

A report presented as part of data
collection for diagnostic component of
national logistics master plan

Situational and Value chain analysis Report

PART IV: Comprehensive Report on data
collection for diagnostics component
of national logistics master plan

To: DT Global

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Contents

Section one: Overview	2
Section two: Agricultural commodities production outlook	3
2.1. Coffee	3
2.1.1. Situational analysis.....	3
2.1.2. Coffee value chain.....	5
2.2. Sesame	8
2.2.1. Situational analysis.....	8
2.2.2. Sesame value chain	11
2.3. Wheat	13
2.3.1. Situational analysis.....	13
2.3.2. Wheat value chain.....	15
2.4. Perishables (Fruits and vegetables)	18
2.4.1. Situational analysis.....	18
2.4.2. Vegetable value chain.....	20
2.5. Teff value chain	22
2.6. Livestock	24
2.6.1. Situational analysis.....	24
2.6.2. Livestock value chain.....	26
2.7. Fertilizer	28
2.7.1. Situational analysis.....	28
2.7.2. Fertilizer value chain.....	30
Section three: Mining and minerals commodities outlook	32
3.1. Construction output situational analysis	32
3.1.1. Ceramics	33
3.1.2. Dimension stone	33
3.1.3. Cement	35
3.1.3.1. Situational analysis.....	35
3.1.3.2. Cement value chain.....	38
3.1.4. Imported Steel value chain	41
3.2. Minerals	43
3.2.1. Gold	43
3.2.1.1. Situational analysis.....	43
3.2.1.2. Gold value chain	45
3.2.2. Tantalum	47
3.2.3. Potash	47
3.2.4. Petroleum and gas	47
3.2.4.1. Situational analysis.....	47
3.2.4.2. Petroleum value chain.....	49
3.2.5. Coal	51
3.2.6. Gemstones	52
References:	53

Section one: Overview

Ethiopia's economy largely depends on agricultural commodities for its foreign exchange earnings. The export cargo volume partly reflects such reality. Of the top ten major export items by volume, eight are from agricultural sector while two are from mining. The ten major export items split in unequal halves, the top four and the bottom six, in terms of cargo volume. The top four include pulses, coffee, oilseeds, and fruits and vegetables, in that order; the bottom half involve flower, chat, live animals, meat products, spices, tantalum, and gold, respectively. In terms of trend, flower and chat are showing recent remarkable increases, coffee and fruits and vegetables steady increases, oilseeds and pulses recent decreases, live animals steady decreases, and the rest (meat, spices, tantalum, and gold) are stable at the bottom. Remarkably, fruits and vegetables appear to be the highest export cargo volume in the foreseeable future. The total export cargo volume of the top ten export items is 1.2 million MT in 2021. Based on this trend, the most fitting forecast for 2030 is 1.37 million MT, approximately to the pick year of 2016 at 1.39 million MT.

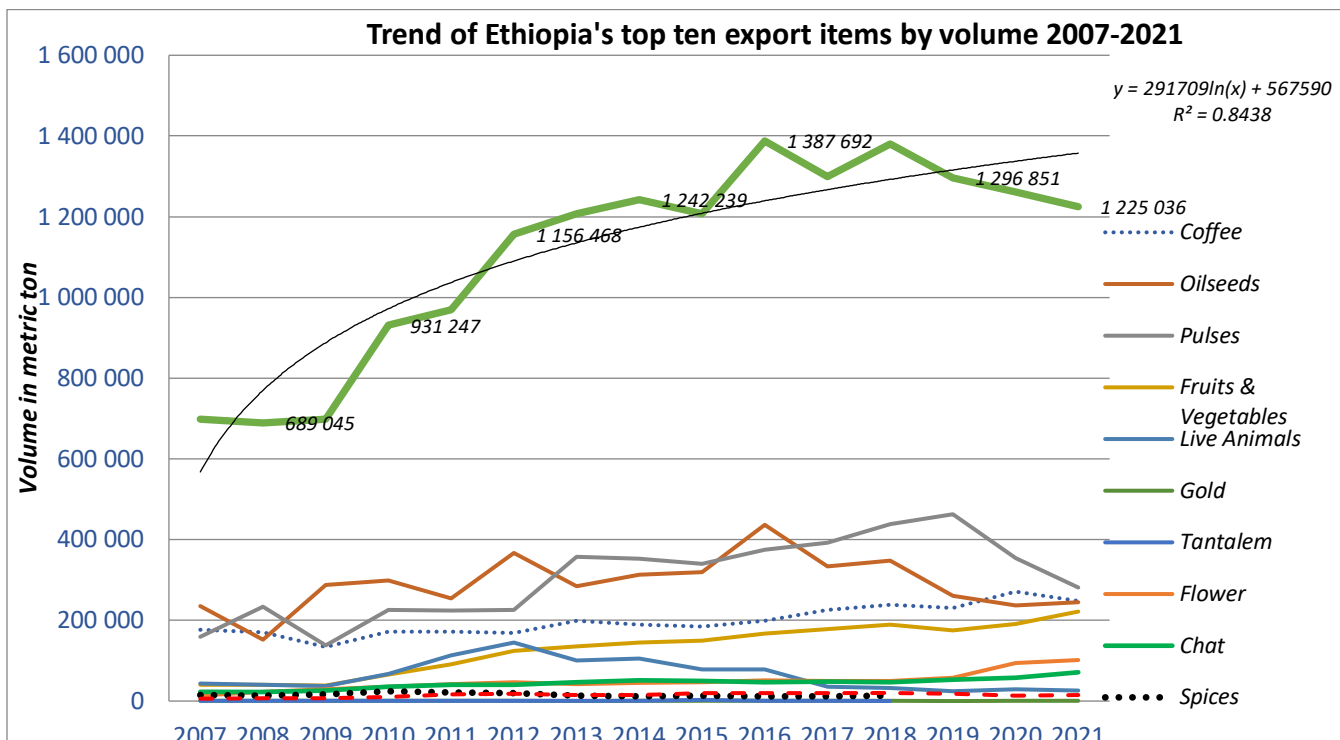


Figure 1(a): Export volume cargo trend

Source: Dilnesahu *et al.* (2023), AAU; NBE data

Section two: Agricultural commodities production outlook

Agriculture has been the main export earner of Ethiopia with the major ones, coffee, sesame, fruits and vegetables recording nearly 594,000 tons yearly average from 2020 to 2022 as per the Ethiopian Central Statistical Agency data. In the same period the total average production for these commodities including wheat (5.4 million tons) is 16.4 million tons. Of the 16.4 tons, about 4.3 million tons are consumed within the production towns, leaving 12.1 million tons for domestic (11.5 million tons) and export (0.6 million tons) sales.

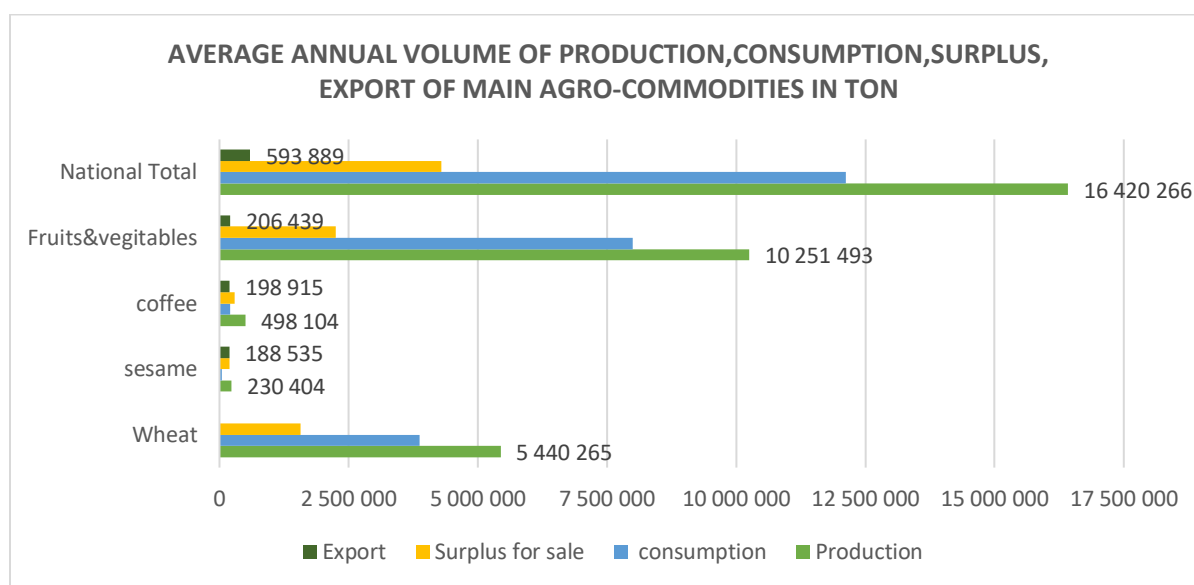


Figure 1(b): Average annual production and export volume of main agricultural commodities

Source: Dilnesahu *et al.* (2023), AAU.

2.1. Coffee

2.1.1. Situational analysis

Ethiopia is Africa's largest coffee producer and the world's fifth largest exporter of Arabica coffee. Coffee is Ethiopia's number one source of export revenue generating about 30 to 35 percent of the country's total export earnings. All the coffee produced in Ethiopia is of the coffee arabica variety. The aggregate production forecast for 2022/23 (Oct-Sep) and 2023/24 are 8.27 million 60 kg bags and (496,200 MT) 8.35 million 60 kg bags (501,000 MT), respectively, according to *Post Addis*.

Ethiopia is endowed with an ideal production environment for growing coffee with a combination of appropriate altitude, temperature, rainfall, soil type, and PH value. Ethiopia, being the epicentre of the

origin of Coffee Arabica, possesses a diverse genetic base. Ethiopia produces a range of distinctive Arabica coffees and has considerable potential to sell a large number of selections of specialty coffee.

According to the USDA Foreign Agricultural Service, more than 15 million smallholder farmers participate in coffee value chain and about 25% of the population is directly or indirectly depend on the coffee value chain, reflecting coffee industry's significance as economic, sociocultural, spiritual life of the people.

Ethiopian coffee produces hard-type coffee beans, with intense flavours and aromatics. Fruit flavours are common in all regions, though the specific fruit character varies from region to region. Berry aromatics are relatively common, as are citrus and chocolate. Ethiopian coffee is organically produced as low yielding highest cup quality.

Coffee is major contributor to GDP and foreign exchange. According to some estimates, coffee production is estimated at 8.27 million 60-kilogram bags (496,200 MT) for 2022/23 with a 0.2% increase from 2021/22. The United States Department of Agriculture reported that coffee output increased from 7,055 thousand 60-kg bags in 2017 to 7,620 thousand 60-kg bags in 2021.

According to the USDA Foreign Agricultural Service, Ethiopia, coffee was cultivated in around 540,000 hectares of the area during 2020–21. About 95% of the coffee is produced in the Ethiopian forest land and production is considered organic.

In 2021, Ethiopia imported \$223k in Coffee, becoming the 177th largest importer of Coffee in the world. At the same year, Coffee was the 762nd most imported product in Ethiopia. Ethiopia imports Coffee primarily from: United Arab Emirates, South Africa, Italy, Brazil and Germany. The major export destinations for Ethiopian coffee export includes Saudi Arabia, Japan, Germany, China, Switzerland, France, Italy, South Korea.

Very low-quality control, the deficiency of a strong coffee seed supply system, inadequate consideration to the input credit provision for efficiency and quality enhancement, and lack of clear national direction are considered the major support related challenges. Limited use of enhanced technology, land degradation and population pressure, limited access to inputs such as fertilizer, seeds, credit and irrigation; and high costs of quality coffee production and processing are also among the challenges identified by the Ethiopian Ministry of Agriculture.

Annual production of coffee shows national average from 2020-2022, as per CSA data, of 498,104 tons of which 206,446 tons are consumed within the producing zone and the rest 287,895 tons are out for market, of which 198,915 tons are export volume. Regarding regional distribution, Oromia region by far (375 thousand tons), South West Ethiopia (75,000 tons, Sidama (, and the previous SNNP regions are producers as indicated in the following figure:

Region	Annual production in ton	consumption in ton	Annual surplus in ton:	surplus %	Export
Ethiopia total	498,103.93	206,445.79	287,894.88		198,914.84

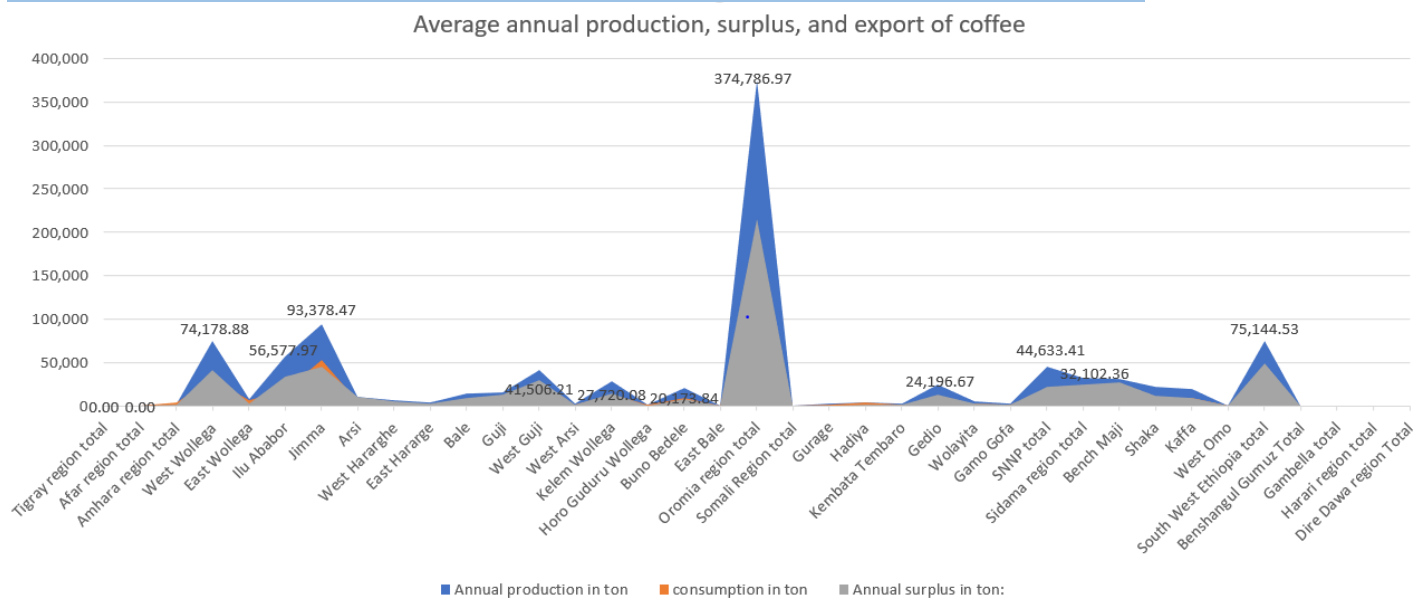


Figure 2: Average annual coffee production distribution and surplus

Source: Dilnesahu *et al.* (2023), AAU.

2.1.2. Coffee value chain

The coffee value chain initiated by input suppliers by providing agricultural inputs such as coffee seedlings, new seed variety, pesticides, fertilizer, farming equipment, cultivating machines, pruning material and storage material cutting saw, machetes and spade. These inputs are supplied by district office of agriculture, rural development cooperative promotion and agricultural research Institute.

Coffee producers, both small-scale farmers and large-scale farms, may involve in coffee processing function, coffee washing, pulping and sorting in addition to coffee production.

The large-scale farmers sale their products to the large suppliers (whole sellers) where they deliver to ECX warehouse for inspection of quality and grading thereby to sell coffee for export through an agent. ECX is expected to create market integrity through introduction of viable products with certified grade and standards, membership-based trading, enforcement of standardized terms and conditions for enforcement of contracts in accordance with trading rules.

ECX stores coffee in its 25 warehouses and 60 shades across the country until laboratory checkup and standardization done. Every marketed product through ECX is connected and announced to the National Bank of Ethiopia, customs, and the Ministry of Trade and Industry who traces the product to the exporter. Buyers and sellers need to register as a member or agent to trade through ECX. Exporters buy coffee meeting export standard and the rest are sold to domestic market. Cooperative Unions which are an organized association of farmers also produce coffee. The union buys from its members and others to sell it at ECX price. The end users of coffee are households, coffee liquor shop, hotels and restaurants.

The main Challenges in coffee value chain are:

- Large number of brokers in the value chain,
- Lack of adequate market information at the farmer level,
- climate change and unpredictable rain and shortage of suitable irrigation,
- coffee diseases, insects and pest infestations and associated risks,
- Price fluctuation, and
- Transportation access problem.

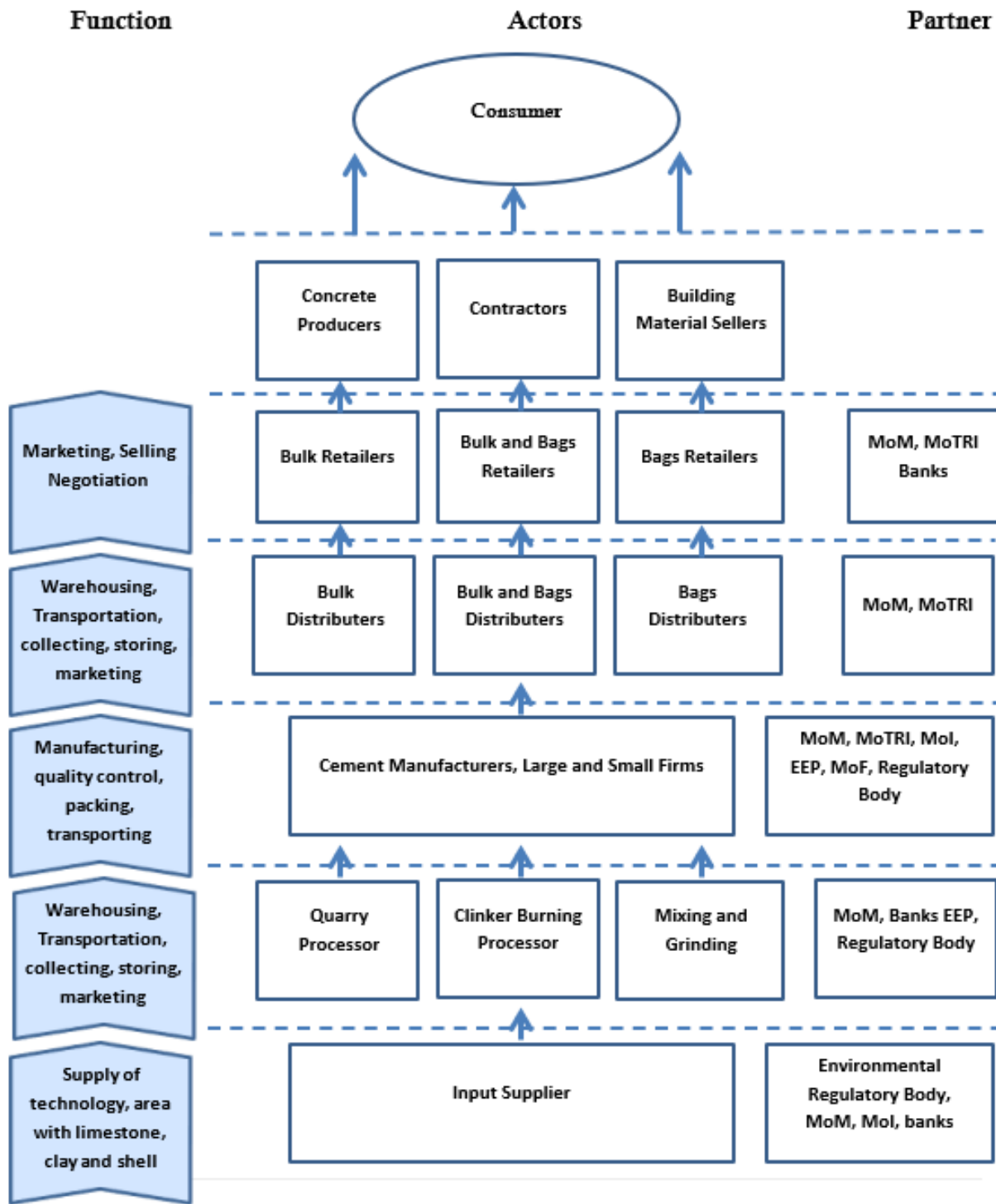


Figure 3: value chain map of coffee

Source: Dilnesahu *et al.* (2023), AAU

2.2. Sesame

2.2.1. Situational analysis

Ethiopia's oilseed industry makes a major contribution to foreign exchange revenues. Ethiopia's three main oilseed crops (sesame, soybean, and Niger seed) account for about 20% of the country's total agricultural export profits, second only to coffee. Even though Ethiopia is one of the world's largest producers and exporters of sesame seeds, the country is facing increasing supply and demand restrictions.

Sesame is a versatile crop that grows both cultivated and wild in Ethiopia, with a wide range of cultivated sesame varieties. It is one of the most widely planted oilseed crops in the country, accounting for 30% of the total output. Ethiopia's northern and northwestern areas, which border Sudan and Eritrea, produce most of the country's sesame oil crops. Sesame, the white gold crop, is the world's second most exported crop after coffee, accounting for 14% of total global exports. Ethiopia is one of the world's top six sesame producers. It is a key crop in Amhara, Tigray, Oromia, Benishangul-Gumuz, and the Southern Nations, Nationalities, and People's Region (SNNPR).

The oilseed sector in Ethiopia is one of the fastest growing sectors in the country. It is the second largest source of foreign exchange earnings after coffee and sesame is the main oilseed crop in terms of production value. Ethiopia is one of the sesame growing and exporter countries in Africa exporting huge produce to the world market and it is the major oil seed in terms of exports, accounting for over 90% of the values of oil seeds exports following coffee. These crops are primarily used as sources of oil for local consumption and also contribute to the national economy through import substitution by helping save scarce foreign currency spent for importing cooking oil.

Sesame yields are highly variable depending upon the growing environment, cultural practices and the type of cultivar. It is a low yielder and worldwide average yields are low. Despite of its nutritional and high value crop, the existing production system suffers from traditional farming practices, unimproved seed, lack of fertilizer use, etc. This situation has caused productivity of the crop per hectare to be far below the estimated FAO potential, which is about 16 quintals/ha.

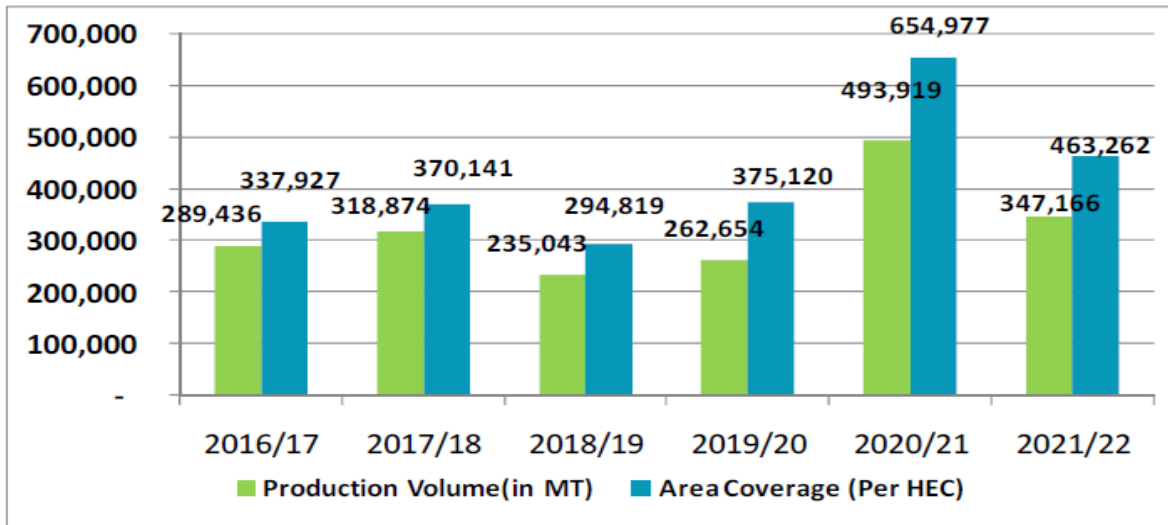


Figure 4: Ethiopian Sesame Seeds Production and Area Coverage; Source: CSA

Annual production of sesame shows a national average (from 2020-2022, as per CSA data) of 230,404 tons, of which a meagre 41,204 tons are consumed within the producing zone and the rest 189,200 tons are out for market, of which nearly the 99%, i.e 188,5345 tons export volume, suggesting a cash crop. Regarding regional distribution, Amhara region by far (125 thousand tons), Tigray (80 thousand tons), Oromia region (18 thousand tons), and Benshangul Gumuz (6.7 thousand tons) come as major producers in that order as indicated in the following figure. Central Gondar, West Gondar, and West Tigray are the top producing zones.

Region	Production	Consumption	Surplus	Export
Ethiopia total	230,404	41,204	189,200	88,534.98

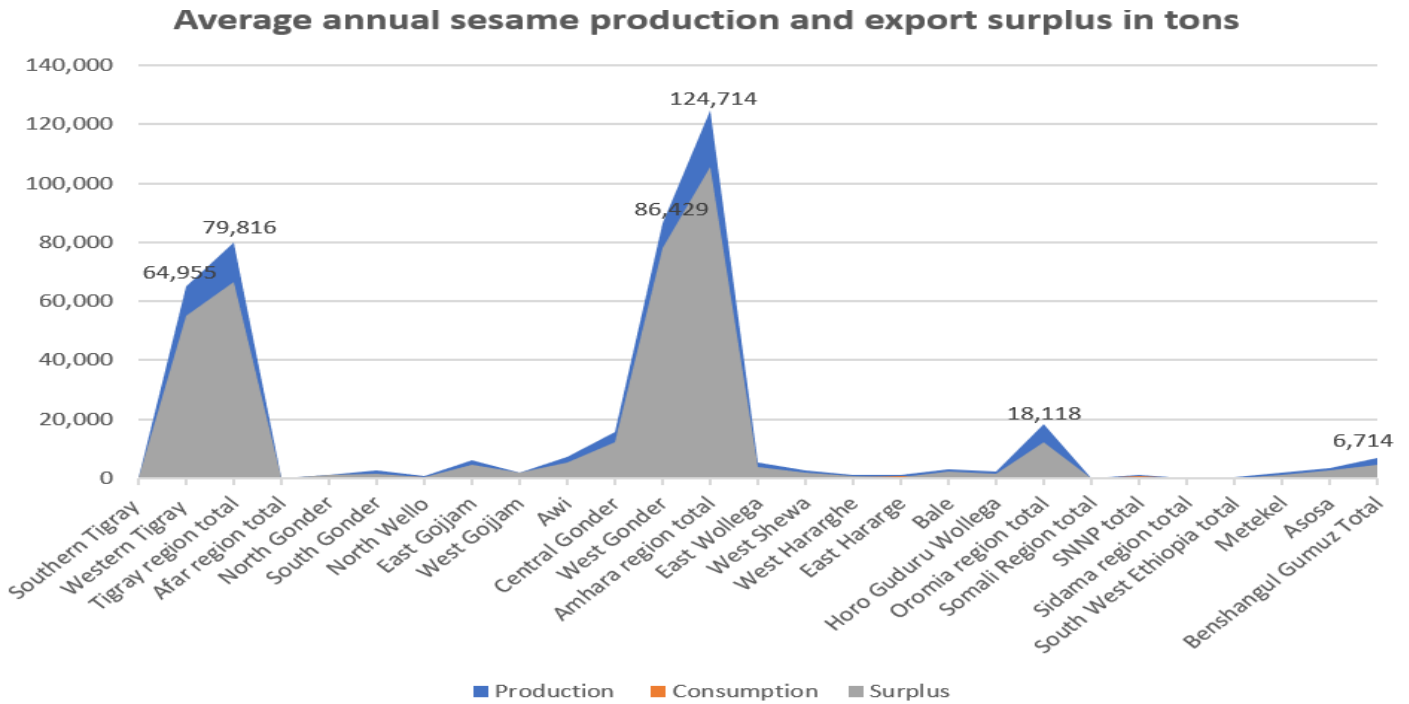


Figure 5: Average annual sesame production distribution and surplus

Source: Dilnesahu *et al.* (2023), AAU.

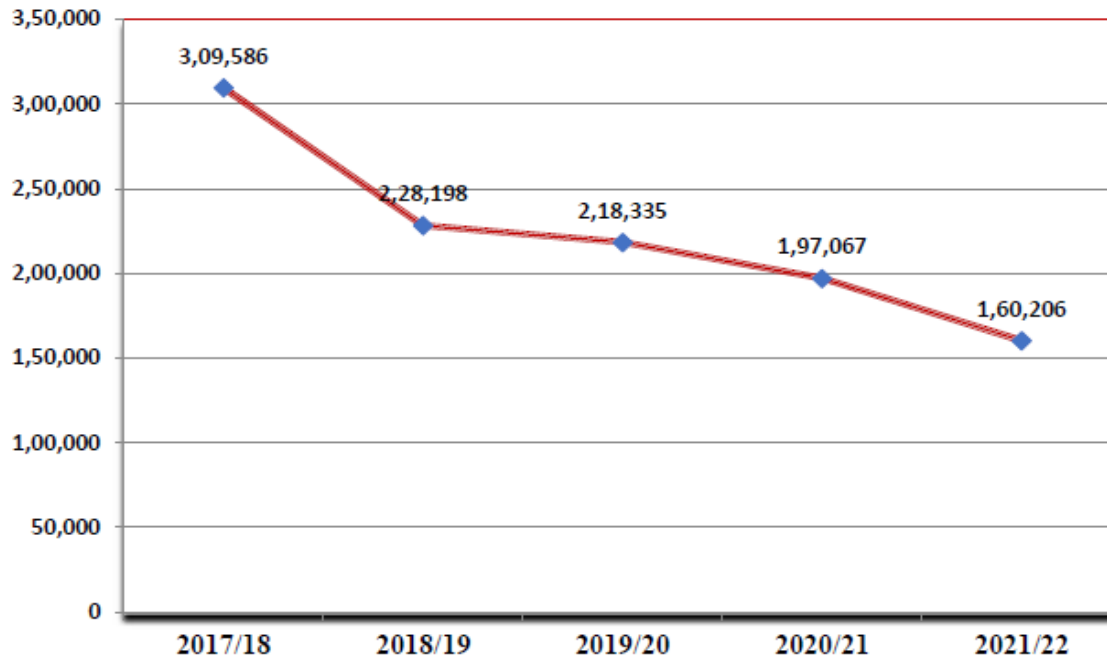


Figure 6: Sesame Export trend in Ethiopia from 2017/18 to 2021/2022 in Volume/MT; Source: MoTRI

The major export destination countries for Ethiopia sesame export are Israel, United Arab Emirates, China, Singapore, Viet Nam, Japan, Turkey, Jordan, Saudi Arabia, Yemen

2.2.2. Sesame value chain

Sesame is a major cash crop which is mainly produced as an export crop. A long value chain characterizes sesame value chain in Ethiopia, which includes input supplier, producers, village traders or collectors, brokers/wholesalers, exporters, retailers and local consumers.

The value chain kickstarts with input supplies of fertilizers, seeds, pesticides, and farming equipment by Ministry of Agriculture, regional and rural district agriculture bureaus. Production then follows from land preparation, seed selecting farming, follow up of seedlings, harvesting, collecting, drying and storage of the sesame. Producers secure partner supports particularly from regional and district micro finance and agriculture office. Finally, harvested sesame is either sold to the collectors, distributors and cooperative union.

The cooperative union and the wholesaler deliver to Ethiopian commodity exchange (ECX) for subsequent regulatory and laboratory tastings before entering the international market. The remainder few are collected by collectors for the local market in particular for edible oil production. In sesame value chain, the wholesaler and the cooperative union may send directly to the exporter. The actors in sesame value chain are input suppliers, small- and large-scale producers, collectors, wholesalers, cooperative union, ECX, exporters, importers, retailers and local oil processors.

The main function of each actor starts with delivering of inputs, land preparation, preparation of seedlings, ploughing, follow-up, harvesting collecting and drying. The next step include: distribution, transportation selling procuring, marketing, linkage formation and regulatory checking. The partners in sesame value chain are Ministry of Agriculture, regional and district agriculture bureaus, cooperative promotion office ECX, ECC, NBE, MoTRI.

The main challenges in the sesame value chain are:

- Low productivity and quality
- Poor marketing linkage and information
- Price fluctuation
- Low productivity because of erratic rainfall
- Large number of brokers in the supply chain
- Uninformed or misinformed decision on stock levels resulted a wrong speculation of price

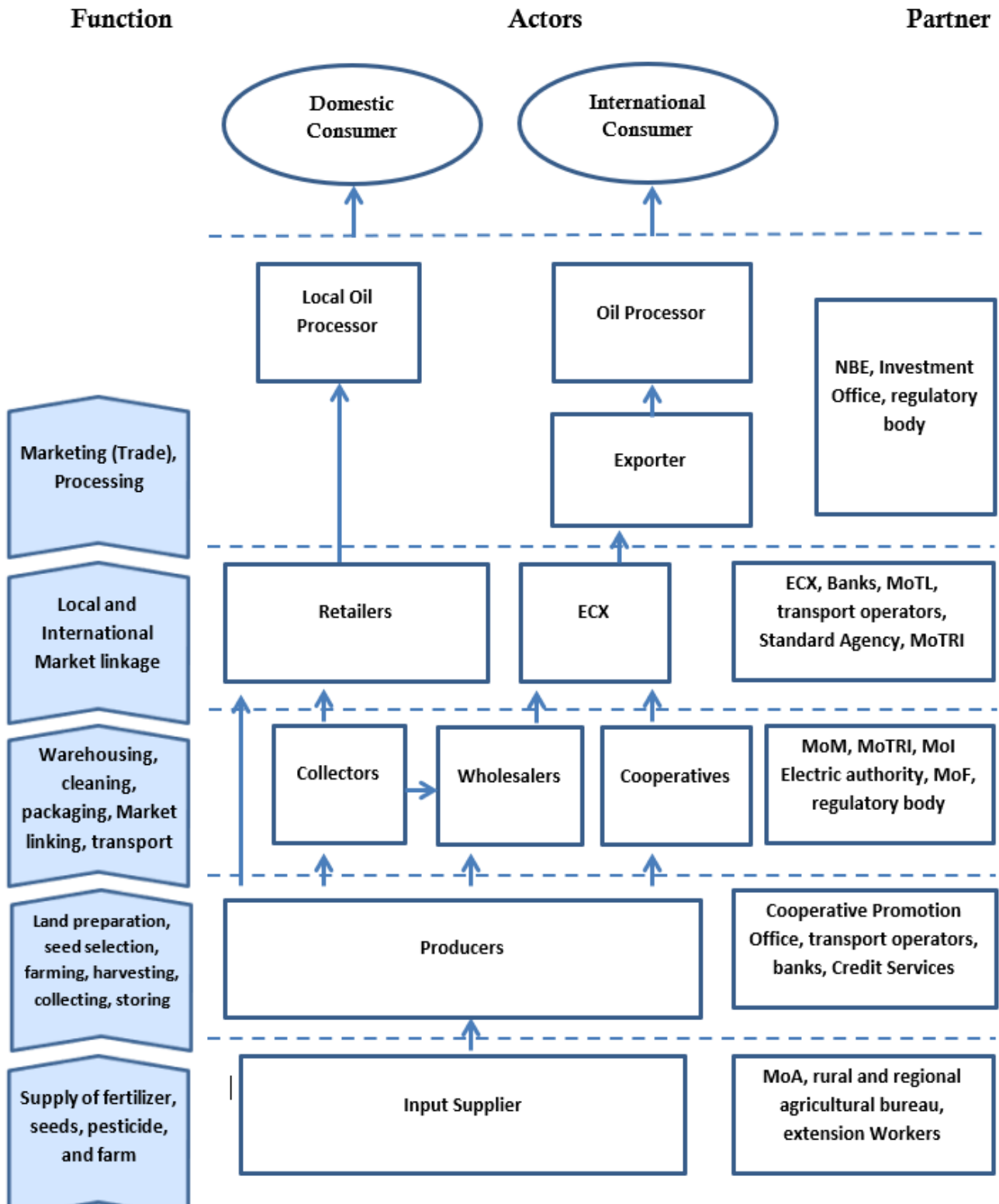


Figure 7: value chain map of sesame

Source: Dilnesahu *et al.* (2023), AAU

2.3. Wheat

2.3.1. Situational analysis

Wheat, one of the most important food security crops in Ethiopia, is cultivated on a total area of 2.1 million (1.7 million ha rain-fed and 0.4 million ha irrigated) hectares annually with a total production of 5.52 million and 7.5 million metric tons in the production years of 2021/22 and 2021/2022, respectively. The Rain-fed wheat production is dominantly carried out during the main rainy season in Ethiopia (June to October) in the highlands of the country while irrigated wheat production is carried out from November through April in the lowlands of Ethiopia along the Awash, Wabe Shebele, and Omo River basins.

The importance of wheat in Ethiopia is reflected by its large coverage in allocated land, volume, and number of farmers. Wheat is the third most important cereal crop after teff and maize, accounting for 17% of the country's grain.

Ethiopia had long been the second largest wheat-producing country in Africa next to South Africa and is the primary wheat producer in Sub-Saharan Africa (SSA) owing to the suitable agroecological conditions. In Ethiopia wheat is predominantly produced by smallholders with average landholdings of less than one hectare. A relatively large percentage of wheat (5-10%) is produced on large-scale farms in the Arsi-Bale wheat belt. Wheat is mainly grown in the highlands of Ethiopia, and the two main wheat-producing regions (Oromia and Amhara) account for about 85 percent of the national wheat production. The central and southeastern highlands of the whereby Arsi, Bale, and parts of Shoa are considered to be the major wheat-producing regions of Ethiopia and are also identified as the main wheat-growing belt of East Africa.

Wheat ranks fourth in the country in terms of the area coverage next to teff, maize, and sorghum. Out of the total grain crop area, 80.8% was under cereals and wheat took up 13.3% of the grain crop area. Moreover, about 4.7 million farmers produce 42.3 million tons of wheat across 1.6 million hectares of land with average productivity of 2.7 t/ha. Ethiopia's annual wheat production is about 5.8 million tons with mean productivity of 3 tons per hectare (tha⁻¹).

Wheat is an important crop with a significant contribution to the development of the agriculture sector in general and to household income and food security. To achieve self-sufficiency and be a net exporter of wheat by 2025/26, the Government of Ethiopia developed the National Wheat Flagship Program (NWFP). The objective of the Program is to produce an additional 4.2 million tons of irrigated wheat at an average productivity of 4.2 tons/Ha. These objectives are supported by the Ethiopia Wheat Value Chain Development Project (EWVCDP) financed by the African Development Bank. The Project is under implementation in four regions of Ethiopia which are Amhara, Oromia, Somali, and Afar regions.

Ethiopia exported an average of \$72k wheat in five years from 2018 to 2021, ranked at 99th wheat exporter in 2021. Norway and Angola come as destinations with \$7.33k value of export and others include Nigeria, Netherlands, Canada, and France.

In 2021, Ethiopia imported \$927M in wheat, becoming the 22nd largest importer of Wheat in the world. At the same year, Wheat was the 1st most imported product in Ethiopia. Ethiopia imports Wheat primarily from: Ukraine, United States, Russia, Romania, and Bulgaria. As of now, the Ethiopian government decided to stop importation for export, buoyed by production boost.

Of the challenges of wheat comes to the fore logistics reflected by poor rural road infrastructure, and by concentration of production to central high lands covering Oromia and Amhara, necessitating long distance transport to the rest deficit areas.

On supply, the government controls urban supply chain through the Ethiopian Grain Trading Enterprise (EGTE) distribution, while distribution is decentralized in rural areas. About 60% of grain stocks are held by the Ethiopia Food Security Reserve Administration for use in emergencies; the rest is held by the EGTE, a few mills, and a small amount of private storage. The supply of agricultural inputs such as seeds, fertilizer, and pesticides are another challenge in the production and distribution of wheat. In addition, the traditional farming system and the lack of knowledge, capacity, willingness, or reluctance on the side of the farmers to adopt technology-driven agriculture is also another key challenge.

Annual average national wheat production (from 2020-2022, as per CSA data) is about 5.4 million tons, of which 3.9 million tons is consumed within the producing area, and the remaining 1.5 million tons is out for distribution to deficit regions. Regarding regional distribution, Oromia region by far (3 million tons), Amhara region (1.74 million tons), and SNNP (1.76 million tons) come as main wheat producing regions while Arsi, Bale, West Arsi, West Gojjam come as top producing zones in that order as depicted below.

Region	Production	Consumption	Surplus
Ethiopia total	5,392,555	3,900,614	1,491,941

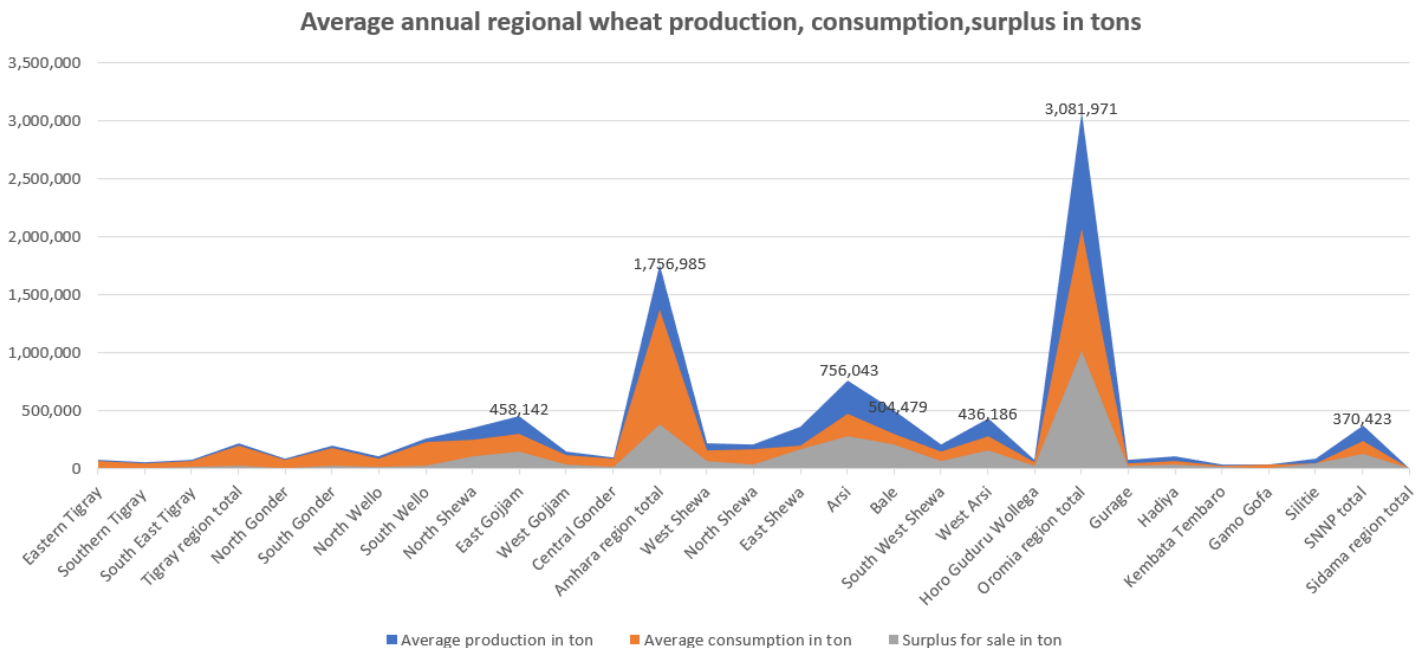


Figure 8: Average annual wheat production distribution and surplus

Source: Dilnesahu *et al.* (2023), AAU.

2.3.2. Wheat value chain

The most important crops in Ethiopian agriculture are cereals such as wheat, barley, maize, sorghum, and teff. Cereal production and marketing provide a source of income for millions of smallholder households. Wheat is one of the important cereal crops consumed in different forms in Ethiopia and the rest of the world.

Agricultural value chains include three or more of the following actors: producers, processors, distributors, brokers, wholesalers, retailers and consumers. The wheat value chain includes operations such as improved wheat variety generation, seed and supply of other inputs, production, marketing, and processing and consumption segments.

The main actors in the value chain are smallholder farmers who tend to sell large quantities of their production during and soon after the main harvest season, Some mechanized farmer, wheat grain retailer, farm gate collector, cooperative/union collectors, whole seller, wheat miller, wheat flour whole sellers, Food processing factories (Pasta, Biscuit, Marconi), wheat flour sellers, and final consumers.

The main partners in the wheat value chain includes Ministry of Agriculture, extension workers, private input supplies, regional agriculture bureaus, cooperative and unions, regional trade offices, Ministry of Industry, credit associations, banks and Food and Drug Authority.

Prospects of wheat production:

The fact that the demand for wheat growing faster than other agricultural products can serve as a motivation for further investments in the wheat sub-sector. The Government of Ethiopia (EoG) is making concerted efforts to further investments on infrastructural and irrigation facilities, new wheat land cultivation development, marketing information system at district level, and warehouse receipt system. As a result, the EoG decided to stop importing wheat for the first time from 2022.

The main challenges in Wheat value chain are:

- Wheat supply scarcity and consequent market irregularities, such as adulteration of produce, exorbitant price, cross border smuggling,
- Sustaining self-sufficiency with wheat,
- Lack of modern marketing system,
- Limited market integration between supply and demand areas,
- Supply of ungraded and unsorted wheat produce to markets and processing sectors,
- Intermittent wheat supply that may lead to unpredictable price fluctuation, and
- Limited wheat traders in areas of low wheat production areas.

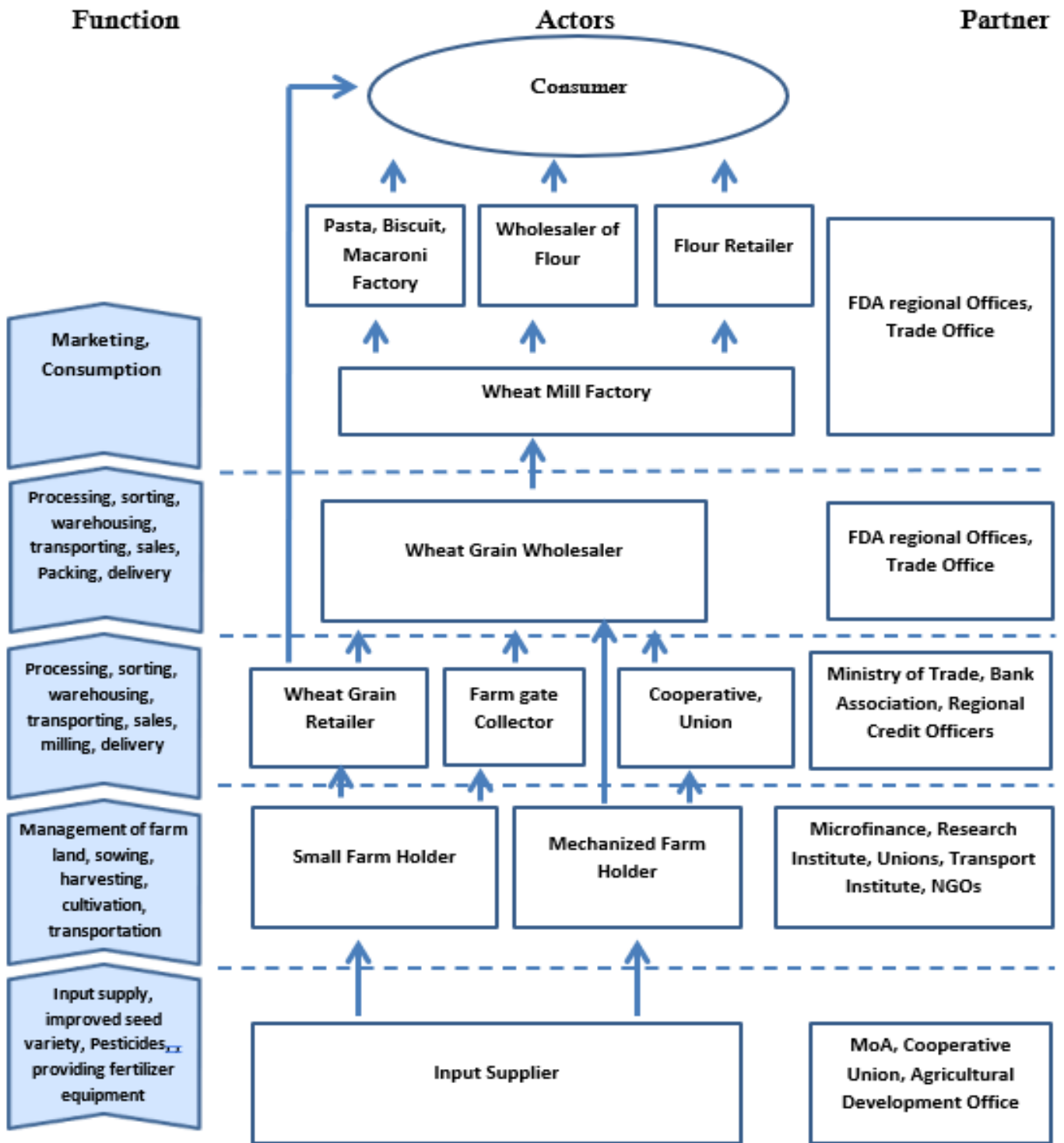


Figure 9: Value chain map of wheat

Source: Dilnesahu *et al.* (2023), AAU

2.4. Perishables (Fruits and vegetables)

2.4.1. Situational analysis

Ethiopia is remarkably rich in agrobiodiversity resulting from its natural features, cultural multiplicity, and solid food arts. The weather condition of Ethiopia has great variation due to the excessive difference in altitude ranging from sea level up to 4,500 m and also there is plentiful potential for irrigation. This makes it possible for different crops to be grown in the country, including all types of fruit and vegetables. East Hararghe, East Shewa, West Shewa, Arsi, Gamo Goffa, Dire Dawa, Harari, Tigray, and Amhara regions are the major fruit and vegetable-producing areas in Ethiopia.

Ethiopia exports fresh fruits and vegetables to the international markets. The major markets for Ethiopian fresh fruits and vegetables are the European Union, the Arab countries and the regional markets. Ethiopia is very well known in some parts of Europe especially for her green beans, climbing beans, cut flowers, okra, melon and passion fruits.

The major fruit crops produced and exported from Ethiopia are bananas, mangos, avocados, citrus, pineapples, papayas, and strawberries. Fresh fruits' contribution to Ethiopia's export earnings is fairly small but it is growing quickly. As per the National Bank of Ethiopia data indicates, Ethiopia exported 191.18 million kg, 221.70 million kg, and 222.65 million kg of Fruits & Vegetables to different countries over the world in production years of 2019/20, 2020/21 and 2021/22, respectively. Although imports are growing faster than exports, Ethiopia is a net exporter of fresh fruits. Like other crops and vegetables, most of these fruits are grown by smallholder farmers. Meanwhile in recent years especially after the country opened its door for flower growers, some international companies have been engaged in production of fruits such as, strawberry targeting mainly export market.

Vegetables occupied around 1.62% of the total cropped area and their production makes up about 2.04% of all crop production in Ethiopia. The largest fresh products in Ethiopian export are vegetables, including tomatoes and onions, potatoes, Lettuce, green pepper, and red peppers.

Regarding the sector's challenge come to the fore poor quality infrastructure pertinent to electricity, irrigation, transport, and cold storage facilities. Transport cost to value of good is incredibly expensive, poor road conditions elongate transport time, and lack of cold chain picks risk of perishability on transport. Lack of access to seaport, railway, long distance to port, shortage of refrigerated containers come as export challenges via ocean. Thus, much of the light weight leafy vegetables and fruits are exported through the expensive air transport means, further undermining the international competitiveness of the sector. Here, the Ethiopian airlines often get congested resulting in transport delay, not to mention producers challenge

associated to access to refrigerated vans and synchronization of supplier-buyer temperature control with Ethiopian Airlines Cargo storage system.

Annual average national fruits and vegetables including false banana production (from 2020-2022, as per CSA data) is about 10.3 million tons, of which nearly 8 million tons is consumed within the producing area especially false banana, and the remaining 2.25 million tons is out for distribution outside the producing area, of which about 206 thousand tons are export. Regarding regional distribution, Oromia region by far (3 million tons), Amhara region (174 million tons), and SNNP (1.76 million tons) come as main wheat producing regions while Arsi, Bale, West Arsi, West Gojjam come as top producing zones in that order as depicted below.

Oromia (4.4 million tons) and SNNP (3.2 million) by far, Sidama(1.9 million tons),South West Ethiopia (1.9 million tons) are the top fruits and vegetable’s producing regions. Sidama Region offers the highest amount of surplus to market. Of the producing zones, West Arsi and Wolayita come as top producers each exceeding 0.9 million tons.

Region/zone	Production	Consumption	Surplus	Export
Ethiopia total	10,251,493.44	7,998,173.86	2,253,319.57	206,439.3

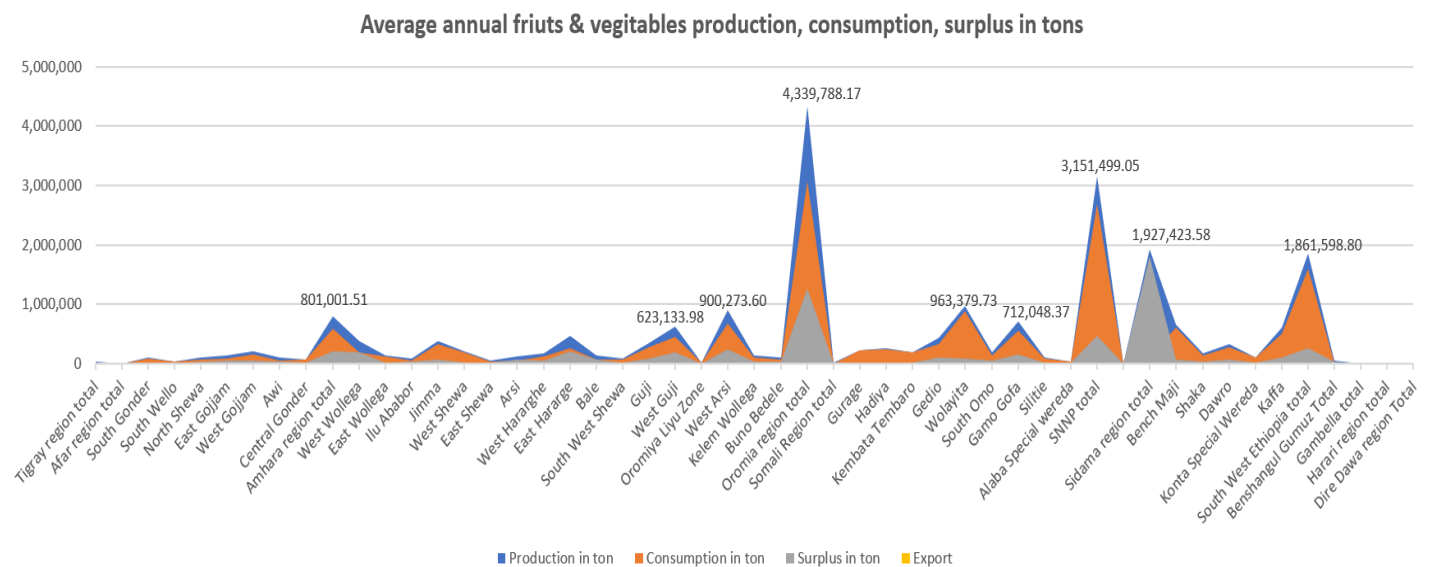


Figure 10: Average annual fruits and vegetables production distribution and surplus

Source: Dilnesahu et al. (2023), AAU.

2.4.2. Vegetable value chain

The value chain actors in vegetables (such as onion and tomato) value chain in Ethiopia involve input supplier (improved variety, fertilizer, pesticides, farm implements), producers, brokers, marketers (retailers, collectors, and small traders and regional wholesalers), and consumers.

The main functions of the actors are supply of inputs, managing farming land, harvesting, cultivating storage, marketing, transporting, processing, and consumptions.

The partners involved in the vegetable value chain include agricultural extension workers. Regional agricultural offices, cooperatives, Unions, credit association, banks, customs, Food and Drug Authority and Ministry of trade and Regional Integration.

Opportunities in vegetable value chain include:

- Existence of vast span of arable land suitable for irrigation
- Existence of institutions supporting the development of the horticulture sector
- Increasing demand for horticultural products,
- Low-cost human capital,
- Presence of an enabling policy environment for the sector,
- Conducive agroecology for horticulture in general,
- Existence of vegetable seed importers and distributors, and
- Increasing registration of commercial vegetable varieties in Ethiopia.

Challenges in vegetable value chain involve:

- Poor knowhow in product sorting, grading, packing, and traditional transporting affecting quality
- Constrained vegetable marketing due to:
 - Lack of market information systems,
 - Poor market linkages,
 - Low institutional support,
 - Fragmented supply chain, and
 - Detachment of smallholder farmers.

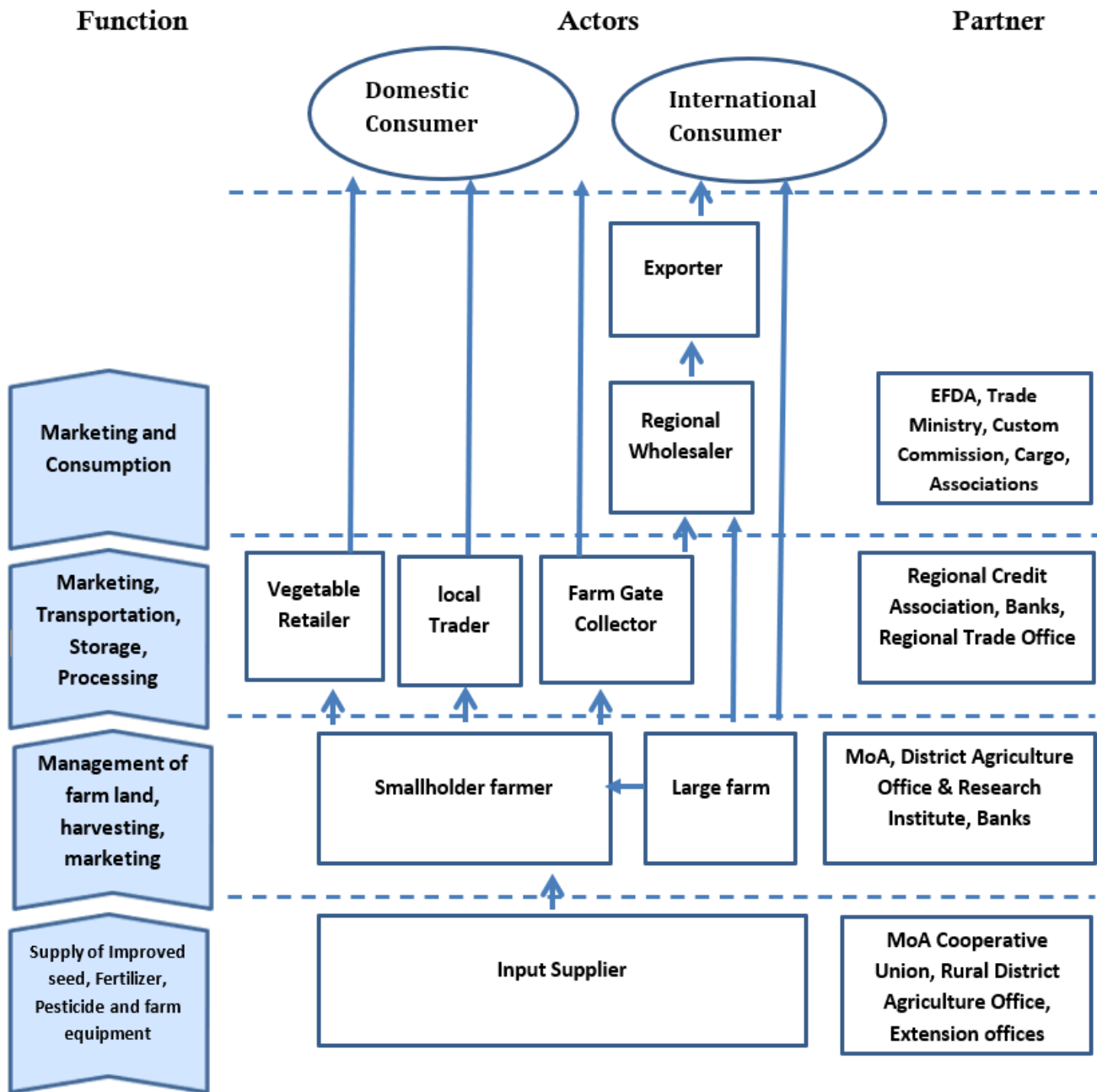


Figure 11: value chain map of vegetables

Source: Dilnesahu *et al.* (2023), AAU

2.5. Teff value chain

Teff is a dietary staple food crop and the most important cereal in Ethiopia in terms of agricultural land use and total value. It is adapted to a wide-range of environments and is presently cultivated under diverse agroclimatic conditions. The crop is critical for incomes and food and nutrition security across Ethiopia and is grown by 6.5 million smallholder farmers. Many of these farmers consume as much as 70 to 80 percent of their production and market the surplus to consumers. It is mainly cultivated in the central and northwest highland areas.

Teff value chains are long and complex. The main actors in the teff value chain involve input suppliers, producers (small holder farmers), retailers, wholesalers, millers and injera processors.

Small land owners, retailers, and wholesalers are the main actors in teff value chain. The main functions of the actors include inputs supply (seeds, fertilizers, farming equipment's, technologies), land preparation, ploughing sowing, harvesting, cultivating, transporting, selling, milling, and processing.

The partners supporting in the teff value chain includes extension workers, agricultural research Institute, Ministry of Agriculture, Regional Trade offices, cooperative and unions, Agricultural transformation Office, regional offices, credit and saving associations, banks and Food and Drug Authority.

The main challenges in the Teff value chain include:

- Low productivity and quality
- High rainfall during harvesting yield,
- Shortage of rainfall during production,
- Rust of teff during yield,
- High price of input,
- Inadequate extension services,
- Inadequate credit provision,
- Shortage of cultivable land,
- Low soil fertility,
- Lack of capital,
- Shortage of improved seed supply and
- Low yield of teff per hector
- Weak integration between teff traders and producers

The opportunities include the introduction and promotion of proven and affordable post-harvest technologies such as metal silos, hermetic bags, multiple crop harvesters, mechanical threshers, Sheller's, and pre-storage protectants.

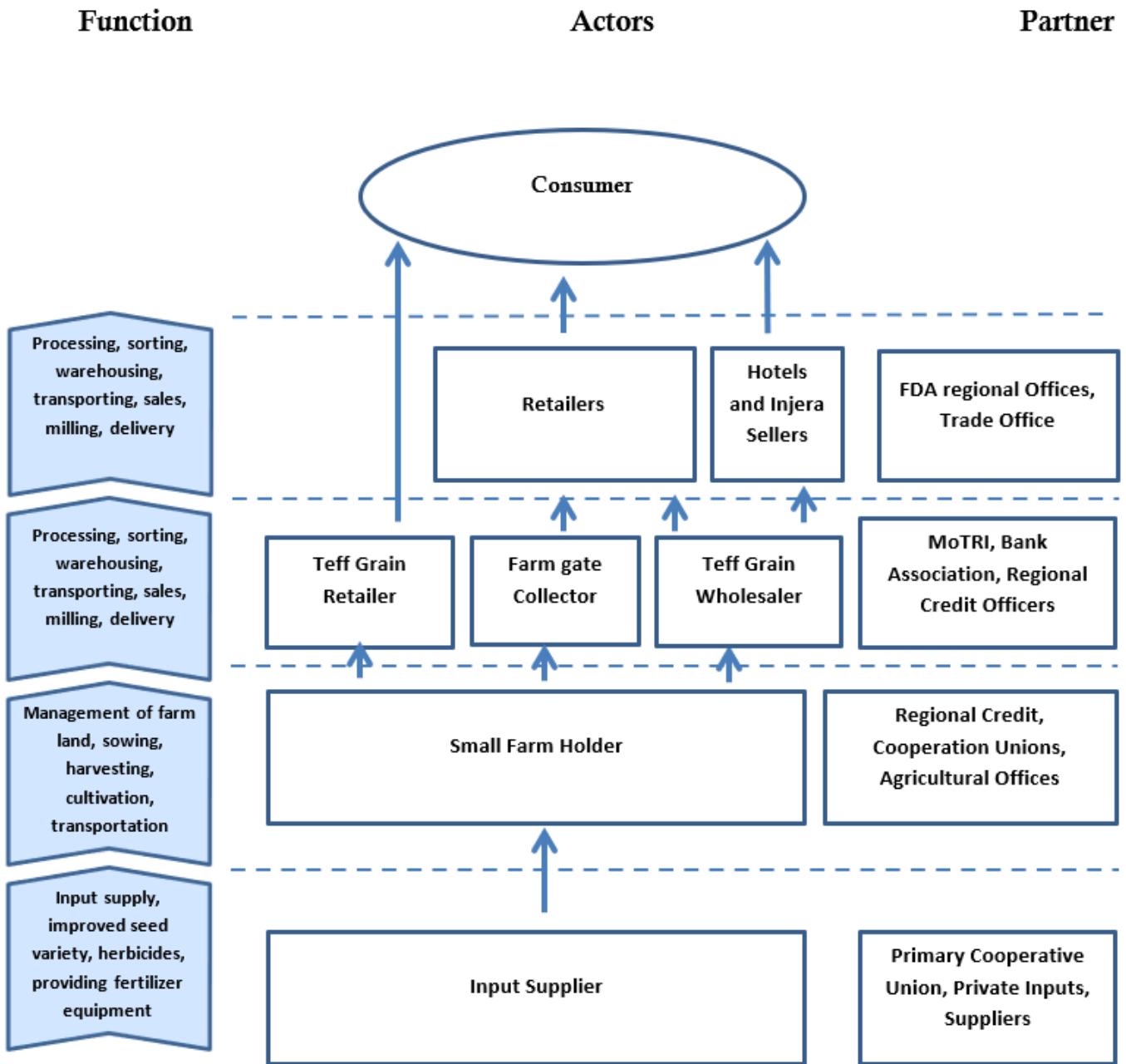


Figure 12: Value chain map of Teff

Source: Dilnesahu *et al.* (2023), AAU

2.6. Livestock

2.6.1. Situational analysis

Ethiopia has the largest livestock population of any African Country. According to central statics agency (CSA, 2021) there are 70 million heads of cattle, 42.9 million sheep, 52 million goats, 2.15 million horses, 10.8 million donkeys, 0.38 million mules, 8.1 million camels, 6.99 million hives, and about 57 million chickens.

Livestock is a major source of animal protein, power for crop cultivation, means of transportation, export commodities, manure for farmland and household energy, security in times of crop failure, and means of wealth accumulation. The sector contributed up to 40% of agricultural Gross Domestic Product (GDP), nearly 20% of total GDP, and 20% of national foreign exchange earnings in 2017 (World Bank, 2017). Among the Livestock export, live animal exports from Ethiopia play a significant role in the country's economy, contributing to foreign exchange earnings and providing employment opportunities.

Ethiopia exports a wide variety of live animals, including cattle, sheep, goats, camels, horses, poultry, and bees. Cattle are one of the most commonly exported animals, with breeds such as Boran, Arsi, and Horro being popular choices. Sheep and goats are also exported in large numbers, with breeds like Afar and Somali being favoured for their adaptability to harsh environments. Ethiopia exports live animals to various countries around the world. The Middle East, particularly Saudi Arabia, Yemen, and the United Arab Emirates, is a major market for Ethiopian livestock. These countries have a high demand for meat and rely on imports to meet their domestic needs. Other destination markets for Ethiopian live animals include Qatar, Oman, Vietnam, Hong Kong, Nigeria, and the neighbouring Sudan, Djibouti, Somalia, and Kenya. Here, massive smuggling has become unprecedented challenge.

Regarding meat production and export, the total volume of meat production in the country reached 1.9 million metric tons in 2019/2020, according to CSA data. Cattle are the primary source of meat production in Ethiopia; poultry meat production has seen substantial growth, with annual output of around 70 thousand metric tons.

The export income from meat products has shown positive growth over the years. According to data from the Ethiopian Meat and Dairy Industry Development Institute (EMDIDI), Ethiopia earned approximately \$93 million from meat exports in the fiscal year 2019/2020. In 2018/2019 fiscal year, Ethiopia earned approximately \$360 million USD from live animal exports. As per FAO's data, though Ethiopia livestock

exports fluctuated substantially in recent years, a long-term trend forecast between 2001 and 2021 shows increasing trend towards 25,967,300 US\$ export value in 2021.

Major constraints in the sector include high cost of feed, land shortage of grazing and rearing land, poor quality feed, shortage of input supply, inadequate veterinary extension services, lack of refrigerated containers, shortage of vehicles, cross border smuggling, among others.

As per CSA data 2022, the total livestock is about 241 million, of which nearly 170 million are the main four (Cattle, sheep, goat, camel) that are subject to export market. In the same year, official live animal export is about 0.3 million. On regional distribution of the four main livestock is reasonably balanced, Oromia (43 million), Somali region (39 million), Amhara (34million), SNNP (21 million), and Afar (16 million) come in order by main four livestock population size. The following figure offers detail.

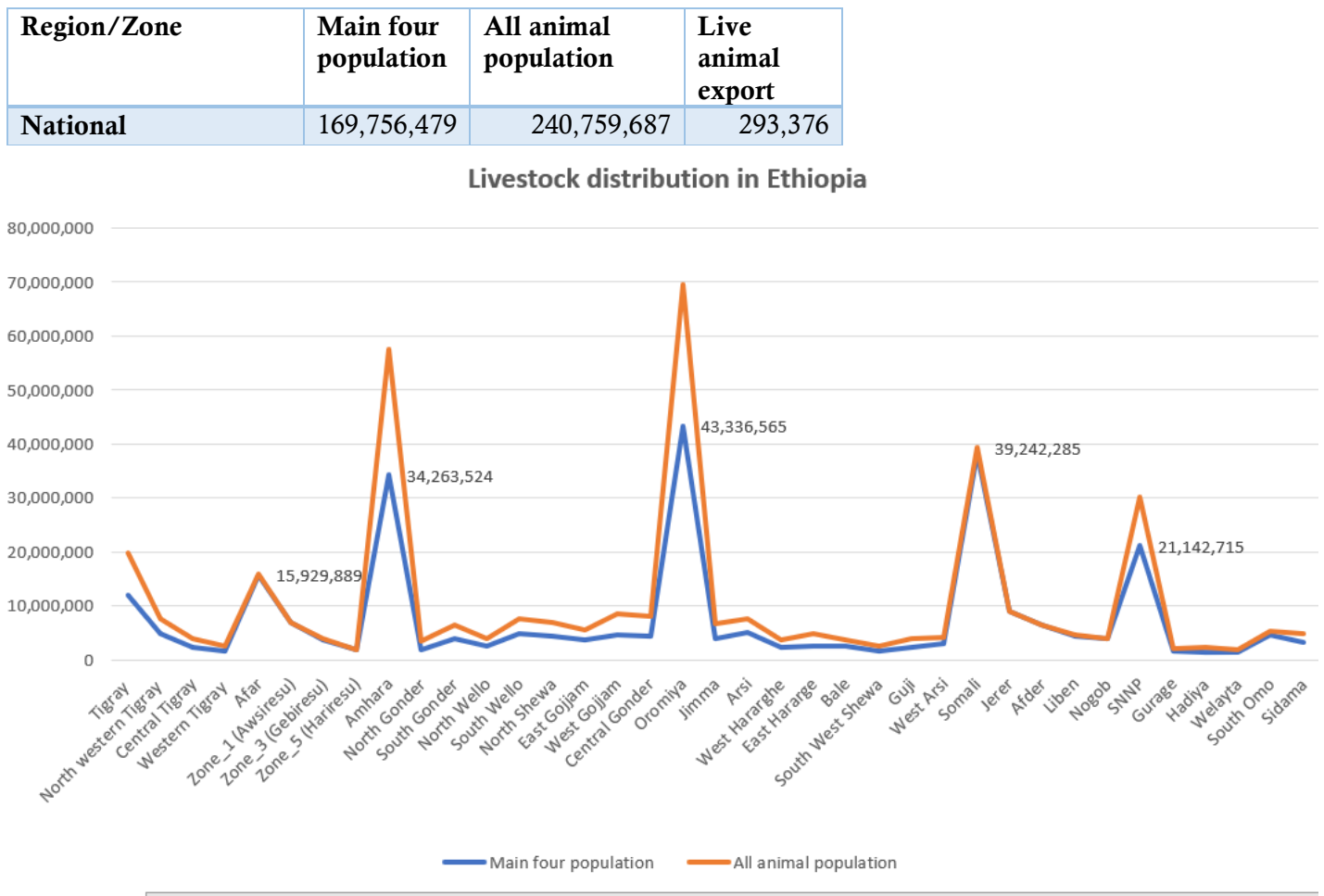


Figure 13: Average annual fruits and vegetables production distribution and surplus (2020-23)

Source: Dilnesahu *et al.* (2023), AAU.

2.6.2. Livestock value chain

Ethiopia has a diverse livestock production sector involving mobile pastoralists, small holders and large-scale producers. Livestock value chains make significant contributions to the national economy through value added processing and marketing. The livestock marketing system in Ethiopia is dominated by informal markets. Cattle, sheep, goats and camels are important commodities that contribute to live animal exports.

Different types of inputs are needed to strengthen and sustain the livestock value chain in the country. These include supply of feed (both grazed and purchased), mineral supplements, vaccines, drugs and veterinary products. The livestock producers are large scale producers, small scale producers and pastoralists who rear and sell cattle, sheep, goat and camels to collectors and fatteners. The collectors from different regions then deliver to export abattoirs and municipal houses. The fatteners deliver to live animal exporter to international buyer who in turn delivers it to its chain customers towards final consumer. Export abattoir exports to importer wholesaler. The municipal house delivers to the slaughter houses to reach the local butchers.

The main partners in the Livestock value chain are Ministry of agriculture (MoA), regional and district livestock offices, Ministry of Trade & Regional Integration (MoTRI), Custom commission, Ministry of Industry (MoI), banks, municipal offices, cooperative union, Livestock Export Trade Association, and National Veterinary and Research Institute. The partners provide feeding and feeding land, sheds, vaccination, follow up and checkups, transportation, regulatory approval, availing new variety breeds, credit facility, banking services, and licensing.

Challenges of live stock value chains include:

- Brokers are active at all levels of the livestock market,
- large informal export market,
- inadequate supply of feeds for the existing livestock population,
- poor quality of the available feed resources,
- widespread prevalence of a wide range of diseases and parasites that kill the animals,
- a shortage of inputs in terms of technology and services required for the development of livestock,
- absence of extension packages, and
- lack of information and knowledge shared among producers and buyers.

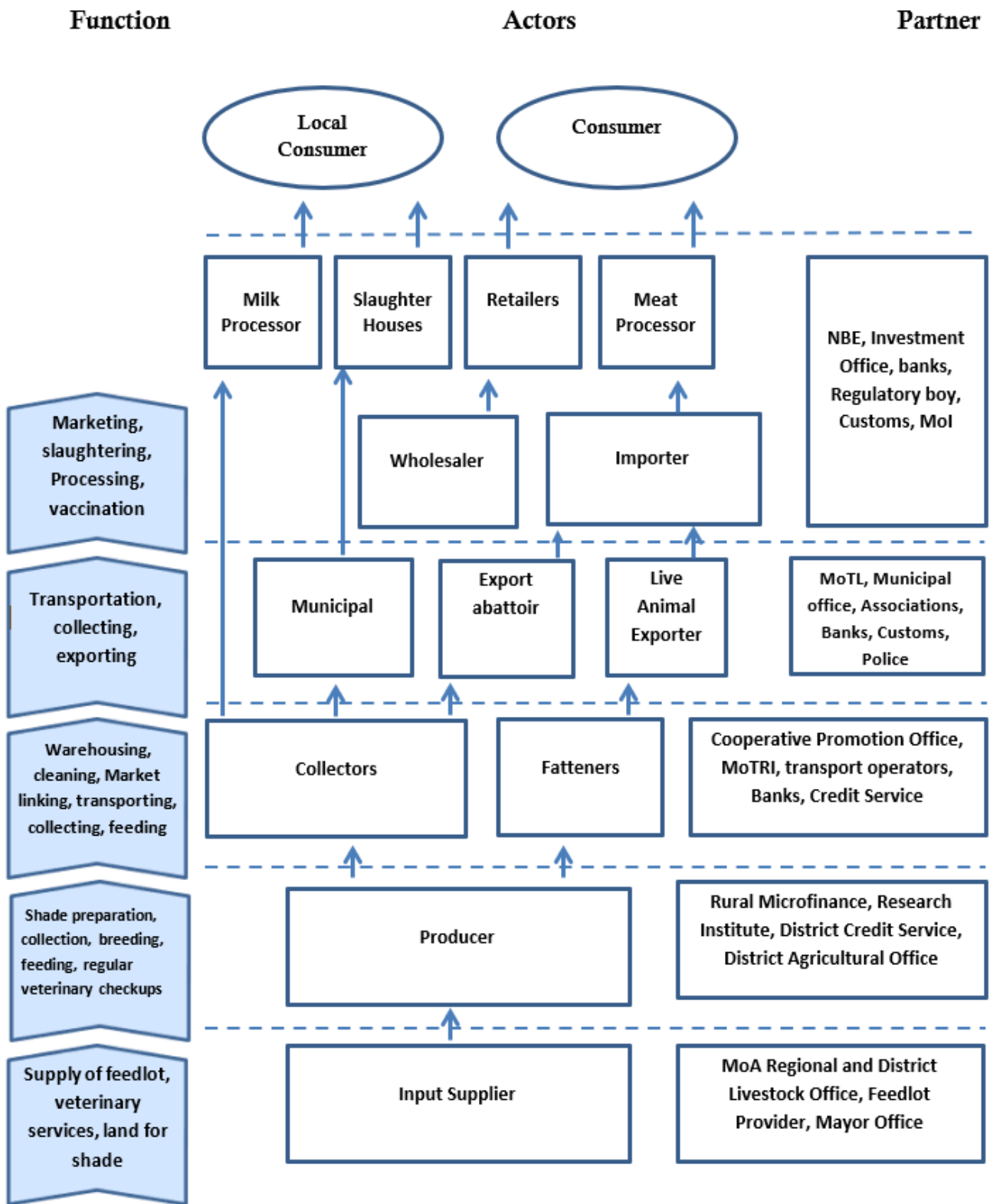


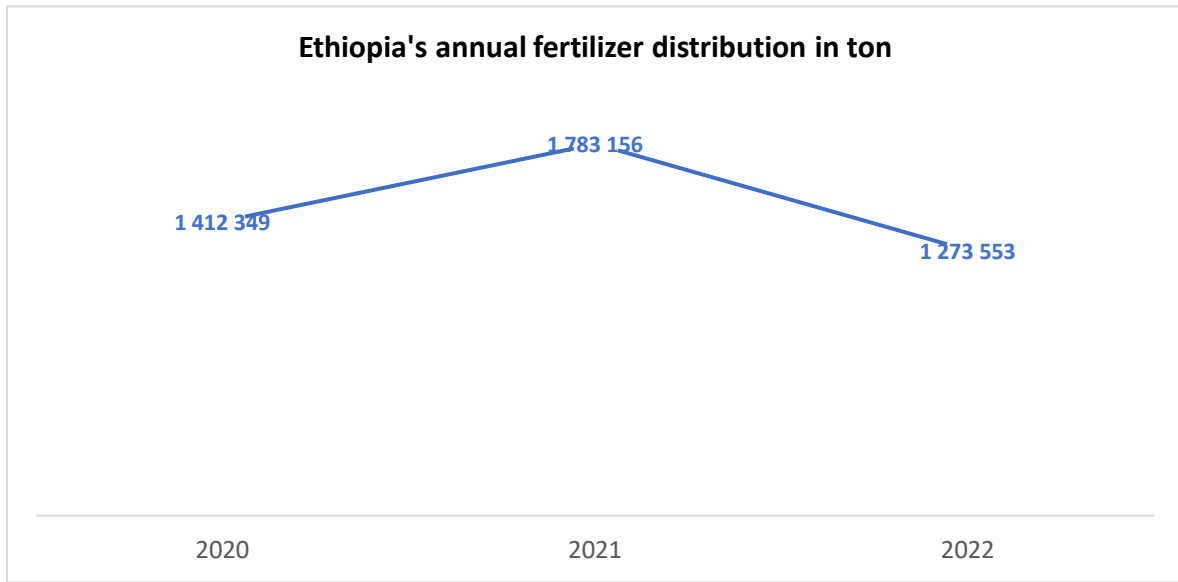
Figure 14: value chain map of livestock

Source: Dilnesahu *et al.* (2023), AAU

2.7. Fertilizer

2.7.1. Situational analysis

The state Minister, Dr. Sofia, revealed that Ethiopia needs 1.9 million MTs of fertilizer in 2022(ENA,2022). In the past three years from 2020 to 2022, Ethiopia has distributed on average 1.4 million tons of fertilizer across Oromia (658k tons), Amhara (615K tons), and the then SNNP (110k tons) regions. The country has distributed at annual average of 1.49 million tons of fertilizer in the three years with 1.3 million tons in 2022 alone. The following figures show the details.



Annual average fertilizer distribution in ton (2020 to 2022)

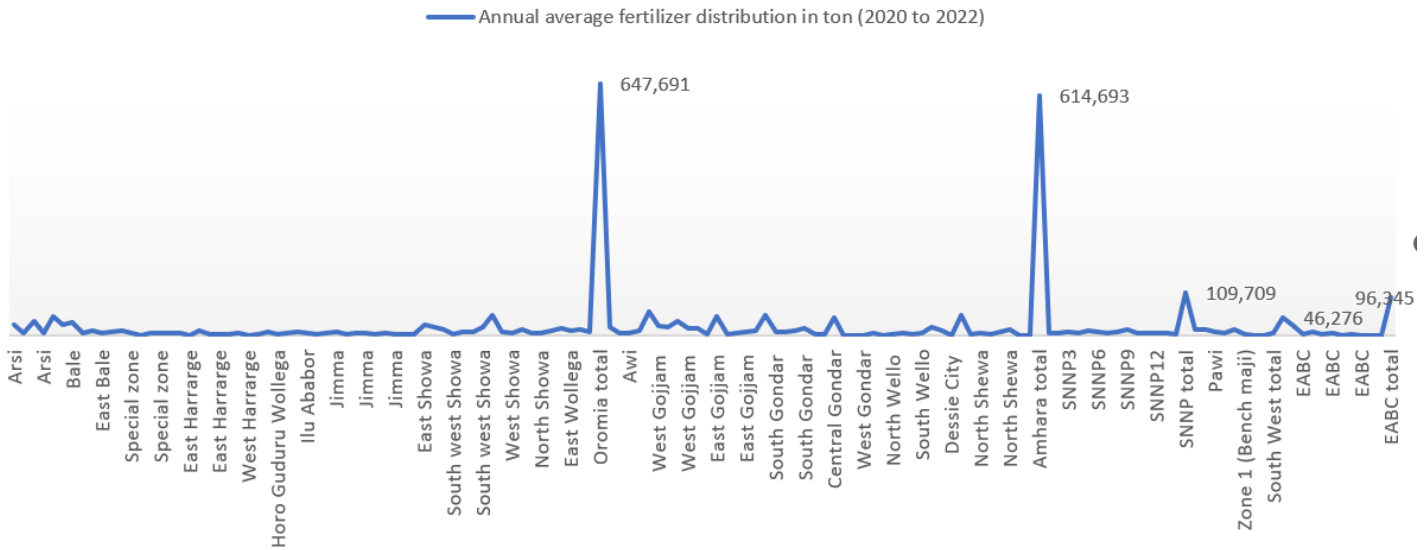


Figure 15(a&b): Annual average fertilizer distribution

Source: Dilnesahu *et al.* (2023), AAU.

Central Statistical Authority (CSA, 2021) survey revealed that 36.58% of expected users never bought chemical fertilizers from sources, while 63% used it. The main supply source for chemical fertilizer are government organizations (22.35%), followed by private organizations (1.42%), merchants (32.83%) and (other sources 0.5%). The following table shows the details.

Table 1: Sources of Chemical Fertilizer in Ethiopia

Source of Chemical Fertilizer	No. of respondents	Percentage (%)	Cumulative percentage (%)
Government organizations	4 912 617	22.35%	22.35%
Private organizations	312 942	1.42%	23.78%
Merchants	1 387 507	6.31%	30.09%
Unions	7 214 902	32.83%	62.92%
Others	108 934	0.50%	63.42%
Didn't buy	8 039 359	36.58%	100.00%
Total	21 976 262	100.00%	100.00%

Source: CSA

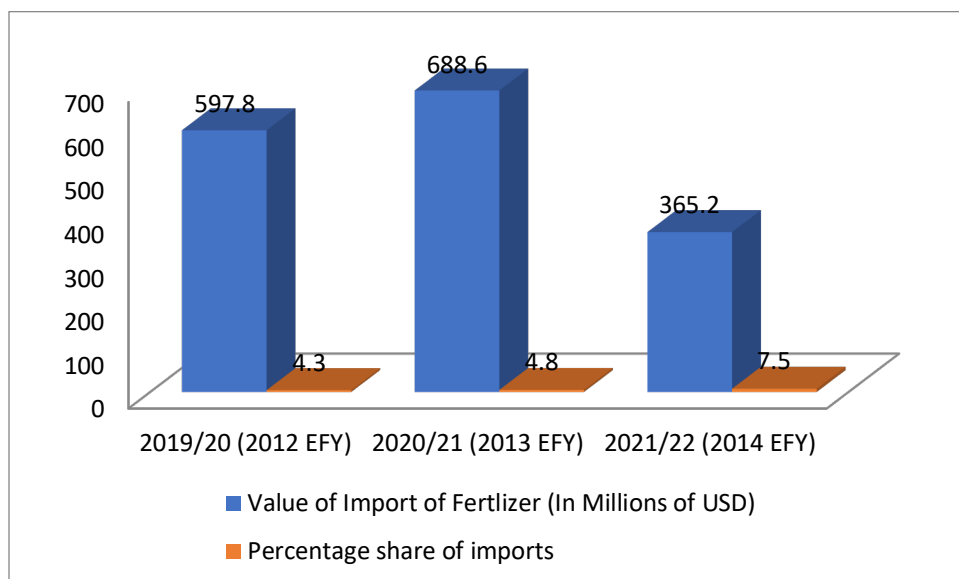


Figure 16: Value of import of Fertilizer and percentage share of imports; Source: NBE & ECC

As shown in the figure above, the amount of dollar invested on importing fertilizer has increased from 2012 EFY to 2013 EFY. However, it has declined during the 2014 EFY. Price spikes, security situation, and war, slow bureaucracy in the procurement process, the lack of awareness of the farmers in the effective and efficient utilization of fertilizers may be the key challenges facing the dissemination and utilization of fertilizer in the country. Ethiopia imports Fertilizers primarily from: Egypt, Morocco, United Arab

Emirates, Saudi Arabia, and China. The fastest-growing import markets in Fertilizers for Ethiopia between 2020 and 2021 were Egypt China, and Spain (EOC, 2021). Ethiopia's Mineral Business Investment Climate

Ethiopia has a very favourable investment climate when dealing with minerals, while royalty rates are mostly the same as other countries in Africa, equity and tax rates are incredibly low with a mere 5% equity requirement. However, among the key challenge facing the mining sector in Ethiopia both small and large scale its over-reliance on the gold industry, which has led to problems for the entire mining supply chain as the value of gold exports has fallen in recent years.

2.7.2. Fertilizer value chain

Owing to solid acidity issues and the need to ensure soil-specific fertilizer for targeted cereals, Ethiopian has placed prime focus on fertilizer since 2014 and the adoption of Growth of Transformation Plan (GTP)II in which demand increased to 1.1million tons. Today, it remains to be a critical import item. Fertilizer choice is limited at individual distribution points and is based on interpretation of soil spectral maps. Operational and capacity imitations as well as loose interaction among key actors had initially weakened the blended fertilizer value chain, needing massive and emergency interventions frequently. Although, such problems appear unabated at times, the challenges in procurement of ingredients, distribution of blended product, and research support are currently adjusted.

The main actors in the value chain of fertilizer are Extension Worker Development Agent, Woreda Bureau, Zonal Bureau, MOA, AISE (Central Warehouse), regional cooperative unions, primary cooperatives, and farmers. The functions done by the actors include import planning, import excursion, procurement and distribution. This includes demand planning, tender preparation, procurement, Importation, storage, distribution and marketing.

The partners involved in fertilizer value chain are MoA, ATA, ECC, MoF, MoTL, regional agricultural bureaus, standard and quality conformity, credit associations, cooperative and Unions

The most serious constraint to area- and crop-specific formulations is that, due to the history of how the current compounds came to the market, they have never been properly validated and targeted to local conditions. Widespread soil also hampers fertilizer response. The other challenges include port restrictions, trucking restrictions, high logistical cost, forex scarcity, and crop specific blending that will shorten the distribution chain. Top of the list comes poor coordination among various actors in the value chain especially for distribution.

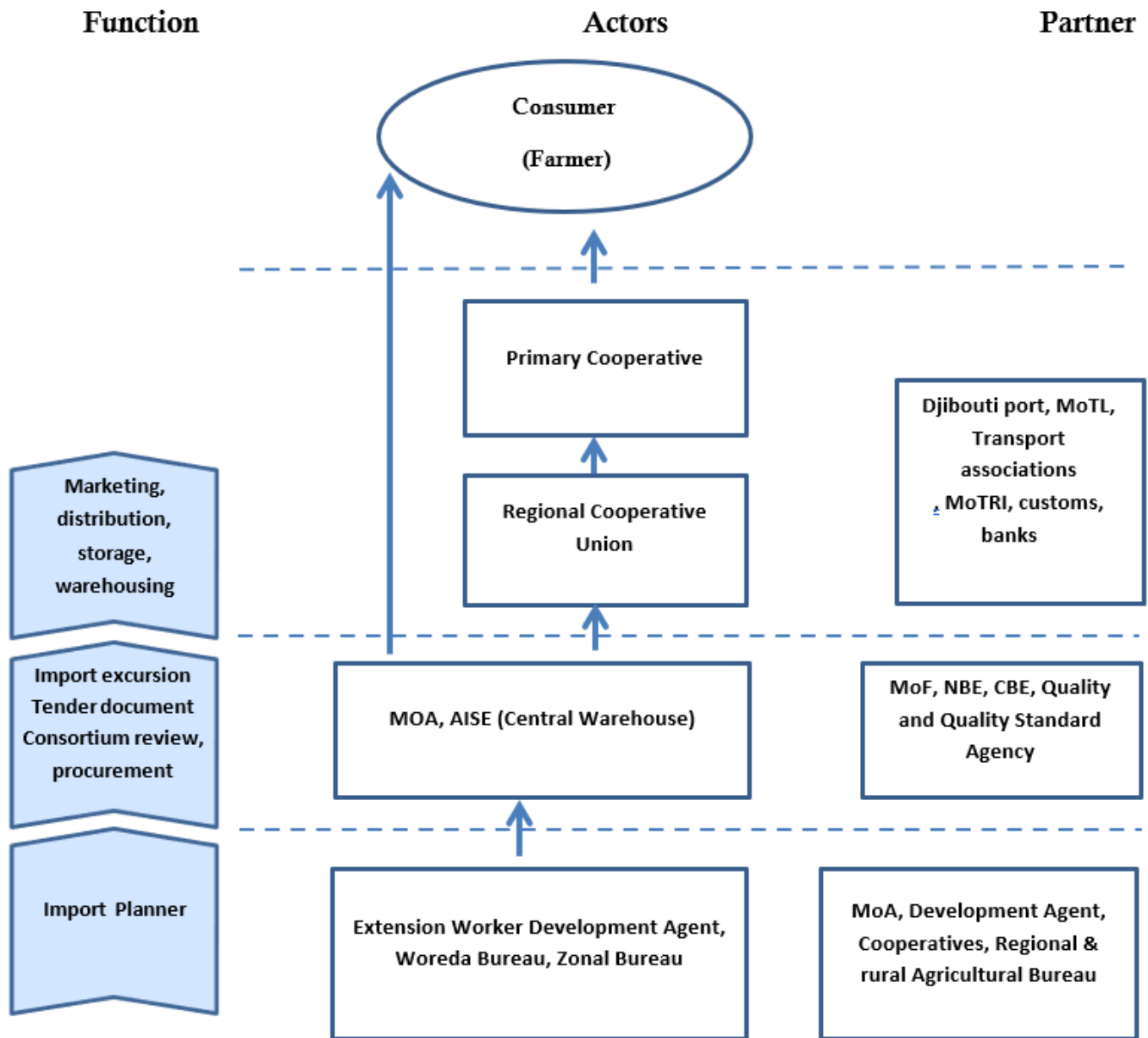


Figure 17: value chain map of fertilizer

Source: Dilnesahu *et al.* (2023), AAU

Section three: Mining and minerals commodities outlook

The Ethiopian mining sector generated annual average revenue of 389 million Birr and 131 million USD from 2018 to 2020. Mineral investment brought annual average revenue of about 2 million Birr as indicated in the following table. Of the top earning minerals include gold, limestone, and gypsum. The country has reportedly produced on average 2,259 kg of gold, 7.5 million tons of lime, and 139 thousand tons gypsum.

Table 2: Main export minerals outlook 2018 to 2020

Item	2017/18	2018/19	2019/20	Average
Annual mineral revenue (in million birr)	435	324	408	389
Number of investors licensed	18	24	34	25
Revenue generated from mineral investment (million birr)	--	3	1	2
Export earnings generated from gold, tantalum, and other gemstones (million USD) (ASM and Companies)	134	49	210	131
Gold production (kg)	2,925	853	3,299	2,359
Limestone (tons)	10,896,332	6,755,309	4,904,155	7,518,599
Gypsum (tons)	253,165	56,313	107,070	138,849

Source: Ministry of Mines

3.1. Construction output situational analysis

The construction industry of Ethiopia has seen unprecedented boost in the past three decades due to massive infrastructural developments in roads, rail, dam, housing. As a result, the industry's input suppliers and players expanded to the level of bringing international companies center stage. However, supply shortage is a reality even if the per capita consumption of Cement for example stands low at 65kg compared to global average of 500kg. As per production data from the Ministry of Mines, with increasing number of producers of cement, ceramics, glass, marble, and granite, cement factories produced 6.1 million tons in 2022 from the potential 10.7 million tons at 57% capacity utilization, while the rest produced 157,386 tons in the same year (excluding Ceramics measured in tons/tiles, i.e 21.6 million ton/tiles output in 2022. The annual production potential for dimension stones considered 218,819 tons. The following figures show the recent trends.

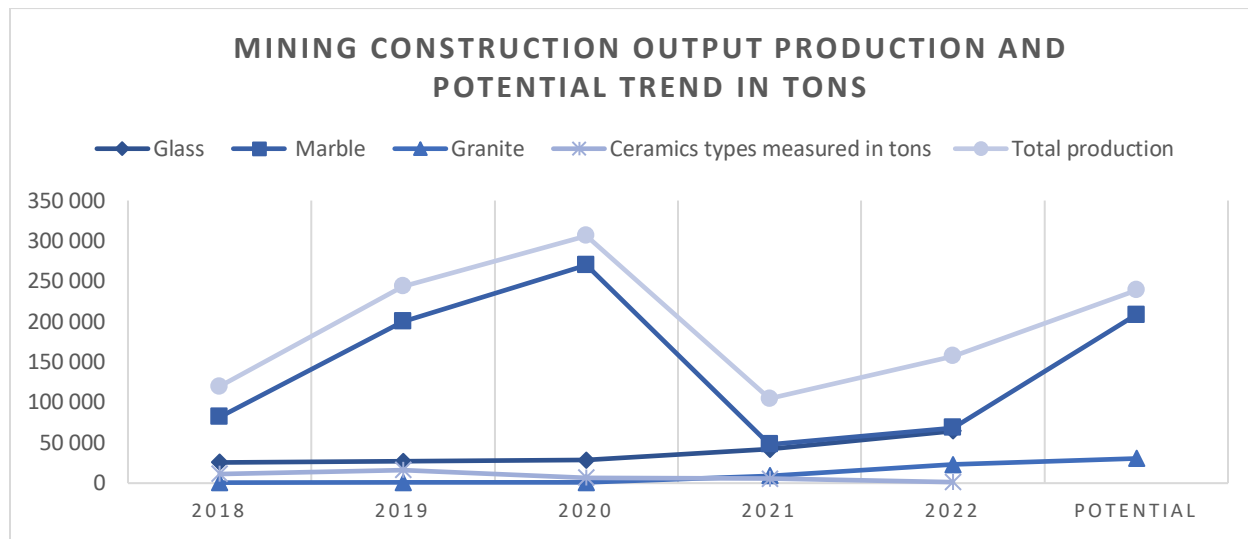


Figure 18: Ceramics, marble, granite production and potential

Source: Dilnesashu et al. (2023), AAU

3.1.1. Ceramics

There are three dominant ceramic producers in Ethiopia with varying capacity and one being under construction. Namely, Tabor Ceramic Products S.C which is located in Sidama Reginal state/Hawasa/Hawasa, Diyuan Ceramic PLC which is located in Oromia Reginal State/East Shewa Zone/Dukem Eastern Industry Zone, Arrerti Ceramic Manicuring which is located Amhara Reginal state/North Shewa Zone /Minjare shenkora/Arreti twon , and Kam Ceramics PLC(under construction) which is located Oromia Reginal State/East Shewa Zone/Beshoftu Industry Zone. Data from the MoM revealed that the Tabor Ceramics Products S.C has produced 1,252 tons/sanitary and Arrerti Ceramics a dominant 21,879,852 tons/tile in 2014 EFY, a massive increase compared to the previous year's 15,969,887 tons/tiles. Ethiopia exports ceramics to the Netherlands, Sweden, and Uganda. The export value is expected to increase by 2.9% yearly, from \$314,420 in 2021 to \$374,380 by 2026.

3.1.2. Dimension stone

Ethiopia has untapped potential in marble production. The marble deposits are mostly located in the Northern and Western part of Ethiopia. In the exploitation of massive stone (dimensional stone), large, commercial blocks are extracted in the quarry and transported to a processing plant for final shaping and finishing to slabs and tiles. Those that are homogenous and attractive types of rocks are potentially exported to other countries as rough blocks. In this regard, the major resource potential within investigated regions in Ethiopia lies in huge marble formations in the western part of the country. Furthermore, the most interesting deposits of marble are found in the western part of Wellega (Daleti) and Gojam (Mora,

Bulen, Mankush and Baruda). The area is quite remote, and transport distances to Addis Ababa vary between 550 and 800 km, for the most part along non-paved roads. However, the cost of transportation and the security situation in the area are posing serious challenge for the production and smooth marketability of the product.

In terms of utilization of the potential for the production of dimension stone (marble), there are about 23 companies that located throughout the country. Of the 23 companies, 12 (52.17%), 4(17%) and 3(13%) of them are situated in Oromia, Amhara and Addis Ababa respectively. Although it is difficult to get the exhaustive performance data due to trade secret and the war in these potential mining areas, scant data obtained from the Ministry of Mines (MoM) shows that there is a fluctuating performance for the Marble product whereas the granite production is relatively increasing (see figure below)

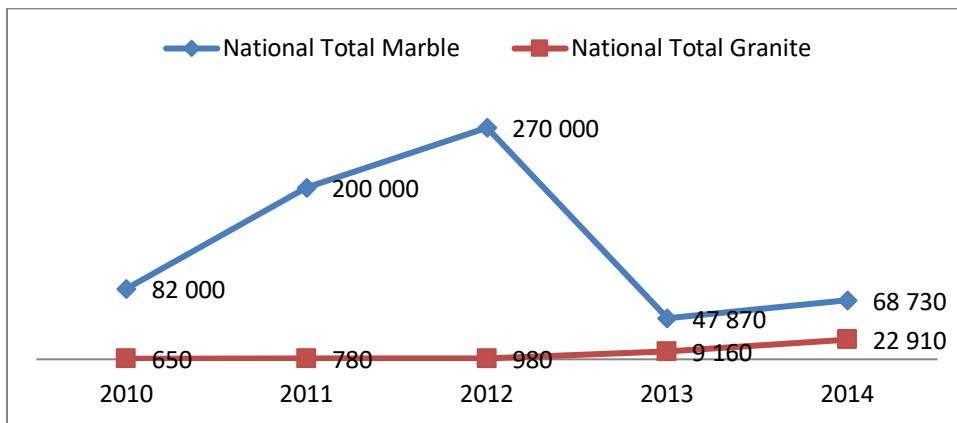


Figure 19: Dimension Stone Production (Marble and Granite) in tones in Ethiopia; Source: Ministry of Mines

The figure above indicates that the national dimension stone production in Ethiopia is 91,640 tons of which Marble is 68, 730 tons and Granite is 22,910 tons. In 2021, Ethiopia exported \$319k in Marble, Travertine and Alabaster, making it the 75th largest exporter of Marble, Travertine and Alabaster in the world. At the same year, Marble, Travertine and Alabaster was the 198th most exported product in Ethiopia. The main destination of Marble, Travertine and Alabaster exports from Ethiopia are: United Arab Emirates (\$121k), China (\$75.7k), Djibouti (\$56.7k), Saudi Arabia (\$49.2k), and Afghanistan (\$9.2k). The fastest growing export markets for Marble, Travertine and Alabaster of Ethiopia between 2020 and 2021 were Saudi Arabia (\$49.2k), United Arab Emirates (\$31.9k), and Afghanistan (\$9.2k).

In 2021, Ethiopia imported \$250k in Marble, Travertine and Alabaster, becoming the 92nd largest importer of Marble, Travertine and Alabaster in the world. At the same year, Marble, Travertine and Alabaster was the 751st most imported product in Ethiopia. Ethiopia imports Marble, Travertine and

Alabaster primarily from: China (\$228k), Lebanon (\$19.5k), United Arab Emirates (\$3.37k), and Turkey (\$15). The fastest growing import markets in Marble, Travertine and Alabaster for Ethiopia between 2020 and 2021 were China (\$226k), United Arab Emirates (\$3.37k), and Turkey (\$15) (OEC, 2021).

3.1.3. Cement

3.1.3.1. Situational analysis

The cement industry remains focal bridging between mining and construction sector. In 2022, the industry produced 6.1 million tons, out of the potential 10.9 million tons capacity, registering industry average utilization of nearly 70% in the same year. Dangote cement by far dominates production and Kiyutu cement sits at far low as shown below.

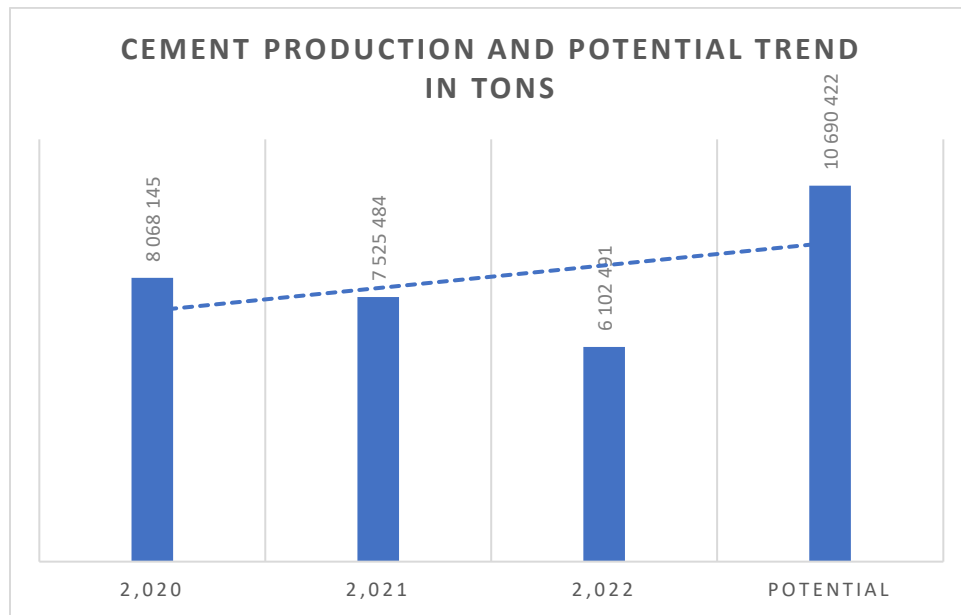


Figure 20(a): cement production and potential; Source: Dilnesahu *et al.* (2023), AAU

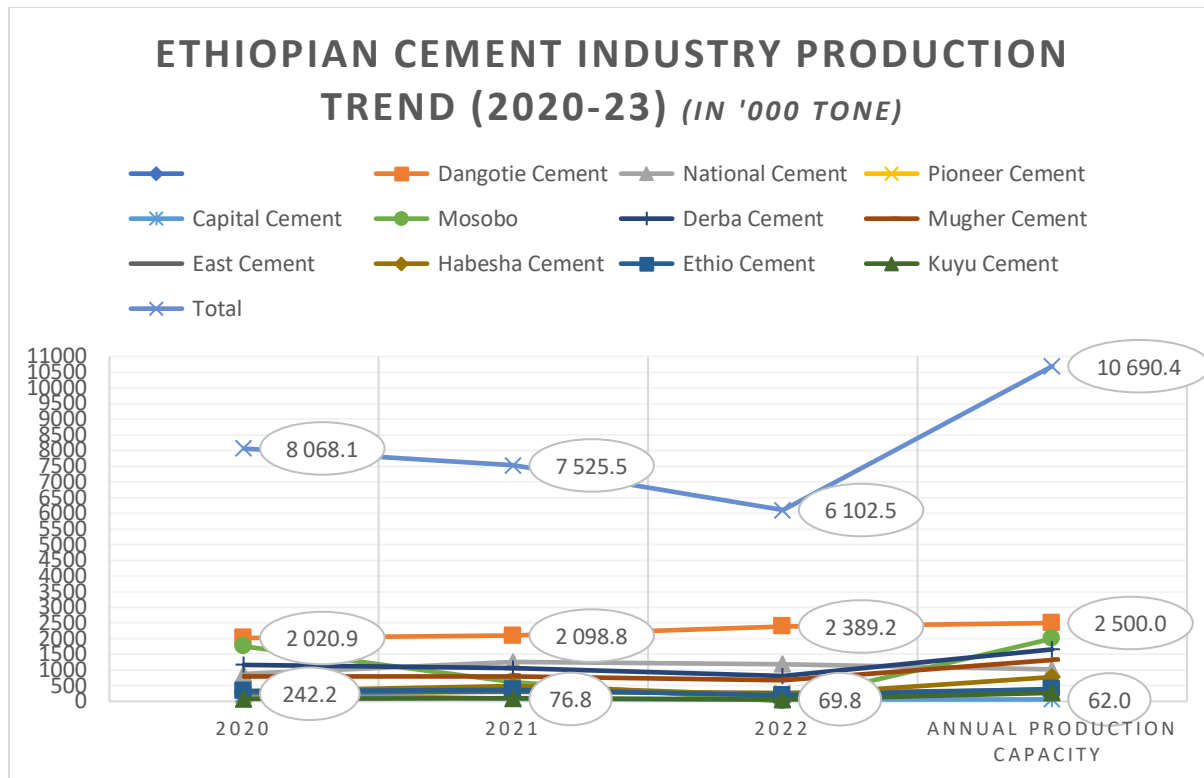
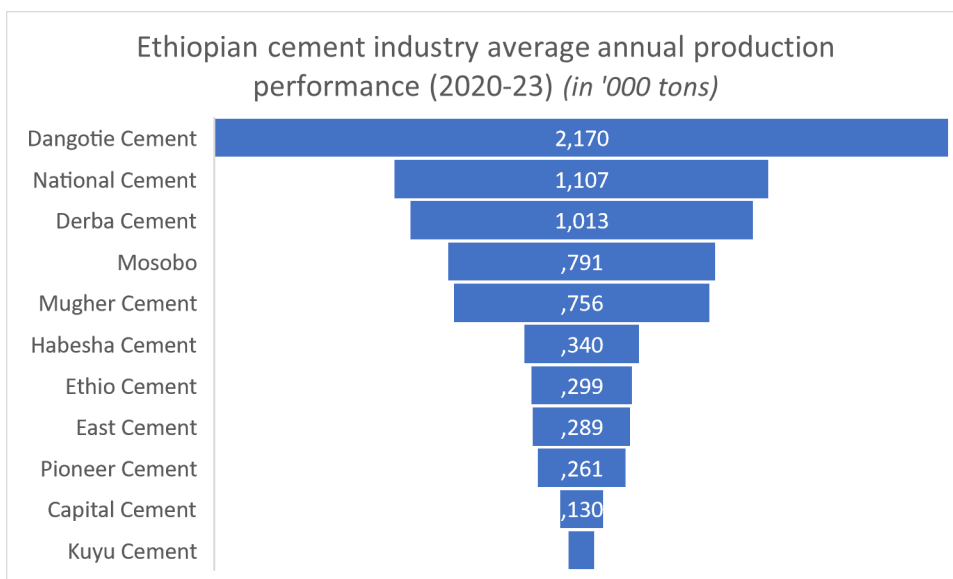


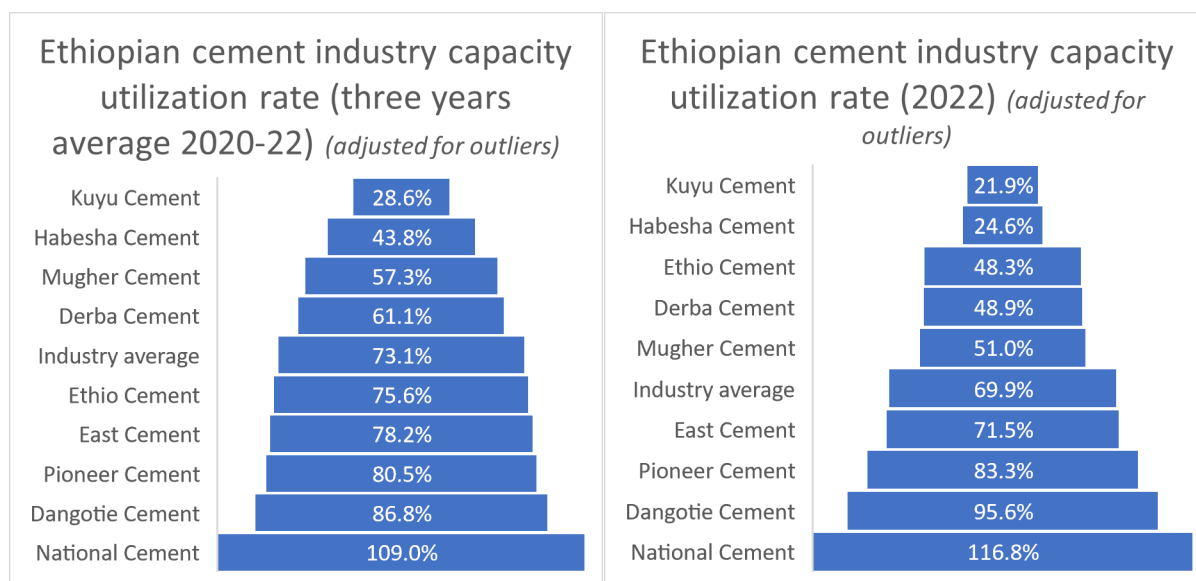
Figure 20 (b): cement production and potential; Source: Dilnesahu et al. (2023), AAU

A three years average production shows Dangote cement, National cement, and Derba cement by far dominate the industry, accounting 4.2 million tons vs 1.5 million tons of production by the nearby followers, Mesobo cement and Mugher Cement. The rest six in total are only comparable to the followers by production volume as indicated below.



Figures 21: Ethiopian cement industry average production performance; Source: Dilnesahu et al. (2023), AAU

On capacity utilization, capital cement and Mesobo (due to closure in 2022) come as outliers at about 200%, and 0%, respectively. Excluding the outliers, the three years average for the industry stands at 73% utilization, national cement leading by overfull capacity utilization followed by Dangote at 87%. As shown below, the 2022 industry capacity utilization is nearly 70%, with an increasing utilization for Dangote, Pioneer, and Habesha cement, and a decreasing utilization for the rest compared to the three year's average.



Figures 22: Ethiopian cement industry capacity utilization rate

Source: Dilnesahu *et al.* (2023), AAU

Being ranked as the 7th top producer of cement in Africa, Ethiopia has 13 companies operating 23 plants and the domestic market is led by a mix of both international and local players, of which Derba Midroc Cement, Dangote, Mugher Cement, Messebo Cement, Habesha Cement and National Cement (parent company East African Holding), are the largest. Production is concentrated in and around Addis Ababa, which is home to over 40% of plants, with the remainder spread among five of Ethiopia's 11 regions. The geographic distribution of cement plants in Ethiopia revealed that 10 are located in Addis Ababa, 7 are located in Oromia Regional state, 3 are located in Dire Dawa, 1 is located in Amhara regional state, 1 in Benshangul-Gumaz and the remaining in Tigray.

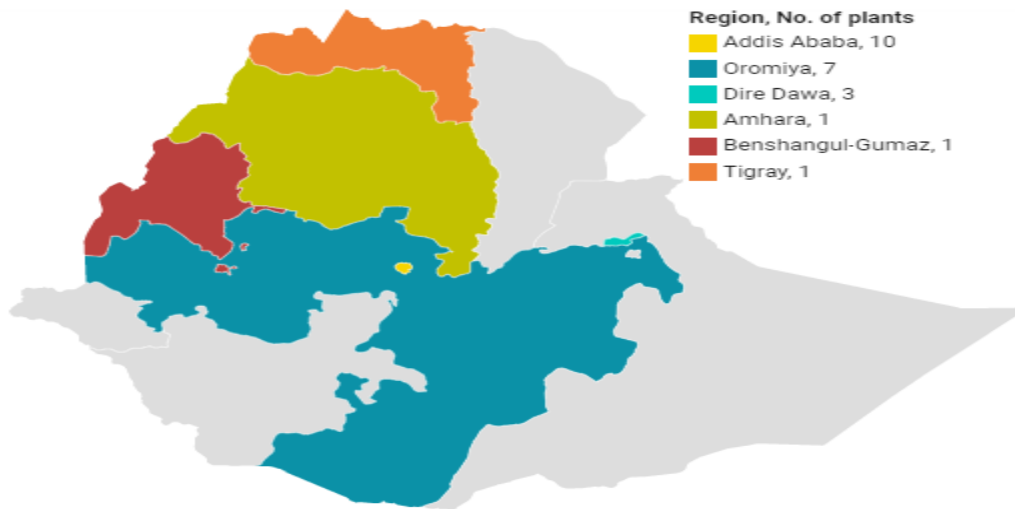


Figure 23: Geographic distribution of cement plants in Ethiopia; Source:

<https://www.asokoinsight.com/content/market-insights/ethiopia-cement-market> on 14 August 2023

Gestures to enhance the local capacity, however, have been evident including the USD 2.5 billion plant by National Cement in Amhara state, and plans by Ethiopian investor Worku Ayetenew to build a USD 1 billion cement plant, also in Amhara, both announced in 2022. Another development was the emergence of a Chinese cement services operator in June 2023, Sinoma, which announced it had won the contract to build a USD 290 million clinker plant for Derba Midroc in the Oromia region. The Ethiopian firm is also planning a 2.74 Mt/annum, cement plant in the Amhara region; Togoga Cement Factory is selling shares to local investors in a bid to build a 5,000 tonnes per day cement plant in the Tigray region that was initially proposed before the COVID-19 pandemic put a pause on development. Other firms in the market are planning extensions to increase capacity including the Pan-African player Dangote, East African Holding (National cement), and West China Cement in Lemi Amhara region, and Mughher Cement are aiming to increase their market share by boosting production. These investments and the continued demand for cement in the economy imply that there is strong potential for the growth of the sector by overcoming the challenges.

3.1.3.2. Cement value chain

Cement is produced in a continuous process from raw materials such as lime stone, shell, and clay. The first step is to get raw materials from input suppliers. The input is supplied by excavating quarry for clay and limestone. These raw materials transported to a manufacturing site for further process to high heating, grinding and form clinker. Finally, in the manufacturing process the clinker will be mixed and fined with gypsum to form cement. This process is mainly done by large firms at large scale but small firms also involve in the industry.

The manufactured cement distributed both in the form of bulk and small bags with a quantity of 50kg standard. Both the bulk and bag forms are distributed by different licensed distributors. Retail shops then avail it to contractors, small building material shops and concrete manufacturers who bridges with end customer for diverse construction projects.

In cement value chain, the main actors are the input suppliers, manufacturers, distributors, retailers and the builders. The main function of the actors is searching for the inputs, excavating, delivering to the manufacturer, transportation, selling, procuring, distributing in large scale, warehousing, marketing, negotiation and delivering in retail shops to the end customer.

The main partners during cement value chain process are Ministry of trade (MOT), Ministry of Mines (MOM), Ministry of Industry (MOI), Environmental regulatory bodies, banks and Electric supply authority.

The main challenges in the cement value chain are:

- Foreign currency shortage and dependency on imported inputs
- Energy source supply shortage and interruptions
- Cement weight to price ratio makes transportation cost high
- High demand and supply gap in the market
- Dissatisfied customer on the current non availability and cost
- Visible demand and supply gaps
- Loose information communication between the supply chain partners

The following figure shows the value chain map of cement.

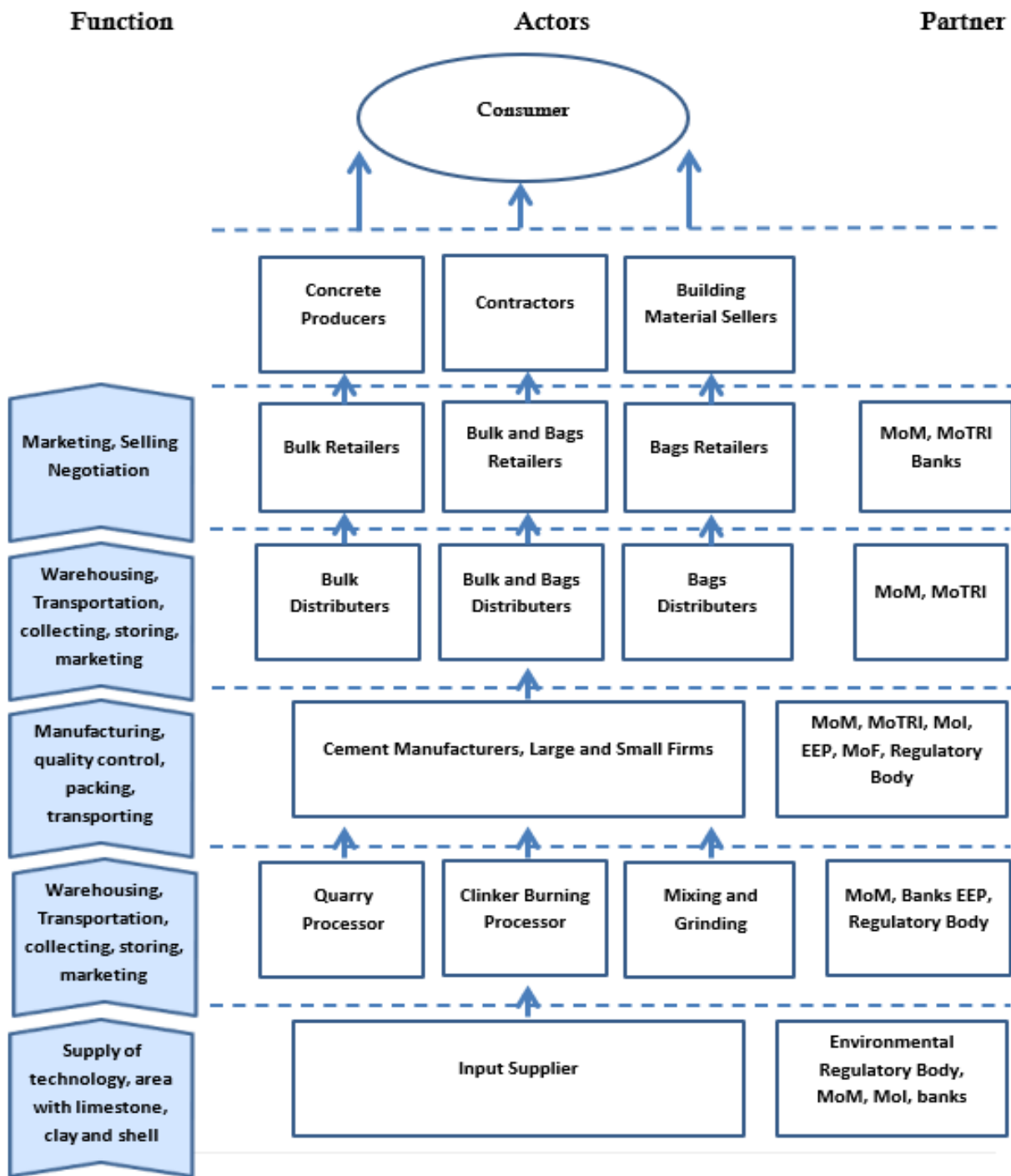


Figure 24: Value chain map of cement

Source: Dilnesahu *et al.* (2023), AAU

3.1.4. Imported Steel value chain

The primary activities in imported steel value chain relates to conversion process of basic raw materials into final output/products. Its importation involves receipt of basic raw materials from suppliers, further processing, and marketing to customers. Imported steel value chain is characterized by high import-intensity (low domestic value added), obsolete equipment, and high wastage rates of materials.

The main actors in the steel value chain include iron ore, scrap steel, and tin free steel importer, casting manufacturer and importer, billet and slab importer, rolling mill manufacturer, flat steel importer, long and flat steel manufacturer, wholesaler, and consumer.

The main activities performed by the actors include importation of different levels of steel inputs, manufacturing, and marketing. The partners Ministry of Trade and Regional Integration, National bank of Ethiopia, customs, Ministry of Transport and Logistics, and Ministry of Finance.

Some of the main challenges in the value chain include foreign currency shortage, Price fluctuation of raw materials and final products.

Opportunities is present with re-equipment and modernization accompanied by appropriate skills upgrading allowing for lower costs in fuels and maintenance.

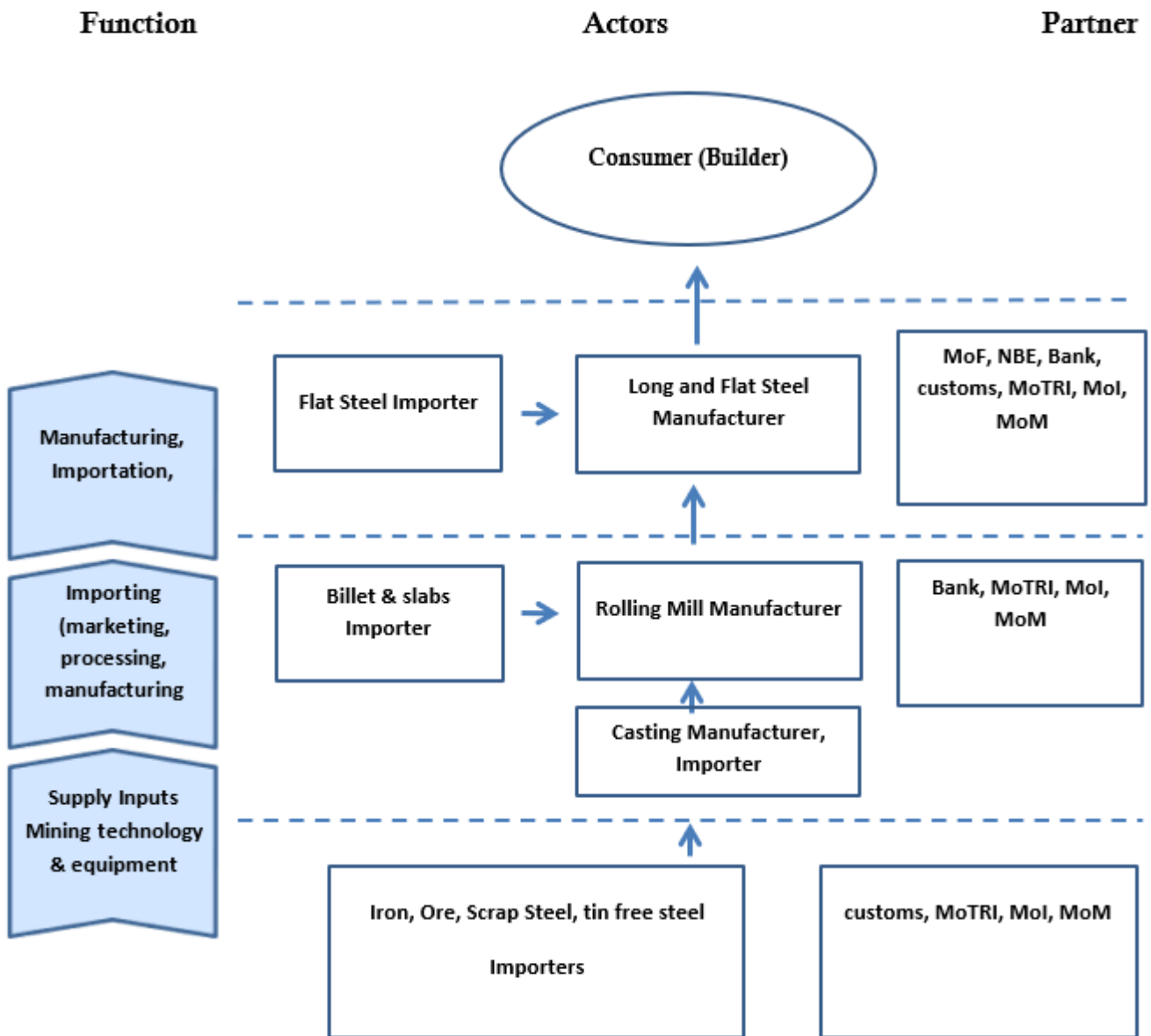


Figure 25: value chain map of imported steel

Source: Dilnesahu & et al (2023), AAU.

3.2. Minerals

3.2.1. Gold

3.2.1.1. Situational analysis

The Gold supply chain follows short route into in the international market through the involvement of National Bank of Ethiopia. Onsite producers or buyers either sale for licensed regional buyers or National Bank of Ethiopia before getting into refinery and then international bank. Asosa zone, Metekel zone, and Kamashi zone are the major gold sources of the region, which is part of the gold belt that lies beneath Sudan and the north-western part of Ethiopia. The major source of gold market in Ethiopia is artisan farmers and local associations and Midroc Ethiopia, the latter averaging 38% while artisans cover about 48% in 2016. The Prescence of illegal artisan and buyers is noticeable, leading to high smuggling through bordering countries. Small scale miners can legally be registered as Small and Medium Enterprise, Cooperatives, or development groups. A 2016 estimate indicates the share of informal to formal channel through National Bank Ethiopia is 61% to 39%, respectively.

The history of gold mining dates back to 6000 years in Ethiopia with the Assosa gold mine identified to be the oldest mine in the world. Gold Production in Ethiopia was reported at 3,480.000 kg in Dec 2021. This stayed constant from the previous figure of 3,480.000 kg for Dec 2020. Ethiopia's Gold Production data is updated yearly, averaging 3,766.000 kg from Dec 1990 to 2021, with 32 observations. The National Bank of Ethiopia (NBE) , however, has reported a decrease in the amount of gold it has received during the fiscal year. The bank received 2,684 kilograms of gold during the past nine months of the fiscal year out of the planned 10,000 kilograms of gold representing a 62.5 percent decrease compared to the same period last year. The data of the Ministry of Mines shows that the country has produced 2.68 tons of gold in the fiscal year. The bank indicated that the lack of proper delivery of gold produced by traditional gold producers and MIDROC Legedenbi mining company stating that smuggling was a challenge which was reiterated by the Ministry of Mines mentioning the existence of gap on the side of the regional states in licensing and regulating the gold producers. The bank had the plan to increase prices by 35% with the objective to incentivise the legal business owners and to bring the smugglers in to the Bank's system.

Ethiopia earned USD 560 million from gold during the 2021/2022 fiscal year. Gambella, Benishangul Gumuz, Oromia, and South West Ethiopia are known for their gold resources. Gambella Regional State's Akbobo narrow greenstone sub-belt is labeled a high potential target for gold exploration by the Ministry of Mines. The major regional states which was rich in gold, Benishangul Gumuz, had already registered low income from gold during the first nine months of the 2022/2023 fiscal year when compared to the

same period last year. Export performance shows declining trend in recent years due to security, smuggling, logistical, and plummeting global price challenges.

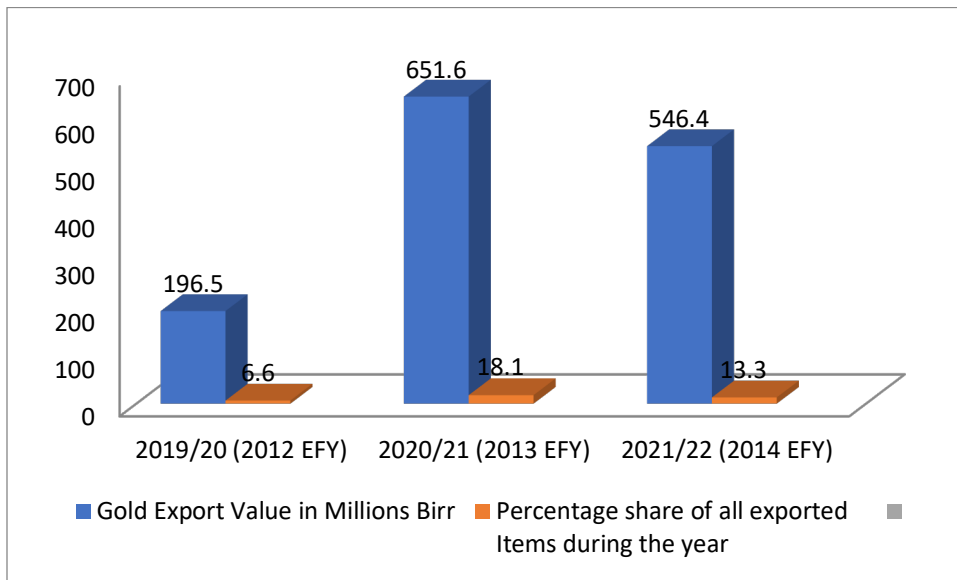


Figure 26: Gold export volume (in mn. of grams), value (In Million Birr) and percentage share of all exported items during the fiscal year; sources: NBE, ECC

The figure above shows that the gold export value and volume compared to other items is the lowest. Yet, the main destination of gold exports from Ethiopia is United Arab Emirates. The fastest-growing export markets for Gold of Ethiopia between 2021 and 2022 were United Arab Emirates.

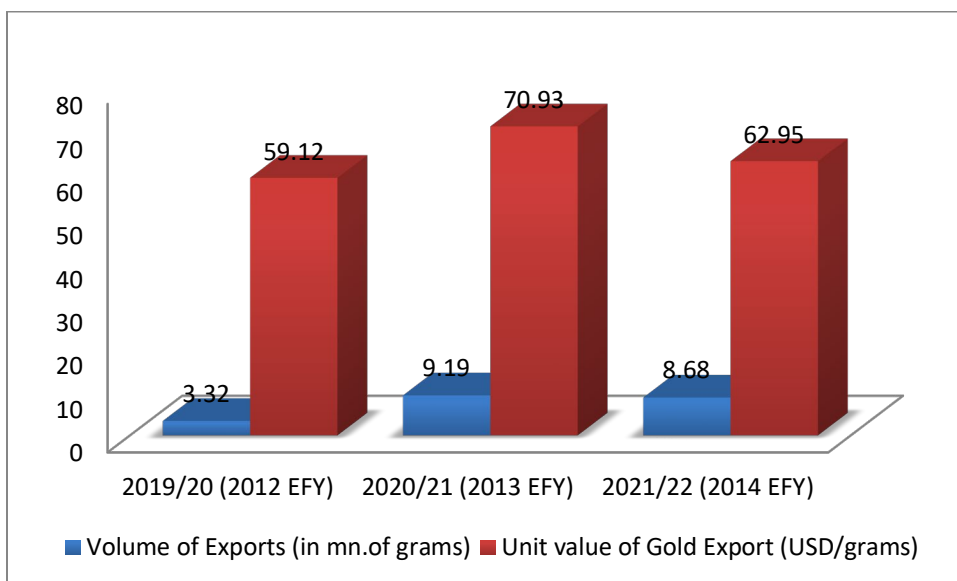


Figure 27: Volume and Value of Gold Export; sources: NBE, ECC

The figure above shows that the Ethiopian gold export has slightly increased during the 2013 EFY (2021) and declined during 2014 EFY (2022). In the same manner, the price of gold has also changed in the same pattern. The price per gram was pick during 2013 EFY.

The most commonly endowed regions of gold reserves are mainly Tigray, Benishangul Gumz, Gambella, Amhara, and Oromia. Domination of artesian and informal mining, security, price instability, and smuggling characterized the gold mining sector of Ethiopia.

3.2.1.2. Gold value chain

The gold mining is considered a strategic sector as key foreign exchange earner. The gold value chain at production level basically involves legitimately organized cooperatives and illegal producers who come as individuals or groups. The organized cooperatives have employed laborers and member laborers, both participating in gold production. The laborers sell recovered gold directly to the ASM cooperative commonly with about 25% less price than the national gold price. The ASM cooperatives sell to licensed buyer, and the licensed buyer to the NBE, adding margins. The cooperatives used to directly sell to the NBE until a regulation is enacted to separate producers from sellers.

The main actors in gold value chain include small scale and large-scale miners, cooperative employee, illegal miners, smuggler, licensed buyers, unlicensed collectors, NBE, importer, and consumer. The main function of the actors includes supply of mining technology and equipment, mining, collecting, sorting identifying and marketing. The major partners involved in the gold value chain involved are Ministry of Mines, Environment and forestry Institute, cooperative/union agency, Ministry of Investment, Ministry of Trade and Regional Integration, banks, customs office, and National Bank of Ethiopia.

The main challenges in gold value chain are environmental degradation, social and health problems, miners are mostly unskilled and have no appreciation for the natural environment; lack the required financial and technical capacities to mitigate negative impacts, price fluctuation, illicit trade, and administrative problems.

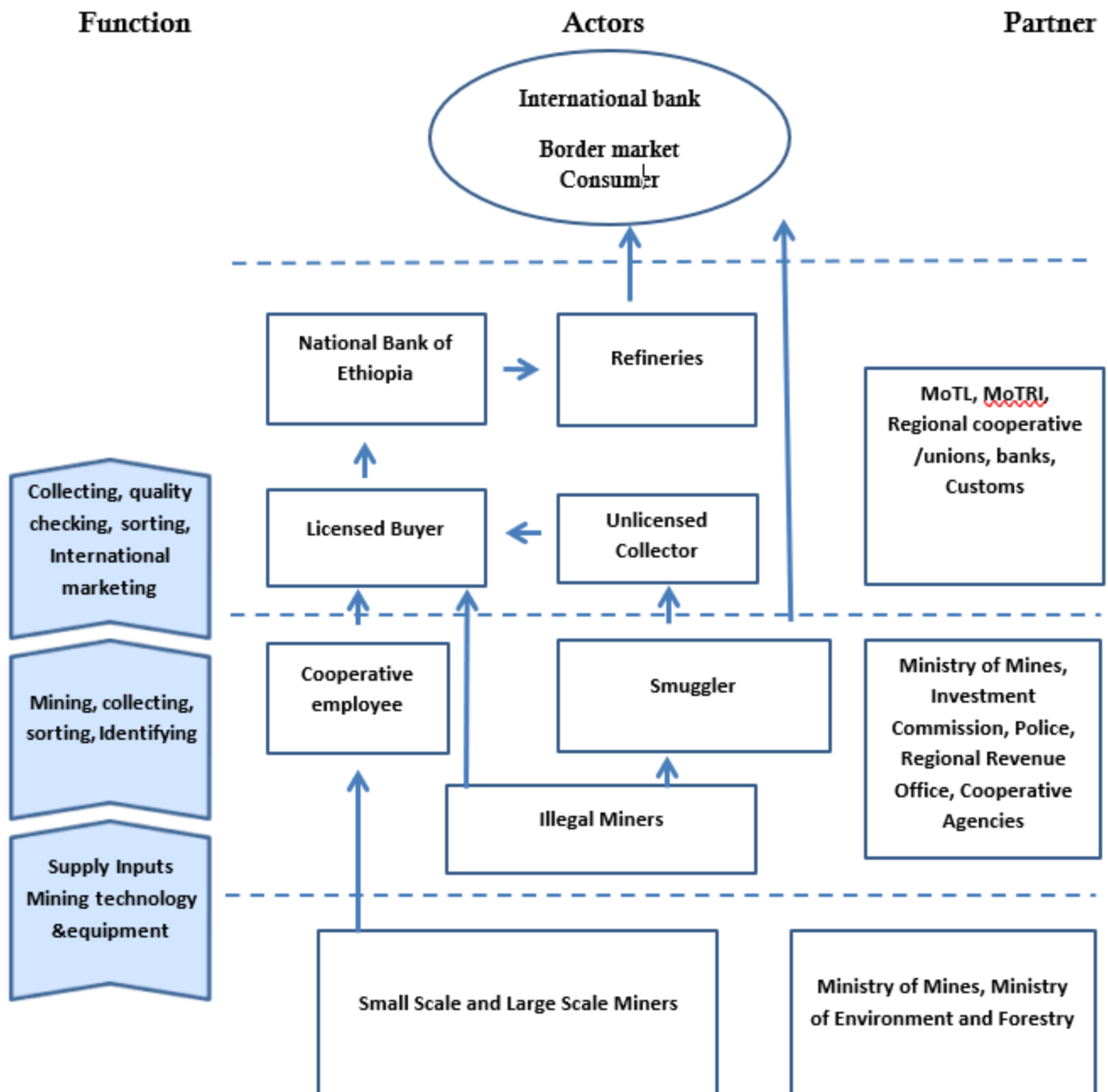


Figure 28: value chain map of gold

Source: Dilnesahu & et al (2023), AAU.

3.2.2. Tantalum

Ethiopia is currently the world's sixth-largest producer of tantalum. In 2018, the country produced 70 metric tons of tantalum. Now, government reforms in the mining industry seek to increase the production of valuable minerals like tantalum. Mineral production only contributes about 1% of GDP for Ethiopia. The Kenticha mine is a tantalum and lithium mine located in the Oromia Region of Southern Ethiopia. It is one of the largest tantalum reserves in the country, having estimated reserves of 116 million tonnes of ore grading 0.02% tantalum.

In 2021, Ethiopia exported \$1.13M in Tantalum, making it the 26th largest exporter of Tantalum in the world. At the same year, Tantalum was the 124th most exported product in Ethiopia. The main destination of Tantalum exports from Ethiopia are: United Arab Emirates (\$603k), Singapore (\$381k), Hong Kong (\$61.6k), China (\$43.3k), and India (\$41.8k). The fastest growing export markets for Tantalum of Ethiopia between 2020 and 2021 were United Arab Emirates (\$603k), Singapore (\$381k), and China (\$43.3k). In 2015, Ethiopia imported \$55.5k in Tantalum, becoming the 0th largest importer of Tantalum in the world. At the same year, Tantalum was the 0th most imported product in Ethiopia. Ethiopia imports Tantalum.

3.2.3. Potash

In 2021, Ethiopia imported \$97.2k in Potassium hydroxide (caustic potash), becoming the 93rd largest importer of Potassium hydroxide (caustic potash) in the world. At the same year, Potassium hydroxide (caustic potash) was the 2418th most imported product in Ethiopia. Ethiopia imports Potassium hydroxide (caustic potash) primarily from: China (\$92k), Germany (\$2.54k), United States (\$1.35k), Belgium (\$481), and Turkey (\$312). The fastest growing import markets in Potassium hydroxide (caustic potash) for Ethiopia between 2020 and 2021 were United States (\$1.06k), Turkey (\$179), and Belgium (\$160).

3.2.4. Petroleum and gas

3.2.4.1. Situational analysis

Oil and gas in Ethiopia have a history that is a little over a century old. Although oil seep was discovered in 1860 for the first time, it was not verified till the 1920s. It was generally referred to as oil on the Red Sea coast but was later attributed to specific areas in the Ogaden basin. The Ogaden basin has since been divided into twenty-one separate blocks making it easier to award concessions to companies. Blocks attributed to oil are located throughout Ethiopia, in the northeast, southeast, and southwest of the country. So far, companies from all over the world have shown interest and received concessions in different parts of Ethiopia, including the Ogaden basin. In 2018, Poly GCL was fortunate enough to have struck oil at their oil field of Hilala at the Hamanlei formation, where they had drilled three exploration wells. All of

the three wells have shown gas reserves with 2 of them having oil flows. The test production phase of Hilala will see Poly GCL producing 450 barrels of oil, daily.

In an area with a proven six to eight trillion cubic meters of crude oil, the Chinese company plans to construct a gas pipeline to Djibouti, where they will build a gas treatment plant, which will convert the gas into liquefied natural gas. The converted gas will then be loaded on special ships specifically built to transport this gas, which will be exported directly to China.

The data obtained from the National Bank of Ethiopia revealed that Ethiopia has imported about 3.8 million metric tons of petroleum products worth Birr 164.3 billion into the country by the Ethiopian Petroleum Enterprise during the in 2021/22 fiscal year. This value of petroleum import showed a 126.3 percent annual surge mainly due to an increase in import of jet fuel (140 percent), gas oil (127.5 percent), regular gasoline (120.4 percent) and fuel oil (65.3percent). Similarly, the total volume of petroleum imports increased by 3.5 percent owing to higher volume of jet fuel (11.9 percent), regular gasoline (3.2 percent) and gas oil (2.4 percent), despite the decline in import volume of fuel oil (6.9 percent) (See Figure below).

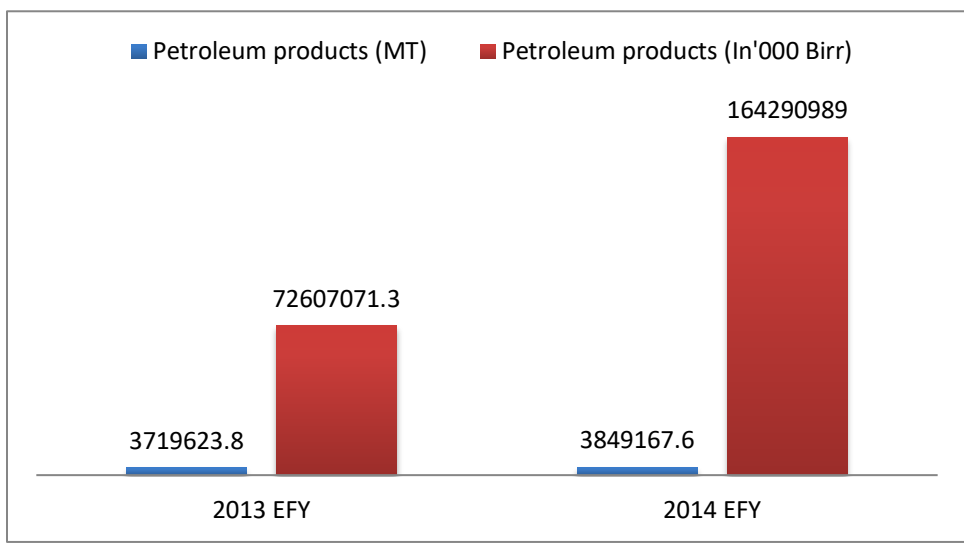


Figure 29: Volume and Value of Petroleum Import in Ethiopia (In MT and '000 Birr); Sources: Ethiopian Petroleum Supply Enterprise, NBE

The figure above shows that there is a significant increase in the values of petroleum import in Ethiopia during the 2014EFY. In other words, Ethiopia imported USD 224 thousand in Crude Petroleum in 2021, becoming the 101st largest importer of Crude Petroleum in the world. In the same year, Crude Petroleum was the 761st most imported product in Ethiopia. The product was primarily imported from: United Arab Emirates (USD 224 thousand). The fastest-growing import markets in Crude Petroleum for Ethiopia

between 2020 and 2021 were United Arab Emirates (USD 63 thousand). From the perspective of petroleum gas, the country imported USD 3.71M in the same year, becoming the 151st largest importer of Petroleum Gas in the world. In the same year, petroleum gas was the 321st most imported product in Ethiopia. The sources of supply were primarily from: the United States (USD 1.39 million), Kenya (USD 1.29 million), Algeria (USD 857 thousand), United Arab Emirates (USD 120 thousand), and Tanzania (USD 28.8 thousand). The fastest-growing import markets in Petroleum Gas for Ethiopia between 2020 and 2021 were Kenya (USD 1.27 million), Algeria (USD 525 thousand), and United Arab Emirates (USD 77.3 thousand) (OEC, 2021).

3.2.4.2. Petroleum value chain

Ethiopia imports petroleum via Ethiopian Petroleum Supply Enterprise (EPSE) for use by diversified users in the form of heavy fuel oil, light fuel oil and JTA-1 into the country. Heavy industries such as sugar, textile, and shipping lines consume heavy fuel oil for their power consumption. Energy company's such as Oillibya, TOTAL, NOC, YBP, Kobil, TAF, Dalol, Nile, WAS, Gomeju, Genet, and Yeshi retail light fuel oil at distribution stations. The aviation imports the JTA-1 oil for own use.

The main functions in importation, distribution and marketing of petroleum involve negotiation, procurement, transportation, storage, and distribution. The main partners are MoM, MoTRI and EPSE.

The main challenges of petroleum value chain include:

- limited distribution centers along corridors and regions,
- Unforeseen events like conflict and war disrupting both demand and supply flow,
- Long lead time,
- Transportation shortage,
- No upstream production of petroleum,
- International price fluctuation and increase,
- Storage space limitation in the port,
- Shortage of foreign currency leading to inconsistent supply, and
- In country and Cross border smuggling.

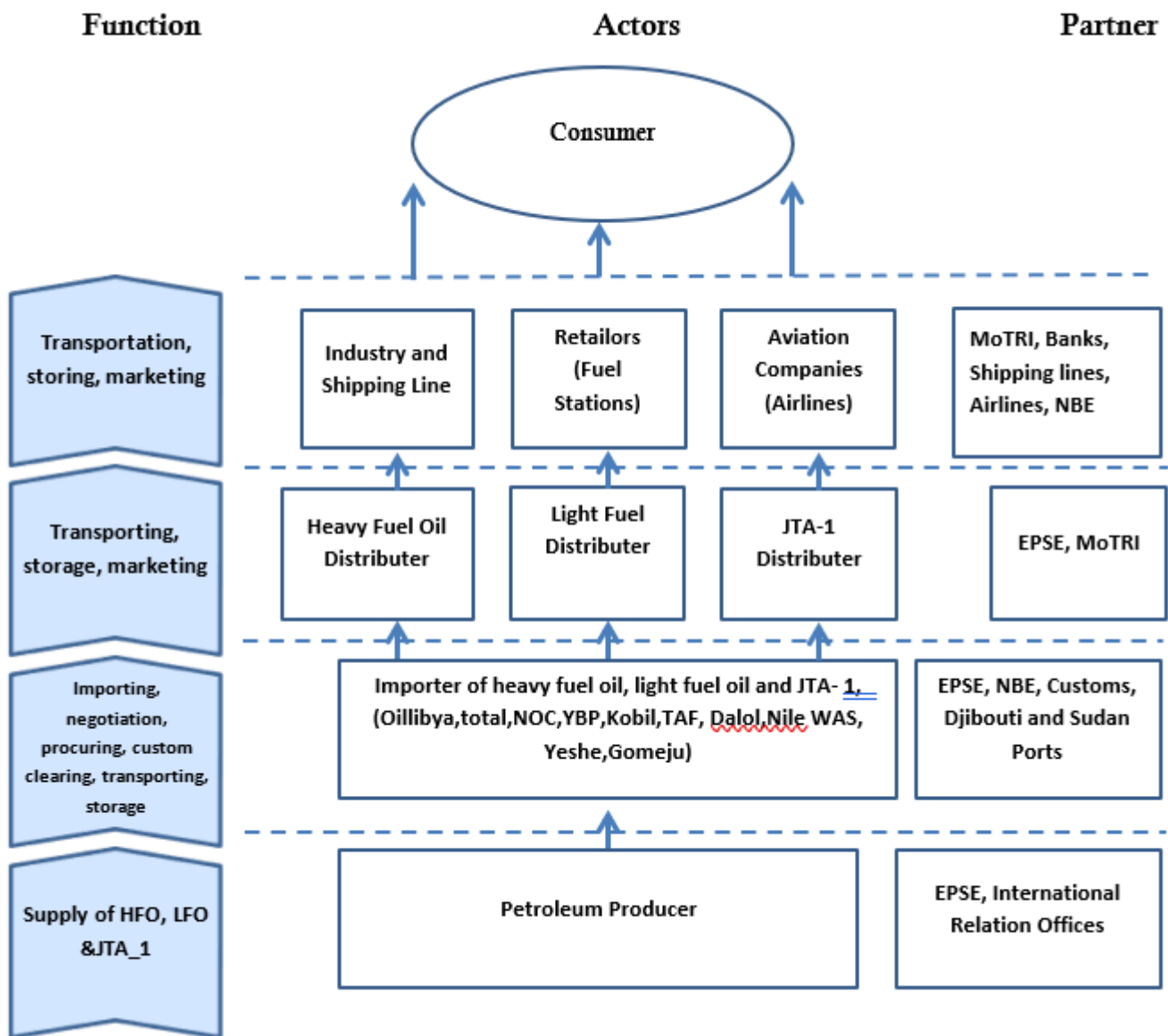


Figure 30: value chain map of imported steel

Source: Dilnesahu & et al (2023), AAU.

3.2.5. Coal

Coal is the second-most used source of energy globally. Primarily used for power generation, it is the raw material of choice for 40 percent of electricity production worldwide. It is also a significant input in the production of cement as well. With an estimated 430 million metric tons of coal deposits in the country, the Ethiopian government is trying to utilize this resource by encouraging small- and large-scale coal producers and investors. The highest deposit potential with close to 200 million metric tons is located in the Yayu basin in the Ilu Ababa Bora Zone of the Oromia Regional State (Ahmed, 2007). In addition, a series of geological investigations conducted by the Geological Survey of Ethiopia underscored that the Delbi, Moye, and Yayu coal deposits were considered to be the best whereas, Chilga and Mush Valley coal deposits as significant deposits required further investigation. Other coal occurrences such as Gojeb, Chinda, Kindo, Halul, and Wake in the Southern People, Nation, Nationalities, and Wuchale in the Amhara, and Arjo, Nejo, and Mendi in the Oromia National Regional States are worth mentioning. From this, it can be considered one of the potential areas of investment in the country (Tegegne, 2019)

Regarding coal import, it shows declining trend owing to EoG's policy shift towards local substitution. Recent data published by Golobaleconomic.com indicates that the amount of coal imported attained the highest value registering 732.54k short tons in 2018 compared to 509.3K tons in 2021. Despite the quality and security challenges facing the country, the country has managed to satisfy 40 percent of its annual demand from the local market, and the remaining part is satisfied through imports.

As one of the “dirty industries”, coal mining is seen to pose serious social, economic, and environmental impacts due to its location. Besides, the industry has also posed a challenge to local coffee production and threatens biodiversity which is directly associated with the very existence of forest in the area calling for a “balanced approach” (Suleman, 2017). For example, the Yayu Basin is located in the UNESCO Designated Biosphere. The security situation is another challenge facing the industry in the production, logistics, and distribution of products throughout the country. For example, the local supply of coal has sharply declined since May 2020 owing to the security situation determining mobility in Kamashi, a major coal mining belt in Benishangul Gumuz regional state. This site is the most excavated site by large-scale investors. Furthermore, the quality of the local coal supply is also another critical challenge facing local manufacturers using local coals including the cement industry with implied hidden costs compared to the imported coal primarily from South Africa (the top coal producer in the African continent).

3.2.6. Gemstones

As per Ministry of Mines report, Ethiopia's gemstone potential is exceptionally promising. Ethiopia has many varieties of high-quality gemstones, including opals, emeralds, sapphires, amazonite, amber, rubies, tourmaline, aquamarine, chrysoprase, peridot, and as well as various types of quartz, agate, jasper. New discoveries are also on the rise, including the especially exciting discovery of the color-change chrome grossular green garnet, as reported in the Journal of Gemology in 2018. These discoveries have brought Ethiopia's total reported gems up to over 40. Ethiopia is producing opal, sapphire, and emerald even though not at scale.

Of the gems, opal production and exports picking up in recent years due to international demand. Its rival Australian opal is seen to be more expensive, despite, Ethiopia's high quality. Precious, fire, and black opals are now being mined in Ethiopia, under the name "Welo/Wollo/Wello or Ethiopian Opals". Opal is considered abundant in Wollo, Lalibella, Shewa around Mezezo, and Afar region, offering the country four distinct opal types.

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