

## Investment opportunity in Mekelle, Regional State of Tigray, Ethiopia

### Beekeeping and Honey Processing

#### Executive Summary

Ethiopia is the largest honey-producing country in Africa and one of the top 10 producing countries in the world. It is estimated that the country has the potential to produce 500,000 tons of honey per annum (MORAD, 2008). Current production, however, is less than 10% of its potential.

Tigray is one of the best honey producing regions in the country. The region's agricultural resource base, favorable climate and its botanical resources can support large numbers of bee colonies. Tigray honey is derived almost entirely from wild bees, and no chemicals are used in any part of its production or processing. The region is known for its white honey, which has low moisture content and a distinctive aroma. The compositional content of Tigray honey meets international quality standard. In the domestic market, Tigray honey - because of its superior quality - has on average a higher price than honey produced in other parts of Ethiopia.

Recently, the Regional Government has named beekeeping as one of its priority commodities, targeting both the local and export markets. Improved honey production (including beeswax, Royal Jelly and other honey related products) is a major focus of the food security strategy of the region. As part of this, the Regional Government and Mekelle city administration are committed to attracting potential investors to the sub sector and provide all needed support.

As honey production and processing falls within the Government's investment priorities, investors are exempted from duty payments for imported machines and equipment. Processors targeting at least 50% of the output for export are also exempted from paying income tax for five years.

#### Introduction to Mekelle

Mekelle is the capital of the Tigray region, located at about 780 km from Addis Ababa. The city is one of the fastest growing urban areas in Ethiopia and in the recent years, the city has become an important investment destination.

#### Demography

According the 2007 census, the population of Mekelle was 215,546 of which 51.3 percent were women. The 2013 population, assuming a 5.4 percent growth rate, is projected to reach around 300,000.

**Table 1: Mekelle Population Growth Scenario**

	2007	2008	2009	2010	2011	2012	2013	2014	2015
High growth (6.3%)	215,546	229,562	244,490	260,388	277,321	295,354	314,560	335,015	356,800
Medium growth (5.4%)	215,546	227,505	240,129	253,452	267,515	282,358	298,024	314,560	332,013
Low Growth (4.4%)	215,546	225,242	235,374	245,961	257,025	268,587	280,669	293,294	306,487

**Source:** Millennium Cities Initiative, The Earth Institute, Columbia University (2011) Draft of a comprehensive City Development Strategy based on the Millennium Development Goals (MDG) for Mekelle, Ethiopia.

#### Economy and Infrastructure

Mekelle is becoming an industrial hub of northern Ethiopia. A survey report of the Central

Statistical Agency of Ethiopia (CSA 2011) revealed that the number of large and medium scale manufacturing<sup>1</sup> firms in Ethiopia has increased from 1,243 in 2005/06 to 2,172 in 2009/10. While in Ethiopia, the number of larger firms increased by 74% during the 2005/6 - 2009/10 period, in Tigray it has nearly doubled (increased by 91%) during that period. The private sector in Mekelle is growing faster than the national average. Although Tigray has only 5.84% of Ethiopia's population, it has 9% (199 firms) of larger firms in 2009/10, with the majority based in Mekelle. The business lines of these firms are manufacture of food products and beverages, non-metallic mineral products, fabricated metal products, furniture; motor vehicles, trailers and semi-trailers, rubber and plastic products, and chemicals and chemical products. According to one of the world's largest professional services firms, KPMG, Mekelle is mature for investment.

Mekelle is connected by road and air to other major cities of Ethiopia, and to the ports of neighboring countries via road. It is connected to Addis Ababa and other renowned tourist destinations such as Axum by asphalt road. Mekelle is relatively closer to most seaports of neighboring countries than Addis Ababa and other major cities of Ethiopia. The road distance from the city to the port of Djibouti is about 837 Km which makes it closer than that of Addis Ababa, which is 910 km. Two new asphalt roads from Mekelle to Djibouti are under construction, which could further shorten the distance to 680 Km upon their completion by late 2013.

The city's Alula Aba Nega International Airport currently serves domestic flights. There are 2-3 daily scheduled flights, 7 days a week to Addis Ababa. There is also a daily flight to Axum and Shire Enda Selassie (towns within Tigray).

#### **Growing Higher Learning Institutions and Skilled Personnel**

The existence of Mekelle University, established in 2000, which has an intake capacity of 26,253, Mekelle Institute of Technology, and other public and private higher learning institutions which are producing skilled labor in many fields. In 2010/11, about 34,299 students were enrolled in higher institutions.

#### **Market opportunity**

Ethiopia is the largest honey-producing country in Africa and one of the top 10 producing countries in the world. The position of Ethiopia in global honey production is presented below. In 2010, China was the leading honey producer and Ethiopia was ranked 7<sup>th</sup> (see Table 2).

Commercial beekeeping has increased rapidly over the past few years and many households involved have increased their incomes, thus reducing poverty significantly. In the 5-year Growth and Transformation Plan (GTP), the national Government has put great emphasis on the development of this sector.

**Table 2: Top World Honey Production countries in 2010**

Rank	Country	Production (MT)
1	China	398000
2	Turkey	81115
3	United States of America	79788
4	Ukraine	70900

<sup>1</sup>Manufacturing industries covered in the Large and Medium Scale Manufacturing and Electricity Industries Survey were all enterprises, which engaged ten persons and more and used power-driven machinery.

5	Argentina	59000
6	Mexico	55684
7	Ethiopia	53675
8	Russian Federation	51535
9	Iran (Islamic Republic of)	47000
10	India	39500
11	Brazil	38017
12	United Republic of Tanzania	34100
13	Spain	34000
14	Canada	33710
15	Republic of Korea	28600
16	Kenya	24000
17	Germany	23137
18	Angola	22900
19	Romania	22222
20	Uruguay	19100

Source: FAOSTAT (<http://faostat.fao.org/site/339/default.aspx>)

In Ethiopia, there are about 10 million bee colonies and over 800 identified honey-source plants (Kebede et.al. 2011). Out of the total colonies, about 5 million are hived (see Table 3). It is estimated that the country has a potential to produce 500,000 tons of honey per annum (Ministry of Agriculture and Rural Development, MORAD, 2008). The recent production, however, is only 53,675 tons of honey. This shows that the country is producing less than 10% of its potential.

The number of hives and quantity of honey produced in Ethiopia and Tigray are presented below. The numbers of hives reported in Table 3 are only those which produced honey at least once during the reference period.

**Table 3: Number of Hives and Honey Production in Ethiopia and Tigray**

Year	Ethiopia		Tigray	
	BEEHIVE ('000)	Honey Production (tons)	BEEHIVE ('000)	Honey Production (tons)
1996/97	3358	13,569	145	774
1997/98	3181	12,075	163	802
1998/99	3389	13,073	171	909
1999/00	3220	11,165	148	840
2000/01	3309	11,940	165	892
2001/02	4602	17,098	228	1,438
2002/03	4289	18,075	209	1,468
2003/04	4229	25,186	175	1,376
2004/05	4546	30,382	205	1,659
2005/06	4,013	41,579	182	1,737
2006/07	4,871	51,174	184	2,044
2007/08	4,688	n.a	243	n.a
2008/09	5,146	42,180	256	n.a
2009/10	4,598	41,525	196	3,203
2010/11	5,130	53,675	213	2,768
<b>Average Growth Rate</b>	<b>3.9</b>	<b>12.97</b>	<b>4.2</b>	<b>13.2</b>

Source: CSA various reports

As shown in the above table, the annual growth rate of the number of beehives was 3.9% during 1996-2011 and approximately 13% for honey production during the same period. Similarly, both the number of hives and honey production in Tigray has shown steady

growth in the last 16 years. On average, the regional growth rates of beehives and honey production for the period under consideration were 4.2% and 13.2%, respectively.

The largest volume of honey is collected from traditional hives. Many reports indicated that traditional hives contribute 95–99 percent to the total national honey product. As can be seen from the Table 4, out of the total number of hives in 2010/11, traditional hives constituted 96.4% and 78.1 % for the national and regional level respectively. On the other hand, traditional hives contributed about 95% and 61.7% to the total honey production of the country and the region. This shows that the share of modern hives-- both in number and contribution to the total honey production--is relatively higher in Tigray than at the national level.

**Table 4: Beehive Inventory and Production of Honey by Type 2010/11**

Honey Production	Geographic Area	
	Ethiopia	Tigray
All Types of Beehives (Number)	5,130,322	213,133
Production (tons)	53,675	2,768
Traditional Beehives (Number)	4,944,380	166,504
Production (tons)	51,023	1,707
Average Frequency (Harvests/Year)	1.55	1.46
Intermediate Beehives (Number)	41,684	3,081
Production (tons)	3875	67.8
Average Frequency (Harvests/Year)	1.65	1.47
Modern Beehives (Number)	144,258	43,548
Production (tons)	2,264.6	993.3
Average Frequency (Harvests/Year)	1.52	1.47

Source: CSA 2011

The CSA data also shows that the average yield of a traditional beehive in one harvest season, for the year 2010/11, was 6.7 kg for the nation and 7 Kg for Tigray. On the other hand, the yield of a modern hive per season amounted to 10.3 Kg and 15.5 Kg for Ethiopia and Tigray<sup>2</sup> respectively.

Recently the Ethiopian Government has named beekeeping/honey production as one of the priority commodities, targeting both the local and export markets. It envisages the following interventions under the ongoing Growth and Transformation Plan (GTP) (Gezahegne, 2012).

- Increasing number of frame hives and own constructed intermediate hives by over 83,000 and 70,000 respectively by 2014/15
- Increasing number of traditional hives by over 734,000
- Increasing annual honey and beeswax production by 18.2% and 20% respectively. Target of honey: 103,000 tons by 2014/15; beeswax: 11,000 tons by 2014/15
- Production of queen bees (simple methods) by an average of 33% increase per annum (BM: 7,500 yr 2010)

<sup>2</sup>The regional government document, however, indicated that performance of the sub-sector in the region is much higher than what is shown in Table 4. For example, the productivity of honey per traditional and modern hive in 2009 was reported as high as 23 and 47 kg. The total number of modern hive and annual honey production of the region for the same year were also reported as 122,052 and 4,264 Kg. (Bureau of Planning and Finance, Five Years Regional GTP, 2010).

- Generation of sector legal frame works (Regulations & guidelines);
- Introduction of Certification: Organic, Fair-trade, HACCP, etc;
- Yearly update of RMP (*Residue Monitoring Plan*) to retain the country to EU's Third Country Listing to export honey to EU market;

### Quality Issues

A study report by the HBRC cited in Ayalew (2008) showed that the compositional content of Ethiopian honey falls in the range of good quality compared to world standards set for determining the quality of honey. The result of the study is reported below.

**Table 5: Comparison of Ethiopian and World Honey Standards**

Parameters	Ethiopian Honey Mean test Results	Ethiopian Standards	World honey Standards
Moisture content % by mass	20.6	17.5-21	18-23
Mineral content % by mass	0.23	<0.6	0.25-1.0
Total reducing sugars % by mass	65.6	>65	60-70
Sucrose % by mass	3.6	<5	<10
Acidity melli. equiv. mg/kg	39.9	<40	<50
Hydroxy methyl furfural mg/kg	32.4	<40	<80
Total Enzymes	?	?	3GS

Source: HBRC as in Ayalew 2008

### Tigray Honey

Tigray honey is derived almost entirely from wild bees, and no chemicals are used in any part of its production or processing. The region is known for its white honey, produced from pollen of white flowers, which has low moisture content and a distinctive aroma. Specifically, a honey made from flowers of the *tebeb* plant is extra white and has medicinal value [Ethiopian Honey and Beeswax Producers and Exporters Association (EHBPEA) <http://ehbpea.com/index.php>].

A physiochemical properties study conducted on samples from different areas of Tigray by Kebede et.al. (2011) shows that the Tigray honey has the desirable qualities.

**Table 6: Major Quality Indicator Parameters of Tigray Honey**

No.	Place and type of honey samples	pH	Electrical Conductivity (μS/cm)	Moisture content	Total ash (g ash/100g honey)
1	Atsbi, white	4.088	25.50	18.60	0.169
2	Hawzene, white	3.820	8.270	18.60	0.078
3	AbiyAdi, yellow	4.450	33.50	18.80	0.152
4	Adigrat, white	3.952	24.40	18.60	0.111
5	Hageresalam, white	3.855	15.50	18.80	0.078

Source: Kebede et.al (2011)

- As shown in Table 6, none of the samples exceeded 19% of the moisture content. It ranged from 18.6 to 18.8%, which show optimum harvesting and proper degree of maturity.
- The levels of metals are in general less than the minimum allowable limit by different organizations. Therefore, Tigray honey can thus be stored for a relatively longer period.

- All honeys analyzed in this work had ash content less than 0.6%, indicating that they were more likely to be floral than honeydew origin.

The above table suggests that Tigray honey fully meets the world honey quality standard requirements. It is reported that:

“... [T]he very distinctive white honey [of Tigray] is made from a local blossom of the sage plant family, known as labiate, which gives it its unusual color. The white honey of Tigray is the most praised in the country and is considered a delicacy.”

[<http://www.awib.org.et/index.php/currency/latest-news/188-honey-ethiopias-liquid-gold>]

As a result, on the local market, Tigray honey has on average a higher price than honey originating from other parts of Ethiopia - by approximately 20-40% - due to its higher quality and a good reputation.

A study carried out by the Holeta Bee Research Center (HBRC) based on sample honeys collected from the southwestern parts of the country found that the amount of pure honey obtained from processing is 73.15%. Mean pure honey from a unit of crude honey examined from Tigray and neighboring zones of the Amhara region is likely to be higher (Ayalew, 2008). This could justify establishing apiculture and honey-processing plants in the region.

#### ***The Local and Global Honey Demand***

Honey is widely consumed in Ethiopia. It is used in cooking but also to produce *Tej* (a fermented, low-alcoholic honey mead beverage). Honey is also considered as medicine to cure some ailments.

According to an agricultural sample survey report of the CSA (2011), of the total honey produced in the country during the 2010/11 period (2003 E.C.), about 36.39 percent was used for own consumption, about 61% was sold for cash, and less than 1% of the honey production was used as payment (wage). For the Tigray Region, the report estimated that nearly 36.39 % of the honey produced was used as household consumption while 65.97 per cent was used for sale.

Of the total marketable honey at the country level, about 80% is used for production of *Tej* and around 20% for table honey [Ministry of Agriculture and Rural Development, MoARD, (2010); Oxfam GB, (2011)]. According to MoARD (2010), this situation accounts for the higher price that honey commands in the domestic market and is also one of the causes for limited honey export to the world market.

Domestic consumption of honey is expected to rise. According to CSA (2004), the total honey demand will be about 54,191 tons by 2015.

Globally, there is large and growing demand for honey and other bee products. Since 2006, world honey supplies have decreased, mainly due to the growing incidence of colony collapse disorder (CCD) in Europe, the USA, and South America. There is a large unmet demand for organic honey in European countries and, according to the International Trade Centre; East Africa has good potential for organic beekeeping (Oxfam GB, 2011).

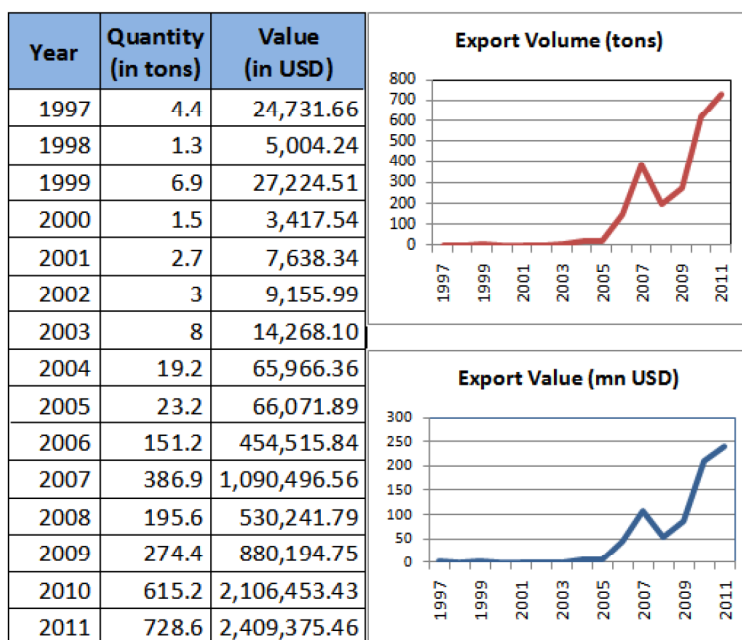
#### **Export**

As shown in Table 7, the volume of Ethiopia honey exported was negligible until 2005. A

leap in export volume has been observed since 2006. Ethiopia's honey export was limited to countries such as Sudan, Djibouti Saudi Arabia, Kuwait, United Arab Emirates, Iran, and Yemen.

Since 2008, Ethiopia is one of only six African countries eligible to export honey to the European Union market; the others being Uganda, Tanzania, Zambia, Cameroon and Ghana(ApiExpo Africa 2012, <http://www.apitradeafrica.org>) As a result of this permit, Ethiopia has begun to export honey and beeswax to Europe countries including Germany, Finland, United Kingdom and Norway.

**Table 7: Ethiopia Honey Export**



Source: CSA 2011

Ethiopia's major honey export destination is Sudan. Out of the total honey exported in 2010 and 2011, Sudan constituted 76%, Norway 13.4%, United Kingdom 3.6%, Saudi Arabia 2.6% and Germany 1.6%.

### **Why Beekeeping and Honey processing investment in Mekelle?**

#### ***Access to High quality product:***

- Tigray honey is derived almost entirely from wild bees, and no chemicals are used in any part of its production or processing. The region is known for its white honey, produced from pollen of white flowers, a sage-like plant known as labiates, which has a distinctive aroma. Specially, honey from the *tebeb* plant (i.e. a wild plant that grows in the region) is extra white honey with medicinal value.
- The compositional content of Tigray honey meets international quality standards. It has low moisture content (less than 19%). The levels of metals are in general less than the minimum allowable limit.
- Owing to its unique quality, Tigray honey is in high demand in the domestic market, which would provide a competitive advantage in niche markets.

***Potentially a growing production capacity:***

- Beekeeping is a traditionally important off-farm activity in rural area. Both forest and backyard beekeeping is common in Tigray.
- The region's agricultural resource base, favorable climate and its botanical resources can support large number of bee colonies. This suggests that honey production in the region can substantially increase in a reasonably short period.
- Improved honey production is centrally established in the food security strategy of the region.
- Between 2005 and 2009, the Regional Government and other institutions distributed 94,562 modern hives to the smallholder farmers, bringing the total modern hive stock of Tigray Region to 122,052 in 2009. The productivity of honey per traditional and modern hive, on average has increased from 9.8 kg and 23 kg in 2004 to 23 and 47 kg in 2009, respectively. Total annual honey production of the region has grown from 1,357 tons to 4,264 tons for the same period. In the Regional GTP, the annual production is targeted to reach 6,132 tons by the year 2015 (Bureau of Planning and Finance, Five Years Regional GTP, 2010).
- Mekelle is located at the center of Tigray Region and accessible to most of the rural honey production areas.
- The Mekelle region has a large bee population – about 37,000 bee colonies or 20% of the Tigray total.
- The Millennium Villages Project (MVP) located at Koraro (95 km north of Mekelle) is implementing a large scale honey and beeswax production system across its 11 villages in Tigray Region. The major goal of the project is to support beekeepers by establishing cooperatives, providing inputs and hives and facilitating distribution of raw honey to customers (KPMG, 2009). REST (Relief Society of Tigray) is also involved in supporting beekeepers (Ayalew, 2008).

***Proximity to domestic and foreign markets***

- There are two honey-processing plants in Mekelle that demand raw honey. The market for table honey though small, is growing. The middle and upper income group is potential consumers of processed table honey.
- Mekelle is strategically located at the crossroads of Middle Eastern and European markets. It is the nearest Ethiopian city to Djibouti port and other major ports. It is only 680 km distance to reach Djibouti port from Mekelle. In the future when the relationship between Ethiopia and Eritrea improves, Mekelle will be the nearest city to reach Massawa port at only 420 km.
- It is also the closest city to Sudan, which is a major importer of honey from Ethiopia.

***Mekelle industrial zone and other suitable locations for honey-processing and beekeeping***

- Mekelle industrial zone was established in 2000 and furnished with basic utilities.
- The industrial zone, which was previously developed on 40 hectares, has currently expanded to 247 hectares.
- The zone is delineated for manufacturing sector and is given to developers at a low fixed lease price, i.e. Birr 1.25/m<sup>2</sup>/year. The leases are granted for up to 70 years.
- It is becoming an industrial base for the city and the region, ranging from heavy engineering to agro-processing, plastic and metalwork, sanitary products, pharmaceutical factories, and packaging materials (producing carton boxes).



<ul style="list-style-type: none"> <li>• At present about 230 projects are found in the industrial zone, of which 60 projects have started production while the rest are under construction. At present about 100 ha is free for new projects.</li> <li>• Information on other potential locations for honey processing and especially beekeeping will be provided in cooperation with the Tigray Investment Promotion Core Process - the investment promotion arm of Tigray regional government</li> <li>• The Koraro millennium village, located some 100 km from Mekelle has been identified as a very suitable location for beekeeping due to its tradition there and assistance available through the Millennium Villages Programme.</li> </ul>
<p><b>Support provided by Mekelle City Administration and Tigray Investment Office</b></p> <p>The Regional Government and City Administration will assist investors interested in investing in the sector by providing land for both bee keeping around Mekelle and for a processing plant in the industrial zone.</p> <ul style="list-style-type: none"> <li>• Prompt land provision by the Regional Government and City Administration to prospective investors. For apiary (beekeeping), land is available around Mekelle at lease price ranges Ethiopian Birr 60 to 100 per hectare per year. For honey processing plants, land is ready available in the Mekelle industrial zone.</li> <li>• Support from NGOs, both local and International, has included involvement in small-scale honey processing and marketing. The Millennium Villages Project (MVP) located at Koraro (95 km north of Mekelle) is implementing a large scale honey and beeswax production system across its 11 villages in Tigray State. The major goal of the project is to support beekeepers by establishing cooperatives, providing inputs and hives and facilitating distribution of raw honey to customers (KPMG 2009). REST is also involved in supporting beekeepers (Ayalew 2008).</li> <li>• Good support to honey producers by the regional government in the form of credit supply and providing of improved hives on credit, and deployment of development agents to support the beekeeping sector.</li> </ul> <p>The regional and city investment offices offer the following support:</p> <ul style="list-style-type: none"> <li>• Handling investor inquiries by appointing a single client executive to provide accurate information and data.</li> <li>• Organize and facilitate site visits for an investor.</li> <li>• Provide investors with up to date check list of all clearances and approvals required by different authorities for the project.</li> <li>• Work with investors to get the necessary permits and licenses and to make the right contacts with service providers at both national and city level.</li> <li>• Ensure fast access to land in the industrial zone.</li> <li>• Assistance in applying for investment incentives.</li> <li>• Post-investment 'aftercare' in resolving issues and supporting requests.</li> <li>• Periodic surveys of investors, followed by public-private dialogue to discuss factors affecting business operation and competitiveness.</li> <li>• Serve as an advocate for business concerns by engaging with relevant officials, legislators and others as necessary to seek to resolve constraints.</li> </ul>
<p><b>Investment incentives</b></p> <p><b>Custom Duty Exemption:</b></p> <ul style="list-style-type: none"> <li>• 100% exemption from the payment of customs duty on imported capital goods,</li> </ul>

construction materials and spare parts worth up to 15% of the total value of the capital goods to be imported.

**Income tax exemption**

- 2 up to 7 years for honey processing investments.
- 2 years for expansion or upgrading of existing honey processing plant
- Loss carry forward for half of the tax holiday period

**Export incentives**

- No export tax is levied on honey export products of Ethiopia;
- Duty Draw-back Scheme: Duty paid at the port of entry and locally, on raw materials used in the production of commodities is refunded, 100 percent, upon exportation of the commodity processed.
- Voucher Scheme: A voucher book is a printed document to be used for recording balance of duty payable on raw materials imported for use in the production of goods for external market. The beneficiaries of the voucher scheme are also exporters.
- Bonded Manufacturing Warehouse: Producers wholly engaged in exporting their products who are not eligible to use the Voucher Scheme and who have license that enables them to operate such Warehouse.

**Non-Fiscal Incentive**

- Investors who invest in areas of beekeeping and honey processing will be eligible to obtain loan up to 70 percent of their investment capital from the Development Bank of Ethiopia (DBE) if their investment is sound to be feasible.

**Further information available**

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### Private sector: Beekeeping and Honey Producer Companies in Tigray

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