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Assessment of Honey and Beeswax Production with Market Opportunities and Challenges in Ethiopia

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Abstract
This assessment was attempted to look honey and beeswax production with market opportunities and constraints in Ethiopia**.** Ethiopia has a huge honey and beeswax production potential. Beekeeping in Ethiopia is a long-standing agricultural practice. It has been exercised as a sideline activity by many of the rural farming communities for its honey and beeswax production that contributes to income generation. According to this assessment the major constraints of honey and beeswax production and marketing in Ethiopia are: no legal framework of honey and beeswax marketing, low quality and quantity of production, adulteration, absence of accredited laboratories within the country for residue testing which is affecting companies engaged in export market, disorganized supply chain, absence of labeling and packaging services, very limited access to medium to long term credit services, inadequate knowledge and expertise on the part of the beekeepers, destruction of forest reserves, modern beekeeping equipment is expensive and difficult to obtain, lack of effective apiculture extension services, limited research for development, no appropriate honey collecting centers with appropriate processing and packaging equipment, lack of mandatory quality assurance system, poor transportation system for products from production points through processing units to the market, lack of adequate market information, limited promotional activities for bee products in both the local and export markets, market assessment for both local and export market dynamics have not been given attention and prevalence of cross boarder traders affecting national export performance of the country.
Keywords: Honey and beeswax potential, market opportunity, marketing constraints, honey and beeswax export
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1. INTRODUCTION

1.1. Background of Study

It is estimated that one in ten rural households in total about 1.8 million people in Ethiopia keeps bees and apiculture makes a substantial contribution to rural nutrition, food security and incomes (Desalegn Begna, 2014 and 2015, Paulos Desalegn, 2012). Further, apiculture related activities like honey and beeswax collection, transport, trade and processing crude honey to local beverage called *Tej,* is an important part of creating jobs to the people.

According to CSA (2019/2020), there are about 6.98 million of beehives in Ethiopia of which 6.70 (96%), 0.10(1.47%) and 0.18(2.62%) millions of are traditional, intermediate and modern beehives respectively. The total amount of honey produced was 48,711.89 tons of honey out of which 44,280.4, 927.64 and 3,503.89 tons of honey was produced from traditional, intermediate and frame beehives respectively. Traditional beehives beekeeping account for more than 95.89 % and have an average harvest of 7kg of honey per colony per year.

About 70-85% of Ethiopian honey is sold in crude form (honey and wax comb together) to *tej* producers, traders, retailers and local consumers (Hartman 2004, Paulos D., 2012 and Gemechis, 2014 and PCI, 2014). Moreover, evidences indicate that the amount of honey exported is comparatively low and less than 1% of the total produced (SNV, 2005; Beyene and David, 2007; CSA, 2012).

In Ethiopia, honey and beeswax is becoming one of the major livestock export products this day. To this fact from 2014 to 2018, about 2318.4 tons of honey exported and generated 7.59 million USD and 248.67 tons of beeswax exported and generated 2.12 million USD in 2018 (Custom and revenue authority, 2018). Generally, it only less than 2% of what is produced is exported. Apart from existing high production potentials, Ethiopia has a great chance of producing natural and organic bee products that command high world market price to greatly benefit producers and the nation. Thus, the huge opportunity of these two commodities attracted the eyes of investors to involve in the practices of collecting, processing and exporting to the world market.

1.2. Statement of a problem

Ethiopia has a high potential for beekeeping as the climate is favorable for growing different vegetation and crops, which are good source of nectar and pollen for honeybees. It is endowed with botanically diversified honey forage plant species which supply huge food to the honeybees. According to reported estimates, Ethiopia, with over 10 million honeybee colonies, out of which about 5 to 7.5 million are estimated to be hived while the remain exists in the wild has large production potential (MOARD,2007).

Ethiopia is a country with the highest honeybee population in Africa and a honey production estimated at 50,000 metric ton per annum, which constituted about 11% of the country's production protentional. It is the 4th largest producer of beeswax and the 10th largest honey producer in the word. The country produces around 23.6% and 2.1 of the total Africa and world's honey, respectively (FAO, 2014).

However, the currently prevailing bee product production is fragmented and marketing system is completely lacks legal frame work. This has open great chance for many illegal traders to involve in bee products collection, transportation and trading systems. This in turn has resulted in to unwanted price rise, quality deterioration due to adulteration and poor handling, loss of consumers' confidence over the products (both locally and internationally). Therefore, this assessment work was done with the following due objective to suggest policy makers and stockholders to improve current bee products production and marketing system.

1.3. Objectives General objective

To assess honey and beeswax production with market opportunities and challenges in Ethiopia

1.3.2. Specific objectives

1) To identify honey and beeswax production in Ethiopia
2) To identify existing honey and beeswax marketing systems, opportunity and challenges with market actors;

1.4. Study areas

Four potential honey and beeswax production regional states of the country were selected to make situational assessment to gather important information that helps to draw conclusion and recommendation. The study area covered Tigray, Amhara, Oromia and SNNP regions. Furthermore, relevant national organizations, sectorial association, research centres and NGOs were included in the assessment. At regional and zonal level, Regional Bureau of livestock and fishery resource development; bureaus of trade and industries, bureaus of cooperatives development (agricultural marketing division) beekeeping unions/federations, primary cooperatives, traders (local honey wineries, processors, collectors, etc.) were included as key informants.

1.5 Significance of the Study

This study may contribute the following significance towards different stakeholders.

- It enables producers, suppliers, processors and exporters of honey and beeswax, the potential, marketing opportunity and constraints in order to take mitigation measures and enhance competitiveness.
- The study used as an input for policy makers in the apiculture sector especially for Ministry of Agriculture, Ministry of Trade and Regional Integration, Livestock Development and Research Institute in the development long term policies and strategies which ensure continue and sustainable production and export earnings.
- The result also used for international donors and other stakeholders working in apicultural development as an intervention area for their developmental support.
- The study provides information for honey and beeswax exporters currently under construction and those want to join in the future.
- Finally, this study result might also initiate other researchers to conduct different research works from different perspectives, which may contribute for strengthening of the value-chain of honey and beeswax.

2. Review of Related Literature

2.1. Production of Honey and Beeswax in Ethiopia

Flora resources base for large honey production. The number honey of bee colonies is also believed to be large. The direct benefit of honey includes generated from the production of bee products, which include the conventional products of honey and beeswax the high value products including propolis, royal jelly, pollen, venom (Addis Ababa University, 2016).

Ethiopia has high potential for beekeeping as the climate is favorable for growing different vegetation and crops, which are a good source of nectar and pollen for honeybees. It is endowed with botanically diversified honey forage plant species which supply hampel food to the honeybees. According to reported estimates, Ethiopia, with over 10 million honeybee colonies, out of which about 5 to 7.5 million are estimated to be hived while the remain exists in the wild has large production potential (MOARD,2007).

Ethiopia is a country with the highest honeybee population in Africa and a honey production estimated at 50,000 metric ton per annum, which constituted about 11% of the country's production protentional. It is the 4th largest producer of beeswax and the 10th largest honey producer in the word. The country produces around 23.6% and 2.1 of the total Africa and world's honey, respectively (FAO, 2014).

Therefore, efforts should also be geared to reduce the main constraints that hindered beekeeping development has been exercised as a sideline activity by many of the rural farming communities for its honey and beeswax production that contributes to income generation. Even though, it is one of the important and oldest

farming activities in the country, there are no civil able records, which confirm when and where beekeeping was first started. However, hieroglyphs of ancient Egypt refer to Abyssinia (ancient home Ethiopia), as source of honey and bees wax and Abyssinia has been for its bee's wax exported to Egypt for country when other items were not exported.12 It is assumed that keeping of bees in baskets may have started about 5000years ago and no countries in the world may have to ancient beekeeping as Ethiopia.2–13 Moreover, the oldest basket hive in the international bee museum is from Ethiopia. Currently there are an estimated ten million bee colonies are found in the country, out of which about 7.5million are confined in hives and the remaining exist in the forest and wild (Sahle H, Enbiyale G, Negash A, et al, 2018).

There are four different types of beekeeping practices in Ethiopia namely, traditional forest, traditional backyard, transitional and improved or modern beekeeping. Beekeeping is a very long-standing practice in the farming communities of the Tigray region and it plays a significant role as source of additional cash income and nutrition for many subsistence farmers. The major constraints that affect beekeeping sub-sector in Ethiopia are: lack of beekeeping knowledge, shortage of skills man power, shortage of bee equipment, pests and predators, pesticide threat, poor infrastructure development, shortage of bee forage and lack of research extension.

3. Research Methodology

The study has relied on both primary and secondary data, which involved both desk and field studies. After Structure checklists that enable to probe all required information at each level were developed, field trip was made to collect primary data from four potential beekeeping regional states; namely Oromia, Amhara, SNNPR and Tigray. In addition, tangential information raised by the respondents was also considered when deemed considerable.

The secondary data sources include both qualitative and quantitative data from diverse sources. These from Holeta Bee Research centre (HBRC), Central Statistical Agency (CSA), Ethiopian Revenue and Customs Authority (ERCA), Ethiopian Meat and Dairy Industry Development Institute (EMDDI) and Ethiopian Apiculture Board (EAB), Ethiopian Honey and Beeswax Producers and Exporters Association (EHBPEA) and The Netherlands Development Organization (SNV). The study employed multiple analytical approaches including both quantitative and qualitative approaches.

4. Result and Discussion

4.1. Honey production in Ethiopia

A total of 212.5 million Ethiopian Birr is estimated to be obtained from the sale of honey from 2011/12 to 2014/15 (Customs Authority, 2016). According to CSA (2019/20), total production of honey was 129,301,078 kg/ year (table 1).

Table 1: Number of total hives and production of honey in Ethiopia (CSA, 2019/2020)

Sn	Types Beehives	Number beehives	%	Production/kg
1	Traditional Beehives	6,699,219	95.89	124,791,328
2	Intermediate Beehives	102,957	1.47	920,058
3	Modern Beehives	183,924	2.63	3,589,692
	Total	**6,986,100**	**100**	**129,301,078**

Source: (CSA, 2019/2020)

Table 1 above revealed that there is a total of about 6.99 million hives is estimated to be found in the country. From this total hives, the greater part (95.89 percent) is reported to be traditional beehives which were adapted backyard beekeeping styles. The total amounts of honey produced from those beehives were 129.3 million kg. From this 124.79 million kg or 96.5 % of honey was produced from traditional beehives.

4.2. Honey export in Ethiopia

Ethiopian honey is considered to be organic as the bee forage are forests and plants grown without the use of chemicals. This would mean that chemical residue would be small in the Ethiopia honey, which is one of the quality criteria for a good table honey. Currently there are 31 companies which process honey and out of these some of them do produce beeswax.

Honey from the country in general looks traded locally and exports into the major countries have been low. Despite its huge quantity of honey production, Ethiopia exports a small amount to the international market. In Ethiopia, about 10% of the honey produced is consumed by beekeeping households and the remaining 90% sold for income generation (MoARD 2009). The same source indicates that form 90% provided for sell, about 70% is goes to tej brewing and the remaining is consumed as table honey. The share export of honey from total production of the country is low as it can been sees below. The 5-years honey export trend of the country is indicated in table 2.

Table 2: Ethiopia's Export of honey and lists of importing countries

Countries	2014		2015		2016		2017		2018	
	Export (Ton)	USD (000)	Export (Ton)	USD (000)	Export (Ton)	USD (000)	Export (Ton)	USD (000)	Export (Ton)	USD (000)
Norway	299.34	1065.84	184.4	623.15	120.15	400	59.82	220	82.8	290
Sudan	258	809.73	194.27	629.85	82.54	250	75.365	211	21.2	60
Somalia	35.44	42.53	40.78	49.13	66.32	80	67.41	79	4.6	10
Sweden	0.5	5.21	0	0	0.7	0	0	0	0	0
Japan	1	10.84	44.44	169.82	4.1	40	3.77	33	0.68	10
France	0	0	0	0	62.74	250	0	0	0	0
UK	36.42	130.64	21.48	86.73	73.08	280	22.38	80	20.89	80
Djibouti	0.06	0.34	0.5	2	0.21	0		0	0.56	10
Saudi Arabia	8.35	38.32	2.88	12.81	3.19	10	0.3	0.1	0	0
Iraq	0	0	0	0	7.5	20	0	0	0	0
Germany	20.88	70.99	107.06	398.74	20.96	60	82.55	286	0	0
USA	1.67	5.54	21.89	89.04	0.93	10	0.32	3	0.73	10
Qatar	0.1	0.41	0	0	0.05	1	0	0	0	0
Australia	0.09	0.28	0	0	0	0	0.47	0.01	0.35	0
Israel	0.95	4.18	1.99	0	0	0	1.02	20	1	0
Yemen	55.67	202.94	37.39	125.91	1.64	10	3	8	1.25	0
Italy	20.88	73.08	21.38	81.11	0	0	0	0	0	0
Belgium	0	0	0	0	0	0	0	0	0.28	0.1
Kuwait	0	0	0.5	2	0	0	0	0	0	0
UAE	0.02	0.08	0.21	0.85	0	0	0	0	0	0
Malaysia	0.2	0.8	0	0	0	0	0	0	0	0
China	0	0	2	22	0	0	0	0	0	0
Oman	2	11.9	0	0	0	0	0	0	0	0
Bahrain	0.73	2.91	0	0	0	0	0	0	0	0
Malta	0.05	0.1	0	0	0	0	0	0	0	0
Total	**742.35**	**2476.66**	**681.17**	**2293.14**	**444.11**	**1411**	**316.4**	**940.11**	**134.34**	**470.1**

Source: Ethiopian customs Authority (2018)

4.3. Beeswax production and export in Ethiopia

Beeswax is a valuable beehive product obtained from honeybees largely collected from traditional beehives. Like honey, beeswax is also a multipurpose natural bee product, which is used in the manufacture of more than 300 commodities. In Ethiopia, beeswax is mostly left or thrown away because beekeepers do not bother to collect it since it is of little practical value for beekeepers and the people do not know it is generating attractive money. However, beeswax supports the national economy through foreign exchange earnings and presently, beeswax is one of the major exportable agricultural products of the country. The bulk of the beeswax supply is obtained as residual from "Tej" production (SNV, 2006). Tej brewers sell crude beeswax either to beeswax collectors or directly to beeswax processors, which may process and export the beeswax.

Ethiopia is the 5th biggest wax exporters to the world market (Asefa Abebe, 2009) and is the third largest beeswax exporter in Africa (Nuru, 2002). Currently, the country produce about 5400 tons of beeswax per year and this annual production estimation is without considering beeswax wasted in the remote areas. Beeswax production and selling was good business as beeswax candles (*Tauf*) that still consumes considerable amounts of (25% of the total produced) (SNV, 2006). In addition, beeswax is highly required for the frame beehives expansions to make foundation sheet and remains expensive these days.

Although the trend of beeswax export of Ethiopia fluctuates over the years. Germany is the biggest importer of Ethiopian beeswax followed by the United State and Japan (Table 3).

Table 3: Exported beeswax quantities by export years and importing countries

Countries	2014		2015		2016		2017		2018	
	Export (Ton)	**USD (000)**	**Export Ton**	**USD (000)**	**Export Ton**	**USD (000)**	**Export Ton**	**USD (000)**	**Export Ton**	**USD (000)**
Japan	59	488.65	121	1042.8	70	0.61	53	473	23	200
Germany	161.5	1339.7	262.02	2542.46	122.34	1.1	174	1448	120.65	1040
UK	25.7	200.38	32	285.24	12	0.1	106	900		0
USA	70.5	556.9	105.36	885	88	0.78		0	70.02	580
Belgium	0	0	0	0	10	0.1	0.6	10		0
Denmark	0	0	0	0	0	0	13.1	100		0
Italy	0	0	0	0	0	0	12	110		0
Netherlands	18	135	0	0	0	0	0	0	0	0
China	0	0	0	0	0	0	0	0	35	300
Total	**334.7**	**2720.63**	**520.38**	**4755.5**	**302.34**	**2.69**	**358.7**	**3041**	**248.67**	**2120**

Source: Ethiopian Customs Authority (2018)

4.4. Key actors of honey and beeswax production and marketing in Ethiopia

Primary Players (Main Actors)

Primary actors are those actors who are playing primary functions of the supply (value) chain in the honey and beeswax production and marketing process. These are:

- Beekeepers (comprising households and commercial producers) who produce honey;
- Producer groups, cooperatives, unions and cooperative federation;
- Collectors, traders/suppliers who buy from beekeepers and provide informal market linkages to local users, district, regional markets and some processing companies;
- Honey and wax processors and exporters (who are mainly concentrated in key urban centers);
- Tej brewers in local and regional market centers;
- Retailers who comprise shop-keeper traders in local town centers and supermarkets (which are mostly found in large towns);
- Consumers (local and international market users)

The functions of these key actors and their transactional inter-relationships which are also depicted in the honey flow mapping are described as below.

Beekeepers

Majority of the bee product producer beekeepers in Ethiopia are traditional smallholders with very small number of bee colonies. Their key functions are to produce, harvest, and transport and sell the bee products they have produced. The majority of beekeepers sell crude honey (consisting of honey, wax, and dead bees) and only in few instances, some beekeepers undertake some form of intermediate level processing which is no more than separation of wax from crude honey. Beekeepers sell their honey products through the following marketing channels:

1) Beekeepers sell crude honey to collectors, traders /supplier who are either performing only the role of collecting, or agents of traders.
2) Beekeepers sell crude honey to wholesalers who sell honey to different market actors at local market or transport it to other market centers
3) Beekeepers sell honey to Tej brewers;
4) Beekeepers sell processed honey at the local market centers to local and transit consumers.

Honey Collectors

Honey collectors operate honey either at farm gate or in local market. The door to door collection (farm gate) benefits them by enabling to purchase as much money as possible at a low price. There are many, seasonal and regular honey collectors who operate at local markets. Some beekeeper farmers also participate during the honey flow season in collecting honey and sell it at regional or central markets.

Honey and beeswax traders

After collecting from the beekeepers or collectors of honey/beeswax, traders retail the honey to Tej brewers, consumers or transport it to major market centers. Some of these traders transport honey to Addis Ababa are constrained by capital shortage.

Retailers

Actors at this level comprise some of the integrated suppliers who sell honey to local consumers, supermarkets especially in Addis Ababa that are retailing both honey and beeswax products. Small shops in rural and urban centers retails partially processed honey and beeswax to satisfy local demands. The number of honey retailers increases during peak honey flow season.

Tej Brewers

There are so many Tej brewers involved in Tej brewing during high honey season and gradual withdrew as the honey supply decline, leaving the business for those brewers with high capital and high client. In addition to Tej, these actors produce a significant amount of crude wax, though the quantity from each of them is often small. These actors normally sell such crude wax to suppliers and collectors; though there is a possibility that a few large brewers may be selling to beeswax processors directly.

Processors

Basing on technological differences, honey processing in Ethiopia can be categorized at two main levels. Firstly, small and semi-processing, this is no more than separation of wax from honey. Most processors of Ethiopian honey belong to this category. Small traders being licensed to retail honey and butter in the same shop in some of the local market centers also perform this role.

Secondly, higher level processing of honey to produce packed table honey and pure beeswax. The beeswax produced in such way can be either used locally for candles/*tuaf* making, making embossed foundation sheet which is an input for frame beehive and meant to export. Currently, Beza Mar, Tutu, Apinec, Yerkisho companies and Zembaba union claims to be the honey processors with standard processing equipment to produce refined table honey and pure beeswax. Some other entrepreneurs, who are the member of the Ethiopian Honey and Beeswax Producers and Exporters Association (EHBPEA), are in a pipe line to embark on the business of honey and beeswax processing with standard processing equipment.

Exporters

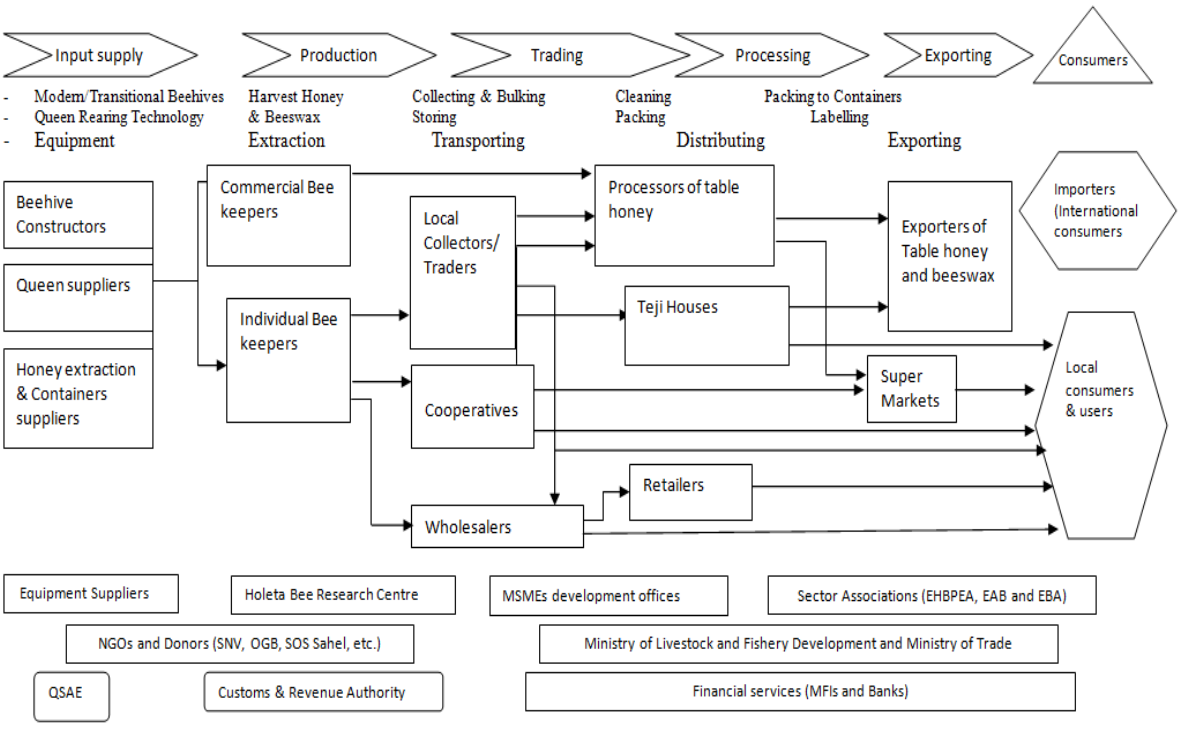
Until recently, honey produced in the country was almost used to satisfy local demand; production of "Tej" alcoholic mead consumed locally. However, since 2008 Ethiopia is listed as EU 3rd country with privileges of exporting honey to Europe. Therefore, the country is exporting honey to different countries and Sudan, Norway, Saud Arabia, Yemen and others are major exporter of Ethiopian honey (Table-). Companies like Beza Mar, Tutu, Apinec are with good records for exporting Ethiopian honey.

In spite of honey, beeswax is one of the traditional agricultural commodities the country is exporting since long time. The country is regarded as the 5th biggest beeswax exporters to the world market.

According to the information from SNV-Ethiopia, there are 16 companies registered as exporters of beeswax in the country. However, most of them are not active. The lack of supply is mentioned as one of the reasons for many of them to remain inactive, not the absence of international markets. The current high local market and super market prices as compared to the export price is also one of the reasons for remaining inactive. Companies listed as honey exporters above are also recognized in exporting beeswax. But the generally trend of both honey and beeswax export during the last five years shows promising tendency (Table- 1 and 2).

In general, the current honey and beeswax flow mapping along the market Chain in the country is depicted in figure 1

Figure 1: Honey and Beeswax Supply (Value) Chain Map in Ethiopia



4.5. Challenges of bee product marketing in Ethiopia

Informal (Illegal) Trading

It has been detected in this assessment that honey and beeswax is illegally smuggled to Sudan, Yemeni and Somali land through different corners of the country. The role of many illegal traders in serving as agent for smugglers is very high. They buy honey at farm get and local town markets and collect at one store for easy access. Then, the smugglers collect crude honey from different depot and taking out through border illegally. As mentioned by different stakeholders during this assessment, illegally crossing bee products to nearby countries significantly affected local supply and also caused irrational price increase. Particularly, legal processing companies of the country who are working targeting export market have been drastically affected through both supply shortage and increased local prices.

Cross Boarder Trading

The country is losing foreign currency that would have been generated if exported through legally exporting companies. For instance, the information obtained from custom and revenue, the amount of honey exported to Sudan through Metema for the last ten years alone is 517.25 tones generating 155,175,000 million ETB with an average price of 300 ETB/kg. However, if this amount would be sold through the formal export market the revenue to be generated could be more than this value.

Fragmented marketing and supply chain

Following the fragmented beekeeping system of the country, bee products market and their supply chain is so fragmented. Including the beekeepers themselves, many actors are involved in bee products marketing. However, there is no formally established supply chain for bee products and sometime honey and beeswax trading is a sideline business. As repeatedly mentioned, most of the honey and beeswax traders in most studied regions are informal and only few are licensed. Most of these informal traders are active only at peak honey production times and leave out during off honey flow periods. In most cases they also run short of capital to do bulk purchasing unless the money is provided to them from wholesalers and/or processing companies.

The unorganized nature of the supply chain has invited informal traders and collectors to involve in the market with no added value. Rather, they made the supply chain very lengthy that in turn has persuaded price rises/unfair price competition. Owing to the fragmented nature of the supply chain, bulky purchasers like processing and exporting companies are always uncertain on the volume and types of bee products they can collect.

Adulteration

In this assessment, honey and beeswax adulteration problem was identified as one of the main marketing challenges. In all of the assessed regions, act of bee products adulteration is very serious. It requires further detail investigation to get detail understanding on where the adulteration starts, what types of adulterants are commonly used and at what rate/proportion. However, based up on this preliminary assessment, there are clues that beekeeper themselves are also involving. Collectors and retailers are also accused for largely involving in the honey and beeswax adulteration work. They buy real products from beekeepers and adulterate with sugar and sell at lower or equal price with that of the farm get or beekeepers.

Lack of minimum testing services

Although, adulterated honey is frequently captured by the experts from local MoA office, testing facilities to support the legal procedure to bring the criminals to justice is a big challenge. All regions lack bee products quality testing facilities and qualified expert where the service can be provided to verify suspected products. Although there are few laboratories (BLESS, EFMHACA, JEJE, HBRC, etc.) with required testing facilities, ECAE is the only national laboratory currently providing this service. However, ECAE is not accredited for this. This created big procedural cracks in bringing criminals to justice and even encouraged them to continue doing so. Sending suspected sample to testing laboratories in Addis Ababa is complicated step and is not feasible due to transportation cost, test result dalliance and very high testing cost.

The communication with regional police commission office (foreign seek department) affirms the fact that suspected samples can't be sent to Addis Ababa to get verification result mainly due to lack of budget for such services. Likewise, the information obtained from regional FMHACA, based in Mekele, affirms facilities and experts are lacking to give support in testing bee products quality. Even it seems there is conflict of interest on the mandate between EFMHACA and MoLF regarding quality assurance and certification of honey and beeswax.

Unavailable of for honey and beeswax marketing legal framework

So far, different efforts have been made to promote honey and beeswax production and market development. The country has apiculture resource development and protection proclamation (Apiculture Resources Development and Protection Proclamation No. 660/2009). This proclamation was detected having drawback for not properly addressing the legal framework of honey and beeswax marketing.

Trade License, Requirements and Legal Enforcement

Although there are specific requirements for licensing of honey and beeswax trade, all informants contacted during the assessment (government, non-governmental organizations, private sector actors, cooperatives and

Unions) have explained that honey and beeswax are traded in a combination or as an additional commodity with other trade products on one market place.

Factors impacting local and international honey and beeswax market

Currently, there is high global demand for natural products like honey and beeswax. Following this high demand, there is huge difference between the supply and the demand sides with overwhelming of the demand side. Generally, price of honey is affected by the place of it is marketed and seasons, which is high in towns and in off-seasons and very low in remote rural areas and during harvest seasons. Further, the colour of the honey also has an impact on its marketing performance in which light-coloured honey, commonly called white honey, commands a higher price and with more demand than other types of honey. The origin of the honey i.e., if the honey is from single plant/mono-floral or multi-flora have an influence on the demand and price of the honey in which mono-floral honey are increasingly requested and appreciated, despite their higher prices. Whether the honey was produced following the procedure of organic production or not and if the marketing style is through fair-trade with sense of promotion can influence the demand and price of a given honey. If not the demand, the price of the honey is also influenced by the extents of local transaction costs and increased production/processing capacity.

The high demands for honey and beeswax have added an incentive for adulteration to be become critical problem to their quality. Above all, lack of contamination testing facilities is a critical problem in assuring the quality of honey and beeswax. The distribution system is a pattern of fragmented distribution channels in the supply chain, which renders traceability a significant challenge.

In addition to limited capacity to trace the products and ensure quality because of the lack of standards that would enable enforcement of ethical business practices, the following factors negatively impacted the international market for honey and beeswax of Ethiopia

a) Relatively very high farm gate price compared to international market which discourage export performance of the country;
b) Low quality (especially due to excessive smoking and adulteration) and quantity production of honey
c) Absence of accredited laboratories within the country for residue testing affects companies engaged in export market,
d) The disorganized supply chain and absence of labelling and packaging services makes the whole value addition process very challenging.
e) Very limited access to medium to long term credit negatively impacts the capacity of producers/processors to upgrade their production/processing capacity by adopting learning from training sessions, acquiring material, obtaining internationally accepted quality certifications, and others.
f) There is a lack of quality packaging materials.

5. SUMMARY

Apiculture development and research works in the country are among the neglected and untouched fields of agriculture. As a result, there are wide ranges of constraints that generally resulted into its low production and productivity. These can be summarized in to constraints of production, processing and marketing aspects as below:

Production

a) Lack of information on the levels and scale of apicultural products; statistics of beehives in Ethiopia, equipment used, annual production figures, number of beekeepers and other stakeholders involved, etc.
b) Lack of funds to enable beekeepers' access affordable and appropriate beekeeping equipment.
c) Inadequate knowledge and expertise on the part of the beekeepers on key issues of management of apiaries and honey harvesting.
d) Destruction of forest reserves in an effort by equipment manufacturers to construct modern beehives and expansion of another sectors investment.
e) The modern beekeeping equipment that permits proper colony management for high yield and propagation of the colony is expensive and difficult to obtain.
f) Inadequate extension services and training materials/guidelines for beekeepers, processors and traders
g) Inadequate appropriate demonstration site
h) Limited extension package
i) Limited research for development and diversification of high productions other than honey.
j) Shortage of bee colonies
k) Genetics and breeding (low productivity, aggressive, frequent absconding and swarming)

Processing and Packaging

a) No appropriate honey collecting centers with appropriate processing and packaging equipment to maintain the quality of products required in the international markets.
b) Lack of mandatory quality assurance system and facilities.

c) High costs coupled with absence of containers and packaging materials in some circumstances discourage processors and exporters from investing in processing and packaging ventures.
d) Poor transportation system for products from production points through processing units to the market tends to compromise the quality of the products.

Marketing

a) Lack of adequate market information on bee products.
b) Limited promotional activities for bee products in both the local and export markets.
c) Market assessment for both local and export market dynamics have not been given attention e.g. distribution channels, packaging requirements, etc.
d) Lack of market linkages and cohesion among and between producers, processors and consumers.
e) Prevalence of cross boarder traders affecting national export performance of the country.

6. Conclusions and Recommendations

6.1. Conclusions

The following conclusions from the information observed during the assessment

1) From this assessment, it can be concluded that the country has enormous potential for beekeeping development and bee products market.
2) There is a variation among regions in the level of adapting improved beekeeping system
3) More than 90% of beekeeping and bee production system are done still in a traditional manner
4) It is understood that bee products ways of harvesting, storage, handling and transporting is also very traditional that significantly compromised the quality of the products
5) Also, this study revealed that bee products marketing in all the regions are so informal and illegal traders are major players.
6) There is no obligatory system to inhibit illegal bee products traders and hence, in so many places illegal traders seasonal emerge following honey flow period and perish at the slack season
7) There is no bee products movement restriction based on quantity among the regional states.
8) Teji houses are major buyer of crude honey and major sources of beeswax.
9) There is no legal quantity and quality custom check set while bee products are traded to nearby country, particularly to Sudan, Yemen, Djibouti and Somali Land. As a result of huge bee products mainly honey is illegally smuggled to Sudan to Yemen, Djibouti, and Somali Land.
10) Honey and beeswax adulteration is identified as one of the threat in bee products marketing in the country.
11) Teji houses were identified as main place where act of beeswax adulteration is extensively practiced and salt and animal talus were the main adulterants identified.

6.2. Rrecommendations

In a view of the above conclusion, to avoid illegal actors from the value chain it is important to draw a recommendation and supply chain channels which is minimizing those illegal actors and encourage legal traders the following recommendations were made.

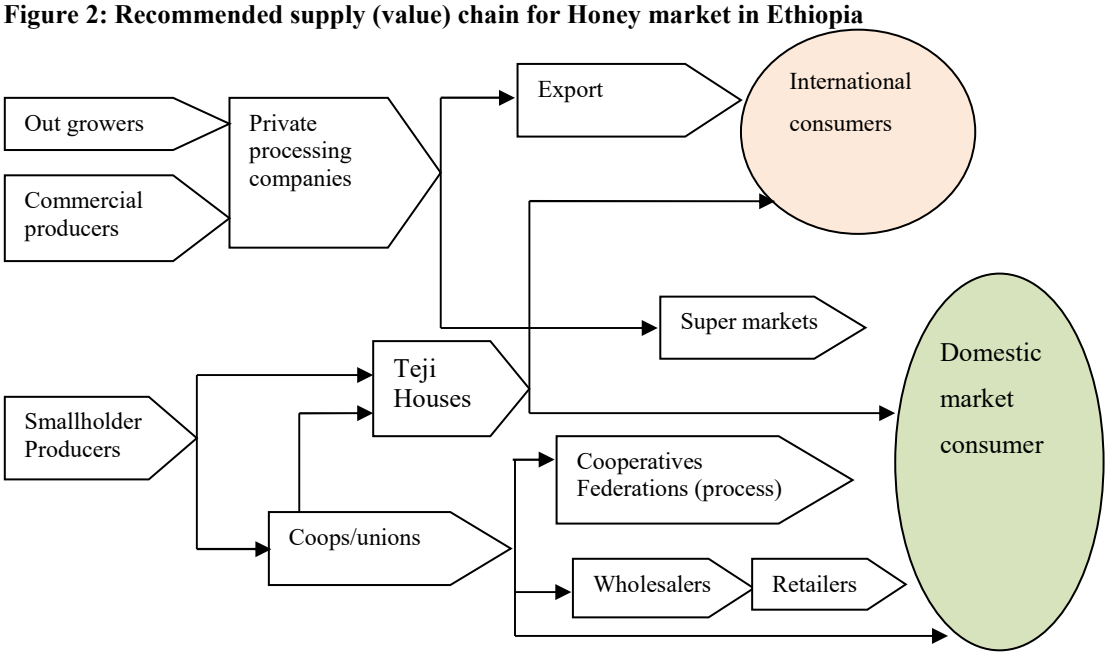
1) Develop legal frame work that favour and promote legal trading while inhibiting and penalizing illegal and/or informal bee products traders.
2) Establish procedure and minimum standards of bee products collection, transportation and storage.
3) Establish procedure of bee products grading and traceability.
4) Establish quality-based pricing mechanisms (create incentives for better quality honey and beeswax production)
5) Establish clear procedures and requirements for licensing of honey and beeswax trade;
6) Enforcing the existing honey, beeswax and beehives standards to make it mandatory (honey, beeswax and beehives)
7) Honey that pass through international airports should be in USD if more than 1kg of honey. Support the establishment airport duty free honey shops.
8) As honey is not the basic need, it should not be included in the lists of border trade items

The following channel also recommended supply chain of honey and beeswax marketing system in Ethiopia.

Honey Recommended Market Channels

- Producer to coops to companies (processors) or directly export or to unions to federation or export directly or to wholesalers or retail to local markets (local consumers)
- Producer groups to coops or companies (processors)
- Out growers to company (processors) to export or local market
- Commercial producers to processing to export or local market
- Producer to coops to teji houses
- Producer to teji houses

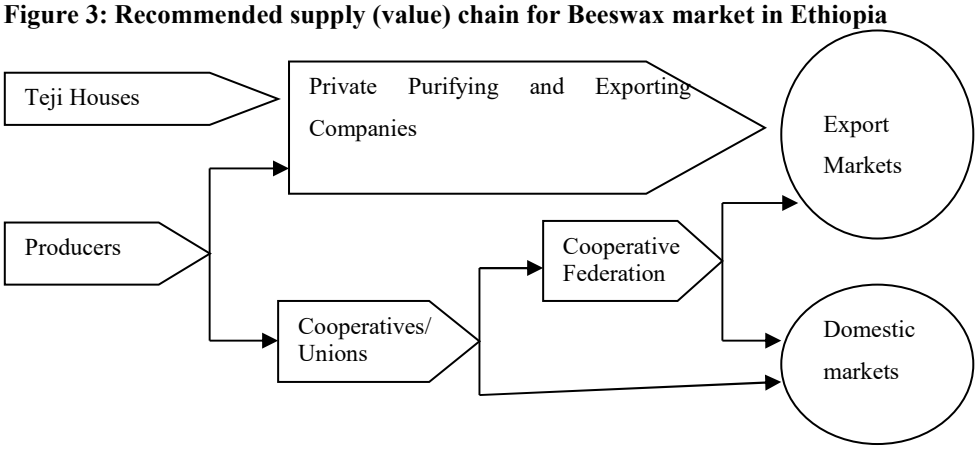
Figure 2: Recommended supply (value) chain for Honey market in Ethiopia



Bees Wax Recommended Market Channels

- Teji houses to companies
- Producer to coops to companies

Figure 3: Recommended supply (value) chain for Beeswax market in Ethiopia



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