ presence does not exist in reality; they are working far away from this vital sector.
- 25% cannot afford interest fees: this is the main reason why the Yemeni honey chain actors did not go to the MFIs to get loans from them, and MFIs should reconsider their terms and conditions to attract the Yemeni honey chain actors.
- 12% do not know how to apply for financing; the MFIs have not yet effective communication to reach these actors of the Yemeni honey chain.
- 7% do not have the required documents to apply for financing; this obstacle should be addressed by the MFIs or mitigated at least.

The findings are very promising for the MFIs to consider in creating a financial product for beekeeping and honey production in Yemen. In addition, there is a need to understand deep desires of the Yemeni honey value chain’s actors when



Partnership

95% of the interviewees said they had not established a partnership or joint venture with other businesses. 95% of beekeepers and other actors in Yemeni honey value chain do not know that there is a union for the beekeepers since 2016, created in Sana'a. This indicates that the management of the union could not reach the vast majority of Yemeni beekeepers due to lack of effective communication, and this is problem of most non-governmental institutions such as unions or associations, they do not have enough motivation, yearly plans, clear vision or message. This union urgently needs to be re-activated.

- The interviewees said that the role of a cooperative union is the following:
- Supporting the beekeepers in building their technical capacities in beekeeping best practices
- Upgrading the beekeepers to work with modern beehives
- Provision of tools and equipment of pre and post-harvest of honey
- Provision of required loans to buy the necessary beekeeping tools and instruments
- Buying the honey from the producers/beekeepers
- Supporting beekeepers by marketing their honey
- Supervision of the honey prices during season and off season

- Working on limitation of cheating practices
- Protecting rights of the beekeeper/producer and other actors of the honey value chain

Performance of the Honey Sector in Recent Years

The honey sector has experienced turbulent growth between 2000 and 2015 but seems to be stagnating in recent years due to current war and crisis and embargo by the sea, land and air to export Yemeni honey. However, honey production has evolved to become a major business, with a steady increase in number of beehives per beekeeper, beekeepers and income derived from honey. Productivity has remained stable. The ordinary limiting factors – as usual – are the availability of modern beehives and natural nutrition for the bees (particularly Sidr trees).

The main destination for the honey is the domestic market, with around 1,540 tons sold annually. Honey exports have been fluctuating, and are in decline in recent years, especially from 2015 to 2018. Imports are relatively significant, recently Kashmiri honey has been imported in huge quantities, especially Sidr Kashmiri honey, and the Black Forest honey imported from Germany and those honey varieties have become more familiar to the Yemeni consumers who stopped purchasing Yemeni honey because of higher prices.

Table 3. Number of Beehives and Production in Yemen

	2014	2015	2016	2017	2018
Number of Beehives	1,322,425	1,290,138	1,248,324	1,246,562	1,197,032
Production (kg)	2,646,617	2,548,631	2,431,059	2,427,750	2,380,567
Productivity (kg/bee hive)	2.00	1.98	1.95	1.95	1.99

Traders complain that in recent years cheating (mixing high grade with imported Kashmiri honey or low-grade local honey) is taking away the reputation of Yemeni honey in the Gulf. Traders blame this on the recent dipping in exports. Export prices are way above domestic market prices. The

study revealed that the vast majority of exported honey is the expensive Sidr type (high grade). This may explain the high price of exports relative to domestic prices. Local prices include the wide spectrum of local varieties including the less expensive Mara’ei honey.

Seasonal Calendar of Yemeni Honey

Table 4. Seasonal Calendar of Yemeni Honey

Factors	Yemeni Honey Type	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Price of Honey in Production Months	Sidr Honey	Medium			High						Medium		
	Salam Honey	High		Medium		High							
	Mara’ei Honey	Low											
Trade Quantity	Sidr Honey	High	Medium			Low			High				
	Salam Honey	Low		High	Medium			Low					
	Mara’ei Honey	Medium	High										
Pest/Disease Outbreaks	Sidr Honey	Medium									High		
	Salam Honey	Medium		High		Medium							
	Mara’ei Honey	Medium	High			Medium							
Capital Investment/ Need for Loan	Sidr Honey	Low			Medium		High	Low					
	Salam Honey	Medium	High	Low			Medium						
	Mara’ei Honey	High											

Business Environment

Beekeeping in Yemen is still practised conventionally/traditionally and mostly as a result of the governmental support absence, collaboration and coordination with NGOs and INGOs. Yemeni beekeepers, wholesalers and retailers operate individually; they are not organized. In 2015, the beekeepers and some traders, researchers and academic professors met and launched the first Union for the Yemeni Beekeepers, but after one year there was conflict inside the Union that led to creation of a new entity called the Yemeni Beekeepers Alliance (YBA) for all honey value chain actors, especially beekeepers. The Alliance proved itself and is still active.

There are new projects implemented recently after the crisis begun to support beekeepers and beekeeping as a good source for livelihoods in rural areas. These projects have been implemented by many INGOs such as GIZ, ADRA, CARE, FAO, and ICRC and NGOs like SFD and SMEPS and many different local organisations

MFIs play a modest role to support the beekeepers and beekeeping because they think that giving loans for beekeepers is risky, particularly in the conflict areas of the beekeeping governorates Hajjah, Mareb, Shabwah and Hodeidah.

Environmental Concerns

The picture from Hajjah shows the increasing supply of firewood. The nectar of the flowers of the Sidr trees have nourished bees to produce honey for hundreds of years, and these trees were cut down for YER 60,000 (USD 120) to be sold as firewood. Some VC actors claimed that there were no more Salam trees in Hodeidah for their bees.

Demand for energy has increased due to the shortage of cooking gas, as people use pottery products for cooking food with firewood. Pottery businesses that used gas to make their products now use firewood. Besides, the influx of IDPs has increased the demand for firewood in the host communities. With such sizeable increase in firewood demand,

prices have gone very high. This has created opportunities for firewood trade, and many have started to cut trees to meet this demand for firewood. The resultant deforestation has affected beekeepers who have lost pastures. Plantation of Sidr trees would be a valuable initiative to replace the cut trees.

As more rural communities choose agriculture for their livelihood opportunities, many started to use pesticides to protect their produce. However, these pesticides are toxic to bees. This raised the cost of bees and beekeepers have to travel to search for Sidr trees and other pasture sources where pesticides are not used.



Gender

84% of the interviewees have not employed women in their business. 55% of the interviewees said “Yes” to empowering women to work in the honey sector as an opportunity of income generation, especially breeding bees in beehives around their houses or in close areas (production stage), and this was confirmed by many projects undertaken by SFD, GIZ, FAO, ADRA and other organisations who support women to own their beehives and train them on how to work with bees, and the results were wonderful and beyond expectation, especially in areas of honey production where bees can find their pastures near their hives.

45% of the actors see difficulties for women to work in the honey sector as per the Yemeni traditions and customs that women cannot work among men in the market, or bargain

with men. Women also do not have the required capital to run honey business except beekeeping in their houses, and they cannot travel with their bees looking for pastures as men do.

Some women in the urban areas are raising bees on the roof of their houses for around ten months of the year. They then lend their bees to rural beekeepers for two months (the season) to produce honey and get 75% of the honey produced. Female beekeepers are suffering from gender inequality and power dynamics as they are controlled by male counterparts who usually do not allow them to deal with male retailers owing to local culture and gender norms.

SWOT Analysis



STRENGTHS

- **Price Stability:** The price of all Yemeni honey is generally among the highest in the world and pure Sidr honey from Yemen is without question the most sought after and most expensive honey on global markets. Yemeni honey is highly prized on the international market and attracts lucrative prices (IFAD, 1999); especially in the Gulf countries. The export quantity and value of Yemeni honey has been on an upward trend for the past decade.
- **Product Quality:** Yemeni honey is mostly produced from natural vegetation in the mountain and plain regions in Yemen and not from growing crops, with a few exceptions. In general, beekeepers make every effort to avoid pesticides used on farms to protect colonies from loss or contamination. In addition, Yemeni beekeepers typically avoid the use of chemicals for pest or disease control. This results in honey with organic characteristics. Pure Yemeni Sidr honey is characterised by a high percentage of Sidr pollen, which can reach up to 90 %, resulting in honey with qualities unlike any other on the planet.
- **Inter-organisational cooperation:** The Yemen Chamber of Commerce and Industry (CCI) has members involved in honey business. CCI can be an effective organisation to assist in the advancement of the honey sector. The CCI is planning to establish a division especially for the traders involved in honey business.
- **National Government Support:** The Ministry of Agriculture and Irrigation (MAI), has programme implementation experience and has plans to provide services to benefit the honey sector, including laboratory testing facilities.



WEAKNESSES

- **Specific Government Agency (Authority) Absence:** There is no specific governmental authority within Yemen related to beekeeping or honey.
- **Producer Capacities:** Honey is primarily produced by landless beekeepers who own very few hives. In general, beekeepers lack training and knowledge of modern beekeeping methods. Mobility of beekeepers reduces accessibility of MAI extension assistance. Beekeepers tend to lack financing to purchase hives and equipment.
- **Knowledge to Prevent Disease Outbreaks:** There is a lack of knowledge relative to diseases impacting bees, as well as how to cure these diseases.
- **Producer-Wholesaler Trust:** Most beekeepers utilize informal marketing systems, leading to a lack of trust of traders.
- **Lack of Standards for Processing and Packaging:** The Yemen honey sector typically has low standards of processing; plus, the absence of processing and packaging equipment.
- **National Institutional Capacity and Experience:** The Yemeni Beekeepers Alliance (YBA) leadership lacks experience in running the Alliance. The Alliance does not provide any market knowledge or technical expertise on honey classification requirements to obtain premium prices for Yemeni honey.
- **Inadequate Financial Resources to Recruit and Retain Staff at YSMO:** YSMO is challenged by the low pay received by qualified staff, while at the same time there are several hundred non-qualified staff draining resources and management effort. In addition, as of mid-2013, YSMO is lacking ISO 17025 accreditation for certification of residues of pesticides and antibiotics. Accreditation for HACCP/ISO certification has yet to be acquired, as is accreditation for organic certification. In addition, YSMO, despite generating sufficient revenue to maintain top quality service, is only allowed to retain 50 % of earnings; with the balance being passed on to the Ministry of Trade's General Fund.
- **Need for Coordination Body in Government and Adequate Financial Resources:** Although the senior management at MAI indicates serious interest in assisting and providing much needed services and extension help to the honey sector, financial resources are absent. Limited resources are stretched and diluted over the numerous agricultural activities within Yemen.
- **Unregulated Exporters:** Certain irresponsible exporters operate without consideration for food safety and quality and are often blocked at the border with Saudi Arabia, thereby diminishing the reputation of Yemeni honey producers.
- **Weak Capacity of Nomadic Producers:** Although GIZ has assisted AREA for several years in developing best husbandry practices for beekeeping, such as the introduction of the Langstroth beehive and related husbandry tools and off-season feeding of the bees, plus developing a handbook detailing all modern beekeeping husbandry practices. Unfortunately, the information contained in the book has only been made available to very few beekeepers and mostly to apiary owners with only few stationary beehives. The research team for this study did not meet any commercial (nomadic) beekeepers with knowledge of the work undertaken by AREA and GIZ.



OPPORTUNITIES

- **Supporting Honey Development Centres for Knowledge Sharing:** Development of a centres or NGOs for beekeeping and honey production would serve as a resource for training, education, research, supplies, quality control, certification and marketing.
- **Capacity Building to Enhance Quality Control:** The need to systematically enhance the safety and quality of all food exports is a necessity in all nations. Establishing sanitary and quality control measures meeting WTO requirements for honey via the provision of technical assistance and training to enforce control measures is a must for the future of the Yemen Honey Cluster.
- **International Markets Opportunities in the United States and Canada:** Development of gourmet and specialized retail business for Sidr honey in the United States and Canada. This can be done through supporting exporters to these markets. The same applies to the European Union market.
- **EU Market Entry Requirements:** Development of suitable procedures and practices required to meet with EU requirements for eventual market entry into EU member nations.
- **Potential Markets for Organic Products:** Organic certification can further increase returns on investment and generate additional market positions.
- **Fair Trade Certification:** Consider the development of Fair–Trade Certification, which will add yet another dimension to the marketing tool kit for Yemeni honey marketers.
- **Traceability Studies:** Initiate trial traceability studies which will be useful in terms of immediate improved credibility for honey from Yemen (especially Sidr).
- **US Market Opportunities:** Establish a USA physical presence to represent the interests of Yemeni honey in marketing development. Expenses could be shared with the coffee sector.
- **Developing Credentials to Emphasise the Medicinal Qualities of Yemeni Honey:** Development of internationally acceptable credentials as related to the medicinal value of Sidr honey being superior to other types of honey known and accepted as having strong medicinal qualities may open a substantial new market opportunity for Sidr honey.
- **Natural Beeswax Sheet Production:** Domestic production of beeswax into natural beeswax sheets used in modern beehives.
- **Working on propagating the most important honey bee pastures trees** like Sidr and Salam trees into organized and planned nurseries in the honey production governorates in Yemen. Those nurseries should be supervised by honey producer associations and government offices.
- **Modern beehive skills and knowledge transfer:** There is potential to transfer knowledge and skills of creating modern beehives to the main beekeeping areas in Yemen.
- **Support the beekeepers** to practice beekeeping with modern beehives; at least five modern beehives for each beekeeper. Youth willing to enter the beekeeping market could be supported by an investment of USD 600 to buy eight modern beehives with bees (USD 80 for each). Each beehive can produce 5 kilos of honey per season, so the total yield is 40 kilos = YER 1,200,000 (USD 2,400), with a profit of around YER 500,000 (USD 1,000) for Sidr honey.
- **Provide the Beekeeping and Honey Production Tools and Equipment** to all beekeepers, especially in the main honey productions areas.
- **Working to Produce Non–honey Products** like propolis, royal jelly, natural beeswax and bee queens and how to market this in the Yemeni market, and benefit from these as an added value in creating product lines such as cosmetics. Such product lines, however, are conditional on the introduction of modern beehives and capacity building.
- **Link the Yemeni Beekeepers with Professional Trainers and Experts** to support them on how to control and treat bee pests and diseases efficiently.
- **Introduce Yemeni Beekeepers to Modern Technologies** to harvest and extract honey from honeycombs effectively.
- **Support the Beekeepers, Wholesalers, Exporters and Retailers** to package their honey in attractive finishing jars and containers to create added value to their honey.
- **National Organisation to Ensure Quality:** The Yemen Standardization, Metrology and Quality Control Organization (YSMO) has qualified, experienced core staff and is working towards the development of well–equipped laboratories capable of evaluating honey being imported, exported and intended for domestic consumption.
- **Potential Impacts of Internationally Recognized Inspection and Laboratory Services:** With the current experienced, capable personnel and infrastructure at YSMO (with the assistance and credibility of an internationally recognized inspection and laboratory service), YSMO can be upgraded to provide certifications for HACCP ISO standards related to food standards, honey standards, organic certification and export certification, which will be acceptable in many developed countries with high standards.



THREATS

- **Beekeepers are Concerned with the Imports of Kashmiri Honey:** Kashmiri honey imported from Saudi Arabia is similar in taste, texture and colour to Yemeni Sidr honey. In recent years mixing of the Kashmiri honey with local Sidr has become a problem. It is difficult by taste and the naked eye to notice a difference, but the practice of cheating is eating away at the reputation of Yemeni honey, resulting, according to key traders in Wadi Hadramout, to a dip in exports.
- **The Difficulties in Obtaining Modern Beehives:** Modern beehives producers are famous in the towns of Tarim and Seiyoun in Wadi Hadramout and they produce the “Modified Kenyan Beehives” and “Modified Hadhrami Beehives”. We can say that they are monopolists in producing the best modern beehives in Yemen, but the problem is the transportation costs that are added to costs of the beehives that make them a bit expensive for small beekeepers, so we can see that there is a potential for knowledge and skills transfer projects to train the carpenters in the honey governorates to produce such beehives.
- **The Difficulty in Obtaining and Getting Access to Modern Harvesting and Post–Harvest Tools and Equipment:** That produce high–quality honey, such as electric and manual honey extractors and left honey combs pressing machines.
- **Diseases and Pests in Beekeeping:** it is a serious issue that most beekeepers are not aware of how to treat pests and diseases that attack their bees, despite the efforts to address this gap through informal exchange contacts through WhatsApp groups and through asking the most skilled beekeepers. There is still a great need to practically train the Yemenis beekeepers via organized projects in collaboration with the Yemeni Beekeepers Alliance and honey and beekeeping associations. Also, the beekeeping input providers do not have cutting edge knowledge of bee problem solutions, vitamins, cures and suitable nutrition, which opens potential to train them on how to find those solutions and how to manufacture locally or import internationally. Another problem the beekeepers complained about is the imported wax which comes with a strong petrochemical smell and contributes to increasing bees’ diseases.
- **Wholesalers and Exporters Express Concern** about cheating through mixing Sidr honey with Kashmiri honey.
- **Exporters Report** that consumers do not trust the quality of the honey, that price is too high and that packaging is not up to the market.
- **Lack of Access to Finance** that enables beekeepers and other actors in the Yemeni honey value chain to expand their businesses.
- **Climate Change** has been a substantial factor related to honey production in Yemen in recent years. Lack of rainfall and subsequent drought conditions has limited production and is likely to continue to be a factor in the coming years.
- **Security Issues:** production of honey has decreased due to the lack of fuel and security problems in the last couple of years.



Quality Management and Consumer Focus

The EOF and YSMO have worked since 2013 until now to issue the Yemeni Standards for Yemeni Honey, signed and approved by the main stakeholders in June 2019. All chain actors are well aware of quality grades, quality indicators and the factors influencing quality. There is a clearly defined quality grading system that is consistently applied from beekeeper to final consumer. The quality grading system is accompanied with clear price incentives, the price differences between the various quality grades are huge; and with the advent of the modern beehive, further market segmentation is expected to follow.

In spite of the sophisticated quality grading system, the chain actors express concerns about cheating through mixing with imported honey. They mention that consumers might be losing confidence in the quality of Yemeni honey; therefore, they attach great importance to the implementation of a quality certification system that guarantees the integrity and traceability of the honey.

Many types of honey are purchased for remedial properties for a wide array of medical conditions, which customers appear to be well aware of. For example, it is a common practice in Yemen to treat burns with pure Sidr honey; however, mixed Sidr is considered detrimental. Customers suffering from diabetes prefer Salam honey as it is believed not to increase or reduce sugar levels in the blood.

83% of the interviewees make their customers aware of their products and services by word of mouth, while 14% use advertisements in social media or radio, 11% visit the potential customers directly, 1% have their sales agent to market their products and services, and another 1% does not care much about marketing and advertisements (traditional businessmen).

The high percentage of word-of-mouth importance reflects the significance of it in marketing of Yemeni honey because customers trust each other through feedback they got after consuming Yemeni honey from any honey beekeeper or trader. One word from a customer can work as a marketer for that honey beekeeper/trader. On the other hand, one word can also destroy the reputation of a beekeeper/trader forever or for a long time, and this is very sensitive in honey business.

It is noticed that the use of advertisements for marketing honey is still modest (14% of respondents). This means that honey traders do not use modern tools such as advertisements to expand their business. There is a potential to train them on how to effectively use advertisements to work for their business.

It is noticed that 11% of the beekeepers/traders have good relationships with specific customers, so they know any new honey available by the beekeepers or honey traders whether in the season or off season via direct contact or visit, and this kind of relationships is sustainable and rewarded by the customers who are eventually from the upper class and the middle class in the Yemeni society.

Only 1% of the Yemeni honey traders have sales agents. A culture of the importance of sales agents to expand honey business and sales could be created through BDS.



The 36% who said they have exported Yemeni honey need extra encouragement to continue exporting honey through the procedures mentioned previously. They export Yemeni honey to mostly Saudi Arabia, Qatar, UAE and China.

Overall Conclusions

- The honey sector has grown impressively between 2000 and 2014 but seems to be stagnating in recent years due to the current war and crisis. Both production and exports are going down.
- Despite the current crisis, beekeeping and honey production is considered as a profitable business. Many men and women whose salaries have been suspended have shifted to work in beekeeping and honey production as their main livelihood.
- Limiting factors are access to modern beehives and availability of natural nutrition for the bees (most nota-

bly Sidr tree pastures) due to the increase in number of beekeepers and beehives.

- There is a hunger for more beekeeping and honey production input providers in the local market.
- The honey value chain is marked by long-term cooperation, close coordination and a clearly defined quality grading system.
- The Yemeni honey chain is not organized institutionally. However, relations among the Yemeni honey value chain actors are maintained by trust, transparency and equity, as a long-term relationship.
- Yemeni honey is still produced by old fashioned practices, with little attention paid to quality, hygiene, smell and taste as required by consumers in the local market and in the regional and international markets.
- MFIs need to be encouraged to support the honey value chain actors, particularly beekeepers.
- Chain actors express deep concern about the integrity of Yemeni honey and consumer confidence. They are working towards the implementation of a quality certification system.
- There is potential to penetrate the niche markets in the world with Yemeni Sidr honey and other honey varieties that have medical properties, but there is crucial need to invest in certifying Yemeni honey and complying with niche market requirements and conditions.

Policy Recommendations

- Apply the formal governmental guidelines and regulations that organize beekeeping and honey production in Yemen.
- Implement propagating projects for Sidr, Salam and Sumor trees in the Yemeni main honey production areas/governorates.
- Support the adoption of modern beehives and the recycling (production) of beeswax into natural beeswax sheets used in modern beehives.

- Organize and build active and effective honey producer associations in the main honey production areas.
- Strengthen the capacity of nomadic honey producers
- Encourage beekeeping and honey production input providers to expand and promote their products (tools and equipment) to reach the beekeepers.
- Support the chain actors in implementing a quality certification system to guarantee the integrity and traceability of Yemeni honey.
- Support YSMO to finalize the grading project for Yemeni honey and issue and accredit the National Quality Mark/Brand that will stand as certification for Yemeni honey in the local market and in regional and international markets.
- Support the development of better packaging.
- Implement a country campaign for branding and promotion of Yemeni honey.
- Activate the currently inactive vertical support chain, including workshops to increase awareness amongst honey chain actors about the importance of such support.
- Implement pilot projects with MFIs and beekeepers and their associations to facilitate getting access to credit that enables beekeepers to expand or improve their apiaries and businesses, or begin new apiary business for youth in the rural areas.
- Support the honey value chain in Yemen to establish a platform that includes all the actors in the chain and facilitates services and products to be easily accessed by the value chain actors. The platform may be owned by a government department such as Department of Beekeeping and Honey Production of Ministry of Agriculture and Irrigation, or by a private company that will technically manage all aspects and activities of the platform.



Summary of the Beekeeping Value Chain in the Targeted Governorates

Governorate	District	Sector/ Gender	Market Potential (High/ Medium/Low)	Demand (High/ Medium/Low)	Supply (High/ Medium/Low)
Hajjah	Abs	Male	High	High	High
		Female	Low	Low	Low
	Bani Qais	Male	High	High	High
		Female	Medium	Medium	Medium
Hodeidah	AlZuhrah	Male	High	High	High
		Female	Low	Low	Low
Abyan	Khanfar	Male	High	High	High
		Female	Low	Low	Low
	Sarar	Male	High	High	High
		Female	Low	Low	Low
Lahj	Almusaymeer	Male	High	High	High
		Female	Low	Low	Low
Taiz	Alshamayteen	Male	High	High	High
		Female	Medium	Medium	Medium
	AlTaiziyah	Male	High	High	High
		Female	Medium	Medium	Medium

Women Engagement (If Yes, Where in the Value Chain)	Women can work effectively as producers, near their homes, only.
Women Roles (What Do Women Work with in the Chain)	They can take care of nutrition and health of the beehive colonies.
Youth Engagement (What Can Youth Work With)	Most of the beekeepers are young (28 – 50 years old), they are specialized in their business, and very active and looking forward to expand their business.
Main Difficulties in the Value Chain that Can be Tackled by UNDP	<ul style="list-style-type: none"> • Decrease of Sidr and Salam trees vis-à-vis increased number of beehives and beekeepers • Lack of access to modern beehives • Lack of access to modern honey harvesting tools and equipment • Lack of specialized training in quality standards • Lack of financing to expand and improve beekeeping and honey production • Lack of institutional capacity for beekeeping and honey value chain actors

Proposed Interventions	<ul style="list-style-type: none"> • Planting new Sidr and Salam trees as much as possible through establishment of tree nurseries near targeted districts • Establishing new carpentry workshops for making modern beehives that improve productive beekeeping • Encouraging beekeeping input providers to strengthen their relations with beekeepers and provide them with the required beekeeping and harvesting equipment and tools • Provision of specialised training for all beekeeping and honey value chain actors, whether in administrative, organisational, financial or technical aspects • Encouraging MFIs and Banks to reach all beekeeping and honey value chain actors • Building the institutional capacities of the beekeeping and honey value chain actors
Proposed Training	<ul style="list-style-type: none"> • Pre and post honey harvesting best practices • Best practices of producing non-honey products: royal jelly, propolis, wax and pollen • Effective management of the apiary • Effective control of bees' pests and diseases • How to take a loan and make it efficient • International, regional and local quality standards and requirements • Effective honey marketing and branding • How to effectively finance the apiary (Accounting for non-accountants – Business Edge – IFC curriculum)
Most Profitable Value Chain Player?	<p>The most profitable honey value chain player/actor is the exporter because he is selling honey with the highest prices in large volumes.</p>
How to Increase Value Creation?	<ul style="list-style-type: none"> • Paying attention to the best practices of honey harvesting to increase the quality of the honey • Marketing the honey in attractive glass or plastic jars • Putting attractive labels on the honey jars and bottles, with required information such as origin and nutrition information • Including information on the medical benefits of each Yemeni honey • Selling honey with its wax (honey inside its wax – raw) with attractive packaging
Macro Level Recommendations	<ul style="list-style-type: none"> • Supervision and establishment of tree nurseries for propagating new Sidr and Salam seedlings and planting them in the targeted areas • Supervision of applying the regulations and policies issued by the Department of Beekeeping and Honey Production of the Ministry of Agriculture and Irrigation • Support YSMO to prepare Standards and Specifications of Yemeni Honey which should be applied for all the actors of the honey value chain • Support YSMO to develop and finalize a National Quality Mark/Brand for Yemeni honey • Encourage the Ministry of Trade and Industry to prohibit – through legislation – re-export of foreign honey as Yemeni honey to support Yemeni honey brand, production, and productivity

Meso Level Recommendations	<ul style="list-style-type: none"> • Encourage the INGOs and donors to support the beekeeping and honey value chain through implementing projects that build technical capacities of the actors of the honey value chain, especially beekeepers • Organize all actors of the honey value chain into strong and active associations/ alliance • Encourage MFIs and banks to provide all actors of the honey value chain – especially beekeepers – with required loans to establish new apiaries or improve and expand existing apiaries by buying new modern beehives and harvesting tools/equipment • Implement a platform for Yemeni Honey Value Chain that includes all the actors and facilitates networking among them, as well as marketing of the products and services offered by them along the chain
Micro Level Recommendations	<ul style="list-style-type: none"> • Provide the beekeepers with necessary training courses regarding pre and post honey harvesting • Support wholesalers and exporters on how to package their honey jars/bottles according to international specifications and standards in order to export to the United States, European Union, Japan, etc • Facilitate access to modern beehives in the targeted areas • Support rural women to be fully involved in the beekeeping and honey value chain by providing them with new modern beehives to take care of, and make this their main own livelihood activity • Train Yemeni beekeepers on how to produce non-honey products effectively and commercially as a new added value from beekeeping
Recommendation for MFIs (What Can Be Financed)	<ul style="list-style-type: none"> • Provide loans for beekeepers to buy new/modern beehives or more traditional beehives to expand and improve their businesses • Provide loans for beekeepers to buy new honey harvesting tools/equipment or tools for best beekeeping practices • Provide loans for youths and women to start their beekeeping projects • Provide loans to retailers as capital to buy Yemeni honey as required by their customers
What New Technologies/Tools/ Equipment Can Be Brought	<ul style="list-style-type: none"> • Honey extraction machine (manual or electric) • Tool kits and equipment of beekeeping best practices (raising bees and controlling pests and diseases) • Pressing honey comb machine • Sucrose analyzer device • Device measuring moisture in honey • Device measuring sugar (fructose and glucose) in honey • Modern beehives
Tracing the Money along the Supply Chain	<ul style="list-style-type: none"> • The profit share (from the Sidr season) that a Yemeni beekeeper gets is around 33%. • The profit share (from the Sidr season) that a wholesaler gets is around 17%. • The profit share (from the Sidr season) that an exporter gets is around 34%. • The profit share that the retailer gets is around 16%.

Potential Impact of COVID–19 on the Sector¹

The honey sector is, to some extent, shielded, and trust among the value chain actors can keep business rolling. Because of the isolated nature of beekeeping, honey production would, in theory, not be much affected as long as bees have pasture in rural areas away from the crowd. However, customer behavioral change in requesting low–price types of honey due to less purchasing power has had a serious impact on the sector, combined with interruption of the more lucrative higher price niche market of honey exports.

Value Chain

The honey value chain has been affected by the COVID–19 pandemic; however, the full extent of impact is not yet clear. It is predicted that the real effects of COVID–19 will be objectively clear only in 2021. For the Yemeni honey sector so far, there are certain effects on the different value chain actors, with a variation on degrees of severity. The pandemic would have severe implications for the lives of the small actors in the value chain, who are lacking support from government, MFIs and aid agencies. Interviewed wholesalers and exporters believe that about 40% of the estimated 100,000 Yemeni beekeepers would face financial crisis due to the impact of COVID–19 on their small businesses.

Beekeepers belong to the poorly educated group of the society, and they tend to be the last group to know about health updates and how to apply health advice, including COVID–19 pandemic–related protective measures. Beekeeping activities have been affected at the time of recording the earliest cases when the fear of the spread of the virus forced people to take extreme measures. Activities such as cleaning hives and feeding bees were not done regularly, and this affected the production rate. According to interviews with beekeepers, the availability of beekeeping products, including bee medicines and other supplies were scarce even before COVID–19 and got scarcer with increased prices due to the pandemic. Most of these supplies are imported and imports are affected by the COVID–19 restrictions globally. The very few existing service providers and importers are creating a

monopoly over beekeeping products, and they control the prices. With the steep increase in prices of equipment, beekeepers shift to alternative solutions that are riskier and uncertain in delivering the same results; as, trusted medicines and other beekeeping supplies.

Home quarantines should increase the use of honey by households, but according to interviewed value chain actors, the situation is the opposite. Demand has dropped and caused a drop in honey prices in the local market. Retailers facing reduced demand estimate a 40% reduction in their revenues. Loyal customers may not be lost; people will continue to buy honey, believing that its medical properties can boost the immune system to fight the virus.

There is significantly weak demand for especially the high–quality honey, due to the weak purchasing power of customers. This demand gap has affected the prices and profit of retailers, who are now selling lower quality honey since this is demanded by most consumers who now care more about quantity than quality. This has affected the price of high–quality honey that has dropped since demand shifted to lower quality honey. Only households with moderate to strong purchasing power, who have family members with chronic diseases or old people with weak immune systems, are requesting high–quality honey, while others are requesting any type of honey they can afford.

The COVID–19 situation has changed the normal pattern of selling and buying Yemeni honey. In normal times, brokers or mediators buy honey from beekeepers in large quantities at the end of each year (November and December), with a price between YER 160,000² (USD 320) and YER 180,000 (USD 360) for a 5–liter jar of Sidr honey. They store the honey until June and July next year and then sell at a price of between YER 250,000 (USD 500) and YER 280,000 (USD 560) with the price difference as profit. COVID–19 has reduced demand and brokers who had stock from previous year could not sell it and were significantly affected.

1 For a more comprehensive analysis of the potential COVID–19 impact on micro, small and medium enterprises in Yemen, see a synthesis report at this link: <https://www.ye.undp.org/content/yemen/en/home/library/a-synthesis-report-on-micro--small-and-medium-enterprises-in-yem>

2 USD = 500 YER

Wholesalers and retailers were affected as customer visits to their stores and honey shops were reduced due to fear of the coronavirus. Advertising and marketing via social media such as WhatsApp and Facebook and offering home deliveries have somewhat helped in mitigating this effect. Marketing honey through social media is actually becoming a trend among retailers.

Shifting market places to open locations has restricted the ability of small retailers to sell their products effectively, and this also goes for mobile beekeepers producing lower quality honey who are marketing their products in a very traditional way by moving their honey jars from one market place to another.

Retailers who used to travel from the northern governorates to the southern governorates where honey markets are active are now unable to travel. They rely on others to travel and sell their products and get a lower profit percentage.

Exporters have faced difficulty in their business due to the closure of borders that has stopped their export of honey to Gulf countries and the US. Stock that was planned to be exported was returned to the local market since borders are closed. Quarantine at the borders is forcing exporters to stay for 14 days with their honey, which gets affected by sunlight and loses value and price. This causes significant losses to the exporters who tend to return their honey to the local market and sell it there at lower prices instead of risking losing honey stock at the borders.

COVID-19 has also had a significant impact on transportation in the Yemeni honey value chain due to the restrictions applied to contain the virus. Blockage in the supply chain of beekeeping inputs sets hurdles for expansion and modernization of business.

Micro, Small, and Medium Enterprises

COVID-19 strikes at the core of small retailers. Those are the most vulnerable group in the Yemeni honey value chain who are at risk of any potential impact of COVID-19 on their businesses. Although people are considering buying honey as a natural remedy for strengthening the immune system against the virus, there is still a risk that small retailers would get affected by the COVID-19 restrictions on people's movements and the closure of markets.

Movement of beekeepers and wholesalers to buy and sell honey has already been affected by travel restrictions. It is expected that supply chain interruptions would increase in case the severity of the pandemic increases. This would directly affect the small retailers who are also facing delays in the delivery of their orders of honey from wholesalers and beekeepers. A high level of supply and low demand are causing a reduction in the sales and revenues of retailers and other small business owners.

Beekeepers are usually dealing with retailers through credit sales, but since the retailers' stock is not being sold, beekeepers are facing liquidity challenges to cover the expenses of keeping their bees healthy and safe.

Beekeepers take resort to risky strategies to cope with the increased prices of beekeeping supplies, including medicines. They are using low concentrations of medicine intended for human beings for their bees instead of the very expensive and scarce medicines for bees. In Tehama, for example, bees are dying in droves due to lack of supplies because of COVID-19, since beekeepers are not able to afford the increased price of medicines and other supplies that are crucial for saving their bees. Some beekeepers use herbal treatment, which is becoming popular in the COVID-19 crisis as an alternative solution.

There are very few laboratories providing honey testing services for beekeepers and retailers, and COVID-19 has complicated the situation, making access to such test services even more difficult.

The reduced demand for the high-quality Sidr honey, considered the most profitable honey, especially when exported to other countries, is causing about 60% loss in sales. Even though Sidr honey can be sold locally, the revenue from export is much higher. This is directly affecting the size of businesses as beekeepers who have large numbers of beehives are now selling most of their hives as a strategy to bear the loss and keeping only the number of hives they can take care of. None of the interviewed MSMEs has mentioned that they are thinking of increasing the size of their business or purchasing more beehives.

MSMEs in the Yemeni honey sector are not part of any formal association to represent them or provide the structural and administrative support that could have enabled them to properly plan for this kind of crisis and prepare mitiga-

tion plans. Beekeepers and retailers in the honey sector lack insurance services and relations with large companies that can provide support to deal with this difficult time.

Among the adjustments applied by honey sector wholesalers and retailers to cope with the COVID-19 situation is the application of infection protective measures including social distancing and protective equipment of gloves, face masks, hand sanitizer and avoiding physical contact. These adjustments would result in better contagion safety in markets with increased awareness amongst individuals.

Suggested MSME support includes providing specialized training courses for MSMEs on developing business continuity plans during COVID-19. There are plenty of newly developed courses in supporting MSMEs during COVID-19, which aim to help them assess the level of risk and vulnerability of their businesses and help them develop effective risk and contingency plans.

The quality of training provided to new beekeepers “in normal times” is not good and the course length is too short. According to interviews with beekeepers and brief context analysis, the duration of training courses should be 3 to 6 months in order to provide the trainees with required skills, experience and knowledge to properly run their projects effectively.

Many MSMEs were facing a struggle with access to financial support already before the pandemic. During the current crisis, it has become even harder to access such support from MFIs and other agencies, and this is expected to worsen in a scenario of increased COVID-19 severity.

Livelihoods

For small retailers and small business owners, the Yemeni honey sector seemed to be creating new employment opportunities and potential support to the Yemeni economy; but, there are new fears and ongoing discussions over the expected effect of COVID-19 measures on the volume of employment of the Yemeni honey market. According to interviewed beekeepers, retailers and wholesalers, there is a significant percentage of actors in the value chain who are no longer working in this field. Beekeeping requires buying

supplies and medicines to maintain bees, and since revenue is not covering the increased expenses, they are closing their small businesses.

If there are extensive lockdown measures imposed, commercial deals and transitions in the honey value chain will substantially decrease, and more than half of the workforce could be laid-off, temporarily suspended from work or have their work hours reduced.

There is no steady source of income in the honey value chain, especially for small retailers and beekeepers. The honey harvest is seasonal, as well as wages for seasonal labor in beekeeping. The wages rate has not been changed by the pandemic. However, a likely potential scenario is that employers have to reduce their workforce as a coping mechanism to address their profit loss challenges. Vulnerable workers would have no option but to accept this, or a reduction in their wages, especially as they are witnessing current lay-off and suspension of employees in other sectors due to COVID-19. Honey retailers are hiring people with low educational attainment and offer very low wages.

Unlike big supermarkets and malls in main cities, which have changed their daily working hours due to COVID-19 restriction measures applied by the government, honey retailers and shops did not have to reduce their working hours, and they have applied the routine protective measures of using personal protective equipment by staff and avoiding physical contact between customers and sellers. Employment in export business has not been significantly affected in spite of plummeting exports since this kind of business is generally run by the owners themselves with no hired staff.

It is important to bear in mind that any intervention to support groups most affected by COVID-19 must consider gender equality in order to be effective. COVID-19 is an extra burden for women and forces female beekeepers to sell to retailers at a low price.

Some recommendations on how to facilitate for MSMEs to respond to and ultimately recover from the COVID-19 crisis are given in the table below. The recommendations are framed based on macro, meso and micro level perspectives.

Honey Sector Recommendations	
Macro Level Outlook: Recommended government policies, relaxations and enforcement measures. Also, the role of private sector to support the macro level outlook	<ul style="list-style-type: none"> • Support the establishment of a Yemeni honey association or union and provide required structural, administrative and financial support for the association to operate and systematically improve the honey sector to reach online and international markets • Provide transportation alternatives for honey distribution to international markets • Provide incentives to honey sector investments and applications such as tax and customs incentives, licenses, subsidies and relaxed regulations
Meso Level Analysis: Recommended continuity measures to be taken to mitigate the impact, including the need for finance	<ul style="list-style-type: none"> • Reconsider the standards of implementing business support and development projects through UN agencies and local partners in the honey and beekeeping sector • Enable business support services and train MSMEs on risk and contingency plans for business continuity in the face of a protracted COVID–19 crisis • Encourage MFIs and banks to contribute in provision of necessary loans for all actors of the Yemeni honey value chain; • Provide insurance services for honey value chain actors in order to be able to cope with crises similar to COVID–19 • Consolidate and coordinate efforts to support interventions in the Yemeni honey sector
Micro Level: Recommendations related to preparedness and plans to contain the impact of COVID–19	<ul style="list-style-type: none"> • Learn about online and international marketing and trade to overcome losses caused by market closure and decrease in demand • Promote commonly used social media outlets, like, WhatsApp and Facebook as platforms for selling products • Establish a network of online contacts with customers for future procurement of medical supplies

REFERENCES

1. World Bank, Analysis of Fish, Honey, Coffee, Wheat and Qat value chain in Yemen (2009). Available at: <http://www.value-chains.org/dyn/bds/docs/769/yemenvaluechainsstudy.pdf>
2. Ghramh, H. A., Khan, K. A., & Alshehri, A. (2019). Antibacterial potential of some Saudi honeys from Asir region against selected pathogenic bacteria. *Saudi journal of biological sciences*, 26(6), 1278–1284. Available at: <https://doi.org/10.1016/j.sjbs.2018.05.011>
3. Yemen Authority for Specifications and Methodological Quality Control, Honey Standardisation (2019).
4. USAID, Preserving Quality of Yemeni Honey – Study funded by USAID and implemented through CLP project.
5. Ministry of Agriculture and Irrigation – Yemen, The Agricultural Census (2018).
6. IFAD, Economic Opportunities Programme (2013). Available at: <https://operations.ifad.org/documents/654016/d29a7149-31d6-40f8-8261-9d4310061721>

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