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International trade of gum and resin (frankincense) in Ethiopia

A Eyassu*, M Abebe and T Abate

Central Ethiopia Forest Development Center, Addis Ababa, Ethiopia

*Corresponding author. E-mail: kalabe_alem@yahoo.com

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ABSTRACT

Ethiopia is among major producing and exporting countries for gum and resin and the product has significant contribution for the national economy of the country. However, there is lack of information regard to the export, import and the trade balance. The objectives of this paper were: (i) To quantify the total income the country earned through export of gum and resin (frankincense), (ii) Estimate the total expenditure that Ethiopia spent in order to import gum and resin (frankincense), (iii) To evaluate the trade balance of the import and export of gum and resin (frankincense).

Ethiopia earned on average 10981427.81 US$ per year by exporting 2855.55 tonnes of gum and resin, whereas the country spent on average 3,676,743.77 US$ per year for importing 1,643.99 tonnes of gums and resins. The trade balance from the years 2009 to 2017 presented that the income generated from the export of gum and resin was more than the country expenditure to import the same product. This result clearly indicated that there were positive trade balance for nine years. On the contrary, the trade balance result further showed that in the years of 2018, 2019 and 2020 the expenditure of the country to import gum and resin was higher than the income of the country from export of similar product and these showed that there were negative trade balances. Therefore attention should be taken to substitute the import product and reduce the country expenditure using foreign currency.

Keywords: Ethiopia, Frankincense, Expenditure, Trade balance, Import, Export

INTRODUCTION

Dry forests account almost half of the world's tropical and subtropical forest and it covers large areas of Africa, Latin America and Asia Pacific. Dry forests has the widest range of endemic gums and resins in Africa provide priceless ecosystem services and the main source of livelihood for hundreds of millions of poorest people. Moreover it is crucial for ensuring environmental sustainability and setback the loss of biodiversity. Similar to other Africa countries, Ethiopia has one of the largest dry forest and woodland resource in the Horn of Africa and endowed with over 60 gum and resin bearing species from *Acacia*, *Boswellia* and *Commiphora* species .These species are known for their production of important gums and incense such as gum arabic, frankincense and myrrh, with an estimated annual production potential of over 300,000 tonnes (Abtew AA, et al. 2014).

Gums and resins are produced in rural areas, consumed by both domestic and imported countries. Despite the fact that Ethiopia is one of the earliest producers and exporters of these commodities, less than 1% of this potential has been tapped and traded due to poor management, shortage of marketing infrastructure, poor pricing and linkages with markets, little economic incentive, weak institution and poor value chain development. Overall, local communities are not yet benefited from the resource and dry forests are among the most threatened forested ecosystems. Thus the government should take measures to alleviate the underlining problem as well as allow the local communities/producers to access the forest products, establish strong market and give them ownership rights

and responsibilities to sustainably mange the resources (Alem S, 2015). Moreover, to improve the income of producers, it is important to understand the overall process of marketing of gum and resin (frankincense) and understanding of the value chain of gum and resin resources will have great impact for development intervention and rural development and poverty alleviation (Blackie R, et al. 2014).

Gum and Resin (Frankincense) Production Use and Export in Ethiopia

Ethiopia is among major producing countries for gum and resin. Frankincense, also known as Olibanum, aromatic gum traded in the highest volumes and is available in seven grades but the 5th to 7th grades are traded on domestic markets. It ranges in appearance from pale pieces or tears up to several centimetres in size to smaller pieces, and from powder and siftings to large, reddish brown or dark agglomerated masses. Frankincense found in three different geographical zones namely Tigray, Ogaden and Borena (Eshete A, 2011). There are three types of frankincense: The first type of frankincense produced in Tigray, Amhara and Beneshangul Gumz regions from *Boswellia papyrifera*, the second one is produced from *Boswellia rivae* and *Boswellia Microphylla* tree species and mainly grown in Ogaden in South Eastern parts of Ethiopia and the third one is frankincense from *Boswellia neglecta* grown in Southern Ethiopia, Borena. Among these the most commercially traded is from Tigray, *Boswellia papyrifera* (Figure 1) (ERCA, 2010).

Frankincense have great potential for diversifying income of the household and contributed about 14%-23% of the mean annual cash income of the household. The use of Frankincense especially in Ethiopia is of great cultural significance and used as unprocessed form for both fragrance and flavor purposes which accounts domestic sales. Furthermore, it is a fundamental part of the coffee ceremony whereby it is burned during the coffee preparation. Similarly like incense, Frankincense is burned in Ethiopia's orthodox churches, and they used high volume of tonnes per year. Other domestic uses include pest fumigant (especially anti-mosquito, herbal medicine, insecticides and used as hygienic and sanitation detergents. Therefore it is a means of livelihood for the poor communities living in the rural areas of Ethiopia who have fewer options for economic development due to the harsh climatic conditions of dry land areas (Gereffi G, et al. 2011).

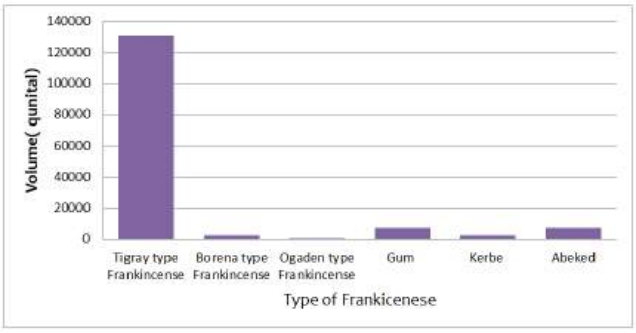

Figure 1: Frankincense production per type from 2009-2018.

Furthermore, Ethiopia is considered to have a long established market for export of gum and resins, the most export products are gum olibanum (frankincense) from *Boswellia* species, gum Arabic from *Acacia Senegal* and gum myrrh from *Commiphora myrrha*. Frankincense accounts over 90% of the export volume of gums and resins in Ethiopia. Gum and resin produced in the country are mainly exported. However, about 40% (10000 metric tonnes) of the total annual production of frankincense is consumed by Ethiopia domestic market and 60% of which is used both for household fumigation and for religious purpose (Figure 2). Despite high potential opportunity offered through commercial exploitation of the sector, the contribution of Ethiopia's overall annual export volume remains much lower than the domestic market. This is mainly due to the absence of detailed statistics covering the overall trends of exports of gums and resins products (Gillespie TW, et al. 2012).

Figure 2: Export market *vs*. domestic market between the year 1999/2000-2007/2009.

MATERIALS AND METHODS

The data on the import and export of gum and resin between the years of 2009-2020 was collected from Ethiopian Custom Commission (ECC). Then the prices (Ethiopian Birr) in all years were changed to USD using the average of each month exchange rate. The data of both import and export was analyzed using descriptive statistical methods. Moreover, the trade balance was analyzed by calculating the differences between the

value of imports and the value of exports for each year (Kassa H, et al. 2011).

RESULTS AND DISCUSSION

Exports of Gum and Resin

The role of gum and resin products for the national economy is enormous. The analysis of volume and price data from Ethiopia custom commission shows that the amount of production is not stable and experiencing up and down trend. This inconsistency in the volume of gums collected may be related to very low prices for their products, current land use change, either unstable supply and demand and currently security problem. The quantity and value of exported gum from Ethiopia is summarized in Table 1 (Lemeni M, et al. 2003).

Ethiopia is on average exporting 2855.55 tonnes of gum and resin and collect an average income of 10981427.81 US$ per year. The result indicated that in the year 2009 Ethiopia earned a total of 10,430,309.06 US$ by exporting 3606 tonnes of gums and resins. The following year, in 2010 and in 2011 Ethiopia export 4379 and 3431 tonnes of gum and resin and earned a total of 13,471,337.86 US$ and 12,526,377.36 US$ respectively. However, in 2012 volume exported decreased to 3104.9 tones. Then the trend of production showed up and down trend until 2016, this indicates that the volume of export of gums and resins fluctuate overtime and it reaches a peak in 2017 fiscal year and dropped again in 2018. Similarly, the quantity of gums and resins that was exported dramatically dropped to 782 tonnes this is may be due to current epidemic disease and security problem in the country. The price of Gum and resins was more or less stable until 2016/2017. However starting 2017 the price of gum and resins per tonne showed an increasing trend and reaches a pick in 2020 (Lemenih M, et al. 2007). This may be related to high exchange rate of dollar to Ethiopia currency (Birr) (Figure 3).

Table 1: Ethiopia exports of gum and resin in the period 2009 to 2020.

Production year	Quantity (ton)	Value (USD)	Price per ton
2009	3606	1,04,30,309.06	2892.5
2010	4379	1,34,71,337.86	3076.5
2011	3431	1,25,26,377.36	3651.2
2012	3105	1,07,44,609.05	3460.5
2013	3711	1,27,69,338.92	3440.8
2014	2971	1,08,78,867.31	3662
2015	3082	1,02,11,751.75	3313.3
2016	2384	90,26,892.49	3785.7
2017	3730	1,22,76,933.30	3291.8
2018	1260	83,39,703.02	6617.4
2019	1826	1,40,01,727.08	7667.4
2020	782	70,99,286.56	9079.7
Total	34266.66	13,17,77,133.80	
Average	2855.55	10981427.81	4494.9

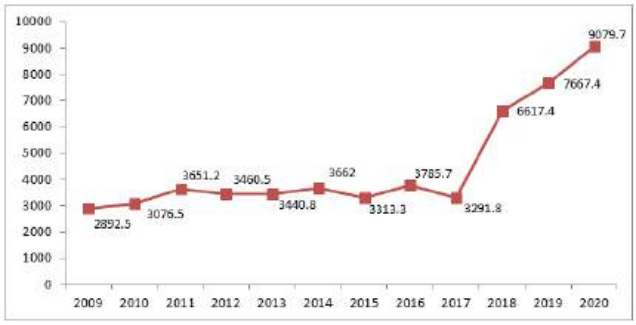

Figure 3: Price of gum and resin per tonne/year.

Similarly the income of the country from the export of gums and resins was also showed the same trend as the volume of exports. Overall the data from 2009-2020 revealed that Ethiopia exporting 34266.66 tonnes of gum and resin and generated 131,777,133.8 US$. This is much higher than the country exported during 2001-2010 which is 11,247 tonnes and generated only 24,208,760 USD (Lemenih M, et al. 2011).

Importer of Gum and Resin from Ethiopia

Gum and resins products from Ethiopia export to a total of 45 destination countries. The leading buyers are china with 38%, followed by Vietnam (16%) India (12%), Saudi Arabia (9%). These country imported a total of 12542 tonnes, 5274 tonnes, 3925 tonnes and 2820 tonnes of gum and resin respectively. This result is in line with the findings of Mekonnen et al., and Shiferaw as they identified china as the leading importers of gum and resins from Ethiopia. However, according to MoA, previously the major buyers of Ethiopia's gums and resins were UAE, China only imports 12% of the total export product (Lemenih M, et al. 2011) (Figure 4).

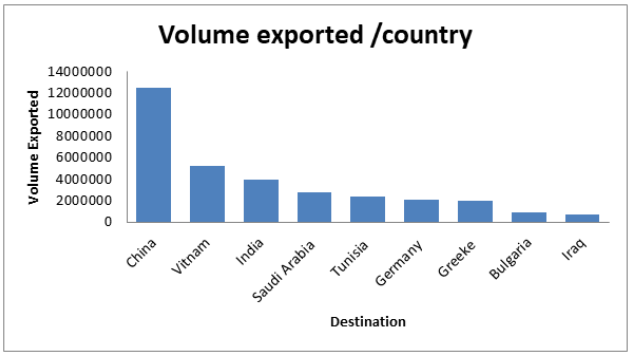

Figure 4: The percentage of gums and resins (Frankincense) exported to different countries.

Import of Gum and Resin

The data collected from Ethiopia Custom commission indicated that Ethiopia is also importing gums and resins from different countries despite the fact that the country exporting huge quantities of the product to different countries. Compared to the previous year, number of countries and volume of importing gum and resin imported from different countries various. In the years of 2009-2020, Ethiopia spent a total of US$, 23,898,834.53 to import the volume of 19,727.85 tonnes gum and resin. This is much higher than compared to the amount of gum and resin previously imported to Ethiopia. According to Ethiopian revenues and customs authority, 2010, Ethiopia imported only 2,769 tonnes of gum and resins in the period 2005-2010 (Mekonnen Z, et al. 2014).

The data revealed that out of the total income the country collected from the export of gums and resins (2009-2020), 18% is used to import gums and resins from different countries. The importation of gum from other countries may be related to the better quality and the volume of production may not sufficient for the countries demand. Ethiopia spent on average 3,676,743.77 US$ per year to import average amount of 1,643.99 tonnes of gums and resins. However, the amount of money the country spent to import gum and resins were variable from year to year. In the year 2009, 2010, 2011, and in 2012 the country spent a total of 360,814.19 US$, 591,005.55 US$ 984,775.03 and US$ 1,424,508.52 respectively to import gum and resin from different countries. The expenditure to import gum and resin increased from the year 2009 to the year 2012 by US$ 1,063,694.33.The general trend indicated that the expenditure of the country to import gum and resin was showed steady growth until 2017. Then after it showed increasing trend and it reaches a pick in 2019 and country spent huge amount of money to import this product (8,147,962.53US$). However it fell in the following year and the value to import the product decreased by 3,534,229.65 US$. Similarly the volume of imported gum and resin indicates stable growth rate from the year 2009 up to 2017 fiscal year. However, in 2018 the volume of imported gum and resin showed dramatic increases and dropped down in 2020. According to the data from the year 2009 to the year 2020 the volume of gum and resin imported increased by 3900 tonnes. This may be due to current epidemic diseases that influence international market. Overall the value of imported gum and resin has the same trend as volume imported over the year. Unlike the amount of money needed to sell one tonne of gum and resin, the money needed to buy one ton of gum and resin showed more or less similar trend (Figures 5-7). Overall, between the years of 2009-2020, Ethiopia spent a total of 634,820,942.46 Eth. birr to import 19,727.85 tonne of gum and resins (Mekonnen Z, et al. 2013).

Furthermore, the result indicated that the importer countries now reaching nearly 60. However, Importers of gums and resins need consistent and sustainable supply of quality raw material. However Ethiopia's status as a producer of consistent quality gums and resins has suffered largely due to poor quality of the raw materials resulted from lack of incentives, low price and lack of knowledge related to tapping and cleaning. Moreover, local level traders generally don't have the skills or the

means to ensure the purity of the raw product offered in a batch for sale. Harvesters, employed under any production system, have to get the incentive to not adulterate the gums and resins they provide to the trader as they will earn more money from selling of higher quality product. In addition training should be provided for producers about harvesting and post-harvest handling to ensure quality collection with no intentional adulterations (Sanchez-Cuervo AM, et al. 2012).

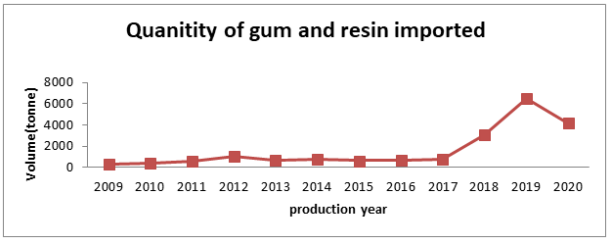

Figure 5: Volume of gums and resins from the year 2009-2020 (ECC).

Figure 6: Expenditures to import gums and resins produced from Ethiopia custom commission, 2009-2020.

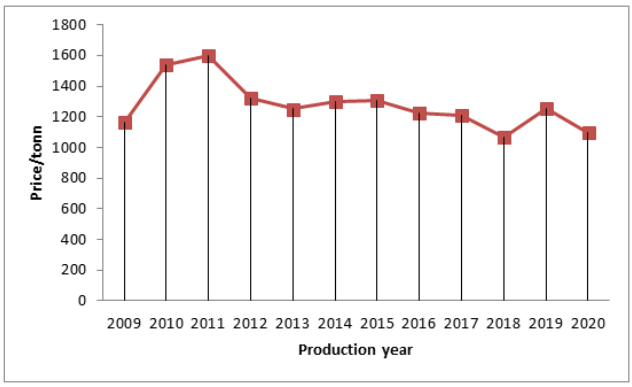

Figure 7: Price per tonne/year.

Exporters of Gum and Resin to Ethiopia

Even though Ethiopia is the main exporter of gum and resin, the country also imports gum and resin from different countries. Between 2009-2020, Ethiopia imported gums and resins mainly from Sudan (42%), Sengal (27%) and indonsia (27%) (Shackleton S, et al. 2011) (Figures 8 and 9).

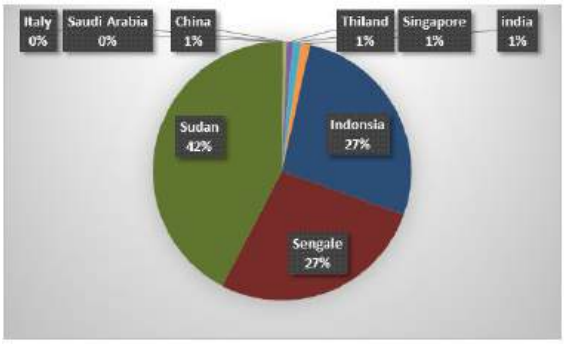

Figure 8: Countries where Ethiopia imports gums and resins.

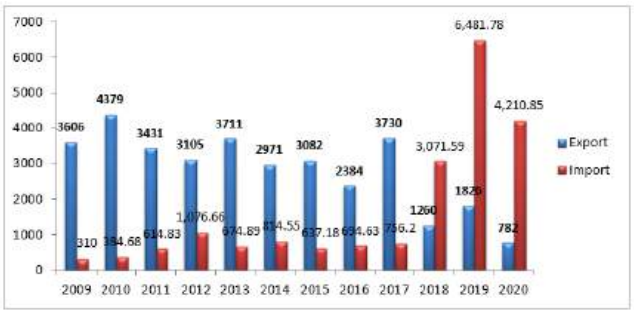

Figure 9: Quantities of gums and resins exported and imported between 2009 to 2020.

Trade Balance

The trade balance indicated that between the years of 2009-2020 Ethiopia earned a total of 131,777,133.8 US$ from the export of gum and resins (Turk DJ, et al. 2008). Whereas, the country spent on average 23,898,834.53 US$ to import gum and resin (Waeber P, et al. 2012). Thus on average Ethiopia earned 10981427.81US$ per year from export of gum and resin and spent on average 3,676,743.77 US$ /year for the import of this forest product. According to the data from the years 2009 to 2017 the income generated from the export of gum and resin was more than the country expenditure to import these products (Worku A, et al. 2011). This result clearly indicated that there was positive trade balance for nine years. On the contrary the trade balance result further showed that in the years of 2018, 2019 and 2020 the expenditure of the country to import gum and resin was higher than the income of the country from export of similar product and the data revealed that for three conseqative years there were negative trade balances (Figure 10) (Worku A, et al. 2014).

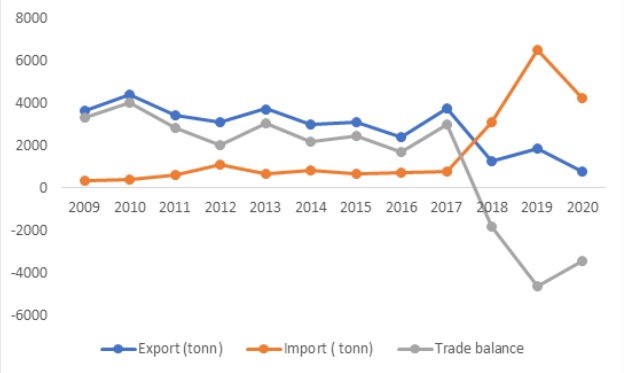

Figure 10: Gums and resins import, export and trade balance between 2009 to 2020.

CONCLUSION

Ethiopia is on average exporting 2855.55 tonnes of gum and resin and collect an average income of 10981427.81 US$ per year. Between the years of 2009-2020, Ethiopia earned a total of 131,777,133.8 US$. The analysis of volume and price data was not stable and experiencing up and down trend. Gum and resins products from Ethiopia export to a total of 45 destination countries and the leading exporters are China, Vietnam and India. Despite the country exporting huge quantities of gum and resin, Ethiopia is also importing gums and resins from different countries. The volume and the amount of money to import gum and resins were various from year to year. Ethiopia spent on average 3,676,743.77 US$ per year to import on average 1,643.99 tonnes of gums and resins. The trends indicate up and down growth from the year 2009 up to 2017 fiscal year. However, in 2018 the volume of imported gum and resin showed dramatic increases and again dropped down in 2020. This may be due to current epidemic disease (COVID-19) that influence international market throughout the country. Between 2009-2020, Ethiopia import gum and resin mainly from Sudan, Senegal and Indonesia. Overall the data from the years 2009 to 2017 showed a positive trade balance, whereas, the following three consecutive years (2018-2020), the trade balance was negative. Therefore, since the country has high potential of gum and resin resources, instead of the country importing gum and resin, attention should be taken on production and exports of gum and resin, which could substitute the import product, increase the sale price and the income of the country as a whole.

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