

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

### **Manufacturing of Animal Feedstuffs**

#### **Executive Summary**

Ethiopia is the first in Africa and the tenth largest livestock producer in the world. The livestock sub-sector plays important roles in the economy and contributes an estimated 12% of the total national GDP, over 45% of the agricultural GDP and about 16% of total exports. Tigray with its current stock of 3.54 million cattle, 1.12 million sheep, 2.87 million goats and 5 million poultry is estimated to possess nearly 9% of the national livestock.

The contribution of livestock to the Regional economy, however, is far below the potential. While a number of factors are attributable to the problem, the inadequate quality of animal feedstuffs is the most important constraint and causes a shortfall into the livestock's productivity of about 40 percent (Land O'Lakes, Inc., 2010). In Tigray, livestock production in Tigray is generally dependent on crop residues, natural grazing/foraging, and hay from natural pastures. Supply of modern animal feed falls short of the demand.

The supply of processed animal feedstuffs in Ethiopia is very limited. During the year 2011, approximately 11 animal feedstuff manufacturers were operating in the country (Central Statistics Authority, CSA, 2012). However, only five of them are producing purely for sale. The rest of the manufacturers produce primarily for their own consumption with limited supply to market. The five big commercial feed mixers and millers are located in the towns of Adama, Mojo, Bishoftu, and the Addis Ababa suburbs of Akaki and Kaliti (Berhanu et al., 2009).

Domestic production of modern animal feedstuffs ranges from 4,762 tons in 2002 G.C to an estimated 19,392 tons in 2010 G.C. The country imports various types of preparations used in animal feeding. The annual imported quantity of residues and animal feeds increased from 103 tons (136,585 USD) in 2002 G.C to 623 tons (731,098 USD in value) in 2011 G.C., On average, the import (both in quantity and value) grew each year by 25%. These data suggest that there is a good potential to establish a plant for the production of animal feedstuffs in or near Mekelle, especially as all of the existing big production facilities are located near Addis Ababa, nearly 800 km away.

#### **Introduction to Mekelle**

Mekelle is the capital of the Tigray Region, located at about 783 km from the nation's capital, Addis Ababa. The city is one of the fastest growing urban areas in Ethiopia and its area coverage has expanded from 102.4 sq.km in 2004 to 192 sq.km in 2011 (Mekelle Municipality cited in Haddis, G/Giorgis and Murutse Desta, Talent Development Consultants, Talent Development Consultant, 2011). In the recent years, the city has become an important investment destination.

#### **Demography**

According to 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**

Growth Scenario	2007 Census	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 2005/6 - 2009/10, in Tigray it has nearly doubled (increased by 91%) during that period, indicating that the private sector in Mekelle is growing faster than the national average. Although Tigray has only 5.84% of Ethiopia's population, it had 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 ripe 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 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 will 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 between Mekelle and Addis Ababa. There is also a daily flight to Axum and Shire Enda Selassie (towns within Tigray).

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

In addition to Mekelle University, established in 2000, which has an intake capacity of 26,253, there is also the 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 institutions of higher learning.

### **Market opportunity**

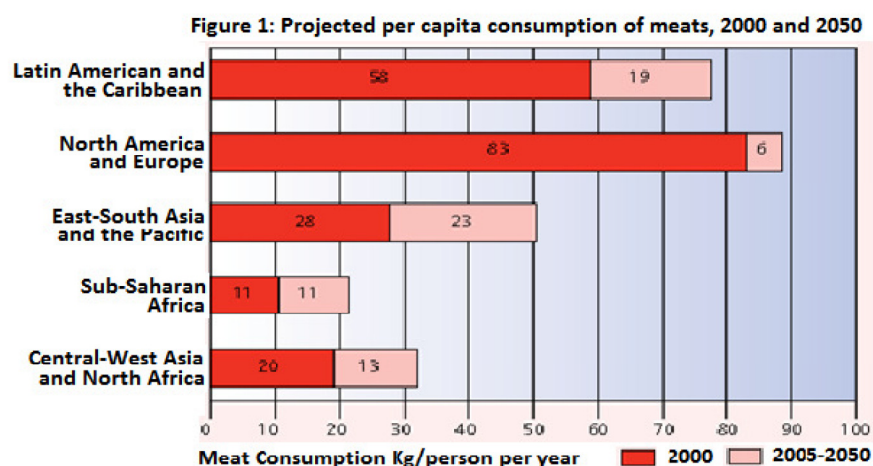
#### ***Global livestock demand***

Global consumption of livestock products is growing rapidly. Population and economic growth in developing countries are increasing the demand for food. The International Food Policy Research Institute (IFPRI) projects that annual meat demand will increase by 6 to 23 kg

<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.

per person worldwide by 2050 [*id21 insights* 72,2008

<http://webarchive.nationalarchives.gov.uk/20090704122546/http://www.id21.org/insights/insights72/index.html>]. This is a huge opportunity for developing country suppliers, especially as the growth will occur mainly in developing countries of Africa and Asia.



Source: International Food Policy Research Institute - International Model for Policy Analysis of Agricultural Commodities and Trade (IFPPI IMPACT) Projections, September 2007

With this strong demand, the IFPRI projects that livestock populations will also increase rapidly. It estimated that between 2000 and 2050, the global cattle population will increase from 1.5 billion to 2.6 billion and the global goat and sheep population will increase from 1.7 billion to 2.7 billion.

The expected growth in demand and supply will also mean profound changes for livestock production systems. Expanded market activity, and a rise in exports of livestock and livestock products will increase the global demand for animal feed.

### **Large Domestic Livestock population**

Ethiopia, considering its large livestock resources base, can potentially take advantage of livestock growth opportunities in the global marketplace. As noted above, Ethiopia is the first in Africa and the tenth largest livestock producer in the world comprising about 52 million cattle, 33 million sheep, 30 million goats and 2.5 million camels. The livestock sub-sector plays important roles in the economy of smallholder farmers and the national economy. It contributes an estimated 12% of the total national GDP, over 45% of the agricultural GDP and about 16% of the total exports.

Tigray Regional State has also considerable livestock resources: with 3,539,395 head of cattle, 1,121,537 sheep, 2,874,520 goats and 5,003,126 poultry in 2012. In this year, Tigray accounts for 6.4% of cattle, 11% of goats and 12% of poultry in Ethiopia (CSA, 2012). About 8.4% of the country's livestock found in this Region.

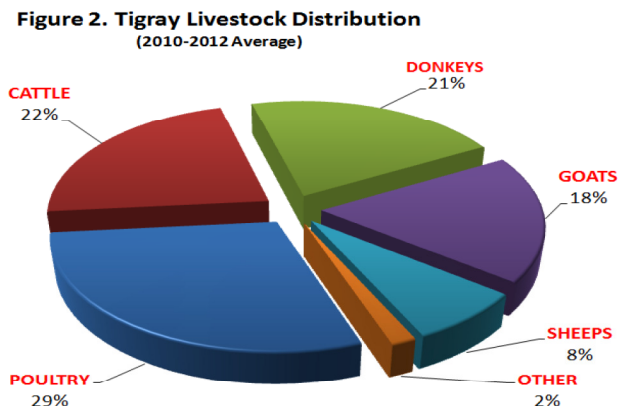
**Table 2: Number of Livestock by Type of Animal, in Tigray<sup>2</sup>**

<sup>2</sup>The data represented only for rural private peasant holdings in the Region.

Year	All Livestock							
	CATTLE	SHEEP	GOATS	HORSES	DONKEYS	MULES	CAMELS	POULTRY
1996	1,728,860	1,027,620	1,293,640	-	261,440	22,680	19310	2,952,080
1997	2,025,730	1,196,300	1,743,360		330,790		18,850	3,095,210
1998	2,043,103	629,860	1,206,250	1,340	283,790	6,350	10,170	3,101,000
1999	2,253,760	703,640	1,365,780	1,370	316,880	7,530	*	3,699,810
2000	2,043,103	629,860	1,206,250	1,340	283,790	6,350	10,170	3,101,000
2001	2,253,760	703,640	1,365,780	1,370	316,880	7,530	*	3,699,810
2002	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
2003	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
2004	2,546,790	652,521	2,034,710	2,615	368,312	10,062	38,562	3,725,111
2005	2,713,747	726,394	2,089,697	1,200	386,601	9,190	32,651	3,180,235
2006	2622170	813550	2399810	1894	387389	7901	32777	3131240
2007	2952180	973490	2771270	2270	434698	7247	33794	3495080
2008	3119410	1388100	3005046		462500	6670	34450	4262034
2009								
2010	3242931	1149717	2621227	*	456093	4920	32288	4266077
2011	3630957	1255403	3049486	2108	568121	4229	34205	4308595
2012	3539395	1121537	2874520	3974	578,273	3,752	35,946	5003126

Source: CSA various publications.

Figure 2. shows the livestock distribution of the Region by type, based on average holdings, for the years 2010 to 2012. Of the total Regional livestock, poultry is the largest resource which accounts for 29%, followed by cattle, donkeys, goats and sheep, representing 22%, 21%, 18% and 8% respectively.



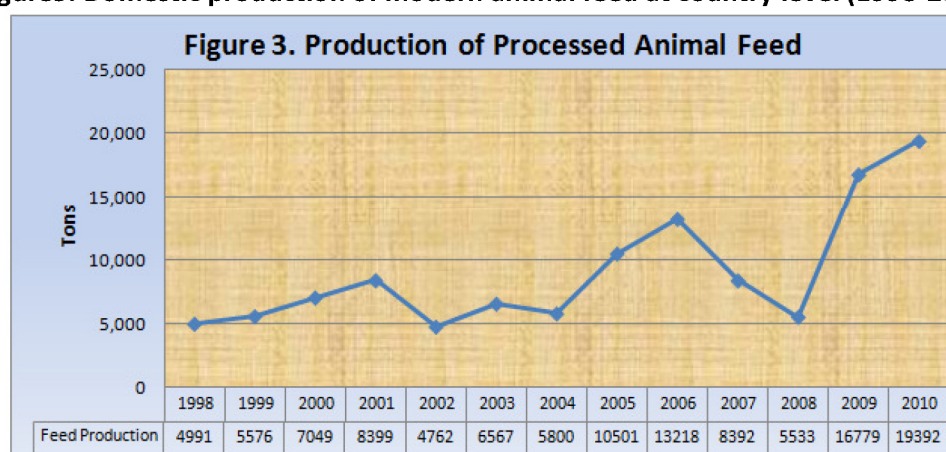
### Animal Feed Practices

The supply of processed animal feedstuffs in the country is very limited. In 2011 about 11 animal feedmanufactures were operating in the country. (CSA 2012).The majority of manufacturers produce primarily for own consumption with limited supply to market. According to Berhanu et al. Animal Feedstuffs Assesment in 2009, only five manufacturers were producing purely for sale. These five big commercial feed producers are located in the towns of Adama, Mojo, Bishoftu, and the Addis Ababa suburbs of Akaki and Kaliti. Based on the source consulted, a brief information on the manufacturers is presented below.

**Bora Animal and Poultry Feed Processing PLC** is one of the biggest factories, located at Bishoftu town, manufacturing poultry, dairy, fattening, shoat and pig feeds, on an order basis. About 90% of the feed mix produced by the plant is poultry feed mix. The plant uses the international standard feed formulation formulae in manufacturing different feed types.

**Mojo Animal Mixer and Miller PLC**, located in Mojo town - about 90 km south of Addis Ababa, produces animal feed for beef, dairy, poultry, sheep, and goats on order basis. The plant has a production capacity of 40 quintals per hour. Its actual monthly production is reported to be about 3,000 quintals and mostly sold in the local market. The factory also exports its feed product to Djibouti. The plant has the capacity to produce pellets. **The Kaliti Feed Mixer and Miller PLC** was established in 1976 by the Ethiopian Government. It manufactures poultry, dairy, beef, sheep, goat and swine feed mixes. Most of its product is poultry and dairy feed mixes. About 50% of dairy and poultry feed mixes are sold to government institutions. Small farms also buy feed from the plant. Although intermittent, the plant exports feed mixes to Djibouti. The factory sells 2000–3000 quintals of feed mix per month.(Berhanu et al. 2009).

**Figure3: Domestic production of modern animal feed at country level (1998-2010)**



Source: CSA Statistical Abstracts

As can be seen in Figure 3, domestic production of modern animal feed ranges from minimum production of 4,762 tons in the year 2002 to a high figure of 19,392 tons in the year 2010. The annual average production of these factories for the time under reference was about 8,997 tons. Considering the size of the livestock population in the country and the recommended per animal feed consumption per annum, it is clear that the supply of animal feed in the country falls short of the anticipated demand.

As depicted in Table 3, the country imports animal feed and to some extent also exports to the neighboring countries.

**Table 3. Imports and Exports of Animal Feed at Country Level**

Year	Import		Export	
	Quantity (Tons)	Value (USD)	Quantity (Tons)	Value in (USD)
2002	103	136,584.6	2.6	198,191.4
2003	150	116,561.0	1.5	40,405.9
2004	126	94,468.6	0.0	4,189.4
2005	221	171,980.8	0.4	116,747.5
2006	343	283,008.4	0.2	18,503.5
2007	389	403,651.0	1.4	131,489.1
2008	538	570,181.5	3.8	654,790.6

2009	638	697,183.0	5.3	815,171.6
2010	679	760,327.1	18.7	3,564,219.9
2011	623	731,098.7	13.1	3,001,304.4

Source: CSA various reports

Livestock production in Tigray generally follows traditional practices and is hampered by nutritional stress and/or limited quality of livestock feed. Currently, in Tigray there is only one livestock feed processing plant, Mekelle Farms PLC, located in Mekelle. The firm produces feed for poultry.

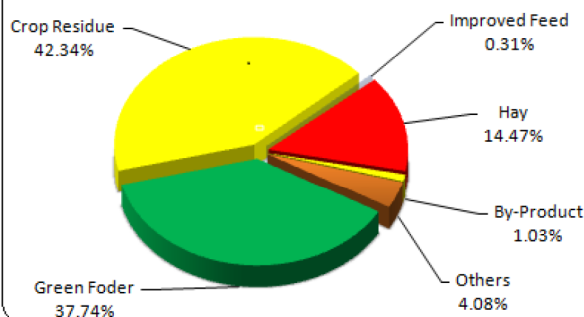
The major sources of livestock feeding in the Region are crop residues, green fodder/natural grazing, hay, agro-industrial by-products and to some extent introduced forage crops<sup>3</sup> (CSA, 2012; Yayneshet, 2010). Animal feed usage practices of livestock holders in rural Tigray are presented below. Table 4 shows the number of livestock holders reporting each type of feed used during 2012 survey. Figure 3 highlights the percentage share of each feed type from the total feed utilized during the reference period.

As can be seen from Table 4, about 815,000 livestock holders in the rural areas of the Region reported that they used green fodder to feed their animals. While 779 thousand and 617 thousand holders have used crop residue and hay for their animals, respectively.

**Table 4. Number of Holders in Tigray By Feed Type, 2012**

Type of Feed	Number of Holders
Green Fodder	815,193
Crop Residue	778,992
Hay	617,350
By-Product	76,422
Improved Feed	9,240
Other	4.08

**Figure 3. Animal Feed Use, by Type Tigray, 2012**



Source: CSA Statistical Abstracts.

Figure 3 reveals that during the reference period, crop residue was the major type of feed in Tigray, representing about 42.3% of the total feedstuffs. Green fodder, hay and by-products accounted for 37.7%, 14.5% and 1%, respectively. Improved feed was also used as animal feeds but for only 0.25 percent.

### Animal feed market

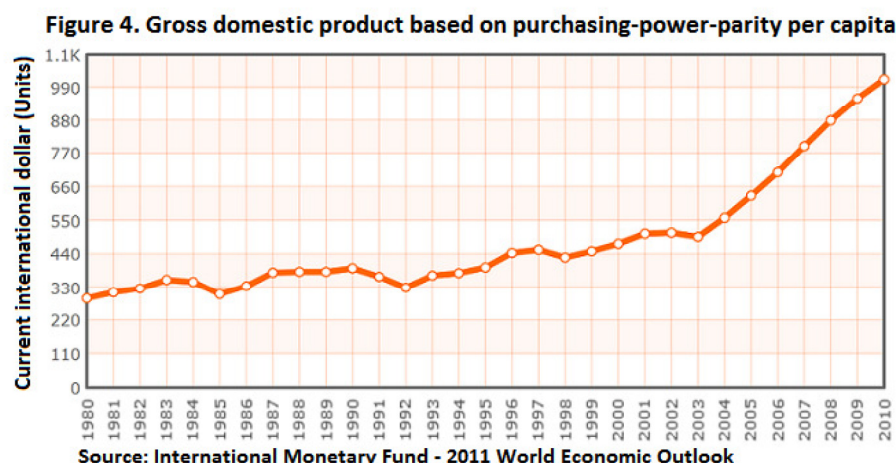
Both smallholder farmers and small scale commercial livestock producers in Tigray purchase animal feeds. According to CSA data, the number of smallholder farmers who buy animal feed increases over time. For example in 2006, about 10,163 smallholder farmers had purchased crop residue while 31,278 farmers bought hay to nourish their animals. By 2012, the numbers of the buyers had grown to 14,886 and 42,923 for the respective feed

<sup>3</sup> According to CSA **green fodder** is simply pasture grasses; **crop residue** includes harvested by-products (straw and chaff of cereals and pulses, etc.); **improved feed** is like alfalfa; **hay** includes any type of grass, clover etc. cut and dried as fodder; and finally **industrial by-products** are like oil cake (rapeseed cake, nueg cake, sunflower cake, etc.), bran, and brewery residue.

resources, showing a growth of 46% (for crop residues) and 37% (for hay) between the two referenced years.

This could illustrate that a considerable number of smallholders depend on market to meet their demand for different types of animal feeds.

Household income, as measured by national GDP per capita, has continuously grown in the past decade (see Figure 4). The establishment of a modern export-oriented slaughter house (Abergelle International Livestock Development PLC) which began operations in 2010 also created a wide investment opportunity in fattening of cattle. Emerging of such investment will also create a demand for animal feed.



### Livestock extension

To develop the livestock subsector, livestock extension packages are provided in the Region. As can be seen from Table 5, about 13.9 thousand holders in the Region were involved in dairy development packages. More than 16.7 thousand holders were involved in beef and poultry development packages. Moreover, about 11.8 thousand holders were engaged in honey and wax development package whereas 823 practiced at least two types of packages during the reference period. Considering distribution of livestock by regions, the numbers of livestock holders practiced in each extension packages is relatively higher in Tigray than other regions in Ethiopia.

**Table 5. Estimated Number of Holders Practiced Livestock Extension Packages, 2012**

Type of Livestock Extension Packages in Ethiopia	Number of Holders Practiced		Tigray's share of total
	Ethiopia	Tigray	
Dairy Development Package	39,145	13,875	35%
Beef/Meat/Mutton Development Package	41,499	3,596	9%
Poultry Development Package	46,307	13,189	28%
Honey and Wax Development Package	22,128	11,752	53%
Two or More of the Packages	7,068	823	12%

Source: CSA (2012)

Some of the important inputs related to improving livestock productivity that are available in the Region include: (Gebregziabher G. and Gebrehiwot H., 2011)

- Medication and vaccination services are available at an affordable price
- Artificial insemination service are provided to farmers at a cost
- The number of extension workers per Kebele (the lowest administrative unit) ranges



<p>from three to four</p> <ul style="list-style-type: none"> <li>• Credit is provided by Dede-bit Credit and Saving Institute (DCSI)</li> <li>• Farmer training centers were established at each rural kebele (lowest administrative unit) in the Region</li> <li>• NGOs that participate and provide important assistance to the sub-sector include: REST (Relief Society of Tigray), IPMS-ILRI (Improving Productivity and Marketing Services-International Livestock Research Institute), Land O'Lakes, World vision, Catholic mission, finance institutions such as Dede-bit Credit and Saving Institution and others</li> </ul>
<p><b>Why produce this product in Mekelle?</b></p> <ul style="list-style-type: none"> <li>• All existing big animal feedstuffs production facilities in Ethiopia are located near Addis Ababa, nearly 800 kilometres from Mekelle and the rest of the Tigray region. A production facility located in or near Mekelle could produce animal feed not only for the Tigray region, but also for large parts of the Amhara and Afar regions.</li> <li>• Major raw materials required by the plant such as oil cake, cereals bran, molasses, meal bone, etc. are to be obtained from processing industries which are usually located in urban areas of Tigray.</li> <li>• Availability of major agro-industrial byproducts commonly used for raw material of animal feeding: <ul style="list-style-type: none"> <li>○ There are 11 flour milling factories in Tigray that can provide substantial wheat bran by-products</li> <li>○ Existence of traditional edible oil extractors in west Tigray (250 km from Mekelle), whose annual byproduct production is estimated at 92,200 quintals/year of sesame seed cake (Yayneshet, 2010).</li> <li>○ Existence of Dansha Cotton ginning factory in the Tigray region.</li> <li>○ Meal bone can easily be obtained from the modern slaughter house (Abergelle International Livestock Development PLC) located in Mekelle.</li> </ul> </li> <li>• Moreover, the market for livestock feed (as described above in the animal feed section) is also mostly found in and around Mekelle.</li> <li>• Agricultural residues are also available in all rural areas of Tigray region.</li> <li>• Construction of a large state-owned sugar factory with a sugar cane plantation in Tigray (about 300 km from Mekelle) is underway and expected to begin operation in 2015. This will make it possible to obtain molasses at a reasonable distance from Mekelle.</li> <li>• Personal safety in Mekelle/Tigray region is high and government offices work according to transparent procedures.</li> </ul>
<p><b>Mekelle industrial zone</b></p> <ul style="list-style-type: none"> <li>• Mekelle industrial was established in 2000 and furnished with basic utilities.</li> <li>• The industrial zone, which was previously developed on 40 hectares, has currently expanded to 247 hectares.</li> <li>• The zone is delineated for the 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.</li> <li>• 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).</li> </ul>



<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 available for new projects including an animal feed processing plant.</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 manufacturing of animal feed by providing land at very reasonable lease price in the industrial zone.</p> <p>The Regional and City Investment offices offer the following supports:</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 visit 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 other 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, construction materials and spare parts worth up to 15% of the total value of the capital goods to be imported.</li> <li><b>Income tax exemption</b></li> <li>2 up to 7 years for manufacturing or agro-industrial and agricultural investments.</li> <li>2 years for expansion or upgrading of existing manufacturing or agro-industrial and agricultural investments.</li> <li>Loss carry forward for half of the tax holiday period.</li> </ul> <p><b>Export incentives</b></p> <ul style="list-style-type: none"> <li>With the exception of few products (e.g. Semi-processed hides and skins-150%), no export tax is levied on export products of Ethiopia.</li> <li>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.</li> <li>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.</li> <li>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.</li> </ul>

### Non Fiscal Incentives

- Investors who invest in areas of agriculture, agro-industry (which includes manufacturing of animal feed) and other manufacturing will be eligible to obtain loan up to 70% of their investment capital from the Development Bank of Ethiopia (DBE) if their investment is sound to be feasible.

### Further information available

- Berhanu Gebremedhin, Adane Hirpa and Kahsay Berhe. 2009. *Feed marketing in Ethiopia: Results of rapid market appraisal*. Improving Productivity and Market Success (IPMS) of Ethiopian farmers project Working Paper 15. ILRI (International Livestock Research Institute), Nairobi, Kenya. 64 pp.
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