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**Competitiveness of Ethiopian Industries : The Case of  
Metal and Metal Products Industry**

Habtamu Workneh and Gashaw Desalegn

**Developments in Agro-Processing Industry in Ethiopia**

Henok Arega and Habtamu Workneh

**Ethiopian Extractive and Mineral Industries  
Competitiveness**

Amelework Olana

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- Identify issues of competitiveness and investment opportunities as well as the comparative advantage and level of business competence of Ethiopian companies against those in Sub-Saharan Africa; and
- Analyze public policy and the regulatory environment to come up with concrete evidence and policy recommendations for Public Private Dialogue with the concerned government organs so as to make the business environment more conducive.

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## **Contents**

- Competitiveness of Ethiopian Industries:  
The Case of Metal & Metal Products Industry** 1  
Habtamu Workneh and Gashaw Desalegn
- Developments in Agro-Processing  
Industry in Ethiopia** 33  
Henok Arega and Habtamu Workneh
- Ethiopian Extractive and Mineral Industries  
Competitiveness** 52  
Amelework Olana

# Competitiveness of Ethiopian Industries : The Case of Metal and Metal Products Industry

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Habtamu Workneh<sup>1</sup> and Gashaw Desalegn<sup>2</sup>

## ABSTRACT

This study is aimed at assessing the level of competitiveness of Ethiopian metal and metal products industry. The approaches used to assess competitiveness are: (i) Stochastic frontier production function model for analyzing their internal capacity by applying technical efficiency of the Ethiopian metal industry over time; (ii) Overview of the national policies in fostering external competitive environment of firms; and (iii) Assessment of the platform for competitiveness and identifying the challenges and opportunities of the industry. The existing policies, in one way or another, put emphasis on competitiveness. However, some policies like trade policy are not even boldly formulated as independent documents. On the other hand, other rules and regulations like the competition law and the industrial policy pay attention to competition and competitiveness; but they do not look at these from broader prospective. Ethiopia has been undertaking infrastructural developments and investments aggressively on human capital development. Investment in power, telecommunication and road obviously enhance competitiveness of firms in the industry. However, these facilities are scanty in iron ore potential areas. The export performance of the industry is weak and limited to few markets. Export share of the industry is also small and shrinking over the years as compared to Eastern and Southern African countries. Limited innovation and product diversification into high value added commodities, low iron ore extraction in the country due to poor infrastructural developments, lack of credit for working capital and new investment, inability to withstand foreign competition especially from India and China, relatively high tariff on imported raw materials, little investment in research and development, electric power fluctuation and weak linkage with universities and research institutions are the major challenges of the industry. The availability of cheap labor force, existence of feasible potential iron ore in the country, macroeconomic stability, due attention given to the industry by the government, growing construction and power industry, and existence of high demand in the world market are on the other

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hand opportunities of the sector. The econometric result showed that basic metal and engineering industries had an average annual efficiency below 20 percent over the period 2008-2012. Labor cost showed significant contribution to the production of the industry as compared to other inputs.

The efficiency of the industry which used labour-intensive technologies decreased in the five years due to obsolete technology. In order to improve competitiveness of the sector, national competitiveness strategy should be designed, and implementing institute established. In the situation where extraction of domestic raw material (iron ore) faces infrastructural constraints, the government should revise the five per cent tariff policy levied on iron ore in the short term and give due attention to develop the necessary infrastructure to extensively extract the main raw material and then discourage imports of the ore. The concerned government body should arrange means for easy credit access for working capital and for buying the necessary technology to diversify their production. In the long-term the industry should be able to allocate its own budget for research and development. In the short-term, however, the existing institutes should create strong linkage with the industry, conduct research on market access and technology adoption and innovation and strengthen the competitiveness of the industry. The association should also be strong in lobbying the public and creating public-private linkage to finally improve capacity utilization. Besides, the concerned government body should tackle external problems hindering the development of the sector.

**Keywords:** *Ethiopia, Metal and metal product industry, Competitiveness, Stochastic Production function and Technical efficiency*

## 1. Introduction

Metal and metal products industry plays a big role in enhancing the economic development of both developing and developed countries. Competitive technology, management and institutional set up are, however, required to make the products competent internationally. Competitiveness is in fact determined by the productivity with which a nation uses its human, capital, and natural resources. Productivity in turn depends both on the value of products and services as well as the efficiency with which they are produced.

The value of metal and metal products industry is based on the principle that it can create backward and forward linkage, enhance foreign exchange earnings by promoting standard quality export products, create jobs and increase income, and give opportunity to technology transfer. Over the years, the success of Ethiopian basic metals industries to achieve these objectives was limited. The country has benefited

little and turned out to be net drains on its resources. However, in the last few years, the metal and engineering sector in Ethiopia has been growing relatively good, following the consistent economic growth of the nation (Asmamaw, 2010). Though there is a rapid development in the sector, the products obtained are still low, despite the long history of iron casting and blacksmithing in Ethiopia. The metalworking industry is fraught with low productivity and slow growth both in output and employment. There are several anecdotes, but systematic studies to understand the factors associated with enterprise performance in the sector are scanty (Girum, 2012:3).

The low performance of the basic metals engineering industries demonstrates the need for further examination into the factors that determine their competitiveness. The objective of this paper is, therefore, to examine the level of competitiveness of Ethiopian basic metal and engineering industries. The approaches used are: (i) Analyzing their internal capacity by measuring technical efficiency of the Ethiopian metal industry over time using stochastic frontier production function model; (ii) Reviewing national policies to analyze the external competitive environment; and (iii) Assessing the platform for competitiveness and identifying the challenges and opportunities of the industry.

The sources of data were both primary and secondary obtained through interview, statistical reports and publications of the pertinent government institutions like Central Statistical Agency, Ethiopian Revenue and Customs Authority and World Trade Organization databases. The study also used ethnographic methods<sup>3</sup> and archival research<sup>4</sup> to analyze different policies and describe the competitiveness environment of the sector. For the model that measures technical efficiency of the industry however the paper applied stochastic frontier approach.

While the primary data used in this study were interviews, document analysis was also integral to the overall results and conclusions. The researchers selected two broad stakeholder groups firms and government officials like staff of Metal Industry Development Institute whose perspectives they felt were important to achieve the objectives of this study and by taking into consideration time and cost constraints.

The study participants were identified because of their roles in the sector as government employees and leaders of metal firms. Due to time and cost constraints, however, visits and interviews at production sites were not conducted in the study in order to gain the largest sample size possible and the broadest range of perspectives.

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<sup>3</sup> Interaction with persons or a group that is being studied

<sup>4</sup> A type of primary research which involves seeking out and extracting evidences from original archival records



Thus, formal interviews were most often done in offices while informal interviews were conducted through phone. The data collection activities were primarily undertaken during visits to different government offices and reviewing the previous interviews of company managers. The interviews ranged from one hour to one and half hours, with most interviews approximately an hour long. The format of the interviews consisted of structured open-ended questions, focusing mainly on challenges of the sector and institutional set ups and experiences from abroad by briefly documenting the experiences of other countries in similar levels of economic development.

## II. Literature Review

Basic Metal Industries are industries engaged in production of metal from ore, scrap and conversion of billet, slab etc., into primary metal products, while Engineering Industries manufacture fabricated metal products (International Standard Industrial Classification of All Economic Activities, Rev.3.1 and Div. 28-35). Discussions in this paper focus on “Metal and engineering Industry” which is engaged in manufacturing metals from metallic ores to be used as inputs in the manufacturing of various metallic products, and “Engineering Industry” engaged in manufacturing capital goods, accessories, parts, tools and other metallic goods made from metals through engineering<sup>5</sup>.

Franziska (2006) says there is competitiveness for the company, industry and country. For the company, competitiveness is the ability to provide products and services as or more effectively and efficiently than the relevant competitors. In the traded sector, this means sustained success in international markets without protection or subsidies. Although transportation costs might allow firms from a nation to compete successfully in their home market or in adjacent markets, competitiveness usually refers to advantage obtained through superior productivity.

At the industry level, competitiveness is the ability of the nation’s firms to achieve sustained success against (or compared to) foreign competitors, again without protection or subsidies. Competitiveness at the industry level is often a better indicator of the economic health of the nation than competitiveness at the firm level. The success of a single firm from the nation might be due to company-specific factors that are difficult or impossible to reproduce. The success of several firms from the nation in an industry, on the other hand, is often evidence of nation-specific factors that might be extended and improved. Assessing the competitiveness of an industry in which there is only one important firm requires an assessment of whether its success is due to monopoly rents, government support, or true efficiency. It is also important to note that

<sup>5</sup> Regulation Number 182/2010, Council of Ministers Regulation for the Establishment of Metal Industry Development Institute

the competitiveness of a single firm does not necessarily imply the competitiveness of an industry (Franziska, 2006).

For the nation, competitiveness means the ability of the nation's citizens to achieve a high and rising standard of living. In most nations, the standard of living is determined by the productivity with which the nation's resources are deployed, the output of the economy per unit of labor and/or capital employed.

Different research works reveal different attributes of competitiveness. Some approach it from a causal perspective, investigating the sources of the competitiveness; others from resultant perspective, uncovering the outcome of the competitiveness. Some focus on the current situation of competitiveness; others focus on the potential position of competitiveness. There are more attributes distinguished in the literature, which can be found in the survey of Buckley et al. (1988) and Siggel (2006). Taking a close look at these measurements, one can easily see that a single measure does not capture all the elements of competitiveness.

## **2.1 Competitiveness and Policy Issues<sup>6</sup>**

Eleven policy areas, namely macroeconomic framework, competition and access to information polices, convention and rule of property right and investment, environmental regulations, enterprise development and clustering policies, trade policy, innovation and technology policies, infrastructure policies, investment policies, environmental policies, socially-targeted competition policies deserve explicit attention when referring to competitiveness.

### **(i) Competition Policy**

As an enabling framework for competitiveness, competition should contribute to effectively encourage technology upgrade and innovation among competing firms and to support the efforts of enterprise development, clustering and investment policies. With these objectives, two specific concerns related to competitiveness must be taken into consideration when conceiving and implementing a competition policy. First, competition policy must allow for policy flexibilities needed for productive capacity development at the country level. The appropriate considerations should allow for coping with international competition and promoting alliances between Transnational Companies (TNCs) and domestic firms. Second, Intellectual Property Rights (IPRs) regimes should also be implemented ensuring that technology upgrading; adaptation and in general legitimate access to knowledge by national actors are not obstructed.

<sup>6</sup> International Center for Trade and Sustainable Development, 2006



## **(ii) Trade Policy**

In the framework of a strategy for competitiveness, all trade policies at the national level are relevant for a country. In addition to this, a proactive stance of countries in international negotiation of trade rules may make the difference between having an enabling international framework for competitiveness policies or not.

A strategic conception and implementation of trade policies implies differentiating and combining two categories of policies according to the country's interests and opportunities. They are, on one hand policies oriented to secure effective market access and fair trade conditions for the country's exports, and on the other hand policies targeted in supporting the supply-side of economics.

Supporting the supply side may entail strategically managing imports trade liberalization, either on selective or gradual bases or not; granting support to exporting capabilities of firms; and providing selective trade protection of specific sectors if needed. In this dimension, it is necessary to create a clear regulatory framework and a fairly good institutional capability for benchmarking and following up progress in competitiveness of firms in order to ensure that these measures achieve their goals and do not become permanent protections of non-entrepreneurial actors.

## **(iii) Technology and Innovation Policy**

Concepts that embody dynamic change such as the notion of an 'innovation system' should be introduced into policymaking in order to benefit from the fact that innovation not only takes place in laboratories of large corporations or in the high tech industries; nor is it reduced to inventions or to the kind of activity that takes place at the technological frontier.

While recognizing the importance of absorbing and mastering imported technology (technology transfer) in order to transform it in new ways, this policy approach also values and fosters two processes of the highest importance in developing economies. The first is building upon indigenous knowledge and exercising creativity in the development of new products and processes, management routines or organizational structures that correspond to local conditions and needs. The second is creating and strengthening the local linkages that support the modification of production processes to bring costs down, increase efficiency and ensure environmental sustainability.

Policies on technology, innovation and knowledge are broader in scope, but in their relation to competitiveness they are responsible for sustaining a permanent course of productivity improvement and product diversification. Therefore, they must be aimed

at fostering learning processes in the economy and promoting the generation and diffusion of know-how, which describes the functioning of national and local innovation systems. Part of this task is supporting the production and adaptation of technology, a fraction of which is promoting and facilitating technology transfer.

#### **(iv) Infrastructure and Logistics Support Policy**

An efficient infrastructure and logistics system is needed for reducing transaction costs for its enterprises relative to those of their competitors in other economies. This encompasses providing supports and services for all sectors in trade facilitation, transportation, storage and logistics information systems; water, energy and telecommunication facilities as well as dedicated and selective infrastructure support given to particular initiatives involving clusters, industrial districts and R&D facilities. Competitiveness and the development of productive capacities in developing countries may be supported by infrastructure and logistics support policies.

Putting in place a competition-oriented regulatory framework allowing for different options for efficiently financing and managing large infrastructures and logistics systems is vital. Making use of public procurement involved in these infrastructure fields to support the development of domestic private capacities in the provision of high value-added services (e.g., engineering and construction services, trade facilitating and logistic services associated to ports, airports and modal-exchange systems) is also essential.

#### **(v) Environmental Policy**

It is necessary to state here that the connection between competition policies, on one hand, and environmental goals and policy on the other, must always be regarded as a two-way relationship. Competition policies should contribute to the environmental goals of sustainable development, and environmental policy must provide instruments that enhance the firms' capabilities to compete internationally as well as safeguard productive capabilities and competitiveness achievements from environmental risks. Losses caused by natural disasters frequently damage productive capacities and hamper competitiveness gains for long periods; and their recovery implies costs which are unbearable for the majority of developing countries.

## **2.2 Empirical Works in Ethiopia**

There is a dearth of empirical work in Ethiopia on competitiveness of metal and metal products industry. Few studies conducted so far focused on basic metal industries entitled with technical efficiency of the industry sector, technology transfer as a vehicle for

industrial development case of basic metals and engineering industries and ownership, management practices, upgrading, and productivity in the metalworking sector (see Melaku, 2013; Gulelat, 2011 and Girum, 2012). With regard to competitiveness, the researchers got only the work of Gebremedhine.

Melaku (2013) used Stochastic Frontier Model to examine the technical efficiency and total factor productivity (TFP) growth in the Ethiopian manufacturing sector over the period 1996–2009. The sector has shown better progress after 2001/2 and the growth is largely explained by technical change which is a shift in production frontier. Girum (2012) used longitudinal data to explore why foreign operated enterprises performed better and whether the observed differences in enterprise performance were due to differences in ownership or whether they can be explained by other confounders. He found that foreign-owned enterprises were endowed with better quality managers. Gulelat (2011) showed how industrial development can, through coordinated and integrated transfer of technology, lead to sustainable social and economic development in Ethiopian industries. The researcher proposed various solutions that would enable technology transfer to Basic Metal Engineering Industries in particular and to the country at large. The proposed solutions mainly focus on technology policy, technical development of institutions of higher learning, practical-oriented science and technology education, coordinated participation of the stakeholders, applied R&D, University-Industry linkage, establishment of Basic Metals and Engineering Industries Technology Transfer and Innovation Centre and Technology Incubation Centre. Gebremedhine (2009) in his paper on “Competition regime: capacity building on competition policy in selected countries of eastern and southern Africa” concluded that state-owned enterprises have been negatively affecting trade, competition and competitiveness in the country.

### **III. Policy Review of Ethiopia from Competitiveness Perspective**

#### **3.1 Competition and Regulatory Policy<sup>7</sup>**

The Ethiopian competition law puts emphasis on abuse of market dominance, agreements, concerted practices and decisions of associations of businesspersons, regulation of merger and unfair completion. It also gives due attention to completion and the right of consumers. The law is much concerned with ensuring competition in the market. But competition may not be sustainable unless firms in the same industry within a nation compete for product innovation. This requires investment in research

<sup>7</sup> The Trade Practice and Consumers' Protection Proclamation No. 685/2010

and development and the appropriate law and policy which ensure ownership right. Though the Ethiopian competition law recognizes the value of competition, the law says nothing about creating conducive environment for innovation to bring dynamic efficiency to the economy.

### **3.2 Trade Policy**

Although the country has incorporated trade issues in its economic policy, i.e., Agricultural Development Led Industrialization and other policies, it does not have a trade policy written in black and white. It is therefore timely to design the policy, taking national and industry competitiveness as its central point. Combination of national policy measures in export promotion; trade facilitation for reducing transaction costs; technical assistance to domestic firms aimed at improving quality and technical standards; incentives to alleviate supply-side constraints and financial support for promoting cooperation between domestic and foreign firms should be considered.

### **3.3 National Science, Technology and Innovation Policy**

The National Science, Technology and Innovation Policy stresses the need for scaling up endogenous knowledge and linkage between firms in the economy. The policy clearly put the milestones on research expenditure, number of researchers and patents, utility models and technology licenses granted, and number of publications between 2010 and 2025. Metal and Metal products engineering is given due emphasis in this policy.

### **3.4 Environmental Policy of Ethiopia**

The overall goal of the environment policy is to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through sound management and use of natural, human-made and cultural resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. It however lacks instruments to promote environmentally friendly mode of production and provide appropriate certificate for such means of production.

### **3.5 Industrial Policy**

The Industry Development Strategy of Ethiopia, which has been in place since August 2002, primarily focuses on the promotion of agricultural-led industrialization, export-led development and expansion of labour intensive industries. Some of the industry sub-sectors that are given top priority in the development effort of the government are textile and garment industry, meat, leather and leather products industry,

agro-processing industries and construction industry (MoTI, 2002:15-20). Metal and metal products industries are not targeted as priority in this policy document.

### **3.6 Investment Policy**

Investment areas reserved exclusively for Ethiopian nationals are banking, insurance, micro-credit and savings, packaging, forwarding and shipping, broadcasting, mass media, attorney and legal consultancy, preparation of indigenous traditional medicines, advertisement, promotion and translation works as well as air transport services using aircraft with a seating capacity of up to 50 passengers. This regulatory policy, Council of Ministers Regulations on Investment and Incentives, opens metal and metal products industries for foreign investors. Considering the sector as essential for the development of other sectors, the policy has also made the tax prohibition period relatively longer when compared to other industries.

### **3.7 Government Procurement Policies**

Government procurement is by competitive bidding. There are no burdensome administrative procedures or special document requirements and efforts are still being made to make the procedures of public procurement more economical and efficient, fairer, transparent and non-discriminatory.

### **3.8 Customs Regulation**

In 2012, the industries with the highest output tariff rates were garment (35%), footwear (35%) and tobacco (35%). The minimum tariff rate is zero for fuel, cereal and armaments. There is variation across sectors and over time in the growth rates of tariff rates. The minimum tariff rate is for raw materials and machinery, and the maximum for finished products. The minimum and maximum rate of selected industries is described in the following table.

**Table 1: Customs Rate of Selected Industries**

Industry	Tariff Rate	
	Minimum	Maximum
Metal and metal products industry	5	20
Textile and garment industry	5	35
Leather and leather products industry ,including footwear	5	35

*Source: Ethiopian Revenue and Customs Authority*

Customs duties for raw materials in member countries of East African Community are zero, while the duty for finished products is 25 percent of CIF price. The countries enjoy zero custom duty for raw materials and the metal industry is relatively better protected as compared to Ethiopia's metal and metal products industry (See Table 2).

**Table 2: Tariff Rate on Metal and Metal Products Industry**

Country	Tariff Rate	
	Minimum	Maximum
Ethiopia	5	20
East African Community*	0	25

*Source: East African Community*

\* Burundi, Kenya, Rwanda, Tanzania and Uganda

#### **IV. Institutional Status to Enhance the Competitiveness of Basic Metal and Engineering Industry**

Ethiopian metal and metal products industries have been facing critical working capital shortage; and cannot therefore afford allocating extra budget for research and development activities<sup>8</sup>. As a result, the sector is faced with difficulty in making informed decision and bringing about dynamic efficiency to the industry. Likewise, there is no public institution fully engaged in researches that enhance competitiveness of the metal industry in the country. However, the following institutions may fill the gap in the short run if they fully dedicate their efforts for the sector. In the long-term, the industry may fill the gap itself.

<sup>8</sup> Section 6



**Table 3: Institutional Framework for Metal & Metal Products Industry Competitiveness**

Institution	Role	Challenge
Metal Industry Development Institute	Supporting the industry in legal & operational activities and filling the gap of the industry in R & D	<ul style="list-style-type: none"> <li>➤ Being young it lacks experienced manpower relative to the challenges of the sector</li> <li>➤ Lacks institutional set up of research and development department</li> </ul>
Ethiopian Association of Basic Metal and Engineering Industries	To work for the development of a truly progressive and dynamic metal and engineering sector that can firmly stand as the backbone of Ethiopian industry	Rather than designing strategy to generate income by providing R & D services and provide policy recommendation that keep the dynamism of the industry, the sources of income of the association highly depend on registration fee and annual contribution by members and aid from within the country or abroad
Ministry of Science and Technology	Help industries, including metal industries, to scale up endogenous technologies as well as adopt, transmit and develop technologies	Lack of experienced manpower and weak linkage with industries
Ethiopia Kizen Institute	Quality improvement, cost reduction, short delivery, reduced lead time, inventory control improvement and safety improvement	Being young it lacks experienced manpower
Universities	Help industries by providing well trained manpower	Weak linkage with industries

## V. Metal and Metal Products Industries Competitiveness Platform in Ethiopia

### 5.1 External Environment

There is a strong correlation between competitiveness and economic growth. It is argued that economic growth per se cannot determine a country's competitiveness. Yet economic growth is one of the factors determining competitiveness. Thus the

economic growth of Ethiopia is helping strengthen the competitiveness of the nation in general and the industry sector in particular. Metal industries may have also benefited from this as they create forward and backward linkage for the economy.

## 5.2 Policy Environment

The government of Ethiopia has undertaken various policy measures targeting sustained economic growth. To achieve this objective, the country followed market economy and recognized the private sector as the engine for economic development. It also recognizes the importance of competition at firm, industry, national, regional and international levels. To enhance competitiveness, the government has formulated different policies that were implemented at different stages. Beyond formulating policies, it has also been aggressively investing on development of human resources, infrastructures and powers which are the core for competitiveness.

The existing policies of the country, in one way or another, underscore the importance of competitiveness. However, some policies like the trade policy are not boldly formulated. On the contrary, the other rules and regulations like the competition law and industrial policy emphasize competition and competitiveness, though they do not look at those from a broader prospective. Still the other policies like the environmental policy lack instruments to promote environmentally friendly mode of production and providing appropriate certificate for such means of production.

With regard to customs regulation, the sector is less protected when compared with the highest output tariff rates for garment (35%), footwear (35%) and textile (35%) industries. Even the gap between tariff imposed on raw material and finished products is narrow for metal and metal products industries. Besides, tariff on iron ore in East African Community countries is nil, but much higher in Ethiopia. Final products are also better protected in the community than in Ethiopia. This exposes firms to face strong competition from the rest of the world at their infant stage.

Both import substitution and export-oriented industries are given huge attention in the Industry Development Strategy of Ethiopia. Some of the industry sub-sectors that are given top priority in the development effort of the government are textile and garment, meat, leather and leather products, agro-processing and construction industries. In this document, basic metal and engineering industries are not targeted as priority areas like the textile and leather industries. Competitiveness as a strategy is not also incorporated in this document or in any other separate document to our knowledge.

The National Science, Technology and Innovation Policy recognizes the importance of absorbing and mastering imported technology (technology transfer) by building upon indigenous knowledge and exercising creativity in the development of new products

and processes. It also give appropriate emphasis on creating and strengthening the local linkages that support the modification of production processes to bring cost down, increase efficiency and ensure environmental sustainability.

The government's procurement policy is open to every potential bidder. In spite of this, the public investment and private metal and metal products industry linkage is weak, especially in mega projects such as the railway development, Grand Ethiopian Renaissance Dam and sugar industries.

Other policies like the educational policy also recognize national competitiveness. Higher education and improved skills are critical for development and productivity enhancement. Since 2010/11 the government has been following a policy that increases enrolment in graduate and post-graduate programs in line with the 70/30 program, which is 70 percent in science and technology and the remaining 30 percent in social science fields. In spite of all the efforts to develop the country's most important asset – human resources, there are still shortages of critical skills for industry, including shortages of engineers, designers, technologists and technicians. The inadequacy of industry specific skills is caused by shortage of industry specific training facilities and the weak university-industry linkage.

## **5.3 Human, Institutional and Physical Resources of Ethiopia**

### **5.3.1 Industrial Human Resource**

It is generally acknowledged that the availability of qualified and skilled human resources is a prerequisite for industrial competitiveness. In Ethiopia, the government has of late been investing hugely on primary, secondary and tertiary as well as technical and vocational education. Producing qualitative human resource that transforms the economy is, however, a major constraint.

Looking at the national education performance of 2012/13, one can observe that enrolment in primary education (grades 1-8) was 17.5 million, and the number of primary schools 30,534. Secondary education enrolment reached 1.9 million in same year and enrolment in technical and vocational education and training (TVET) was 237,877. The share of education in the annual national budget was 25.2 percent in 2012/13<sup>9</sup>.

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<sup>9</sup> Ethiopian Ministry of Education 2012/13 Report

### 5.3.2 Institutional Capacity

Institutional set up plays important role in enhancing competitiveness of an industry. Support institutions fill the gap left by an industry by conducting various researches and leading the industry towards international standard. The Ethiopian Metal Industry Development Institute was established in 2010 to give the necessary support for metal and metal products industry.

Though the institute has ambitions to provide different kinds of support for the industry, it seems too young and lacking the institutional readiness to solve the existing problems of firms in the sector. In addition, the institute does not have the necessary manpower to address its objectives.

Ethiopian Association of Basic Metal and Engineering Industries is another institute established to support international competitiveness of the industry. However, the association lacks the necessary strategy, finance and human resource.

With regard to universities, the major bottleneck is weak linkage with industries and limitation in production of manpower with specific industry skill.

The Ministry of Science and Technology is capable of providing direct support for the industry. It implements the Science, Technology and Innovation Policy. One of the objectives of the policy is to scale up indigenous knowledge of the country and to increase adaptation of technology in metal and metal products industry. It, however, lacks financial resources to expand indigenous knowledge and disseminate adopted technologies.

The other institution that can play an important role in increasing the productivity of the industry is the Ethiopian Kaizen Institute. Though a new concept for the country, Kaizen mode of production improves a company's productivity and enhances competitiveness.

### 5.3.3 Infrastructure

#### (i) Power Status and Potential

The country's power generation capacity is largely based on hydroelectric power and this will remain a predominant energy source. The major constraints of the power sector are the frequent power fluctuations and lack of electricity in potential iron ore producing areas. Industries like metal and metal products which require continuous power supply with high intensity may as a result be affected seriously. Consequently, domestic metal firms could be forced to expend additional cost when they use generators to smoothen the power supply. The electric power generated by the country was 7.6 million KWA in 2012/13.

## **(ii) Road Network**

The total road network of the country was 85,966 km in 2012/13<sup>10</sup>. Roads improve a country's competitiveness by reducing the transportation cost of commodities produced in the country. However, from a metal industry perspective the main roads where iron ore deposits exist are only dry weather roads that make extraction difficult, thus affecting industry competitiveness adversely.

## **(iii) Telecommunication**

The telecom sector which has a multiplier effect on the economy plays a vital role by way of contributing to increase in efficiency. Ethio-Telecom data show that the number of mobile subscribers in the country was 23.6 million and the number of fixed line subscribers 790,168 in 2012/13. Internet subscribers reached 4.4 million. Despite this, the telecom sector still needs to further penetrate remote areas where investors could engage in iron ore mining.

### **5.3.4 Raw Materials (Iron Resources of Ethiopia)**

The Geological Survey of Ethiopia (GSE) has identified many iron occurrences in different parts of the country with a total deposit of more than 70 million tons. In most areas, lack of infrastructure (road, electricity and telecommunication) and small amount of iron ore deposit are the main constraints to extract ore.

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<sup>10</sup> Ethiopian Roads Authority

**Table 4: Major Iron Occurrences and Deposits in Ethiopia**

Area	Location	Reserve	Occurrence status	Opportunity	Constraints
Bikilal	Oromiya region	About 57.8 million tons	With 200m-1,400m length, 2-6 m width, and 200-300 m depth	Water is available at nearby streams and rivers. There is also adequate labor force in the nearby town to carry out mining of iron	The infrastructure conditions such as power and communications are major constraints to exploit the iron deposit
Gordana	Oromiya region (Wollega)	About 250,000 tons	Depth of nearly 100 m	Water is available from nearby streams and rivers. There is also adequate labor force in the nearby town to carry out mining of iron	Are recommended for small-scale mining as the resources are not huge enough
Koree	Oromiya region (Wollega)	150,000-200,000 tons	A length of 200 m, with an assumed extension of 100 m	"	"
Chago	Oromiya region (Wollega)	39,000 tons of ore	-	"	"
Belowteo	25 km away from east of the Asso-sa-Kurmuk road	2,500,000 tons	100 m depth	There is adequate labor in the area	Recommended for small-scale selective mining
Werfedo	Oromia region, Western Harerghe zone	20,911 tons		There is adequate labor in the area	Only for household utilities as the reserve is small
Other iron ore resources	Adwa (Tigray)	5MT	-	-	-
	Enticho (Tigray)	14.23MT	-	-	-
	Kaffa (SN-NPR)	47MT	-	-	-

*Source: Geological Survey of Ethiopia*



### **5.3.5 Iron ore Extraction Cost**

Production cost of iron ore is estimated to be about ETB 2.5/kg, which compares to the current steel scrap cost of ETB 3-5/kg. This implies that it is worthwhile to re-investigate its feasibility under the current and prospective high mineral price situation (JICA, 2010).

The annual iron and steel raw material inputs of metal factories imported and locally generated have reached 550,000 tons. The annual production of metal factories has in the meantime reached one million tons. The country's total reserve at different categories is approximately 100-120 MT. With the projected demand being twice that of the present level of production, the iron ore resources could be sufficient for over 50 years, if infrastructure is well developed and attracts investors to ore extraction.

## **VI. Assessment of Ethiopia's Basic Metal and Engineering Industry Performance**

Performance of the metal industry has been low. Average annual value of production of metal industries during 2008-2012 at industry level was USD 974 million (Table 5). The annual value of production went up and down from period to period. In the period under consideration, the minimum and maximum annual productions were worth USD 567 million and USD 2,178 million respectively. Most of the industries have been producing spare parts; and some roof-structure products, hand tools, construction machinery, water and fuel tanks. Very few produce industrial machinery, utensils and truck bodies and trailers. From this it is possible to conclude that the product items are very limited, and that the industries are concentrating on specific products. Ethiopia's five-year annual average value of production is more than triple of Kenya's average value of production.

**Table 5: Value of Production of Metal Industries (In million USD)**

Year	Value of Output	
	Ethiopia	Kenya
2008	711	292
2009	2178	318
2010	491	320
2011	922	334
2012	567	-
<b>Average</b>	<b>974</b>	<b>316</b>

*Source: Own calculation based on CSA data & Economic Ministry of Kenya*

The overall export performance of metal industry has been unsatisfactory. In the years between 2008 and 2012, average export volume was 665 tons, which had an average value of USD 337 million. The export volume revealed decrement from year to year in the past five years as a result the decline in value of metal export (See Table 6). The share of the industry from national export was insignificant and below five percent. Major export products of the industry were iron and steel, machinery and transport equipment accessories, automotive products, and waste and scrap of stainless steel. Firms in the industry sent their products to eighteen countries, of those Djibouti, United Arab Emirates, Sudan and India were the main destination countries.

**Table 6: Iron and Steel Export in Ethiopia**

Year	Volume in tons	Export Value (In million USD)	Share from total export
2008	3,027	53	3.7
2009	214	88	4.4
2010	36	106	3.9
2011	26	42	1.3
2012	23	48	1.6
<b>Average</b>	<b>665</b>	<b>337</b>	<b>-</b>

*Source: Ethiopian Revenue and Custom Authority & World Trade Organization*

Ethiopia's export performance between 2008 and 2012 was poor when compared to Eastern and Southern African. It was the lowest next to Sudan. The country generated USD 337 million from export of metal products while Kenya, Uganda, Zambia, Tanzania and Zimbabwe generated USD 2,336 million, USD 1,896 million, USD 1,433 million, USD 1,248 million and USD 1,080 million, respectively (See Table 7).

**Table 7: Metal Export Country Comparison (Values in Million USD)**

Reporter	2008	2009	2010	2011	2012	Five Years Total
Ethiopia	53	88	106	42	48	<b>337</b>
Kenya	412	408	449	524	543	<b>2,336</b>
Sudan	37	47	59	50	17	<b>210</b>
Tanzania	267	185	247	250	299	<b>1,248</b>
Uganda	330	333	320	422	491	<b>1,896</b>
Zambia	175	177	170	466	445	<b>1,433</b>
Zimbabwe	316	139	256	175	194	<b>1,080</b>

Source: *World Trade Organization*

## 6.1 Volume and Value of Import

Ethiopia imported an average of 564,457 tons of steel and various iron raw materials which cost USD 4.2 billion between the years 2008 and 2012. The import volume has registered growth in the five years, except in 2010 (See Table 8). The major import origin countries were Ukraine, Russia and Turkey, China and Japan.

**Table 8: Imported Steel and Metal Raw Materials**

Year	Volume in tons	Import Value (In million USD)
2008	484,297	3,503
2009	581,909	3,662
2010	403,840	4,242
2011	504,525	4,096
2012	847,712	5,827
<b>Average</b>	<b>564,457</b>	<b>4,266</b>

Source: *Ethiopian Revenue and Customs Authority*

Compared to some Eastern and Southern African countries, Ethiopia is the third importer of metal and metal products next to Kenya and Sudan (See Table 9).

**Table 9: Metal Import Country Comparison (Values in Million USD)**

Reporter	2008	2009	2010	2011	2012	Five years Total
Ethiopia	3503	3662	4242	4096	5827	<b>21,330</b>
Kenya	4381	4254	4818	5140	6297	<b>24,890</b>
Sudan	7449	5039	4666	4108	3176	<b>24,438</b>
Tanzania	2947	3288	3472	4507	4694	<b>18,908</b>
Uganda	1837	1800	1991	2260	2461	<b>10,349</b>
Zambia	2292	1481	2058	3283	3751	<b>12,865</b>
Zimbabwe	1339	1500	1461	1667	1667	<b>7,634</b>

**Source:** World Trade Organization

As we saw in the export section, the African countries export iron to the world but the countries had little interaction with Ethiopia. The metal industry of Ethiopia imported materials from far away European and Asian countries rather than the near African countries.

In the industrial development policy of Ethiopia, the metal and metal products industry has the objective to play important role in import substitution. In this respect, the industry covered on average 19 percent of domestic demand. In 2012 the share shrunk to 9 percent (See Table 10).

**Table 10: Share of Domestic Firms from National Demand (Value in Million USD)**

Year	Value of Production(A)	Domestic demand(B)	A/B*100
2008	711	4,161	17
2009	2178	5,752	38
2010	491	4,627	11
2011	922	4,976	19
2012	567	6,346	9
<b>Average</b>	<b>974</b>	<b>5,172</b>	<b>19</b>

**Source:** Ethiopian Revenue and Customs Authority, Central Statistical Agency

Average annual investment on fixed assets in the years between 2008 and 2012 was USD 14.3 million. Annual investment on fixed assets which is a proxy for size expansion and new technology reached USD 30.3 million in 2012 (See Table 11). This was small compared with competing firms in Asia and Europe.

**Table 11: Investment on Fixed Assets (In Million USD)**

Year	Investment Value
2008	10.7
2009	8.5
2010	9.3
2011	12.9
2012	30.3
<b>Average</b>	<b>14.3</b>

*Source: Own calculation based on CSA data*

The main source of finance for the sector is own fund. Loan of banks to this sector is very limited, though the share registered more than double expansion rate in 2012. Foreign source is insignificant and the share varies from period to period (Table 12).

**Table 12: Source of Finance (Share from the total annual finance)**

Source of Finance	2008	2009	2010	2011	2012
Own fund	28.0	28.9	28.5	30.0	30.9
Bank loans	8.0	4.8	7.3	5.7	18.0
Foreign Source	0.7	0.0	0.3	0.3	0.0

*Source: Own calculation based on CSA data*

## 6.2 Major Challenges Facing the Sector

The major constraints for metal and metal products industry can be broadly categorized into technical, organizational, institutional, and environmental and policy aspects. Lack of clear policies that enhance competitiveness of the industry and little investment in research and development which focuses on the industry are policy challenges, while weak innovation and product diversification and high dependency on customers' order are technical. Inability to produce iron ore domestically, lack of working capital, inability to cope up to foreign competition especially from India and China, tariff gaps between imported raw materials and finished goods and lack of quality monitoring on imported products, shortage of skilled labour, power (electricity) fluctuation, weak linkage with universities and research institutions, and poor infrastructure in iron ore manufacturing areas are the major institutional, and environmental challenges.

## **VII. Opportunities of Metal and Metal Products Industry in Ethiopia**

The major opportunities of the industry are availability of cheap labor force, existence of high and feasible potential of iron ore, macroeconomic stability, the high attention given to the sector by the government, fast growing construction industry and infrastructural development, growing demand for metal and engineering products, growing energy sector, and high world and regional demand for iron and iron products.

## **VIII. Ethiopia's Metal and Metal Products Industry Competitive Advantages and Disadvantages**

### **8.1 Competitive Advantages**

The macro-policy of the country, particularly infrastructure, education and science and technology policies enhance metal and metal products industries competitiveness. Cheap labor is another factor that enhances competitiveness. Ethiopian metal and metal products industry can become competitive by efficiently utilizing the cheap labor force of the country. The industry can at least take higher share of the domestic demand in the medium-term and become competitive in the international market. The other factor of production that enhances competitiveness is land; and foreign investors can acquire land on long-term lease arrangement. Land can be obtained from regional offices and/or federal government agencies. The Ethiopian Investment Agency has also set aside land for investors with promising utilities such as water, electricity and telecommunications.

### **8.2 Competitive Disadvantages**

The major competitive disadvantages are the inexistence of national competitiveness strategy to strengthen the competitiveness of the country's metal and metal products industry in particular. The other serious problem that erodes the competitiveness of the industry is the customs regulation. Cost of production of locally produced products is high as domestic firms are forced to pay five percent additional customs duty plus other taxes on raw materials; and this in the end makes the industry less competitive. The industry has been affected by chronic financial scarcity. Adopting modern technologies, boosting volume of production and becoming competitive both in the domestic and international markets are serious issues. In this regard, the existing association and institutes are incapable of providing the required service due to many problems. Finally, the sector is poorly supported by research and development; there



is limited assessment of regional market for end product and raw material so as to become more competitive by reducing transport cost.

## IX. Econometric Model, Results and Discussion

### a. The Model

#### i. Economic Model

The study employed frontier production function to estimate technical efficiency of the basic metal industry. It specified a production frontier proposed by Battese and Coelli (1995) which defines output as a function of a set of inputs together with technical inefficiency of production. The model considers that these inefficiency effects are modeled in terms of other observable explanatory variables and all parameters were estimated simultaneously. The stochastic frontier production frontier for panel data model incorporates the usual stochastic error term which is exogenous to the system and the firm-level effects to be distributed as truncated normal random variables assumed to systematically vary over time. Pioneer representation of the model is as follows:

$$\ln(Y_i) = X_i \beta + V_i - U_i \quad \text{for } i = 1, 2, \dots, N \text{ and } t = 1, 2, \dots, T \quad (1)$$

where  $Y_i$  is the output of the firm at the time period;  $X_i$  denotes a  $(1 \times K)$  vector of log of input values;  $\beta$  is a  $(K \times 1)$  vector of unknown scalar parameters to be estimated;  $V_{it}$  are the usual random errors measuring the positive and negative effects of exogenous shocks, assumed to be identically and independently distributed with  $(0, \sigma^2)$  independently of the  $U_{it}$ s;  $U_{it}$  hold no-negative values which are assumed to account technical inefficiency in the model. The summation of the two random variables  $V_i$  and  $U_i$  is expressed as  $e_i$  in which  $\sigma_e^2 = \sigma_v^2 + \sigma_u^2$  and  $\gamma = \sigma_u^2 / \sigma_e^2$ .

#### ii. Specification of Econometric Model

##### 1. Specification of the Production Function

The stochastic frontier production function can be specified as a Cobb-Douglas, or translog functional form. The Cobb-Douglas functional form is defined as:

$$\ln y_{it} = \beta_0 + \sum_{j=1}^3 \beta_j X_{jit} + V_{it} - U_{it} \quad (2)$$

The translog functional form which additionally considers the cross effects of inputs is defined as:

$$\ln y_{it} = \beta_0 + \sum_{j=1}^3 \beta_j X_{jit} + \sum_{j < k} \sum_{j < k-1} \beta_{jk} X_{jit} X_{kji} + V_{it} - U_{it} \quad (3)$$

where  $i = 1, 2, \dots, N$  which represents number of firms ( $N = 20$  for metal industries).  $t = 1, 2, \dots, T$  Which represent time period (five years are considered)  $j = 1, 2, 3$  which identify explanatory variables  $y_{it}$  and  $X_{jit}$  denote log of output and inputs, respectively. The time-variant technical inefficiency effects are non-negative random variables.

This study devotes the stochastic frontier production function technique to assess the technical efficiency of manufacturing industry, in particular, the Cobb-Douglas stochastic frontier production with the distributional assumption due to advantages over the other functional forms (Kalirajan and Flinn, 1983; Dawson and Lingard, 1989; Coelli and Battese, 1996, etc.). Since the panel data is used in this study and the sample number is not very high, the translog specification could not be tried.

## 2. Specification of Inefficiency model

The model used here incorporates a simple specification of the time-varying inefficiencies following Battese and Coelli (1992) as

$$U_{it} = \{\exp[-\eta(t-T)]\}U_i \quad (4)$$

Where  $i = 1, 2, \dots$  and  $N = 1, 2, \dots, T$

The random variable  $U_i$  can be considered as technical inefficiency effects for the  $i^{\text{th}}$  firm in the last period of the panel. Technical inefficiency effects of the firm for earlier periods are assumed to be the product of technical inefficiency effects of the last period and the value of the exponential function,  $\exp[-\eta(t-T)]$ . If the value of the parameter  $\eta$  had a value greater than zero, then  $-\eta(t-T)$  would be greater than zero and the exponential function provides a value not less than one. This shows

that earlier periods' technical inefficiency effects are improving over time. But if this parameter has a value less than zero ( $\eta < 0$ ), it implies that technical efficiency declines over time. If this parameter has a value equal to zero ( $\eta = 0$ ) it implies that technical effects of the  $i^{th}$  firm does not vary over time, (i.e.,  $U_i = U_i$ ).

### iii. Estimation Procedure

The parameters of the stochastic frontier model (1) were estimated using maximum likelihood estimation (MLE). The MLE method has been found to be significantly better than Corrected Ordinary Least Square (COLS) where the contribution of the inefficiency effects of the total variance is large, and is the preferred estimation technique whenever possible (Coelli, Rao and Battese 1998). Using the composed error terms of the stochastic frontier model (1), the total variation in output from the frontier level of output attributed to technical efficiency is defined by  $\gamma = \sigma_u^2 / \sigma_e^2$ . The variance parameter  $\gamma$  lies on the interval  $[0, 1]$ .

### iv. Definition and measurement of variables

The following variables were considered to estimate the inefficiency scores and the inefficiency effects:

- 1. Gross value of output ( $Y_{it}$ ).** Output of a certain enterprise could be measured either in gross value of output or in terms of value added. Both measures have their own strengths and weaknesses. Production is the result of the interplay of raw materials, fixed assets and other industrial inputs and it is relatively less affected by measurement errors when calculated at the firm level. Thus, considering gross value of output as a measure of output to be used as a dependent variable is more reasonable.
- 2. Fixed capital ( $X_{1it}$ ).** It represents those assets of the establishments with a productive life of one year or more. It shows the net book-value at the beginning of the reference year plus new capital expenditure minus the value of sold and disposed machinery and equipment and depreciation during the reference period.
- 3. Industrial cost ( $X_{2it}$ ):** Industrial cost includes fuel, electricity and other supplies consumed and industrial services rendered by the firm.
- 4. Raw materials ( $X_{3it}$ ).** Inputs used in the production process.

**5. Wage rate for Manual Labor, Wage rate for Non-Manual Labor and salary ( $X_{4it}$ ).** In the frontier production, the amount of wages and salaries paid to workers in each time proxies the labor cost. This is done because labor is a heterogeneous input not only in terms of biological make-up of workers but also in education, work experience and other similar attributes. Therefore, wages and salaries are presumed to consider such differences and better represent the extent of labor input use. This variable includes all payments in cash or kind made to the workers during the reference period in connection to the work done for the firms.

## **b. Estimation Results**

As explained in the model specification sub section, the model that better fits the data is the stochastic frontier production function technique to assess the technical efficiency of manufacturing industry. In particular, the Cobb-Douglas stochastic frontier production with the distributional assumption has advantages over the other functional forms (Kalirajan and Flinn, 1983; Dawson and Lingard, 1989; Coelli and Battese, 1996, etc.). Since the panel data used in this study and the sample number is not very high, the transom specification could not be tried.

The parameters of the stochastic frontier model were estimated using maximum likelihood estimation (MLE). The MLE method has been found to be better than Corrected Ordinary Least Squares (COLS) method, where the contribution of the inefficiency effects of the total variance was large, and hence the preferred estimation technique whenever possible (Coelli, Rao and Battese 1998). MLE methods were used for metal industries. All the coefficients for each input variables and their interaction terms and the parameters were estimated. The t-values for the coefficients and the log likelihood function were also provided. Table 13 reports these estimation results.

## **c. Discussion of Results**

In the MLE of Cobb-Douglas functional form of the basic metal and metal product industries, the coefficients of all the explanatory variables had the expected positive signs. The coefficients of factors of production show the responsiveness of total cost to a unit change in the use of respective input and output. The estimated coefficients show that labor input had very significant contribution to the total cost for production of basic metal.

The coefficient of industrial cost shows that a unit increase in industrial cost corresponds to a 0.29 unit increase in total cost for output production and it was significant at 5% level. Fixed capital input coefficients are also significant at 5% level (See Table 13).

**Table 13: Estimation Results**

Variables	Parameters	ML Estimates	
		Coefficients	t-value
Constant	$\beta_0$	0.18	2.45*
Fixed capital (X1it)	$\beta_1$	0.28	3.85*
Industrial cost(X2it)	$\beta_2$	0.29	3.1*
Raw Material(X3it)	$\beta_3$	0.53	3.11*
Wage(X4it)	$\beta_4$	0.62	3.16*
Sigma Square	$\delta^2$	0.77	-

Note: \* t-value significant at 5% level

#### d. Production Efficiency of Basic Metal and Engineering Industries (Between 2008 and 2012)

The mean efficiency for Basic Metal and Engineering Industries in 2008 was 0.14, which means 86% inefficiency in production. Continuing its decrement, the average efficiency reached 12 percent in 2012. The deviation from the expected unitary value of efficiency of the industry shows the existence of potential for improvement.

The maximum average technical efficiency of the industry in 2008, 2009, 2010, 2011 and 2012 were 18 percent, 17 percent, 15 percent, 14 percent and 13 percent, respectively, the minimum being consistently 11 percent within the five years (See Table 14).

**Table 14: Mean Production Efficiency of Basic Metal and Engineering Industries (Between 2008 and 2012)**

Efficiency measure	Year				
	2008	2009	2010	2011	2012
Average	0.144	0.135	0.129	0.123	0.118
Maximum	0.18	0.17	0.15	0.14	0.13
Minimum	0.11	0.11	0.11	0.11	0.11
St.deviation	0.03	0.02	0.02	0.01	0.01

**Source:** Own calculation based on CSA data

The average efficiency level increased at the rate of 4.9, implying an efficiency decrement during the period. The result indicates that the efficiency of the industry decreased over the recent few years. This might be because of high cost of imported

iron ore which is the main inputs for the industry. The other justification might be firms in the industry employed obsolete technology that are deteriorating from time to time (See Table 15).

**Table 15: Average Efficiency Growth Rate**

Efficiency measure	2008	2009	2010	2011	2012
Average efficiency	0.144	0.135	0.129	0.123	0.118
Growth rate in efficiency	-	-6.2	-4.4	-4.7	-4.1

**Source:** *Own calculation based on CSA data*

## X. Conclusions

The review in this paper revealed that competitiveness for an industry is a broad issue and should be seen from different angles, namely legal, institutional and socio-economic perspectives. The paper assessed the competitiveness of Ethiopian metal and metal products industry by examining national policies, institutional capabilities and internal capacity of firms in the industry.

The existing laws and regulations of the country have been reviewed to what extent these rules enhance competitiveness of metal and metal product industry in the country. The existing policies, in one way or another, put emphasis on competitiveness. However, some policies like trade policy are not even boldly formulated as independent documents. On the other hand, other rules and regulations like competition law and industrial policy do emphasize competition and competitiveness, but they do not look at them from broad prospective. Other policies like environmental policy do not explicitly embody issues of competitiveness in their objectives.

The country is undertaking different infrastructural developments and invests aggressively on human capital development. However, these are scanty in iron or potential areas.

Although value of production is better than Kenya, the export performance of the industry in Ethiopia is weak and limited to few markets. Export share of the industry is small and has been shrinking from year to year. Compared to the export performance of Eastern and Southern African countries, export was poor in the years between 2008 and 2012. It was in fact the lowest next to Sudan.

The government identified the industry as one of the few that has potential to substitute import. In reality, however, the industry is young to play this role. As the data depicted,

its domestic market share deteriorated from year to year and the industry is struggling to compete in domestic market.

Limited innovation and product diversification, low activity in iron ore extraction, lack of credit for working capital, inability to cope up with foreign competition, especially from India and China, relatively high tariff on imported raw materials, little investment in research and development, power (electricity) fluctuation and weak linkage with universities and research institutions are the major challenges of the industry. Availability of cheap labor force, existence of feasible potential of iron ore, macroeconomic stability, growing construction and power industry, and high demand in the world market are opportunities of the industry.

The econometric result indicates that basic metal and engineering industries had an average annual efficiency below 20 percent from 2008-2012. Labor cost showed significant contribution to the production of the industry as compared to other inputs; which means the industry used labor-intensive technologies. The industry efficiency decreased within the five years due to obsolete machinery employed in the production process.

## **XI. Recommendations**

Based on the findings of the study and the economic role of metal and metal products industry, the following policy implications may be drawn.

Even if competitiveness is discussed in several places in the country's policies, principles of competitiveness are not well addressed. This loosens the concept and relevance of competitiveness by stakeholders of any industry. Therefore, a national competitiveness strategy should be designed and an implementing institute established.

With regard to customs duty, in the situation where extraction of domestic raw material (iron ore) faces infrastructural constraints the government should revise the five percent tariff policy levied on iron ore in the short run and give attention to developing the necessary infrastructures to extensively extract the main raw material and then discourage imports of the ore.

To make the industry competitive in domestic and international markets, the government should create conducive environment for the industry. The concerned government body should therefore arrange easy credit access for working capital and to buy the necessary technology to diversify production.

In the long term the industry should be able to allocate its own budget for research and development. In the short-term, however, the existing institutes should create strong linkage with the industry, conduct research in market access and technology adoption

and innovation and strengthen the competitiveness of the industry. The association should also be strong in lobbying the public and creating public-private linkage. To do so, it should strengthen itself in finance by performing different consulting services and involving new competent staff.

With regard to capacity utilization, there exists a potential to increase output in the industry by improving efficiency in the utilization of existing resources as well as tackling external problems that hinder the development of the sector. Ethiopian Metal Development Institute should work towards utilizing local iron ore. Moreover, improving product quality with better technology, upgrading manpower and managerial skills and other alliances will have considerable effect in the development of the sector.

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# Developments in Agro-Processing Industries in Ethiopia

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## ABSTRACT

In this study, an attempt has been made to analyze the development of agro-processing industries in Ethiopia. In order to examine the development of the sector, the study employed a descriptive research approach. Hence, the development of the sector in terms of employment creation, gross value of production, value added in the national account, new investment, regional distribution, foreign currency generation and import substitution for the years between 2008 and 2012 has been descriptively analyzed. The finding declares that compared to its potential, the sector had unsatisfactory performance in these variables albeit improvements recorded for some variables over time. The finding from Revealed Comparative Advantage Index showed that, except for meat products, the sector had no comparative advantage for the other agro-processing sub-sectors. The finding also implies that the sector has huge potential for both domestic production and export as the sector is characterized by plethora in human and resource endowments.

**Key Words:** *Descriptive Research, Agro-processing, RCA Index, Export*

## 1. Introduction

### 1.1 Background

Agriculture is the dominant sector in the Ethiopian national economy. Its share accounts for more than forty three percent of the total GDP, sixty percent of foreign currency earnings and above eighty percent of employment creation<sup>1</sup>. Both the industry and services sectors are dependent on the performance of agriculture, which provides raw materials, generates foreign currency for the import of essential inputs and food for the fast growing population. In spite of its importance in the national economy, agriculture is based on subsistence farming households whose modes of life and operation have remained unchanged for centuries. This is due to slow rate of agricultural transformation

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towards high value commodities as a result of low performance of agro-processing industries, both in product innovation and market competitiveness.

The agro-processing subsector is the largest subsector, accounting for thirty seven percent of the total gross value of production (GVP) and twenty three percent of the value added at basic price (VAMP) of large and medium scale manufacturing industry, which itself contributes sixty percent of GVP of manufacturing sector (CSA, 2012).

As a dominant manufacturing sub-sector, the agro-processing industry includes nine industrial groups that are located in close proximity to major urban centers such as Addis Ababa, Adama and Dire Dawa. Product lines include frozen, chilled and canned meats; pasteurized milk, butter and cheese; canned and fresh fruits and vegetable products; crude and refined edible oil; flour and bakery products, including spaghetti and macaroni; animal feeds; and sugar and sugar confectioner. The quality of these products is generally satisfactory, although the technology used tends to be largely old, with capacity utilization in the sub-sector averaging fifty eight percent (UNIDO, 2012).

Recognizing the agro-processing industries potential in creating employment, foreign currency earnings from vast international market, role in backward and forward linkage with agriculture, role in import substitution and contribution for faster technology transfer, the industries have been given special attention in both the Industrial Development Policy and the Growth and Transformation Plan.

Despite the efforts of the government, the size distribution of manufacturing enterprises reveals the infancy of the sector. There were 2,172 medium and small-scale enterprises with forty two million birr gross value of production (GVP). The enterprises generate only around five per cent of their revenue from exports, employ about 186,799 workers, and capacity utilization is around 76.6 per cent. Most of the agro-processing factories in Ethiopia are cereals processors such as bakery products, 276 establishments in all (CSA, 2012). Compared to the huge potential of the sector, this performance is unsatisfactory. Different factors contributed for this low performance. Of these, the major bottlenecks the sector has been facing are low effort to improve process technology, marketing management and conforming to standards; low labor productivity, intense competition in the world market, and small size and type of ownership (Habtamu, 2010).

Generally, the agro-processing industry is still in its infancy in Ethiopia. The products have difficulties in complying with international standards and the trade balance for processed food products remains substantially negative, which is an indication of very high and unexploited domestic market potential for food industry development. However, the agro-processing sector has relatively low import dependence (UNIDO,

2009). The major imports are malt and barley for making beer, and wheat and flour for bakery products. Even these raw materials can be supplied from domestic sources at competitive prices as the country has large area of land that grows wheat and barley. The above mentioned low performance of the sector deserves detailed investigation. Therefore, it is important to evaluate the development of the sector in order to devise appropriate policies and thereby increase competitiveness of firms in the sector.

This particular study seeks to evaluate developments in agro-processing industries, critical issues on competitiveness, challenges and opportunities in the industries and analyze policy and strategic issues to enhance the competitiveness of agro-processing industries in Ethiopia, to particularly boost the performance of medium and large-scale industries.

## **1.2 Objectives of the Study**

The main objective of this study is to assess the development of agro-processing industries in Ethiopia during the past five years (2008-2012). In line with this, the specific objectives are to:

- Analyze the five-year progresses in agro-processing industry in Ethiopia;
- Identify problems and challenges the sub-sector is facing and assess available opportunities;
- Analyze competitiveness of the sector in the international market and Eastern and South African countries;
- Make policy recommendations to further enhance the performance and competitiveness of agro-processing industries in Ethiopia.

The study is limited to Ethiopian agro-processing industry major sub-sectors. These are the manufacture of bakery products, spaghetti and macaroni, confectionery, fruits and vegetables, meat and meat products, oil-cakes, dairy products, coffee and spices.

## **2. Methodology**

### **2.1 Data Sources and Type**

The sources of the data are both primary and secondary. Primary data on challenges and opportunities were collected from firms within the sector and officials in support institutions. Secondary data were collected from statistical reports, mainly from Central Statistical Agency, Ministry of Industry, Ethiopian Revenue and Customs Authority, International Trade Center (ITC) statistical database, and review of related theoretical and empirical literature.

## 2.2 Method of Analysis

To assess the development of agro-processing industries, the study employed descriptive approach. The approach was used to evaluate the progresses in agro-processing industries in Ethiopia in terms of number of establishments, employment and value addition, regional distribution and market orientation in the sector and in each sub-sector during the past five years.

To assess the competitiveness of the sector, the study applied Revealed Comparative Advantage (RCA) index, which is a common measure used to analyze competitiveness. The concept of comparative advantage is widely used in modern economics literature to evaluate the patterns of trade and specialization of countries in commodities which have a competitive advantage. Balassa (1965) outlined that it is difficult to measure competitiveness due to lack of comprehensive data on factor costs. So the most widely accepted indirect approach is the following RCA index, which reveals the comparative advantage of a nation from its past trade data.

$$RCA_i^A = \frac{x_i^A}{X^A} \cdot \frac{X^w}{x_i^w}$$

Where,

$x_i^A$  – Ethiopian Agro-processing industries export of product  $i$ ;

$X^A$  – Total Agro-processing export of Ethiopia;

$x_i^w$  – World Agro-processing exports of product  $i$ ;

$X^w$  – Total world Agro-processing exports;

The index reveals a comparative advantage in export of agro-processing commodity  $i$  by Ethiopia. If the index's value is greater than one, a country has a revealed comparative advantage in the production of that product. A value of less than unitary implies that the country has a revealed comparative disadvantage in the product.

To overcome the problem of upward-biased of the RCA index values, Laursen (1998) argues that, the index should always be made symmetric when used in analysis, because the pure RCA is basically not comparable on both sides of unity. The index ranges from zero to one, if a country is said not to be specialized in a given sector, while the value of the index ranges from one to infinity, if a country is said to be specialized. He adjusts the RCA index to make it symmetric, such that the adjusted index values are between  $-1$  and  $+1$ . He identifies this index as the Revealed Symmetric Comparative

Advantage (RSCA), which is algebraically defined as:

$$RSCA_i^A = RCA_i^A - 1 \quad RCA_i^A - 1$$

Positive values of RSCA show a competitive advantage and negative value shows a competitive disadvantage in exporting product.

### 3. Developments in Agro-Processing Industries

Despite the lack of recorded information about when and how modern industry was introduced in Ethiopia, many scholars agree that modern manufacturing industrial activities began in the beginning of the 20<sup>th</sup> century. It is also widely accepted that the major enabling conditions for the emergence and development of modern industries in Ethiopia were the construction of Ethio-Djibouti railway, the establishment of strong central government and Italian invasion of Ethiopia<sup>3</sup>.

During the imperial regime, the development of agro-industry remained stagnant. From 1974-1991 the military government imposed command economy upon the country. Hence, all large-scale commercial farms were nationalized and private sector investment discouraged. The change of government in 1991 brought back free market economy. Hence, lots of reforms were put in place in line with the structural adjustment program.

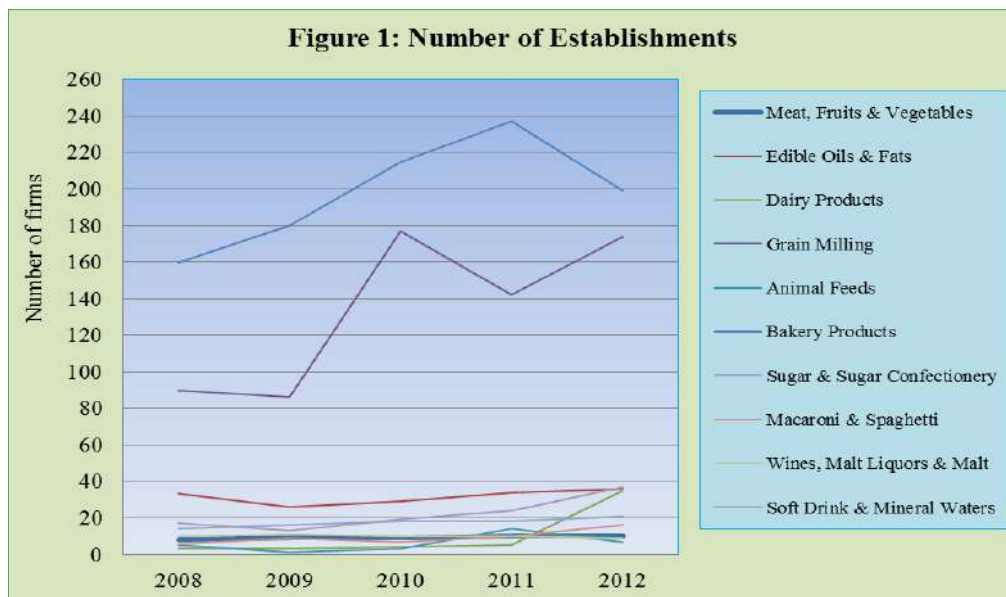
Following the reform, considerable achievements have been recorded in agro-processing industries. For example, there was rapid expansion of flower farms, which was virtually unknown before 1992, and became a major source of foreign exchange in addition to generating employment opportunities.

In this section would be discussed the development of agro-processing industries in Ethiopia and the developments from the years 2008 to 2012. The sub-sectors that the study covers in the agro-processing industries are meat, fruits and vegetables, edible oils and fats, dairy products, grain milling, animal feeds, bakery products, sugar and sugar confectionery, macaroni and spaghetti, wine, malt liquors, malt, soft drinks and mineral water.

<sup>3</sup> There were about 25 manufacturing industries before the Italian invasion in Ethiopia. And during the invasion period an additional 5 industries were functional.

### 3.1 Number of Establishments

A quick review on the number of the establishments in the different sub-sectors revealed that the bakery business has shown significant increase during the study period. This was because the sub-sector requires little capital and easily attains supply of essential inputs such as flour from state commercial farms. Grain milling also showed an increase in number of firms over the same period. The other sub-sectors showed minimal or no growth, indicating that there is lack of intense competition and the sector is still untapped. A positive and increasing growth rate in the number of establishments was observed in dairy products, sugar and sugar confectioneries sub-sector (Figure 1).



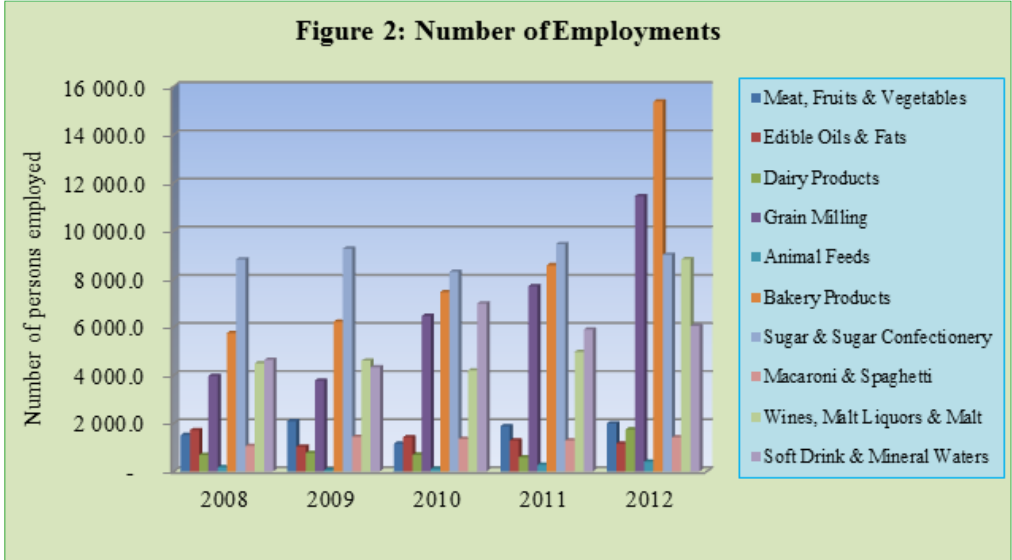
Source: Central Statistical Agency (2008-2012)

### 3.2 Number of Employments

In terms of employment absorption, the bakery sub-sector was also dominant and showed an increasing trend over time. With respect to annual growth rate, this sector exhibited a continuous positive rate of growth during the review period. Sugar, grain milling, fruits and vegetables and meat also absorbed a significant number of employments. Animal feeds and dairy products absorption of labour remained to be the least. On the other hand, the rate of labour absorption in edible oils and fats showed an annual decrement over the period under study. This was mainly due to government policy of importing edible oils to combat food inflation. Of all agro-processing

sub-sectors, animal feeds absorbed the least labor force (See Figure 2).

Although the sector is one of the priority sectors in its role of labour intensiveness in the Industrial Development Strategy, the sector was struggling to create wide employment opportunity for citizens.

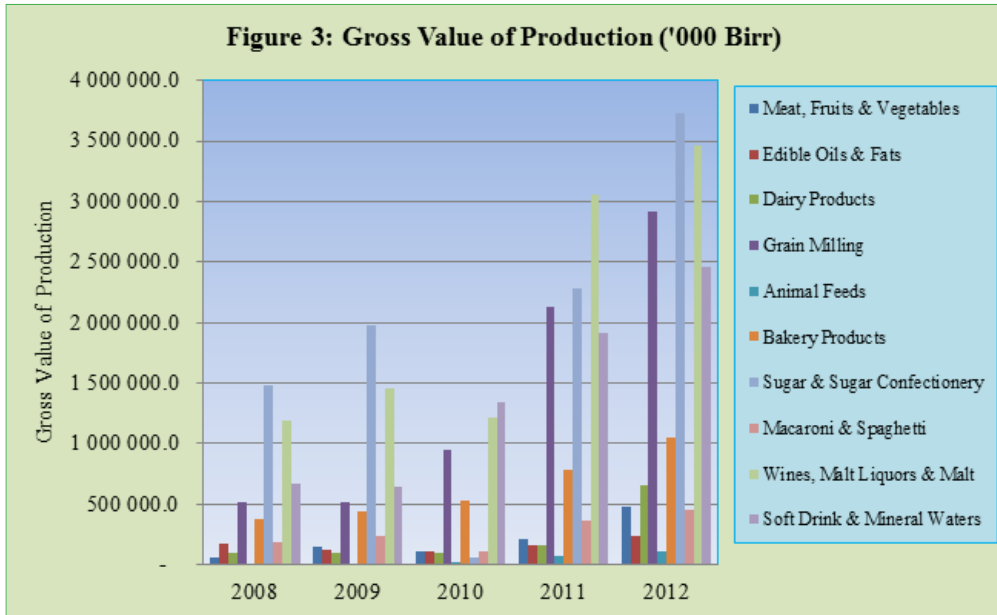


Source: Central Statistical Agency (2008-2012)

### 3.3 Gross Value of Production

Of all the sub-sectors of agro-processing industries, sugar and sugar confectionery had the largest gross value of production, followed by grain milling and bakery products, respectively. This implies that the capacity and capacity utilization of firms in the industry is very low and varies from sub-sector to sub-sector. Dairy and bakery products registered a continuous and positive annual growth rate in gross value of production during the period under review. Edible oils and fats recorded a negative annual growth rate in 2009 and 2010 due to the large amount of government import of edible oils to combat the then food inflation (See Figure 3).



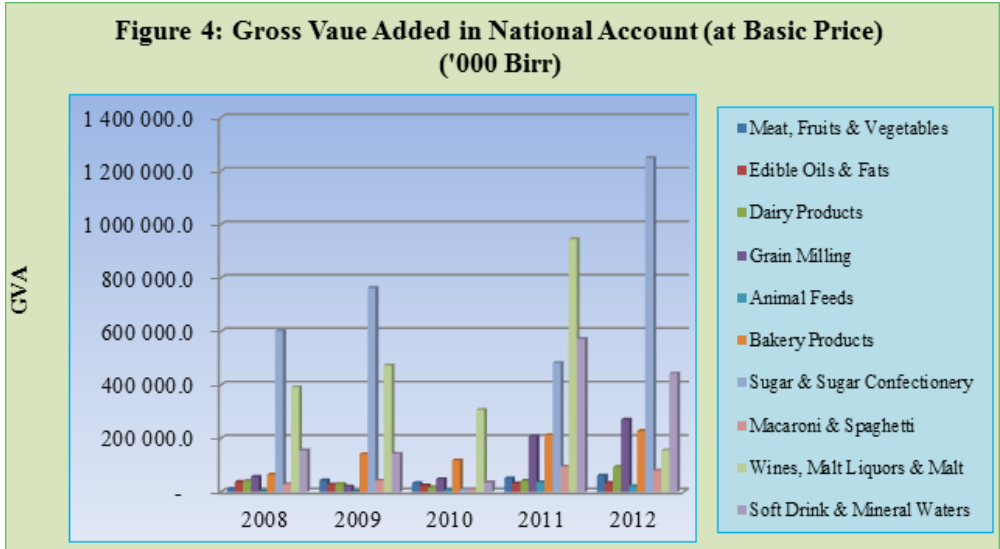


Source: Central Statistical Agency (2008-2012)

### 3.4 Value Added in the National Account

Sugar and sugar confectioneries contributed the largest amount of value addition compared to all the other sub-sectors. Wine, malt liquors and malt and soft drinks and mineral water were the second and third largest sub-sectors in value added in the national account, respectively.

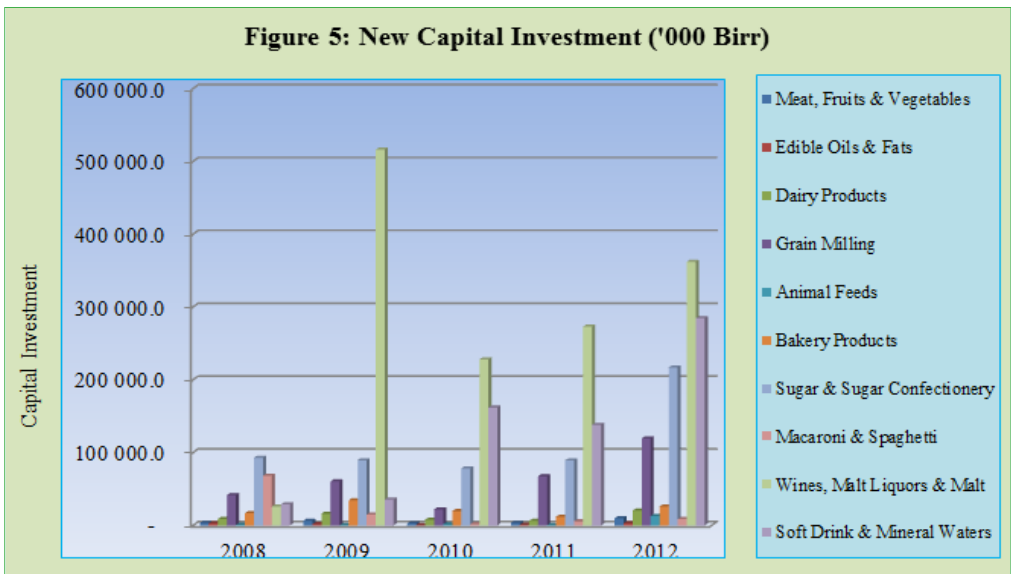
The other sub-sectors had little value added in national account, despite the fact that agriculture is the dominant sector in the Ethiopian economy. One of the key challenges that inhibits the growth of value added in national account is inadequate technical capacity. Improvement in annual growth rates were observed in most of the sub-sectors in 2011 and 2012 (See Figure 4).



Source: Central Statistical Agency (2008-2012)

### 3.5 New Capital Investment

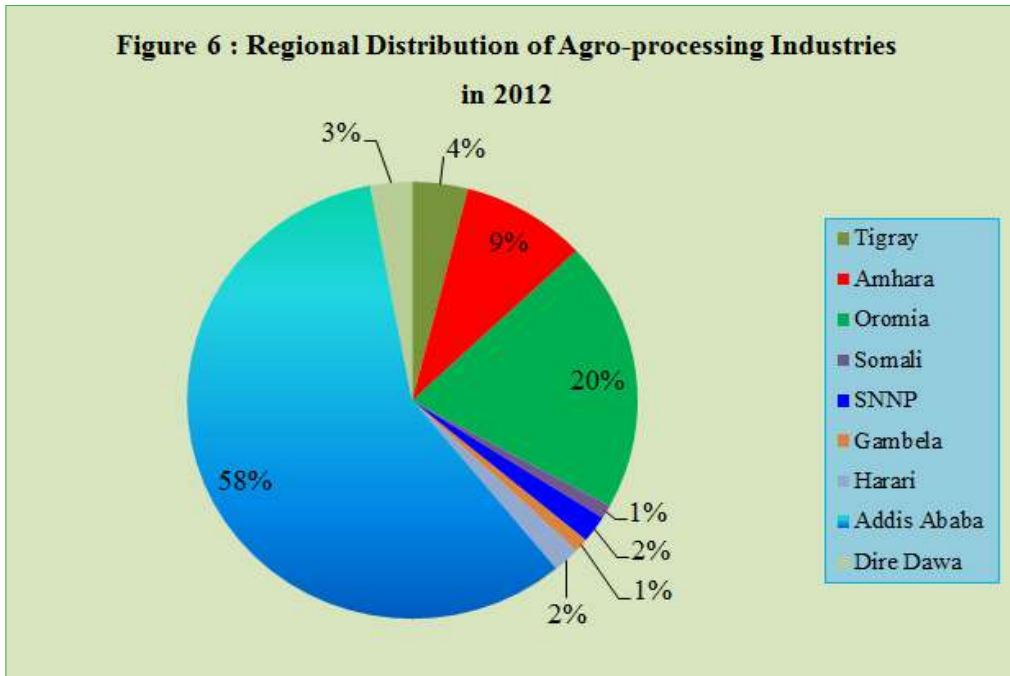
Of all the sub-sectors of agro-processing industries, wine, malt liquors and malt had the largest new capital investment from 2009-2012. The second and third largest new capital investment was undertaken by soft drinks and mineral water and sugar and sugar confectionery, respectively. This was because the business in these industries requires large capital investment. All in all, the development in agro-processing industries showed that the sector possesses huge untapped potential (See Figure 5).



Source: Central Statistical Agency (2008-2012)

### 3.6 Regional Distribution

Addis Ababa is the dominant place for agro-processing industries, with 58% followed by Oromia (20%), Amhara (9%) and Tigray (4%). Variation in regional distribution of agro-processing firms resulted from variation in developments of infrastructures like power, road and other utilities. As a result, agro-processing industries are concentrated in urban areas where they can fetch good returns due to proximities to well-developed infrastructures and market (See Figure 6).

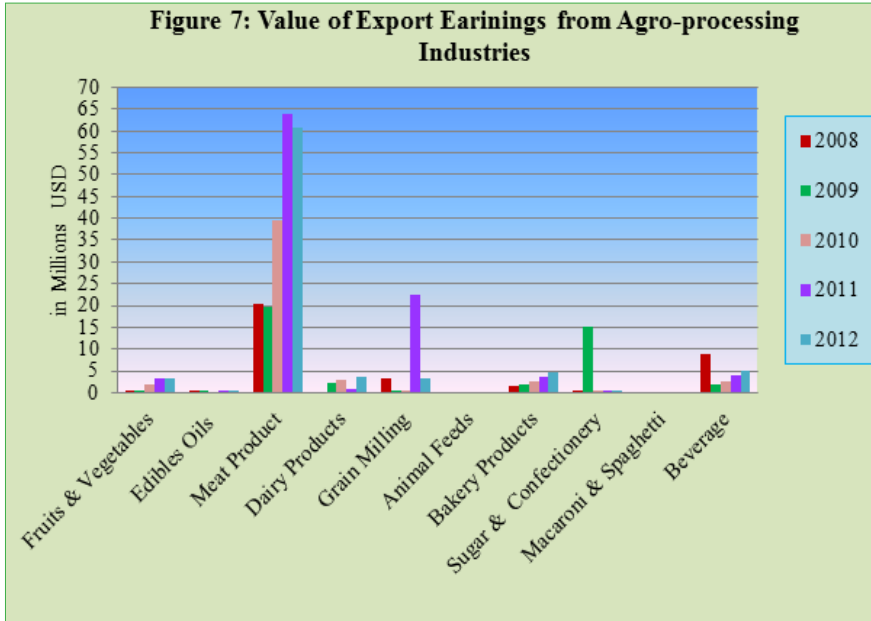


Source: Central Statistical Agency, 2012

## 4. Agro-processing Industries Trade Performance

### 4.1 Agro-processing Export Performance

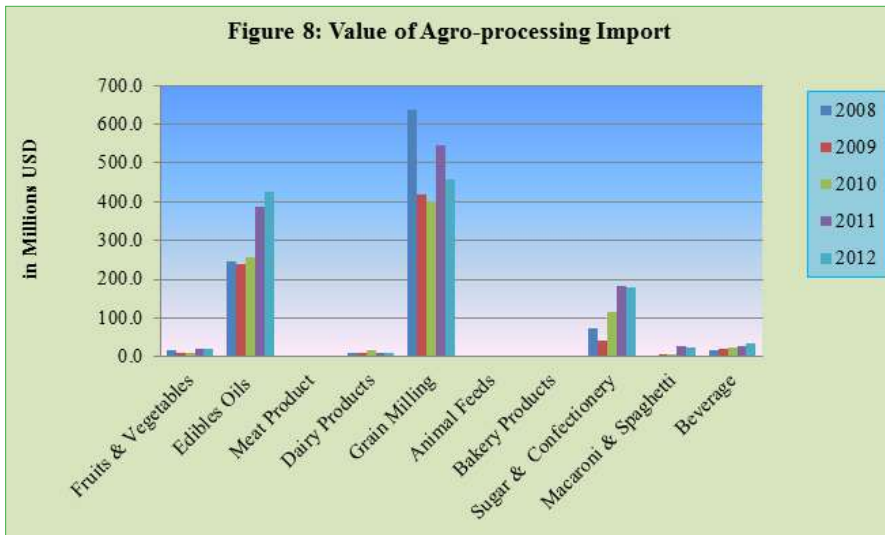
The country earned 304.4 million USD between 2008 and 2012 from agro-processing industries. Earnings grew from USD 34.7 million in 2008 to USD 80.4 million in 2012. At sub-sector level, the highest earnings were from meat and beverages export, respectively. Earnings from meat grew from USD 20.4 million in 2008 to USD 60.8 in 2012. On the other hand, value of earnings from beverages decreased from USD 8.8 million in 2008 to USD 5 million in 2012 (See Figure 7). United Arab Emirates, Djibouti, Somalia and Sudan were the major product destination countries.



Source: Ethiopian Revenue and Customs Authority (2008-2012)

### 4.2 Agro-processing Industries Role in Import Substitution

Ethiopia imported agro-products worth USD 4.9 billion from 2008 to 2012. For most of the commodities, the import value registered growth over the five years. Grain milling, edible oils and sugar and confectionery had the highest import value (See Figure 8). The trade balance of this sector registered USD 4.6 billion deficit in the study period.



Source: Ethiopian Revenue and Customs Authority (2008-2012)

The Industrial Development Policy stipulates the important role of agro-processing industries in import substitution. The sector has covered on average 32 percent of the domestic demand, which is unsatisfactory when considering the existing ample potential the sector has (See Table 1).

**Table 1: Share of Domestic Firms from National Demand  
(Value in Million USD and share in percent)**

Year	Value of Production (A)	Domestic demand (B)	A/B*100
2008	133.7	1104.1	12.1
2009	438.4	1139.6	38.5
2010	281.6	1064.6	26.4
2011	645.5	1752.8	36.8
2012	855.1	1929.2	44.3
<b>Average</b>	<b>470.86</b>	<b>1398.06</b>	<b>31.62</b>

**Source:** *Ethiopian Revenue and Customs Authority & CSA (2008-2012)*

The export performance was unsatisfactory when compared to Eastern and Southern African countries. It was the lowest next to Burundi, Rwanda and Sudan. The country generated an average value of USD 43.7 million from export of agro-processing products, while South Africa, Kenya, Tanzania and Uganda generated USD 2,825 million, USD 827 million, USD 233 million, and USD 177 million, respectively (See Table 2).

**Table 2: Agro-processing Export Country Comparison  
(Values in '000 USD)**

Country	Meat & Meat Products	Dairy Products	Fruits & Vegetables	Flour Milling Products	Edible Oils	Sugar	Beverages	Average
Botswana	475,950	3,443	3,412	52,452	5,320	92,739	71,016	100,619
Burundi	2	139	4,665	980	310	3,751	10,389	2,891
Ethiopia	204,279	9,538	8,944	45,519	64	15,611	22,074	43,719
Kenya	65,485	78,638	1,603,287	95,345	635,032	2,986,299	327,993	827,440
Malawi	111	8,085	1,834,379	25,045	2,229	450,013	27,202	335,295
Sudan	84,845	581	32,508	1,324	1,767	81,340	23,398	32,252
Rwanda	145	646	16,083	40,054	2,800	2,658	29,744	13,161
South Africa	458,052	413,139	10,205,331	996,493	915,340	1,411,659	5,376,874	2,825,270
Swaziland	19,563	7,141	89,328	3,961,975	4,646	922,602	86,012	727,324
Tanzania	1,394	8,769	1,062,838	231,678	234,205	45,165	52,865	233,845
Uganda	2,183	66,748	108,781	175,044	362,359	305,639	222,519	177,610
Zambia	3,128	43,507	86,564	193,681	72,445	626,953	41,149	152,490

Source: *International Trade Center (ITC), 2012*

### 4.3 Assessment of Agro-processing Industries Comparative Advantage

The index of RCA (RCAI) was calculated using data on exports for Ethiopia and the world seven agro-processing industries from International Trade Center (ITC) database. The index was analyzed at sub-sector level. Throughout the study period, Ethiopia had consistently revealed comparative advantage only for meat product, as the value of RCA was greater than one. For grain milling, bakery and beverage products, the country revealed comparative advantage in 2008, but then after comparative disadvantage as the value of RCA was less than unity. In general, the other sub-sectors had comparative disadvantage in the world market (See Table 3). This is due to the fact that Ethiopia's agro-processing industries export commodities constitute very small component of the total national export as well as world export.

Although the pros and cons of the Balassa index are still debated in the literature, it stands as the most widely used comparative advantage index. In the literature, numerous empirical studies have used the Balassa index to identify a country's strong sectors. The index is not satisfactory as a cardinal or ordinal measure but provides a

useful tool in detecting comparative advantages of a country in particular sectors. Since the result of RCA index did not observe upward bias, there was no need to calculate the RSCA index.

**Table 3: RCA of Agro-processing Industries Export**

Commodities	2008	2009	2010	2011	2012
Fruits & Vegetables	0.1467	0.0574	0.3593	0.3273	0.4108
Edible Oils	0.0041	0.0053	0.0000	0.0001	0.0000
Meat Product	2.8676	2.2219	3.9086	3.2343	3.7290
Dairy Products	0.0000	0.4011	0.3992	0.0552	0.3123
Grain Milling & Bakery Products	1.4276	0.5354	0.5127	2.7817	0.9874
Sugar & Confectionery	0.0611	4.4874	0.0017	0.0372	0.0000
Beverages	1.3293	0.2326	0.2828	0.2214	0.3326

**Source:** Own computation based on International Trade Center (ITC) data (2008-2012)

## 5. Challenges and Prospects of Agro-processing Industries

### 5.1 Challenges

To improve the development and competitiveness of the sector and reap the benefits derived from agro-processing industries, a number of challenges must be first addressed. To mention a few:

- **Obsolescence of Machinery and Equipment.** Apart from few modern factories, the agro-processing firms in general have inappropriate or obsolete processing equipment, mainly due to lack of investment capital. This results in sub-optimal production, poor and inconsistent quality of processed products and inability to meet international standards.
- **Inadequate and Poor Supply of Raw Materials.** There exists insufficient, inconsistent and poor quality of raw materials. This is due to huge reliance

on small-scale subsistence farming which generates more than 90 per cent of total raw material supply and is heavily dependent on rain-fed agriculture. In addition, agro-processing industries occupy small lots scattered over large areas, resulting in high aggregate cost such as transportation and related handling costs.

- **Poor Vertical Integration.** The agro-processing sector in Ethiopia has suffered from poor vertical integration in marketing among the value chain segments and actors, which has limited the flow of information regarding the availability of supply to manufacturers and quantities and quality requirements that have to be met by the producers. Problems in marketing are further compounded by the unnecessary number of actors involved in the commodity value chain, which results in exaggerated overhead costs and marketing margins for the various value chain.
- **Inadequate Technical Capacity.** The agro-processing industries are characterized by inadequate technical capacity in food science and technology and in agri-business management. Little technical knowledge is disseminated to the farming and small-scale levels. Moreover, the sector is characterized by a division between the formal and informal system. In the formal system there are few well trained managers in agribusiness and agro-processing in the country.
- **Urban Concentrated Agro-processing Plants.** The location of most of the agro-processing plants is skewed to near urban area where they can access basic utilities such as water, electricity, and telecommunications. This limits the market for agro-processing products to urban areas.
- **Poor Product Quality.** Except for a few oil processing companies, most firms are not accredited under any of the international quality standard programmes. Hence, exports of products are low and are limited geographically to neighbouring and Middle-East countries. The sector also faces limited access to packaging technology and often uses inappropriate packaging materials or none at all, which restricts distribution to the immediate vicinity and shortens product shelf line.
- **Poor Access to Finance.** Unavailability of credit leaves most firms unable to invest in new technologies. Hence, this will cause for most firms to operate at sub-optimal levels, leaving insufficient profit margin to allow for self-financing investment.



## 5.2 Opportunities

Despite the challenges the agro-processing industry faces, Ethiopia is endowed with a mix of the following appropriate conditions for the development of this industry.

- **Infrastructure.** Infrastructure improvements, together with Ethiopia's regional positioning, create a favourable condition for expanding local markets as well as facilitating the collaboration of transnational corporations to work with Ethiopian partners to access the large markets of regional blocks such as COMESA.
- **Raw Material Endowment.** Large amount of raw material endowment creates enormous potential for agro-industrial development. For instance, Ethiopia's various agro-ecological zones enable the country to be highly competitive in both variety of crops of production and yield within the East Africa sub-regions.
- **Untapped Market Demand.** Domestic market demands for grain mill products, malt, edible oils are not being met, which creates huge potential for domestic production and processing of these crops. Ethiopia currently imports about 30 percent of its wheat requirements, 80 percent of malt required by breweries as well as 50 percent of its edible oils.
- **Cheap Labour Force.** The labour intensive nature of the food industries in Ethiopia allows for the supply of relatively cheap labour and, hence, creates opportunities for low skill employment. However, as the sector transforms to modernization some of this low level labour force will be eliminated, but will at the same time create new and more skilled employment opportunities.
- **Investment Conducive Environment.** There is an enabling environment for investment provided through incentives such as tax exemptions, including customs import duty exemption and tax holidays; a special loan fund business; land availability; supply of foreign exchange, among other things, in Ethiopia.
- **Establishment of Industrial Zone.** Establishment of exclusive industrial villages at various locations at a cost of more than USD 700 million can be considered as a huge opportunity for the development of agro-processing industry.
- **Population Growth, Increased Income and Urbanization** has also contributed to higher domestic demand and demand for more sophisticated goods. This situation will create opportunity for further growth of the agro-processing industry.

## 6. Conclusions and Policy Implications

The study examined the development of agro-processing industries in Ethiopia. In doing so, the study descriptively analyzed the contribution of the sector in employment creation, gross value of production, value added in the national account, new investment, regional distribution, foreign currency generation and import substitution for the years between 2008 and 2012. Compared to its potential and Eastern and Southern African counterparts, the sector had unsatisfactory performance in these variables; though improvement has been registered for some variables over time.

To illustrate the sector's competitiveness in export, RCA Index was used. The index revealed the comparative advantage Ethiopia has in the export of agro-processing commodity in the world market. The finding also disclosed that the sector, except in the meat and meat products sub-sector, has comparative disadvantage in the international agro-processing product market.

These low performances resulted from obsolescence of machinery and equipment, inadequate and poor supply of raw materials, poor vertical integration, inadequate technical capacity, urban concentrated agro-processing plants and poor product quality. However, the sector has plethora of opportunities such as improved infrastructure, raw material endowment, untapped market, cheap labor force, conducive investment environment and population growth with increased income and urbanization.

### Policy Implications

The policy implication from these findings suggests that, in order to improve future performance and comparative advantage of the sector, capacity and quality in production of firms in the sector should be improved by tackling the major constraints identified in this research while taking advantage of the existing opportunities. An effort has to be exerted to make the Ethiopian agro-processing industry more commercial-oriented to harvest the benefits derived from the existing regional and global market. Hence, a number of strategies should be implemented to attain optimal result from agro-processing industry, at least, in the following areas.

- **Agricultural Productivity.** Agro-processing industries are reliant on the production of agriculture for input. The current level of productivity and technology utilization of the Ethiopia agriculture sector should be enhanced to increase the agricultural yield.
- **Access to Finance.** There is a need for investment in new processing

capacity and investment to improve existing capacity. Productive capacities of the sector can be improved through increased access to finance for the sector. Financial access will promote both capital investment and working capital. Hence, there is a need for establishing institutions such as bank which mobilize both domestic and foreign currency only dedicated to financing the development of agro-processing industry.

- **Infrastructure Development.** The finding of the study revealed that most of the agro-processing firms are way far from raw material production areas due to absence of support infrastructure. Hence, the existing agro-processing areas are skewed to in and around Addis Ababa where they have access to basic infrastructure. In order to minimize, if possible eliminate, such imbalance and promote small-scale producers, there is a need for infrastructural development such as electricity, water and road in raw material production areas. Developments in basic infrastructure also promote the direct linkage between smallholder farmers who produce more than 90 percent of raw materials and agro-processors.
- **Export Performance.** Focus should be given to the quality of agro-processing products in order to be competitive both on domestic and export market. This implies that there should be a well-established Food Safety Assurance System that will support the agro-processing industry in meeting local and international standards. Maintaining the quality of products also has enormous advantage in substituting imported products.

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# Ethiopian Extractive and Mineral Industries Competitiveness

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**Amelework Olana<sup>1</sup>**

## **ABSTRACT**

African countries are rich in natural resources and minerals are becoming the means of foreign currency earnings. The extractives industry is expected to play an important role in the development of many of the countries. In East Africa, the extractive industry has been growing fast, with huge mineral deposits already discovered and other explorations going on. Many countries have financed their development through resource extraction. Mining is important to the economy of Ethiopia and a diversification from agriculture. The Ethiopian government is very willing to support the sector by taking different measures. The legal and fiscal environment instituted permits a free market driven economy, allowing both foreign and local companies to participate in the mining development of the country in a transparent manner that would help boost the economy of the country. A new market-oriented economic policy was provided by new mining proclamations and regulations to encourage the participation of private capital in mineral prospecting, exploration and development activities. The latest Proclamation No.678/10 provides exemption from customs duties and taxes for holders of exploration licenses and with no limitation of imported item. In addition, the materials imported can be re-exported free of tax. The government also made amendments to reduce the tax rate from 45% to 35%, and to 25% for large-scale mining.

Ethiopia has an immense mineral potential. Gold has, for instance, been discovered in different parts of the country, and a huge potash deposit was also discovered. This study is conducted to assess the competitiveness of selected extractive industries with the view to gauging the opportunities and challenges that affect competitiveness of the industries and the progress of the industry in relation to industries in East African Community countries. The competitiveness of the industry in Ethiopia is examined in relation to performance (level of production), job creation, contribution to GDP, and contribution to export. The potential resources, the free market economy, incentives offered by the government and other supports have positive effects on the competitiveness of the industries while the poor infrastructure, attrition of experienced staff and other challenges affect it adversely.

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<sup>1</sup> Amelework Olana holds MA degree in Public Finance Management, from Ethiopian Civil Service University

Even if the mining sector in Ethiopia has been underexploited, there is a significant progress in the sector. Minerals are now the second biggest foreign currency earners, next to coffee. Gold is the main contributor to the GDP of the country with foreign currency earnings of close to 100%, out of which 2/3<sup>rd</sup> is produced by artisanal miners.

## 1. INTRODUCTION

### 1.1 Background

Records indicate that foreign companies had obtained mining concessions in Ethiopia as early as 1900. However, limited exploration and mineral production took place in the following years. Integrated mining did not exist in the country until 1971.

The Mining Proclamation of the Empire of Ethiopia No. 282/1971 was enacted in 1971 to regulate mining operations. Any person registered as a trader in accordance with the 1960 Commercial Code of Ethiopia was eligible to be granted exclusive exploration and mining licenses.

The proclamation issued after four years, Proclamation No.39/1975 of the Socialist Government of Ethiopia, nonetheless restricted the role of the private sector to the exploration and mining of construction minerals like quarrying. The operation for metallic and industrial minerals was reserved to joint state and private ownership whereas mining of precious metals, radioactive minerals, commercial-scale salt production, and thermal power were exclusively reserved to the state. The command economic policy, coupled with poor geological data, stifled private investment for about two decades and resulted in the low-level of development of the mineral industry (Melka, 2010:p.8).

With the change of government in 1991 came a fundamental shift to a free market economy. Major economic reform programs were initiated with the objective of establishing a market economy and creating the legal, institutional and policy environment to increase private sector involvement in this sector (Bryan & Hofmann, 2007:p.15).

Private investment in the mineral sector was opened as a result of the political change in the country. New mining proclamations and regulations were provided to encourage the participation of private capital in mineral prospecting, exploration and development activities. With a view to adjusting to the global approach towards sustainable mining development, Mining Proclamation No. 52/1993 of the country was revised after 17 years and a new Mining Proclamation No. 678/2010 came into effect on August 4, 2010.

As in other African countries the extractives sector in Ethiopia is expected to play an

important role in development. The goal of the Government of Ethiopia is to facilitate the establishment of large and diverse mining industry that would strengthen industrial development in the country.

In Ethiopia, the Ministry of Mines is responsible for the processing of license application, regulation of mineral operations and the promotion of investment opportunities in the mining sector. Ethiopian Geological Survey undertakes basic geological mapping, mineral exploration and other related geological activities, and generates basic geosciences data. Regional States Mines Bureaus/Agencies have the mandate to issue and administer prospecting, exploration, and artisanal as well as small-scale mining for national investors.

This study discusses the policy and legal frameworks regarding extractive and mineral industries, and competitiveness of selected industries in relation to their productivity, foreign currency earnings, job opportunities, and contribution to GDP. The experiences of East African Community countries are also examined to assess the current progress, opportunities and challenges of the extractive sector in Ethiopia.

### **Research Questions**

- How does the government policy and strategy support the extractive and mineral industries?
- What opportunities are available in the country to make the extractive and mineral industries competitive?
- What is the performance of the extractive and mineral industries in the country?
- What are the problems and obstacles that challenge the mining and extracting industries?

## **1.2 Objectives of the Research**

The main objective of this research is to find out the competitiveness of the extractive and mineral industries in Ethiopia and to assess conditions or opportunities that make them competitive.

### **Specific Objectives**

To assess the provision of the country's policy in promoting mining investment;

- To assess the problems the sector is facing and the opportunities that are available to the extractive and mineral industries;
- To evaluate the performance of the extractive and mineral industries; and
- To examine experiences of East Africa Community countries in extractive and mineral industries.

### 1.3 Scope and Limitation of the Study

Due to the broadness of the study area and time constraint, the study is confined to selected solid minerals, mainly gold, tantalum, and gemstone industries.

There are many ways of measuring competitiveness of the sector, this study however determines the competitiveness of Ethiopian extractive industries based on sector productivity, contribution to GDP, foreign currency earnings from minerals exported and job opportunities created by the sector. There is time constraint in conducting this broad area of study, which is considered as a limitation of the study.

## 2. LITERATURE REVIEW

### 2.1 Overview of the Extractive Industry

Extractive industry is defined in the Trade Union Sub-regional Workshop Report (2013, p.13) as industry that involves mining and other valuable natural resources found in the ground. Essentially the extractive industry is concerned with the physical extraction of metals, minerals and aggregates from the Earth. The extractive industry is made up of mining, quarrying, dredging, oil and gas extraction industries. These differ in what, how and where they extract. The extractive industry is categorized as:

- **Mining** - the extraction of metals and solid fossil fuel, and extraction may take place either underground or aboveground, known as surface mine;
- **Quarrying** - the extraction of aggregates and industrial minerals aboveground;
- **Dredging** - the extraction of marine aggregate underwater;
- **Oil extraction** - the extraction of liquid fossil fuel; and
- **Gas extraction** - the extraction of gaseous fossil fuel (2013, p.13).

Extractive industry fulfils a fundamental economic need of providing basic and high-value commodities, and enriching its communities. Operating within a wide variety of geographical and climatic conditions and socio-economic environments, extractive companies are often the primary economic growth engines in their communities (Martin, 2014).

Growth and Economic Opportunities for Women Program declared that Africa holds an estimated one-third of the world's mineral reserves. Millions of women and men rely on artisanal and small-scale mining for their livelihoods.



## 2.2 Concern for Sector Development

Natural resources of agricultural and extractive origin account for an important share of the economic activity and exports in most African countries. Several countries around the globe have shown that natural resource sector can drive structural transformation when governments put in place the right conditions and policies and focus on managing their resource wealth for the common good (AfDB et al., 2013: p.177).

### 2.2.1 Government Policy and Strategy

According to Bryan and Hofmann (2007: p.19), accountable governments face two principal challenges in determining the policy framework for the exploitation of oil and minerals in their countries. First, they must create a business climate that attracts private investment, a necessary precondition to the development of the extractive industries. Second, they must address relevant domestic policy issues.

Industrial policy is a contested issue, especially for low-income countries. On one hand, it is widely accepted that these countries need proactive policies to master the transition from low-productivity resourced-based societies with large informal sectors to more productive, knowledge-based and formalized patterns of productive organization. On the other hand, deliberate interventions aimed to channel resources into preferential activities may well end up reducing allocative efficiency and creating perverse incentives for investors and bureaucrats alike. This is especially true for low-income countries, where political checks and balances tend to be weak (Altenburg, 2010: p.1).

The Federal Ministry of Mines and Energy has been working in two major strategic plans in the mineral sector. These plans focused on:

#### **i) Geosciences data generation and distribution**

Assessing most of the country's landmass and acquiring/generating basic geo-science data (different scale geological, geochemical, hydro-geological, geo-technical etc., maps, mineral exploration data, etc) to provide basic information to all users including potential investors.

#### **ii) Strengthening competitive and enabling mineral sector investment environment so as to increase the benefit from the sector**

Identifying the various constraints that hinder mineral operations investment in the country and taking appropriate measures such as issuance of the mineral policy, im-

plementation of mineral license cadastre, facilitating artisanal and small-scale mineral development and marketing condition in order to create conducive investment environment by considering all aspects of capacity building implementations into focus areas to the best of the institutions (MoM, 2009:p.11).

### **2.2.2 Legal Frameworks**

Policy or regulatory frameworks and laws governing the exploitation and management of natural resources are often spread across different pieces of legislation and other government instruments. In most cases, constitutions vest natural resources in the people but grant the government the authority to manage those resources on their behalf (Bryan and Hofmann, 2007: p.19).

Mining in Ethiopia is governed by independent legal regime. Investment and income tax proclamation does not apply to mining activities. From the last decade, several amendments and re-enactments were made to the mining law, driven by the growing demand for metallic and industrial minerals and the need to create highly competitive legal frameworks for mining investment in Ethiopia.

The Mining Operations Proclamation governs all mining and related activities in the country. Mineral resources of the country are the property of the State and the People. The government, custodian of mineral resources, act through the licensing authority to control and administer mineral resources (Leykun, 2012).

Licensees are required to give preference to the employment of Ethiopian nationals having the required qualifications and to domestic goods and services, where they are readily available at a competitive price and comparable quality.

The author also stated that except for reconnaissance, retention and artisanal mining licenses, applicants for a license are required to submit an environmental impact assessment and obtain approval from the competent authority. They are also required to allocate funds for rehabilitation of environmental impact and participate in community development plan within the license area.

The new Mining Proclamation No. 678/2010 provides non-exclusive reconnaissance license rights (for a maximum period of 18 months); initial three-year exclusive exploration licenses to be renewed each year; mining licenses for 10–20 years for small-scale and large-scale mining with unlimited renewals of 5 or 10 year periods; guarantee for the licensee to sell the minerals locally or abroad; favorable financial packages, e.g. tax exemptions on equipment, foreign currency accounts, loss carry forward for 10 years; settlement of disputes through negotiations and international arbitration. This new legal foundation supports the modern and global approach of the utilization and administration of natural resources for sustainable mining development.

## 2.3 Performance of Mineral Industries

The African Minerals Development Centre (AMDC), which is sponsored by the Economic Commission for Africa (UNECA), African Union Commission (AUC) and African Development Bank (AfDB), will help implement the African Mining Vision which aims to ensure that Africa's mineral resources support economic growth and development (UNDP, 2013).

The Federal Ministry of Mines in its website, expressed that mining industry in Ethiopia is dramatically growing with major involvement of the private sector. The investment policy of Ethiopia is generally established under the principle and practices of a free market driven economy. The government has enacted a very competitive legal and fiscal regime that attracted many local and foreign mining companies to engage in mineral operations, starting from exploration to mining activities.

The government's objective to scale the contribution of the mining sector from less than one percent in 2009/10 to 10% of the country's GDP by 2030 has made the industry the second largest recipient of inward investment after agriculture. As many mines will move from the exploration to exploitation stage over the next few years, ensuring they adhere to best practice in terms of social and environmental performance will be instrumental to building an impact agenda for extractive industries in Ethiopia (Martin, 2014).

In East Africa, the extractive industry has been fast growing over the last couple of years, with huge mineral deposits already discovered and ongoing high explorations. It is also important to point out that huge oil and gas discoveries have already been made in some states, with mass explorations still taking place in many other parts of the EAC region. The discoveries have seen the extractive industrial sector expand rapidly within the EAC states.

The overall FDI inflow to the EAC region grew by 50 percent over the period 2011-2012 from USD 2.57 billion in 2011 to USD 3.85 billion in 2012. This represented 8 percent of the total inflow of FDI to Africa. The increase in FDI flow to the EAC region was mainly attributed to recent natural resources discoveries, for example gas reserves in the United Republic of Tanzania and oil fields in Uganda (EAC, 2014:p.19).

The World Investment Report shows that Ethiopia was the third largest recipient of foreign direct investment (FDI) in Africa in 2013, with a 241 percent increase from the amount in 2012. The country has also registered a significant increase in Foreign Direct Investment (FDI) stock – the amount of investment from abroad held within the economy. The FDI inflow to the country reached 953 million dollars in 2014, up from the 279 million dollars in the previous year (World Investment Report: 2014, p.206).

## 2.4 Opportunities and Challenges of Extractive Industries

According to the Ministry of Mines (2009, p.5), a number of junior exploration and world-class mining companies are operating in Ethiopia looking for different mineral commodities. Apart from these, there are wide-ranging investment opportunities in Ethiopia.

While there is no restriction on private investors in developing any type of mineral resource, the greatest potential is in gold and rare metals, petroleum, precious and base metals, industrial minerals and dimension stones (Investment Guide, 2012: p.30-31).

Given both the opportunity and what is at stake, perhaps one of the most important steps that the Ethiopian Government has taken towards a better future contribution of the extractive industry was its candidacy for the Extractive Industries Transparency Initiative (EITI) in October 2013, which accepted Ethiopia as an EITI candidate country in March, 2014 (Martin, 2014). Through the EITI standard, Ethiopia wants to improve transparency and accountability in its extractive industry in order to help move the governance of natural resources forward and reduce corruption.

Countries endowed with abundant pools of mineral resources are faced with a number of challenges, such as limited participation by marginalized groups like women, minorities and youths in extractive sectors; conflict over land and resources; environmental degradation and the creation of capital intensive economies that fail to create jobs and benefits for local communities. The challenge is to enlarge people's choices by expanding their capabilities and opportunities in ways that are sustainable from the economic, social and environmental standpoints (UNDP, 2013).

Many countries have financed their development through resource extraction. However, there are risks related to natural resource wealth. These include volatile economic growth, limited job creation, violent conflicts, corruption, environmental degradation, gender violence, and spread of HIV and AIDS among communities impacted by extraction activities. Such negative outcomes of resource extraction can be tackled through effective strategies, legal frameworks and policies.

## 2.5 About Competitiveness

Competitiveness generally refers to the ability to do something better. According to Wikipedia, competitiveness pertains to the ability and performance of a firm, sub-sector

or country to sell and supply goods and services in a given market in relation to the ability and performance of other firms, sub-sectors or countries in the same market. It is defined as the ability to do something well in the Cambridge Advanced Learners Dictionary. Longman Dictionary defines it as the ability of a company, country, or a product to compete with others and the desire to be more successful than others. In this assessment, competitiveness is measured based on the changes in level of production and the contribution of the sector to the country's economic development.

According to Ministry of Employment and the Economy of Finland (2013, p.32), a growing and sustainable extractive cluster requires solid competence and long-term policies to promote sustainable development and create a positive investment climate, incentives through economic policy and sufficient precondition for competitiveness. Operating in the international market requires functional logistics and energy, among other things.

The vision of the Ethiopian mining sector for the coming 15 to 20 years is to establish a diverse, world-class, competitive and environmentally sound private sector led mining industry based on transparent and free market principles, and contributing not less than 10% of the GDP thereby enhancing the socio-economic development and eradication of poverty in Ethiopia (MoM, 2009: p. 4).

## 2.6 Practice of East African Community Countries

Guang Zhe Chen, World Bank Country Director for Ethiopia, told a forum on Extractive Industries that "sharing of international best practices on Extractive Industries will contribute to building a solid base for their good governance, which in turn will facilitate sound management of revenue and equitable growth that will further the sustainable development of Ethiopia" (2014).

The East African Community (EAC) is regional intergovernmental organization of Burundi, Kenya, Rwanda, Tanzania and Uganda, with its headquarters in Arusha, Tanzania. The Treaty for the Establishment of the East African Community was signed on 30<sup>th</sup> November 1999 and entered into force on 7<sup>th</sup> July 2000, following its ratification by the Original 3 Partner States – Kenya, Uganda and Tanzania. Rwanda and Burundi acceded to the EAC Treaty on 18<sup>th</sup> June 2007 and became full members of the community with effect from 1<sup>st</sup> July 2007 (EAC Investment Guide: p.4).

**Tanzania:** The mining industry remains relatively small but is exceedingly important as a significant source of export revenues. The sector contributed approximately 3.2% to GDP in 2012. It is estimated that about 90% of Tanzania's minerals have yet to be exploited. The construction of a nickel mine was set to start in 2014 and large-scale

uranium mining is likely to commence over the coming year (KPMG, 2013: p.4).

Tanzania is a country endowed with a wealth of minerals, including diamond, gold, cobalt, copper, nickel, platinum group metals, silver and tanzanite, a gemstone unique to Tanzania. Mining accounts for 3.6% of Tanzania's total tax revenues. The mineral sector also contributes 52% of total exports, while gold represents 90% of mineral export value. However, despite the sector's potential to fuel rapid economic growth, there is widespread concern that minerals have not contributed enough to improve the lives of the poor, and particularly those living above and near the mines (2013, p.4).

The country remains a major FDI destination, with mostly greenfield investments in the extractive and tourism sectors. Tanzania is becoming one of Africa's FDI front runners; yet the large majority is for greenfield investments in the extractive and tourism sectors, with seemingly little local value addition.

The contribution of the extractive industry is estimated to increase by approximately 10% in 2025. Besides infrastructure investments, key areas include continued improvement in the overall business environment, the development of Tanzania's skill base and effective implementation of national development strategies (AfDB et al. 2014: p.165).

Tanzania is a member of EITI (Extractive Industry Transparency Initiative) and Publish What You Pay. However, the level of revenue transparency in the country is still quite low.

The Secretary General of Trade Union Congress of Tanzania (TUCTA), and member of the East African Trade Union Confederation (EATUC) Summit, Bro. Nicolas Mgaya noted one of the biggest challenges facing the extractive industry in the region as being the lack of negotiating skills by the governments to negotiate fairly with foreign mining companies, and the sector also suffers from education and technological challenges. He said there are also challenges arising from freedom of association, the right to organize and collective bargaining which are fundamental (2013, p.4).

Since infrastructure cuts across various sectors --- including transport, energy, water, agriculture and ICT, the respective ministries and agencies in Tanzania have specific policies for each sector to guide infrastructure activities. Also, the government has recently formulated a Public Private Partnership (PPP) policy to guide the participation of the private sector in financing infrastructure. Tanzania has many good policies, but it has always faced implementation challenges. It is, however, important to note that while this could attempt to address policy co-ordination and other implementation challenges, financing for infrastructure still remains a challenge as Tanzania depends

heavily on donor funding for development projects (AfDB et al. 2014: p.165).

### **Burundi**

Burundi has untapped mineral potential which offers real opportunities in the medium and long terms. The country has large reserves of nickel, coltan, vanadium phosphates, carbonite, peat and limestone. Specifically, Burundi has the second largest global reserves of nickel, representing 6% of the world's supply at nearly 200m tons. However, today the mining sector contributes less than 1% of GDP and the real challenge for the country is to establish the conditions for effective and transparent management of mineral resources (AfDB, 2014: p.27).

### **Rwanda**

Rwanda is yet to experience the type of natural resource discoveries seen elsewhere in the region. However, mining accounts for 1% of GDP and mineral receipts primarily from coltan, cassiterite, and wolfram remain a major source of foreign exchange, accounting for 34% of export revenues in 2013 (up from 23% in 2010). It is estimated that the country has 450 mining sites with about 25,000 artisanal diggers. The government is keen on exploiting the country's mining potential and recorded about USD 70m in mining investments in 2012 (up from USD 24m in 2011). (AfDB, 2014: p.77).

### **Kenya**

Kenya has discovered oil, gas, and coal deposits in commercial quantities, whose extraction could potentially increase the extractive industry's contribution to GDP from the current 1% to an estimated 10% in the future. Oil exploitation is expected to start in 6-7 years. However, using an extractive industry to promote economic growth requires careful planning and important policy challenges (AfDB, 2014: p.83).

The recent focus on extractive resources, including oil, gas, and minerals, is creating a paradigm shift in the types of FDI moving into Kenya – from market seeking FDI to resource seeking FDI. The implementation of key economic reforms is contributing to a structural transformation. These reforms include the policy and legal framework for Public Private Partnerships (PPPs) enacted in 2012 and the passage of the legislative framework for establishment of Special Economic Zones (U.S Department of State, 2014: p.6).

Recognizing the need to strengthen investor confidence and position the private sector as the engine of economic growth, EAC is continuously supporting Partner States to undertake economic reforms. The Partner States have in turn made major milestones

to support the Community particularly through various policy initiatives (Investment Guide, p.3)

## 2.7 Challenges of the Extractive Industry in EAC

There are a number of challenges the extractive industries face in East African Community countries. Among them include the following:

- None of the EAC Partner States has ratified ILO Conventions that protect rights of indigenous and tribal populations/peoples affected/to be affected by the extractive industries;
- Young people are often unaware of the many careers in the exciting extraction industry;
- The extractive industry is currently facing a shortage of skilled professionals, e.g. graduates of mining engineering are in demand;
- Workers from the EAC are not aware of/not used to working with the latest technology;
- Environmental degradation, e.g. water and air pollution;
- Lack of safe and professional work environment, especially for local employees; and
- Discrimination against members of indigenous communities in relation to employment issues, salary payment – foreigners are well paid versus local employees, etc (Trade union sub regional work shop report p.14).

## 3. METHODS OF STUDY

### 3.1 Research Methodology and Approach

This section discusses the methodology employed to accomplish the research objectives. Research methodology is a way to systematically solve the research problem. It denotes the methods which the researcher adopts and the techniques applied to carry out the study. The research methodology used in this study includes the research design employed, the research type, techniques used in selecting sample, sources of data, and data analysis.

### 3.2 Research Design

In order to achieve the research objective this study follows descriptive method of



research. This method is convenient to the purpose of the study because the method enables to describe, compare, contrast, classify, analyze and interpret the situation. Thus, the researcher used the method for the grounds of the research, that is to describe supports of government policy, strategy and legal frame work issues, to point out the opportunities and challenges of extractive industries, to demonstrate the state of the industries performance and growth, and to compare and contrast the existing situation of extractive industries in relation to East African Community countries practices.

The study used information collected from primary and secondary data sources. For primary data, questionnaire and interview were used as tools to collect qualitative data. The quantitative data were collected through secondary sources from different government bodies (Ministry of Mines, Ethiopian Revenue and Customs Authority, Ministry of Finance and Economic Development). Related literature on the topic was reviewed and secondary data collected from different written materials. These included books, journals, working papers, proclamations, directives, regulations, guidelines, and other published and unpublished materials. The qualitative and quantitative data were analyzed, interpreted and described based on the findings in descriptive form.

### **3.3 Area of the Study**

Ministry of Mines, Ethiopian Geological Survey and Ethiopian Revenue and Customs Authority were selected as areas of the study because the Ministry of Mines is responsible for essentially all aspects of mineral sector development and governance while Ministry of Mines has duties and responsibilities in issuing licenses and regulating mineral and petroleum operations, and the Ethiopian Geological Survey (EGS) is responsible for carrying out basic geological mapping, mineral exploration and other related geological activities, and generates basic geosciences data. The Ethiopian Revenue and Customs Authority executes duty-free privileges offered by the government.

Samples were taken from the relevant Directorates of MoM and Geological Survey. There were 24 staff in Licensing and Administration Directorate, 14 in Environmental and Community Development Directorate, 5 in Legal Affairs, 5 in EITI Implementation Secretariat, 14 in Mineral Exploration, 14 in Geo-Science Directorate. In total, there were 76 employees in the departments, and 45 samples taken.

The other study area was the Ethiopian Revenue and Customs Authority (ERCA) which is the legal established entity to collect and administer tax revenue and to provide facilitation for trade and investment in the country. The privileges provided for the mineral sector is facilitated at Addis Ababa Kality branch office of ERCA. The sample is taken from the relevant construction and mining team and Post Clearance

Audit Process. In total, there are 35 employees, out of which 20 employees were taken as sample.

### **3.4 Sampling Method**

The study employed purposive sampling method to get accurate information. The advantage of purposive sampling method is it enables the researcher to select the appropriate respondents who have a significant contribution to the research by providing useful information.

The researcher selected sample of respondents carefully. The sample consisted of 45 employees from MoM and EGS staff members, including process owners and team leaders; 21 investors; and 20 employees, including process owners and team leaders from ERCA. To get accurate information, experienced employees were selected. As regards investors, they were selected based on the volume of work they have.

### **3.5 Sources of Data and Collection Methods**

The study relied on a combination of quantitative and qualitative data types, using primary and secondary sources. Both primary and secondary data sources were used to collect the required data for the study. Primary data were gathered by providing and distributing close and open ended questionnaires to the respondents. The open ended questions were provided to give chance for those who have better knowledge about the area in order to get their valuable opinion for the study.

To fill the gap in the questionnaire, interview questions were provided for employees. The researcher conducted face-to-face interview with well-experienced and knowledgeable persons in the area.

The secondary data were gathered from MoM, Ministry of Finance and Economic Development (MoFED), ERCA, and internet sources. These included books, proclamations, regulations, directives, reports, journals, and published and unpublished materials.

### **3.6 Data Analysis Method**

Both qualitative and quantitative data gathered through primary and secondary sources were analyzed, interpreted, and described in descriptive form. Tables and percentage were used as tools in analyzing the data.

## 4. FINDINGS AND ANALYSIS OF COMPETITIVENESS IN ETHIOPIAN INDUSTRIES

In this chapter analysis is made based on the data gathered through questionnaires, interviews, and reviewed written materials. Though open-ended and close-ended questionnaires were forwarded to respondents, the focus was on open-ended questions in order to get sufficient information.

The rate of responses to the questionnaire was high because of the willingness of all the respondents. From the total 86 questionnaires distributed, 75 were returned completed. The responses are summarized in the table below.

**Table 1: Summary of Responses to the Questionnaires**

Types of questionnaire	Questionnaires Distributed	Returned	Rate of responses	Questionnaires not returned	Percentage
Questionnaire to employees of MoM	45	40	88.89%	5	11.11%
Questionnaire to investors	21	18	85.71%	3	14.29%
Questionnaire to customs staff	20	17	85%	3	15%
Total	86	75	87.21%	11	12.79%

The data gathered from primary and secondary sources were filtered to get the information necessary for the study. Proclamations, regulations, directives, reports and other written materials were used to make analysis with empirical data for better accomplishment of the study.

Ethiopia is a big country, with a population of over 80-million. The government, which has been registering double-digit growth in the past decade, envisions to making the nation join the group of middle-income countries by 2030. Mining is one of the main contributors for the economic growth of Ethiopia as it increases generation of foreign currency, substitutes imports of minerals and metals, creates employment, and introduces basic infrastructures and services in newly identified mining areas that are found in different parts of the country.

The Ethiopian government therefore aims at creating a favorable environment for the

private sector in exploration and development by putting in place a comprehensive policy and regulatory framework.

## **4.1 Policy and Legal Frameworks for Extractive Industries**

The government recognizes the need for supporting the private sector as it is the engine of economic growth and productivity. It is clearly committed to advancing industrialization and other high-value activities. The government, which is strongly driven by the desire to lay foundations for long-term economic development, is probably among the few developing countries that show such a determined and credible commitment.

The Ethiopian government intends to build and develop a large-scale mineral sector, an essentially new economic sector. The current policy framework envisions the mineral sector to be the backbone of the industry sector by 2023. The mining policy of the country is not yet ratified. It is under review. According to a recent study by the World Bank, the draft policy is comprehensive in its scope and provides a good basis for the future development of the sector and its contribution to wider sustainable economic development.

Most of the respondents to the study have positive attitude to the mining law. Expressing their opinions about the incentives offered by the government for the extractive and mineral industries, they indicated that the incentives provided are attractive and the law delineates the emphasis given by the government. They assert that it encourages the private sector, even if attention has to be given to the remaining minor tasks.

Different types of exemption from Customs duties and taxes are, for instance, provided through Proclamation No. 678/2010 under Article 73(1-7). The holder of an exploration license, small-scale and large-scale mining license, or the contractor shall be entitled to import equipment, machinery and vehicles free of customs duties and taxes without any limit. The holder of artisanal, small-scale and large-scale mining license has also the right to export free of customs duties and taxes minerals produced according to the license.

The Growth and Transformation Plan on its part indicates that the main attention of the government strategic direction in the mining sector is to create conducive environment for private investors to participate in exploring and developing the mineral resources by gathering, compiling and interpreting basic geo-science information to deliver to the customers. Besides, the expansion of private investment will enhance the mineral exploration and exploitation of high value minerals and hence increases the

opportunities of finding additional deposits and increase the foreign currency earning of the country; with the objective of exploration for import substituting minerals for construction and industrial input.

As part of the reform process the Ethiopian government has increased its engagement with the private sector. It has promoted the formation and strengthening of the Chambers of Commerce and Sectoral Associations. It also established a public-private consultative forum, jointly chaired by the representatives of the government and the private sector (Wieder working paper 2013, p.12).

The objectives of the consultative forum are creating a conducive investment climate that enables the private sector to succeed; finding lasting solutions for constraints relating to business regulations and their implementations; and fostering strong partnership and mutual trust and cooperation between business and government.

Besides the favourable environment created by the government, the high value of the commodity by its nature makes the business environment attractive for potential investors.

## **4.2 Performance and Progress of the Extractive Industry in Ethiopia**

As Ethiopia expands investment in the mining industry, issuance of exploration and production licenses as well as the investment in the mining sector is increasing. The ministry has issued close to 200 mineral exploration and production licenses (See Table 2); of these 72 licenses were issued for large-scale and small-scale mining at federal level. Investment in the mining sector has been growing steadily; and it reached 30.871 billion birr in 2013/14. This shows that the investment has increased by 14.677 billion birr from the previous 2012/13 year. The investment increased due to the engagement of Allana Potash, a Canadian company exploring potash in Afar regional state. The revenue generated from this sector has also been increasing, except the year 2013/14, due to the fall of gold price in the international market.

**Table 2: Performance of Mineral Products in the GTP Period**

Indicator	Base Year	2010/2011	2011/2012		2012/2013		2013/2014		
	2009/2010	Plan	Achievement	Plan	Achievement	Plan	Achievement	Plan	Achievement
Mineral investment (billion birr)	13	13	13.8	14	15.1	16	16.2	18	30.871
Number of investors licensed in mineral exploration and production	37	63	59	66	61	15	7	70	36
Revenue generated from mineral investment (million birr)	69	70	104	105.8	141.39	100	166.43	175.902	153.692
Gold marketed (K.G)-	6,773	9,106	11,672	18,100	12,311	18,200	12,581	18,646	12,228
By Companies	3,907	4,500	4376	4900	3983.72	5000	4193.718	5445.5	4667.87
By Artisanal mining	2,866	4606	7296	13,200	8327.73	13,200	8386.84	13200	7559.69
Tantalum export (ton) -	265	315	311	340	294.675	355	81.47	385	87.9064
By Companies	202	210	187	215	136.375	275	48.52	300	54.27
By Artisanal mining	63	105	124	125	158.3	80	32.95	85	33.63638
Exports of gemstones (Kgs) By Artisanal mining	3,104	7315	17,146	18,000	16,523.3	18,000	25,078.26	18000	34,320.33
Number of mining co-operative associations established	243	50	53	60	60	70	75	80	150
Members in the associations			1769		8647		50,000		78,995

**Source:** Ministry of Mines 2010/11-2013/14 GTP report

According to the Ministry of Mines 2013/14 budget year report, the ministry which planned to establish 80 legalized artisanal miner cooperatives in six export mineral producing regions succeeded in setting up 150 cooperatives in the course of the year. The performance is, therefore, about 200% of the plan. In total, 460 cooperatives were established from 2010/11-2013/14. The associations have 78,995 members, out of

which 51,943 are men and 27,052 women.

Various activities have been carried out to enhance the legal framework for artisanal mineral production and transaction in the country by the Ministry of Mines and other stakeholders. As a result, the amount of minerals supplied to the National Bank of Ethiopia and the world market has grown, and foreign currency earnings from the sector have been increasing. Of the total output, about 62% gold marketed is supplied by artisanal miners.

Table 2 shows the incremental change in all dimensions of the sector and the ministry has, in most cases, achieved its plan. The performance of artisanal miners is especially important. The lion's share of gold products and all gemstone products are obtained from artisanal miners. The dramatic growth in gemstone production could be seen easily when we compare the production of 2013/14 with the base year 2009/2010. It reached 34,320.33kg from 3,104 kg. In 2013/14, gold production also increased by 80.54% from the base year.

### **4.3 Ethiopian Extractive Industries vs. East African Countries**

The exploitation of mineral resources can bring great benefits. Many countries have improved their human development by using their large mineral wealth effectively. Ethiopia is a country of enormous potential. Extractive industries can help Ethiopia meet that potential. Ethiopia's rich and abundant natural resources could help the country achieve its ambitious development agenda and benefit all Ethiopians.

Like Ethiopia, Tanzania also pursues a free market economy. In the decades after Tanganyika and Zanzibar created the United Republic of Tanzania, the government recognized the leading role the industrial sector would play in the transformation of Tanzania's economy. Over the years, efforts were made to liberalize the economy and change the system from a planned economy to a market economy, encouraging more active participation of the private sector to accelerate growth and increase the nation's prosperity. In this setting and considering the high dependence of Tanzania's economy on the agricultural sector, policymakers emphasize the need to build a competitive industrial sector to transform the economy (UNIDO: 2012, pp.21).

The Tanzanian Industrial Policy framework has experienced several transformational phases over the course of time. The trend has certainly been progressive, with the government undertaking remarkable efforts to support the industrial sector.

Tanzania is rich in natural resources and is a major exporter of precious minerals,

including gold and diamonds and its unique gemstone, tanzanite. Since 2000, mining has been the fastest growing sector in Tanzania with an average annual growth rate of about 15%, the largest recipient of foreign investment, and the largest contributor to the country's exports (accounting for 48.2% of Tanzania's total merchandise exports in 2006, and about 45% in 2011). In 2012, the sector contributed approximately 3.2% to GDP. The mineral sector also contributes 52% of total exports, while gold represents 90% of mineral export value as indicated in the Trade Union Sub-Regional Workshop Report.

In Ethiopia, the investment in the mineral sector has been increasing from year to year; however, the growth rate is less than 10%, except for the year 2013/14 in which the growth rate reached 90.55 % (See Table 2). This big change occurred due to the huge investment made by Allana Potash. Ethiopia's mineral sector contributes 19.92% of the total export of the country. Of this, 95.91% is covered by gold. The GDP share of Ethiopian mineral sector has not even reached 2%. It was 1.5% in 2011/12(See Table 4).

African Development Bank Group study (2014) indicated the contribution of the mineral sector to GDP in Burundi as less than 1%, while the mineral sector in Kenya and Rwanda contributed 1% to GDP. Yet Rwanda's mining sector remains a major source of foreign exchange, accounting for 34% of export revenues in 2013 (up from 23% in 2010).

Tanzania's mineral sector has been broadening its base and expanding its size in recent years, with gold, natural gas, limestone, nickel, gemstones, and uranium being the major contributors. However, nearly all major developments over the past decade have been seen in the gold sub-sector, making gold the most important mineral in Tanzania. Proven gold reserves are currently in excess of 1,000 tonnes, making Tanzania Africa's third-largest gold-producing country after South Africa and Ghana (Lokina and Leiman: 2014, p.1).

Tanzania is facing serious infrastructure challenges as the state of transport, energy, water and port facilities is still very poor and in urgent need of government action. The power sector is characterized by exceptionally high demand, coupled with limited supply, even by the standards of other low-income countries in Africa. Empirical evidence has shown that there is a positive relationship between improvements in infrastructure quality and economic growth.

The results of the latest business survey conducted by the Tanzania Private Sector Foundation (released in 2013) confirm that for the fourth consecutive year the problem of reliable electricity is the top barrier to doing business in Tanzania. In recognition of the challenge, over the past decade the government has consistently prioritized infrastructure in its plans and strategies. Also, the government has recently formulated



a Public Private Partnership (PPP) policy to guide the participation of the private sector in financing infrastructure.

The recent focus on extractive resources, including oil, gas, and minerals, is creating a paradigm shift in the types of FDI moving into Kenya – from market seeking FDI to resource seeking FDI. The implementation of key economic reforms is contributing to a structural transformation. These reforms include the policy and legal framework for Public Private Partnerships (PPPs) enacted in 2012 and the passage of the legislative framework for establishment of Special Economic Zones.

## **4.4 Opportunities and Challenges of Extractive Industries in Ethiopia**

### **4.4.1 Opportunities**

Ethiopia offers excellent opportunities for mineral prospecting and development. Geological studies have identified a favorable geological environment hosting a wide variety of mineral resources. According to the Ministry of Mines, Ethiopia has a substantial deposit of gold, tantalum, platinum, nickel, potash and soda ash. Among construction and industrial minerals are marble, granite, limestone, clay, gypsum, gemstone, iron ore, coal, copper, silica, diatomite, etc. Geothermal energy resource also exists in good quantity. With regard to fossil energy resources, there are significant opportunities for oil and natural gas exploration and development (Ethiopian Investment Guide 2012, p.30).

Due to industrial expansion and urbanization the demand for mineral commodities has increased. Ethiopia is also endowed with a range of industrial mineral deposits, including potash, limestone, coal, iron ore, tantalite, field spar, quartz, dimension stones and dolomite, among others.

The Federal Ministry of Mines has revealed that gold is discovered in different parts of the country. An estimated more than one billion ton of potash deposit was also found in Afar Regional State. Tantalum has been mined in the Borena Zone of the Oromia Regional State. Platinum is mined in the Yubdo locality in Western Wollega. Gemstones, including opal, emerald and sapphire, are found in the Amhara, Oromia, Afar and Somali Regional States. Iron ore and coal are also available in bulk in the Wollega, Illubabor and Chilga localities (The Reporter, English edition May 17, 2014).

Mining Operation Proclamation No. 678/2010 has offered exemption of customs duties and taxes for any type of imported goods to be used for the exploration of minerals

without limitation, and export of mineral products and re-exportation of imported goods after the accomplishment of the project. In the production phase, consumable goods are allowed to be imported free of custom duty and taxes for the first three months. Besides, a holder of large-scale or small-scale mining license can make the following remittances:

- Profit and dividends accruing from mining investment;
- Principal and interest on a foreign loan;
- Fees, royalties or other payments accruing pursuant to technology or management agreement relating to investment;
- Proceeds from the liquidation of a mining business enterprise foreign exchange are also dividends; and
- Payment from the sale or transfer of shares of a mining investment or acquisition in part or in whole of a mining operation by a domestic investor.

According to Article 10 of Proclamation No. 53/1993, any financial loss resulting from a mining operation of licensee in an accounting year may be carried forward and deducted from gross income in the ten accounting years which follow the year in which the loss is incurred. This proclamation is amended two times and the tax rate is now reduced to 25%.

The Industrial Policy of Ethiopia also provides investor benefits in the form of import and export customs duty and tax exemptions, remittances of foreign exchange and the provision of financing through the Development Bank of Ethiopia. The incentives provided by the government will have advantage for the country and for investors also by reducing their production cost.

Licensing and Administration Director with Ministry of Mines, Sisay Ayalew, pointed out the mineral potential of the country, the favorable mining law which provides different types of incentives for private investment, and the stable political environment in the country are good opportunities for both domestic and foreign investors.

#### **4.4.2 Challenges**

In its GTP Annual Progress Report for 2011/12 (2013, p.40), Ministry of Finance and Economic Development has identified the challenges in this sector. Limited technical capacity to fully support, regulate and administer the mining sector, lack of infrastructure in some mining areas, problems associated with settling compensation issues in

mining areas, failure on the part of few licensed investors to fulfill their mandates and responsibilities in line with their contractual agreements, and lack of awareness of some mineral suppliers were cited as challenges.

The 2006 Mining Sector Annual Progress Report on its part also identified some of the challenges as shortage of professionals to fully support, control and administrate licensees, turnover of experienced employees, slow progress on the part of some mining licensed investors in term of starting mineral production, unexpected decline of gold price in the international market and inability of gold mining companies to sell some of its gold products in time, inability of few licensed investors to fulfill their mandates and responsibilities in line with the contractual agreements, and lack of awareness and efficient organization in regions that implement artisanal mining and transaction activities.

Other challenges pointed out by Tamrat Modjo, Artisanal Mining Transaction Coordinator with the Ministry of Mines, were the following. When the youth raise enough money from the sale of gold they go out to towns to consume alcohol and have unprotected sex, exposing themselves to HIV/AIDS infection. According to Tamrat, this is one area of concern that needs to be addressed. Malaria pandemic is the other concern. Artisanal miners dig deep holes and leave them open. Rainwater stored in the wells is ideal locations for mosquitoes to breed (The Reporter, English edition May 17, 2014).

Environment degradation is another major challenge. Trees are cut down, and wells are dug rampantly in search of alluvial (placer) gold. This poses a threat to the environment. "If we do not handle artisanal mining properly it infringes serious harm on the environment," Tamrat said.

Licensing and Administration Director with Ministry of Mines, Sisay Ayalew indicated the challenges in the sector as the fluctuating price of gold, lack of skilled manpower, less accessibility of professionals, and absence of retention mechanisms in the organizations to benefit from trained human resources.

Most of the answers of the respondents to the question about what the challenges of extractive industries are were similar to those mentioned above. The additional challenges they cited were: technological limitation, implementation problem of the mining law, the little attention given to the sector and capacity building of human resources, and the inexistence of retention mechanism to minimize turnover of experienced staff especially geosciences professionals, lack of educated experts, requirements of the bureaucracy for different support letter to get incentives, extensive capital requirements, communication and power problem, and inadequate geosciences information. Responding to the question whether there is adequate geo-science data in the country,

they indicated lack of quality and detailed geo-science data. They noted that the data were not updated.

## 4.5 Competitiveness of Ethiopian Extractive Industries

### 4.5.1 Encouraging Issues

In this assessment, competitiveness refers to the performance of the sector represented by changes in level of production, contribution to GDP, foreign currency earnings and job creation.

The opportunities and challenges in the sector affect the competitiveness of the industry. The key opportunity that makes the industries in Ethiopia competitive is that the mineral resources of Ethiopia are yet untouched and so the country has sufficient potential to accommodate the interest of so many other investors.

Ethiopia offers excellent opportunities to mineral prospecting and development companies. Geological studies have identified a favorable geological environment hosting a wide variety of mineral resources. Ethiopia has a substantial deposit of gold, tantalum, platinum, nickel, potash and soda ash. Among construction and industrial minerals are also found marble, granite, limestone, clay, gypsum, gemstone, iron ore, coal, copper, silica and diatomite, etc.

The commitment of the government in supporting the development of the sector is the other opportunity for the industry. The Ethiopian government recognizes the need to support private sector development, productivity enhancement, and the advancement of industrialization and other high-value activities.

Answering the question regarding the opportunities that make the Ethiopian extractive industries competitive, the respondents pointed out government provisions such as exemption of customs duties and taxes for imported equipment and machinery to be used for mining, re-exportation of those after the completion of the tasks, reduction of mining income taxes, and the existence of a mining law that offers different privileges as well as other supports of the government that indicate its concern for the sector. As can be seen from the discussion below, the contribution of the private sector to mining has been steadily growing after the launching of the free market economic policy and the supportive measures the government is taking.

#### (i) **Level of Production of the Sector**

Generally speaking, gold mineral production has increased from 2010/11 to 2013/14, though at a decreasing rate (See Table 2). Production grew by 72.33% in 2010/11 fiscal year, 5.47 in 2011/12, and 2.19 in 2012/13; but decreased by 2.8% in 2013/14. In total, production increased by 80.54% from the base year. Gemstone production showed improved rate of production of the commodity, except in the year 2011/12. In 2010/11 production increased by 452.38%, 51.77% in 2012/13 and 36.85% in 2013/14.

Concerning large-scale production, there is only one operating mine in Ethiopia, i.e. Midrock's Lega Dembi gold mine, which was ranked number 170 in the world in terms of value of production in 2012.

### (ii) Contribution of the Sector to GDP

Gold was the main contributor to the GDP. Accordingly, 89.65%, 88.94%, 90.31% and 88.94% of the contribution of mining to the GDP was made by gold in 2010/11, 2011/12, 2012/13, and 2013/2014, respectively. The contribution of the extractive industry to the GDP showed little progress, from less than 1% to 1.5%, in 2011/12. Gold in general contributed less than 2% of the GDP from 2010/11 to 2013/14.

**Table 3: Contribution of the Sector to the Country's GDP ('000Birr)**

	2010/2011	2011/2012	2012/2013	2013/2014
Gross Value Added at Constant Basic Prices (country' GDP)	475,647,542	517,026,533	567,803,590	626,556,961
Contribution of Mining to GDP				
In Birr	6,809,661	7,675,101	8,156,918	7,881,109
In Percent	1.4	1.5	1.4	1.3
Contribution of Gold to GDP				
Pure Gold (In birr)	1,480,908	1,543,956	2,051,177	1,660,773
(In Percent)	0.31	0.3	0.36	0.27
Alluvial Gold (In birr)	4,624,173	5,282,142	5,315,326	5,348,718
(In Percent)	0.97	1.02	0.94	0.85
Total (In Birr)	6,105,081	6,826,098	7,366,503	7,009,491
(In Percent)	1.28	1.32	1.3	1.12
Contribution of Tantalum to GDP				
Tantalum (In Birr)	65,688	106,377	43,333	28,865
(In Percent)	0.01	0.02	0.008	0.005

**Source:** Ministry of Finance and Economic Development, National Economic Accounts Directorate

Artisanal miners are the largest contributors to the total production of gold. The data in the above table indicates that about 75% of the contribution of gold was covered

by artisanal miners, thus indicating that the performance of companies involved in the sector was insignificant. The contribution of tantalum to the GDP was less significant as it was 0.96%, 1.39%, 0.53%, and 0.37% in 2010/11, 2011/12, 2012/13, and 2013/2014, respectively. Yet Ethiopia could move to a much larger scale mining as the government aims at making the sector the backbone of the economy.

### (iii) Contribution of the Sector to Export Trade

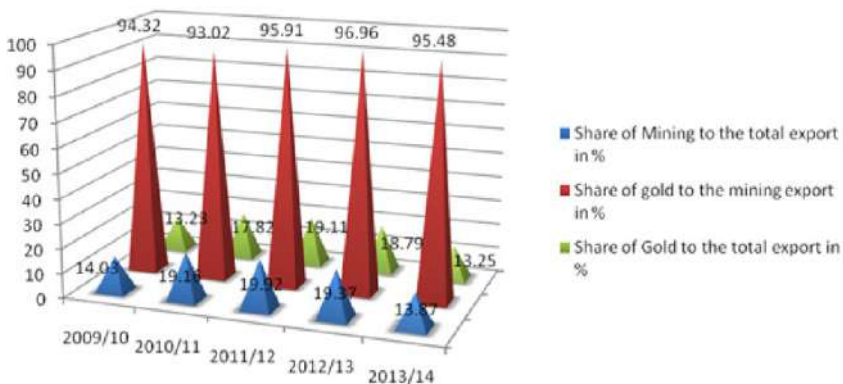
Ethiopia is making significant progress in the mining sector. Mineral export is the second biggest foreign currency earner next to coffee (See Annex 4). An average of 95.29% of the foreign currency earned from minerals was covered by gold.

**Table 4: Contribution of Mining to the Total Export of the Country**  
(Value in Million)

Product type	2009/2010 (in USD)	2010/2011 (in USD)	2011/2012 (in USD)	2012/2013 (in USD)	2013/2014 (in USD)
Gold	262.54	461.67	602.42	578.83	427.34
Mineral products other than gold and tantalite ore	1.56	5.93	8.43	12.53	15.07
Platinum	0.04	0.02	0.02	0.00	0.04
Scrap	2.45	0.61	0.58	0.48	0.56
Tantalite ore	11.77	28.09	16.63	5.13	4.51
Total export earnings from mining	278.35	496.31	628.09	596.97	447.53
Total export earnings	1984.52	2590.82	3152.69	3081.21	3225.87

Source: Ethiopian Revenue and Customs Authority

**Fig. 1: Contribution/Share of the Sector to Export (in Percent)**



Source: Ethiopian Revenue and Customs Authority

The average export revenue from the mineral sector was about 57.59 million USD

a year before 2009/10. But a significant change occurred starting from that year as the average export reached 489.45million USD, contributing more than 19% to the total export. That is except in 2009/10 and 2013/14. From the total foreign currency earnings obtained in the sector, gold generated almost 100% of the income, with 2/3 of the product coming from artisanal mining.

#### **(iv) Job Creation**

Ethiopia is a country where artisanal or small-scale mining still plays a significant role in the extractive industry. According to Martin (2014), between 300,000 and 500,000 Ethiopians work as artisanal miners.

Until 2013/14, jobs created by 460 legally established artisanal cooperatives were 78,995, while large-scale and small-scale mining companies licensed by the federal government created jobs for 2,993 individuals.

Mineral Licensing and Administration Director Sisay Ayalew asserts that these companies mostly need professionals as they are not labor intensive and that is why they hire lesser number of people.

The contribution of mining to employment is small since the sector is small and mining is not a labour intensive industry. Artisanal mining on the other hand is likely to involve several thousand workers.

The Ethiopian government has enacted very competitive legal and fiscal regimes that attract local and foreign mining companies to engage in operations from exploration to extraction. These laws have also been amended many times to make them more competitive.

### **4.5.2 Discouraging Issues**

There are on the other hand, problems that discourage investment in this sector. The fast growing attrition rate of professionals from the ministry to get better salary is of huge concern as it can hamper the facilitation of investment and accomplishment of other works. It may also maximize cost of investment.

Lack of infrastructure also affects competitiveness since minerals produced in remote parts of the country need to be transported, and running the business itself require communication. Thus, in some cases investors are obliged to build roads to mining areas.

## 5. CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

The mining sector in Ethiopia is underexploited. There is a substantial potential for generating foreign currency earnings and savings, contributing to industrial development as well as creating employment opportunities in the sector. Mineral production is also an option for diversifying the export base.

The Ethiopian government is committed to promoting and developing the mineral sector. It has therefore been taking different measures to encourage private investment. The incentives given to the mineral sector is encouraging. Exemption from customs duties and taxes for exploration license holders has no limitation on the type and amounts of importation of goods. The income tax proclamation was also revised and amended three times to reduce the tax rate.

The mining sector has been registering growth during the GTP period. Levels of investment, production, foreign currency earnings from export, and revenue earned had incremental change. The recent performance has made the sector the second largest contributor to the foreign currency earnings of the country.

The contribution of the Ethiopian extractive industry to the GDP is no less than that of the East African Community countries. Tanzania's mineral sector performance is however better than Ethiopia, Kenya, Rwanda, and Burundi. Regarding foreign currency contribution, Rwanda comes second next to Tanzania.

In Ethiopia artisanal mining plays crucial role in the development of the sector. Gold is the main mineral product that significantly contributes to the GDP and foreign currency earnings; and out of these two thirds comes from artisanal mining. Besides, gemstones are produced only by artisans.

The government recognizes the need to support private sector development, and it is clearly committed to advancing industrialization and other high-value activities. The extractive industries in the country have all the more a huge chance of remaining competitive as Ethiopia is endowed with mineral wealth and the government striving to support the sector.

However, there are challenges which affect the activities of the industries. Inadequate geo-science information; lack of skilled manpower; limited technical capacity to fully support, regulate and administer the mining sector; lack of infrastructure in some mining areas; attrition of experienced staff, and lack of awareness and efficient organization in



regions that manage artisanal mining and transaction activities remain the challenges of these industries.

## 5.2 Recommendations

To solve the problems the mining sector is facing and to build it on competitive skill base and high productivity, the Ethiopian government has to pay attention to the following.

- Retain skilled workers who leave the ministry for better salary;
- Establish a mining institute that produces professionals with mining skills;
- Develop human resources capacity building program to upgrade technical skills, technological use, support and regulate the sector efficiently; and
- Improve quality of geosciences information by taking the best experiences of other countries and other necessary measures;

Besides, capacity building of institutions in the mining sector at regional and federal levels is required in order to enhance the regulatory and basic data acquisition capacity of the sector. The existing competitive and transparent regulatory and fiscal regimes should also be strengthened in order to attract investors.

To alleviate the infrastructural problem, the government has to provide incentives for the private sector so that it could participate in infrastructure development. Poor infrastructure limits opportunities and can harm the investment in the sector.

The ASM is becoming an alternative source of revenue for large number of people in rural parts of Ethiopia and a potential source of foreign currency earnings for the country. The jobs ASM create are also the other contributions of the sector. Therefore, the government should strengthen its ongoing efforts of assisting the artisanal miners technically and financially.

Yet the Ethiopian mining sector has to move to large-scale mining to enhance the current development in the sector, to make the extractive industries more competitive and to achieve the plan to make the sector backbone of the economy.

And in the long –term establishing a Chamber of Mines as a supporter to the private sector, while mining is governed by independent legal regime would be essential.

Finally, the government has to provide one-window shopping service for investors in the sector to avoid the bureaucracy they may face get the privileges made available by the government.

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